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Government-Industry Dinner

Guest List

March 15, 1994
J. W. Marriott Hotel
Washington, D.C.

ELECTRONIC INDUSTRIES ASSOCIATION
2001 Pennsylvania Avenue, NW
Washington, D.C.

Sr. Technology Aide
Office of Science & Technology Policy
EIA 10-Year Forecast
17 June 1994

• Defense conversion will remain hot for the next few years. Conversion still not common among defense primes, except among companies like Hughes, TRW, Lockheed, Westinghouse Electric Group, and to a lesser extent, Raytheon — all electronics houses. Electronic systems are by their nature dual use. There's much less opportunity to diversify in the world of systems integration.

• TRP is going to continue and will remain relatively modest. The development side continues to have more money this year, and deployment dollars will migrate more and more over to the Commerce Department. Will continue at about $600M level for FY95, has strong congressional support.

• Administration requested $450 million for ATP funding in FY95. Received $200 million in FY94, $450M in FY95. "That's going to be a stretch to get that from Congress." At the steady state ATP is going, it will eventually put it in ARPA's class as far as dual-use funding.

• As DoD, NASA and DoE labs undergo rationalization, it's not inconceivable those assets could end up in ATP-like programs. Labs rationalization study is an interagency lab review integrating the three individual agencies reviews (the DoE Galvin Task Force, the DoD study of the labs in conjunction with BRAC, and NASA's review and update for the president).

• On BRAC: "Everything is possible, nothing is likely. It is a wildcard."

• Flat budget in federal government for the next four to five years. "I have to look in the nooks and crannies for opportunities...wherever those opportunities lie." The best growth areas — if not the only growth areas — are ATP, TRP, NASA CRADAs, and DoE CRADAs. NASA has set aside $265M for CRADAs.

• On the EIA Defense Budget Chart: "It slopes probably a little too flat. We'll be lucky if it stays that flat in constant dollars."

• Procurement will be down two-thirds and will only go up if they procure new tank or plane, which if it occurs will be 1997 or 98. "The only way that we could pay for those new weapons systems...is to decrease the O&M [accounts] even more."

• R&D: "They're going to fight to keep R&D up because that's a new agenda at DoD." Noted the presence of Perry as key to keeping R&D high.

• On NASA: Goldin's view and the Clinton administration have a lot in common. "Hard tech" is coming out of the woodwork. Formerly classified work that is being downgraded is opening up opportunity for higher productivity, more sensors, power consumption, onboard data processing in satellite areas—could represent almost a quantum leap in technology capabilities. "These technologies are big productivity gains."

• We're really quite serious about re-inventing government. NASA has been one of the fat, dumb and lazy agencies." We created an annuity program for them and their grandchildren. 10-year development cycles in a $1 billion satellite is what you find with Mars Observer,

RECVd OSTP 4-5-95
cc: JHG
Rick
Johns

Electronic Industries Association

April 3, 1995

Dr. John H. Gibbons
Assistant to the President for Science and Technology
and Director, Office of Science and Technology Policy
Old Executive Office Building, Room 424
17th Street and Pennsylvania Avenue, NW
Washington, DC 20500

Dear Dr. Gibbons:

On behalf of the EIA Government Division Board, I want to thank you for your presentation at the 24th Annual Technology and Budget Conference held last week at the Omni Shoreham Hotel in Washington, DC.

In these times, it is vital that EIA technology and budget conferences address the important topics that provide our industry attendees with the information they need to stay abreast of the changing government marketplace. The government benefits, in turn, by seeing better quality, more responsive proposals from industry suppliers. We feel that this was among the best conferences we've held in recent years in terms of meeting these goals, and your participation and insights clearly contributed to that success.

We appreciate your continuing support of EIA activities.

Sincerely,

Dan C. Heinemeier
Vice President
Government Division

2500 Wilson Boulevard • Arlington, Virginia 22201-3834 • (703) 907-7500 • FAX (703) 907-7501

ELECTRONIC INDUSTRIES ASSOCIATION

6/17 - at their request w/ Kitty - late May (guidance will be out)

April 18, 1994

Mr. Lionel S. Johns
Office of Science and Technology
Associate Director for Technology
Old EOB, Room 423
17th & Pennsylvania Ave., NW
Washington, DC 20503

1:00 - 2:00

Dear Mr. Johns:

The Electronic Industries Association (EIA) is the national trade association representing the full spectrum of electronic manufacturing in the United States. Our Government Division/Requirements Council consists of companies that manufacture and/or engage in research and development of systems, subsystems, electronic equipment and the like for federal agencies, particularly the Department of Defense.

Annually, this council conducts a study of DoD and NASA mission area needs and program plans, and their projected impact on key electronic technologies. This annual unclassified survey of the outlook for defense electronics is presented at an annual fall conference, this year in October in San Diego. This year the Council has selected to study, in addition to the 30th annual Ten-Year forecast; Missions, programs and Technologies; and International Markets; two very critical and highly visible market areas: Remote Sensing; and Platform, Modification, Retrofits and Maintenance. EIA also plans a first time Government/Industry panel to discuss the critical subject of Software. Your participation may be necessary in one or more of these areas.

The results of our findings will bring direct benefits to DoD as well as industry. Technology objectives and realistic new business opportunities will be identified which will focus limited industry discretionary resources on priority military needs. The Fall conference also serves as a conduit for disseminating information to industry as a whole, thus saving DoD personnel from having to explain their plans to hundreds of individual companies. The EIA is supported in this effort by DoD (Reference to the enclosed copy of Deputy Assistant to the Secretary of Defense for Public Affairs (Operations) Memorandum dated December 23, 1993). Participation in this study is consistent with DoD Instruction 5410.20, "Public Affairs Relations with Business and Nongovernmental Organizations Representing Business."

The conference consists of several studies, each one made up of extensive literature searches with key officials from OSD, the Services, other defense and non-defense agencies, as well as the Executive Office of the President (OMB, NSC) OSTP), and Congress.

EIA would like to schedule an appointment with you in the next few weeks.

During the discussion, study team members would like to explore the following: (1) needs and requirements, program plans and priorities, funding projections and key emerging technologies; (2) possible new opportunities, e.g., new starts, major upgrades; key and emerging technologies and technology demos; (3) changes from last year and shifts in emphasis; (4) new constraints that might lead to stretchouts, descoping or termination of programs; (5) special issues related to your area of interest (e.g., budget cuts, congressional interest, strong opposition or support, program "health"); (6) any messages or suggestions you may have for industry (e.g., recommended IR&D directions).

All discussions are unclassified, off-the-record, and not-for-attribution. Members of the EIA team who will meet with you will be representing the electronics industry as a whole rather than their individual companies. To ensure an industry perspective, at least two members from different companies participate in each discussion.

Your participation in this important study is very much appreciated. John Geron of our staff will be contacting your office in the near future to set a meeting time, or you can reach him at 202/457-4944, fax 202/457-4910. If you have any questions about this EIA program, please give John a call. Thank you for your cooperation.

Sincerely,

Dan C. Heinemeier
Vice President
Government Division

Enclosure

OFFICE OF THE SECRETARY OF DEFENSE

WASHINGTON, DC 20301-1000

DEC 2 3 1993

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS
CHAIRMAN OF THE JOINT CHIEFS OF STAFF
UNDER SECRETARIES OF DEFENSE
DIRECTOR OF DEFENSE RESEARCH AND ENGINEERING
ASSISTANT SECRETARIES OF DEFENSE
COMPTROLLER
GENERAL COUNSEL
INSPECTOR GENERAL
DIRECTOR OF OPERATIONAL TEST AND EVALUATION
ASSISTANTS TO THE SECRETARY OF DEFENSE
DIRECTOR OF ADMINISTRATION AND MANAGEMENT
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: Ten-Year Forecast Study for Electronic Industries Association (EIA)

Each year EIA prepares a Ten-Year Forecast of Defense Needs. This is the 30th consecutive year of the publication. Highlights of this year's study include: European Opportunities; Software (DoD and NASA); and Remote Sensing, and Platform Modification and Retrofitting.

The study consists of an extensive literature search as well as research interviews with selected personnel from the Services, the Office of Management and Budget, the Congress, and other government and business representatives. Last year, more than 250 interviews were conducted in DoD by EIA.

The purpose of this memorandum is to advise you that if sought, your cooperation with EIA is authorized by DoD. EIA will write directly to officials with whom interviews are desired. These letters will identify the desired topics, list the point of contact, and provide further background information about subjects to be covered. The decision to cooperate, however, rests with individuals and their offices.

EIA notes that all discussions with DoD personnel are unclassified and not for attribution. DoD personnel are reminded of the prohibition against unauthorized disclosure of any proprietary or source selection information regarding procurements. Interviewers are conducting research. They represent the electronics and training systems industries as a whole, rather than their individual companies.

DoD's participation in this study is consistent with DoD Instruction 5410.20, "Public Affairs Relations with Business and Non-Governmental Organizations Representing Business."

The OSD point of contact is Mr. Bill Harris, Directorate for Community Relations, (703) 695-2709 or DSN 225-2709. This memorandum has been coordinated with the offices of the General Counsel and the Under Secretary of Defense (Acquisition and Technology).

Clifford H. Bernath
Deputy Assistant to the Secretary
of Defense for Public Affairs
(Operations)

ELECTRONIC INDUSTRIES ASSOCIATION

May 5, 1994

Dr. John Gibbons
Dir., Off. of Science & Tech. Policy
Executive Office of the President
1600 Pennsylvania Ave., N.W.
Washington, D.C. 20500

5/12 Skip - Will refer to you - Then OK? Sue

Dear Dr. Gibbons:

The Electronic Industries Association (EIA) is pleased to announce the commencement of its sixth annual study of Federal Information Systems, entitled "Five-Year Forecast of Federal Information Systems." This study will include a forecast of federal obligations and information technology (IT) needs and will identify opportunities in both the Civil and DoD agencies. Additionally, special market studies on Health Care in the federal government and Synthetic Environments will be undertaken. The results of this study will be presented at a national conference in Washington, D.C. on June 29-30, 1994.

EIA's studies are based upon government documentation, research and information gathered during interviews with key government officials. The EIA interviews are conducted by study teams from our member companies and are unclassified and performed on a not-for-attribution basis. EIA believes that you can provide vital information and insights into the growing federal needs for information technology. Therefore, we would appreciate meeting with you and/or your designee in the near future.

EIA is the national industrial trade association that represents the interests of the U.S. electronics industry. EIA member companies range from the smallest manufacturers of electronic components to the largest corporations that design and develop complex systems used in both national defense and civilian service. Each year EIA, through its member companies, conducts studies and forecasts on future requirements in various segments of government. These forecasts have proven to be important sources of information for both government and industry.

Your participation in this important study would be appreciated. A member of the EIA staff will be contacting you to schedule an interview during the next few weeks. If you would like to receive a copy of the 1993 EIA Federal Information Systems forecast, or would like more information, please call Mrs. Mary Lamb of EIA at (202) 457-4943.

Date Rec'd 5-9-94
ACTION to SUE
INFO to _____
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Stationery _____

Sincerely,

Dan C. Heinemeier

Dan C. Heinemeier
Vice President
Government Division

2001 PENNSYLVANIA AVENUE, N.W. • WASHINGTON, DC 20006-1813 • (202) 457-4900 • FAX (202) 457-4985

EIA 8

ELECTRONIC INDUSTRIES ASSOCIATION

Date Rec'd 5/2/94
ACTION to
INFO to JHG
Nelson
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Johns
Newell

SIG of
Stationery
DATE DUE

April 27, 1994

The Honorable John H. Gibbons
Director, Office of Science and Technology Policy
Old Executive Office Building
17th Street and Pennsylvania Avenue, NW
Washington, DC 20500

Dear Mr. Gibbons:

It was with great interest that we learned of the President's recent comments supportive of the so-called V-chip. In light of the current debate over televised violence on Capitol Hill, the Electronic Industries Association is concerned that the Presidents' remarks may be taken as Administration endorsement for pending legislation which would mandate the V-chip in all television receivers 13" and larger.

As per the attached letter to the President, the EIA extends an offer to you and your staff for a briefing on viewer discretion technologies in the free market.

Sincerely,

Joe Peck
Staff Director, Congressional Affairs
Consumer Electronics Group

Attachments

JP/epa

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ELECTRONIC INDUSTRIES ASSOCIATION

April 22, 1994

The Honorable William J. Clinton
President of the United States
1600 Pennsylvania Avenue, NW
Washington, DC 20500

Re: "The V Chip"

Dear Mr. President:

I am writing in response to your recent positive comments on technology dubbed as the "V-Chip." The Electronic Industries Association (EIA), is concerned that this proposal might signal the advent of government-designed television receivers. Proposals now before Congress suggest a technology-based "fix" to the issue of gratuitous violence in television programming would mandate the inclusion of four different features in every television set 13" and larger. The imposition of such a requirement would mean the redesign of these TV receivers and impose unjustified financial burdens.

Attached is our position paper on HR2888 and S1811. We would also be pleased to brief you and your staff on the viewer discretion technologies available in the free market.

EIA and its members understand the importance of reducing violence in our society. We offer our pledge to do our part as good corporate citizens.

Sincerely,

Gary J. Shapiro
Group Vice President
Consumer Electronics Group

Attachment

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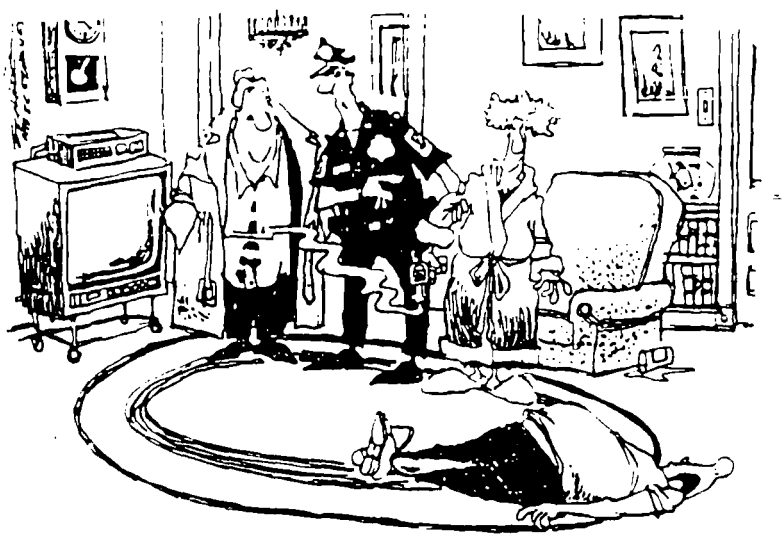
HR 2888/S 1811 - CONGRESSIONALLY MANDATED VIOLENCE BLOCK

Surgeon Gen. Jocelyn Elders, "...it probably would be a waste of money...."

SHOE JEFF MacNELLY

William Raspberry

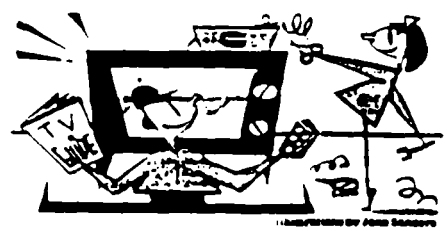
Parent-Programmed TV? Get Serious



"HE WOULDN'T TELL HER HOW TO WORK THE ANTI-VIOLENCE LOCK ON THE T.V. SO SHE SHOT HIM..."

Bill Schorr

THE NEW YORK TIMES



Youth Against Censorship

To the Editor:

Regarding "A Chip That Allows Parents to Censor TV Sex and Violence" (Technology, July 18): the sub-headline about the V-chip — "It's cheap, it's easy, it's controversial: the broadcasters hate it." — is missing a line. It should have also said "... and kids hate it."

As a young person, I dislike the concept of the V-chip more than the consequences. The idea that such a small and inexpensive device gives my father the power to lock out my favorite television shows, or a program that I know that I am mature enough to watch, makes me furious.

Nevertheless, I don't fear the consequences of such technology, because I know from growing up and being surrounded by technologically inept parents and teachers that more adults will shy away from such a device than embrace it with enthusiasm. They have had bad enough experiences with VCR's, computers, fax machines and other technological devices.

If my father did buy such a gadget I [illegible] that my 10-year-old sister and I would be [illegible] enough to either [illegible] the access for the gadget, or watch TV at a friend's house.

ELECTRONIC INDUSTRIES ASSOCIATION

TECHNICAL REQUIREMENTS AND TELEVISION VIOLENCE: FACT SHEET AND POLICY STATEMENT

Representing the nation's television manufacturers, the Electronic Industries Association (EIA) is concerned about efforts to require every new TV set to allow parenting by remote control. Television manufacturers cannot determine program content and wish only to provide features that consumers demand.

Congress is considering legislation to help parents restrict or limit access to violent programming. To serve consumer needs and avoid unnecessary confusion, EIA believes that certain principles ought to apply to any TV receiver-based proposal:

- The approach taken to empower consumers should be reasonably calculated to **serve the intended purpose**;
- Any TV receiver-based parental control mechanism should be:
  - Not unduly expensive or complicated for **retailers to explain** and **consumers** to **implement**;
  - Not **resented** by the consumers it is meant to serve;
  - **Voluntary** – a feature to be selected by concerned consumers;
  - **Not required** on all television models – consumers should have a choice.

Based on these principles, EIA **opposes** the passage, in its present form, of **HR 2888/ S 1811**, which would require in televisions **mandatory** circuitry that is both program-based and content-based. Basic **demographic** and **marketplace** facts demonstrate that such a mandatory approach would **not be effective** and would confuse and impose unnecessary burdens on many consumers.

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Why Mandatory Technical Requirements Proposed Would Not be Effective

HR 2888/S 1811 would require two types of circuitry in all new TVs of screen size 13" and over: (1) a circuit that would block particular programs which carry a common rating code for violent content; and (2) a circuit to lock out specific time slots, programs or channels.

Before mandating such features, consider that:

- Two-thirds of American households do not contain children under age 18.
- Some 200 million TVs are now in use in America. With 20 million sets sold yearly, it would take ten years to replace these sets even if an old set were destroyed for every new one purchased. But in reality, old TV sets usually are kept working in bedrooms, dens, etc. To watch a show with a violent rating code, the child will only need one set in the household that pre-dates the new requirements. Thus, it would take decades for the proposed mandate to have an appreciable effect.
- No violence rating system is in place for television programs nor does the legislation require any program encoding which would trigger the blocking circuitry.
- Mandating this circuitry would impose confusing new features on television sets purchasers.

Mandated technical requirements on all new TVs – even if program providers transmitted the violence rating code which activates the circuitry – would be overbroad and could not be effective for decades. Voluntary trends can result in a more targeted and effective solution.

Voluntary Trends Supporting A More Effective Approach

Those who care about children's viewing should know:

- In a draft industry standard for Electronic Data Services (EDS), EIA has reserved space for TV program providers to encode their programs with "program content advisories." If TV programmers begin rating and encoding their programs, manufacturers will offer consumers the option of an EDS-equipped set that responds to such encoding.
- Twenty-two TV models now on the market offer a channel blocking feature that enhances parental options.

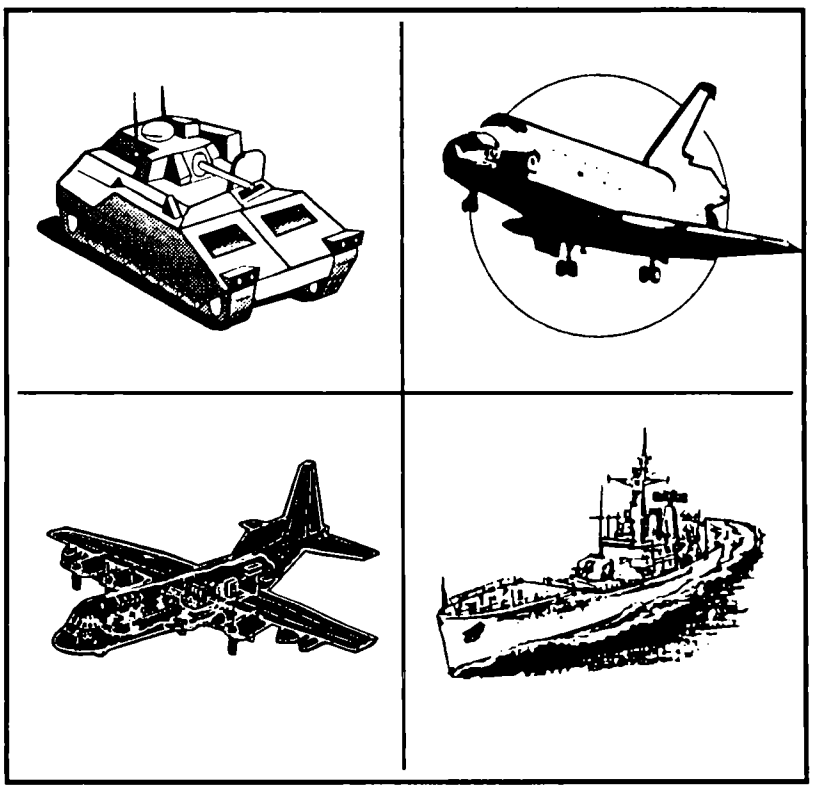
- Most, or all, TV manufacturers will likely offer models that respond to the desires of those consumers who do need and want parental control features.

* * * * *

Simply, market forces combined with television programming industry sensitivity and parental responsibility will more likely reach the desired goal of reducing children's viewing of TV violence. Mandating costly and confusing new features will simply not achieve the desired goal.

MARKET PLANNING REFERENCE PUBLICATIONS

28TH ANNUAL
EIA TEN-YEAR FORECAST
OF DOD AND NASA BUDGETS



EIA TEN-YEAR FORECAST
of
DEFENSE ELECTRONIC OPPORTUNITIES
(FYs 1993-2002)

A PUBLICATION OF
ELECTRONIC INDUSTRIES ASSOCIATION
GOVERNMENT DIVISION
REQUIREMENTS COUNCIL

"Positioning for the New Realities... Challenges and Opportunities"
EIA
Ten-Year Forecast
of
Defense Electronic Opportunities
(FYs 1993-2002)

28th Annual
EIA
Ten-Year Forecast Conference
Coronado, California

October 20-22, 1992

Sponsored By:

ELECTRONIC INDUSTRIES ASSOCIATION
GOVERNMENT DIVISION
REQUIREMENTS COUNCIL

J. EDWARD WAESCHE
GRUMMAN CORPORATION
CHAIRMAN, REQUIREMENTS COUNCIL

DON W. WEAVER
AEROJET CORPORATION
FIRST VICE-CHAIRMAN, REQUIREMENTS COUNCIL

EMILY WILLEY
HONEYWELL, INC.
SECOND VICE-CHAIRMAN, REQUIREMENTS COUNCIL

Prepared By:

ELECTRONIC INDUSTRIES ASSOCIATION
GOVERNMENT DIVISION/REQUIREMENTS COUNCIL
2001 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20006-1813
(202) 457-4944: JOHN D. GERON

KELLY M. CURTIS
MARY K. LAMB

PRICE:

EIA GOVERNMENT DIVISION MEMBER COMPANIES	$175.00
NON-MEMBER COMPANIES	$395.00

POSITIONING FOR THE NEW REALITIES...
CHALLENGES AND OPPORTUNITIES
EIA TEN-YEAR FORECAST OF DEFENSE ELECTRONIC OPPORTUNITIES
(FYs 1993-2002)

TABLE OF CONTENTS

TUESDAY, OCTOBER 20, 1992

WEDNESDAY, OCTOBER 21, 1992

THURSDAY, OCTOBER 22, 1992

28TH ANNUAL EIA TEN-YEAR DOD/NASA FORECAST (FYs 1993-2002)

LINDA Z. COUTURE
NORDEN SYSTEMS
CHAIRMAN, EIA TEN-YEAR FORECAST COMMITTEE

Viewgraph #1

Defense Electronics Market
Ten-Year Forecast
U.S. Department Of Defense
And
National Aeronautics And Space Administration
Budgets
FY 1993 To FY 2002

Electronic Industries Association
Government Division / Requirements Council
Ten Year Forecast Committee

October 20, 1992

Welcome to the 28th Annual Electronic Industries Association (EIA) Ten-Year Forecast of Department of Defense (DoD) and National Aeronautics and Space Administration (NASA) spending.

Viewgraph #2

Forecast Presentation Outline

Introduction

Department Of Defense Forecast

- Assumptions
- Environmental Factors
- Force Structure Outlook
- Topline Forecast

Hardware Category Forecasts

- Drivers And Issues
- Budget Authority Forecast
- Electronic Content Forecast

NASA Forecast

- What We Heard
- Forecast

Summary

The forecast presentation this year has been divided into three major sections.

The first part primarily discusses the topline forecast of the Department of Defense budget, the assumptions underlying this forecast and the factors which will affect the topline.

Another important part of the first section is an introduction of the participants who made this forecast possible, along with a glimpse of the process and methodology the team used.

The second portion covers in detail the hardware budget categories--aircraft, missiles, space, vehicles, ordnance and weapons, ships, and electronics and communications. The hardware briefing will be given by Ron Henderson of McDonnell Aircraft Company. Ron will brief on each category's budget assessment--procurement and RDT&E, the issues and drivers associated with each category, and the electronic content.

Bob Hansen, Rockwell International, Chairman of the NASA portion, will cover this topic. Bob will give you the budget outlook and the factors that his team concluded would impact this forecast. He will also cover issues, drivers, and the electronic content applicable to NASA systems.

Viewgraph #3

Ten-Year Forecast Team

Industry Team Composition Reflects Varied Corporate Interests

Linda Couture, Chairman—Norden Systems
Bob Hansen, Vice Chairman—Rockwell
Ron Henderson—Hardware Chairman-McDonnell Douglas

Charles Alcon - Computing Devices	John McIver - Boeing
Rod Alderton - General Electric	Gina Meister - Hughes Aircraft
John Allhoff - McDonnell Douglas	Kenneth Menges - Motorola
Michael Alter - McDonnell Douglas	Michael Pearson - Rockwell
Paul Blumhardt - Martin Marietta	Linda Peter - General Dynamics
Bob Brownlee - McDonnell Douglas	Hughes Petteway - Allied Signal
James Bush - PRC Inc.	Gregory Rambo - Rockwell
Kristina Erickson - Boeing	Thomas Rohde - Computing Devices
Paul Evans - Lockheed	James Serafin - Brunswick
Michael Hatcher - FMC	Jim Valk - General Dynamics
Franz Hirshmann - Hughes Aircraft	John Watkins - Lockheed Sanders
Alan Keisner - McDonnell Douglas	Lee Wright - Motorola
Charles Lent - GTE	Howard Williams - Aerojet

Viewgraph #3 lists the Ten-Year Forecast Committee. I was very fortunate to have been able to work with such a dedicated and talented group of people. This is a good time for me to thank each and every one of them and to thank their respective companies for their support.

I would also like to thank our chairman, Ed Waesche of Grumman, for his substantial assistance and his valued inputs. My hat is off to the EIA Staff for the many ways they supported the team.

Viewgraph #4

Why We Prepare Forecast

- Evaluate And Frame The Major Issues
- Predict The Effects Of Anticipated Changes
- Identify Challenges And Opportunities
- Provide Rationale For Corporate Planning And Decision Making

Some may ask about the value of this forecast and why we go to so much trouble each year to prepare it. Our purpose is to annually evaluate our business environment and identify the major issues which will affect the electronics industry. We then go one step forward and predict anticipated changes in the business and the effects thereof. The process we applied in preparing this forecast gave us insight into the challenges and, in a more positive light, the emerging opportunities.

This forecast provides a numerical baseline for strategic planning. The forecast trend is a map to the future and the hardware category data the detail about specific markets on the map. Both are solid tools for aiding accurate and rational business decision-making.

Viewgraph #5

Forecast Caveats

- Not An Endorsement Of Projected Spending, Rather An Assessment Of What Is Likely
- Macro Predictions Of Trends, Supported By Unclassified Data
- View Of Forecast Committee, Not Any Individual Or Company
- Influenced By Interviews, Committee Analysis, And Review Of Requirements Council
- Covers DoD (051 Function) And NASA Budget Authority In Constant FY 1993 Dollars

It is important that I explain the caveats that apply to this forecast. First, the EIA Forecast team is presenting what the committee expects to see happen. The final forecast was not driven by what the industry would like to see happen, but the result of the team's objective analysis.

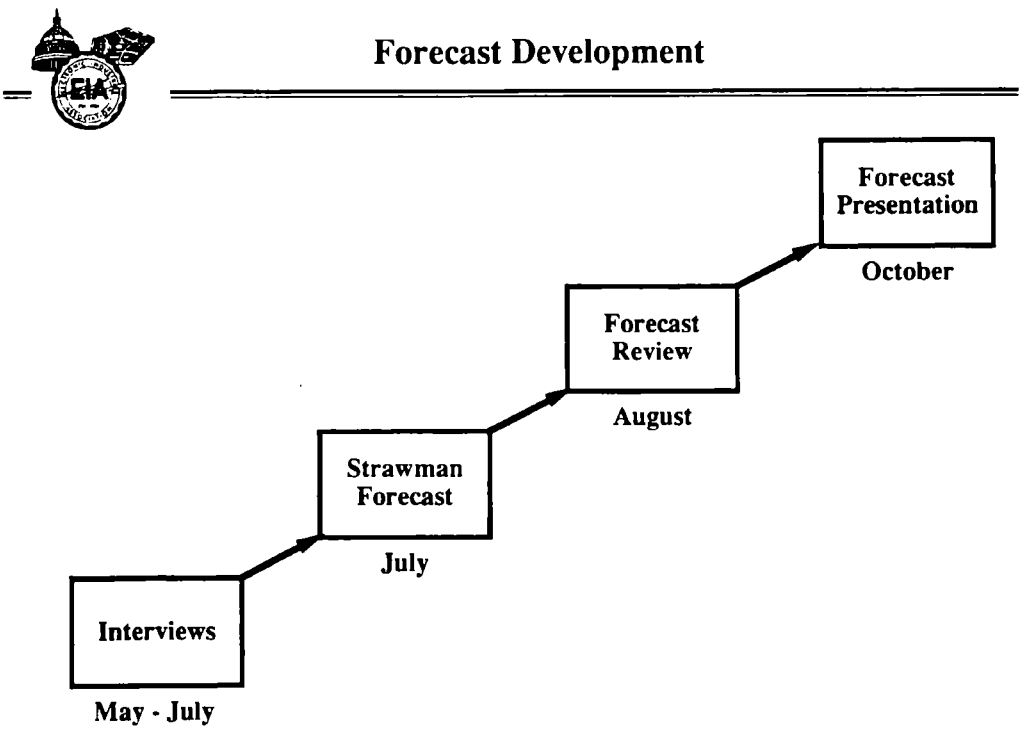
Next and just as important, we forecast trends. We do not predict events, but rather provide a macro outlook supported by judgement, consensus and a strong rationale. It must be noted that all data used are unclassified.

This year's forecast is the view of this year's committee; it was not influenced by any one committee member or by any EIA member company.

What does affect the final product, however, are numerous interviews which were conducted, the in-depth analysis of the forecast committee, and a complete review by the EIA Requirements Council.

Finally, EIA's Department of Defense forecast covers only the 051 function--this eliminates for example Department of Energy. We will estimate NASA's budget for the next ten years. Our forecasts are in Budget Authority and unless noted, all numbers are constant FY 1993 dollars.

Viewgraph #6



Viewgraph #6 displays our three major steps. From May through July we conduct interviews throughout the community. The team synthesizes the data collected from these interviews with other research material. We meet, as necessary, to confer, debate, compare, model and apply judgment and experience. From this process emerges a consensus among team members and the development of the strawman forecast.

But, our work does not end there. A working session for Requirements Council members is held in August. At this meeting the strawman forecast and associated data are reviewed. The data are usually massaged after that meeting and the final product prepared near the end of September. However, we remain alert to events which could have a profound change on our budget outlook right up to the conference itself and make adjustments, if necessary.

Viewgraph #7

EIA Ten-Year Forecast Interviews

- Office Of The Assistant Secretary Of Defense (Comptroller)
- Office Of The Undersecretary Of Defense For Research & Engineering
- Office Of The Director For Program Analysis & Evaluation

- Offices Of Services Assistant Secretaries For Financial Management
  - U.S. Air Force
  - U.S. Navy
  - U.S. Army

- Office Of Management & Budget
- General Accounting Office

- Senate Appropriations Committee
- House Appropriations Committee
- House Budget Committee
- Senate Budget Committee
- Congressional Budget Office

- Brookings Institution
- Center For Naval Analysis
- CSIS
- Data Resources, Inc.
- Defense Budget Project
- Institute For Foreign Policy Analysis
- Washington Research Institute

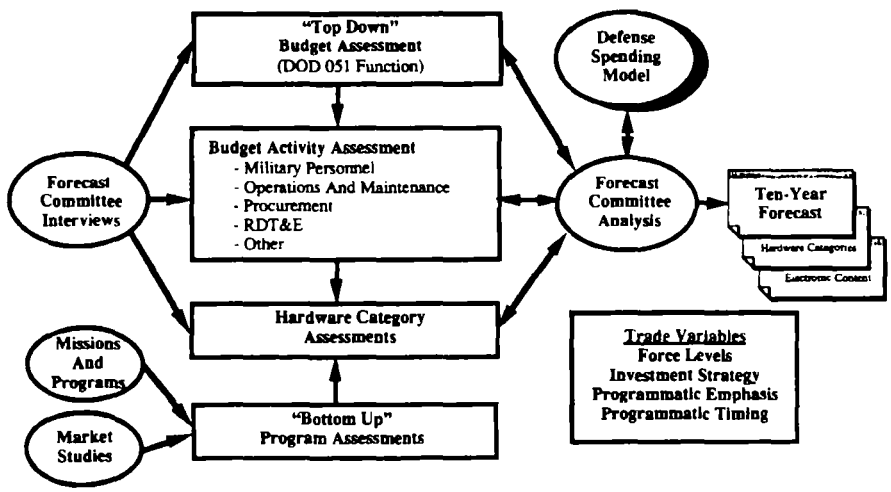
- Aerospace & Electronics Industry
- Financial Securities Analysis

The Ten-Year Forecast interview list is composed of professionals dedicated to understanding, analyzing, influencing, assisting in the preparation of and, yes, spending the defense budget. EIA benefits enormously from interviewing these informed people because of their diverse perspectives and the fact that some are partisan and others non-partisan. These interviews give us a breadth of information and insight that simply could not be obtained anywhere else. We would like to be able to acknowledge each individual. However, all EIA interviews are conducted on an non-attribution basis, so you will not find any specific quotes or references in this briefing. This year we conducted over fifty interviews.

Viewgraph #8

Forecast Development Process

The Forecast Is Developed Through A Rigorous Process



The Ten-Year Forecast Committee works closely with the EIA Missions, Programs and Technology Committee and each market study team. This is done to ensure that what we heard and the conclusions we have drawn do not conflict with what our other committee colleagues have heard. This process validates our findings. If we are not in concert, we do further research.

In order to rationalize the topline, we prepare a complete bottom-up forecast for the hardware accounts and then converge the two. This sanity check instantly alerts us to potential disconnects, which are analyzed and resolved.

This year yet another cross-check was added, ratcheting our scientific approach one more notch. This cross-check cuts across the forecast by way of a force structure/cost per unit model developed for the committee by our Requirements Council Chairman, Ed Waesche. Ed's model neatly validated both the topline forecast and the force structure outlook. We were impressed with the results we have achieved using Ed's model.

Now that I have explained our methodology, it is time to proceed to the forecast.

Viewgraph #9

Ten Year Topline

Underlying Assumptions

- **No Major Event: i.e., Superpower War, World Depression**
- **Regional Conflicts/Threats Continue**
- **Downsizing Of The Military Forces Rather Than Demobilization**
- **Roles And Missions Review Has Not Yet Appreciably Affected The Shape Of The Forces**

Based on our findings, EIA's forecast was prepared with the following assumptions:

- This year's forecast does not include money for a major world conflict, nor does it contain the effects of a worldwide economic depression. Immediately one might ask--is there money in there for a Desert Storm? The answer is bullet two. Yes and no; we are not predicting specific events, but the forecast does contain funds to deal with Desert Storm-type conflicts.

- So far defense planners seem comfortable with a downsizing of the current military forces--in the likeness of a mini-Desert Storm force. Demobilization was only mentioned in one or two interviews. We on the Ten-Year Forecast Committee do not feel the nation is ready to cross that bridge yet. However, if we have several more years of relative world peace and the price tag for fixing domestic problems grows, this could change. The history of the U.S. does not show a nation supporting a large standing force without a "clear and present danger."

- Our interviewees did not connect the size of future defense budgets with the roles and missions debate that is underway. Therefore, our forecast does not reflect the effect future changes could have. We do expect, however, that reducing redundancies would not affect the topline outlook as much as it would change hardware and service allocation ratios.

Viewgraph #10

Ten Year Topline

Underlying Assumptions

- Topline Forecast Economically Driven
- Slow, But Steady U.S. GDP Growth—Average Two To Three Percent Per Year
- No Firewalls In Budget Agreement After FY 93

One thing became clear early in the year--the topline forecast is definitely not threat driven. It is emphatically economically driven. The forecast I am about to present is what the nation is willing to spend on its defense. I will discuss later events that would change this attitude. A warning, however--there aren't many!

We do predicate this forecast on slow, but steady economic growth. No one we talked with presaged a return to the economic boom of the 1980s; therefore, the nation will have to choose between guns and butter. And, the budget agreement walls will be down for the FY 1994 defense budget. This presumes that defense's immunity from spending raids disappears.

Viewgraph #11

Changed World Environment

End Of Cold War

- Completely Changed Geopolitical Landscape
  - Multipolar Uncertainties Replaced Known Dangers Of Bipolar System
  - Benign Overall
  - What Could Surpass Desert Storm?
- New Roles, Missions And National Strategy
  - Support U.S. Interests Abroad Via UN Peacekeeping And Humanitarian Aid
- Diplomatic Influence And Economic Strengths
  - Grown In Importance Vis-A-Vis Military Strength
  - Impetus For Unique Alliances

We are no longer talking about the New World Order; we are living it. The new environment does and will continue to affect defense planning and defense spending levels.

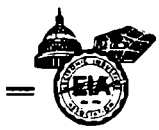
The end of the Cold War brought with it the uncertainties of a new geopolitical landscape, one planted with uncertainties and nations suddenly free from the bonds of communism now struggling for survival among the wealthiest nations of the world. The known danger of the bipolar system, where communism competed against the free world, has been replaced by multipolar uncertainties. Nationalism is today's danger--individual nations maneuvering for a place in the order of nations. Strange alliances are being formed to gain economic advantage.

U.S. citizens are feeling more safe and secure from outside forces than we have for over forty years. This lack of concern about safety is directly affecting our willingness to spend money on defense.

The U.S. will support NATO as a way of staying prominent in the European scene. And we will continue humanitarian efforts throughout the world as well as to support United Nations' peacekeeping efforts.

While military strength appears to have taken a temporary back seat, diplomatic and economic strengths have moved to prominence.

Viewgraph #12



Changed World Environment

End Of Cold War

- **U.S. Foreign Policy In Transition:**
  - **— New Direction? Will U.S. Forego World Policeman Role? If So, Who Will Provide Leadership?**
  - **— How Much Military Needed?**
  - **— Appears To Have Moved To "Selective Engagement" Will We Respond With Military Force Only If Vital U.S. Interests Are Affected?**

The end of the Cold War has forced us to review and revise our foreign policy. We are a nation in transition. One of our interviewees pointed out that it took the U.S. almost ten years to definitize our national military strategy after World War II. It does appear that our role as the world's policeman is in question.

Another question on the table: How much military do we need today?

It appears that under the current administration we have moved to a policy of selective engagement. Some think we would respond militarily only if there is an obvious threat to a vital, strategic interest.

Viewgraph #13

U.S. Environment

What's Playing In Peoria?

- **Domestic Issues Primary Concern**
- **Jobs Hold Top Priority**
  - — Economic Stagnation Mitigates Defense Cuts
- **Economic Competitiveness Is Current "War"**
- **Populist Movement**
  - — Unhappy With Process
  - — "Throw d'Bums Out"
- **Election Outcome Will Not Change Public Attitudes**
  - — Defense Will Move To Page Two

While there may be several factors which affect defense spending, they all seem to boil down to the attitudes of the public. The people, you and I, lead Congress through our votes. With respect to defense spending, if we are somehow convinced or surmise that the nation needs more defense goods, you and I will support the budget the Pentagon says it requires. With respect to today's environment, everyone feels relatively safe. So guess what? Minimum support for defense spending. A September poll by USA Today ranked important issues for the presidential candidates to debate. After the success of Desert Storm, guess where foreign affairs rated? Forty-two percent of those polled thought it important, which ranked it second to last, right between family values and abortion. What was number one at 89 percent? You guessed it. The economy. We are worried about money!

Where is the threat today? Some would say our new war is an economic one--economic competitiveness.

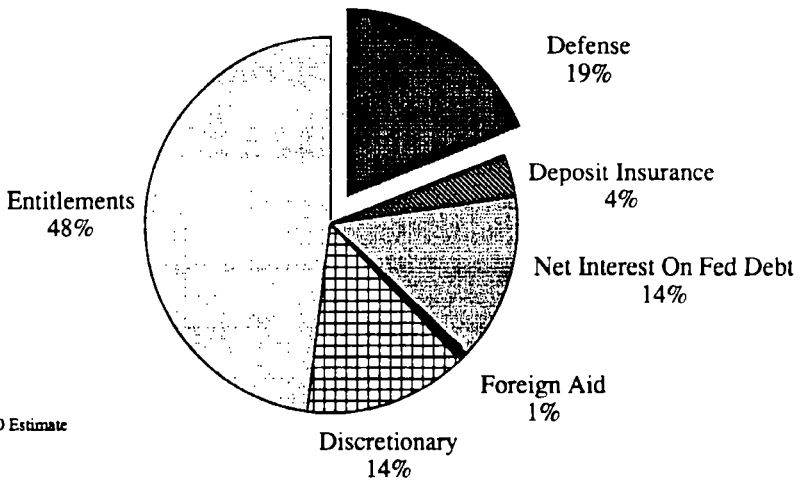
All these money problems and the fact that the public does not see things improving quickly has changed the mood of the country. Throw them all out, some are saying. We want a change. Many feel the election is going to change things, but we did not hear that in our interviews. In fact, since the public is setting the agenda, the election result will not profoundly affect public attitudes--a rebounding economy would, but unfortunately not to the aid of the defense budget. We expect this topic to move to page two.

Viewgraph #14

National Spending

Where The Money Goes

FY 1992 Budget Outlays

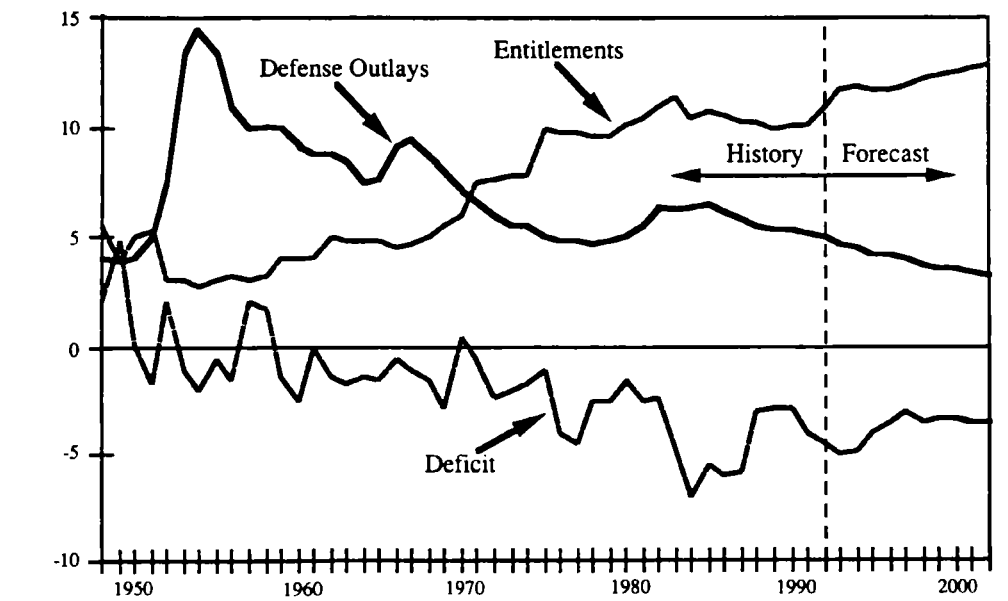


Source: CBO Estimate

Viewgraph #15

Entitlement And Deficits Rise, Defense Spending Falls

Federal Spending As Percentage Of Gross Domestic Product



Let's take a quick look at national spending. *Viewgraph #14* shows FY 1992 spending estimates, while *Viewgraph #15* shows the patterns of spending since 1950.

Defense spending as a percentage of Gross Domestic Product (GDP) is returning to pre-World War II levels, while mandatory outlays--entitlement and the net interest on the national debt--are applying more and more pressure on discretionary spending.

Viewgraph #16

Messages To Industry
Industrial Base Policy

- **Administration Sticks With Its Belief In Free Market Process; Believes Industry Will Be Able To Build Up Again If Necessary**
- **Hill Advised Industrial Base Will Become A Burning Issue**
- **Recent Interviews Suggest The Pentagon And The Hill Are Already Planning Budgets And Weapons Acquisitions With The Industrial Base Clearly In Mind**
- **Spending For Non-Needed Equipment May Become An "Insurance Policy"**
- **Conclusion: Both Sides Of The River Will Want To Retain The Nation's Industrial Capability**

The question of an industrial base policy came up during our interviews.

The Bush administration continues to maintain industry can be counted on--it will be there when needed.

Interviewees on the Hill, however, warned that while the issue is a discussion point today, it will become a burning one as industry sales continue to fall. The Hill and the Pentagon are going to find it necessary to cut into industrial muscle with large subsequent cuts. Plants will actually be closing due to lack of business.

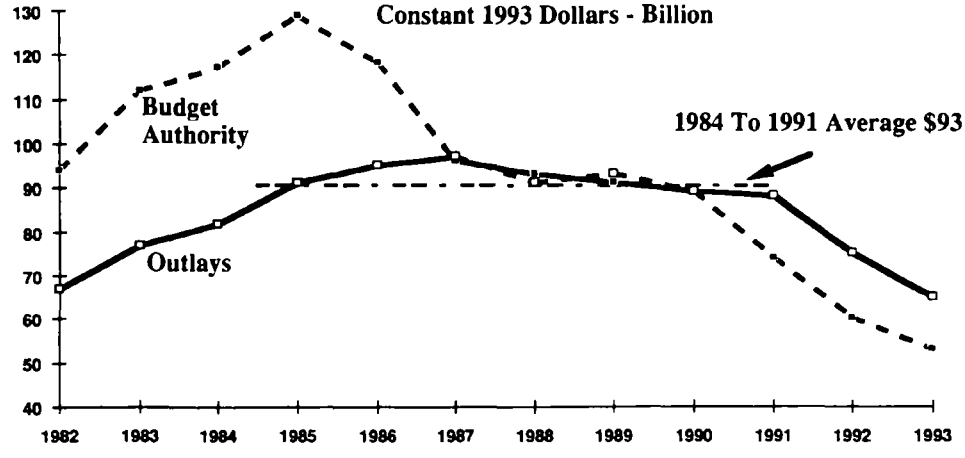
There are some signs that the Pentagon is starting to make weapons-buying decisions with the industrial base in mind. Clearly the Seawolf and the CVN-76 carrier have industrial base implications all over their decks.

The American people may have to accept that defense spending is an insurance policy--like buying a house without one, the risk is too great.

When push comes to shove, neither side will forfeit all the military prowess and industrial capability we have built up over the past forty years.

Viewgraph #17

Why Defense Budget Cuts Took So Long To Be Felt By Industry



Defense procurement outlays, which are industry sales, lag changes in Budget Authority. Thus, industry sales have been relatively constant—***until this year***.

Viewgraph #17 succinctly explains what has happened to industry starting last year--the backlogs have disappeared. This has especially affected the mid-tier supplier level, according to Wall Street analysts, since the large contractors have bolstered their sales by their ability to pursue smaller defense contracts and the ability to do more work inhouse. Other analysts maintain, however, that small firms in specialized niches protected from defense cuts are those best able to deal with the declining market.

This slowdown of outlays, which translate into sales, will hasten the downsizing of the industry. Outlays have been stable over the past eight years, and their dramatic fall beginning in 1991 explains the recent surge in acquisitions and divestitures. As one analyst bluntly puts it, "Backlog is not an important indicator for the defense industry...it is the only indicator."

Viewgraph #18

Messages To Industry What We Heard

- **Jury Is Still Out On Cheney's New Acquisition Approach And Aspin's *Silver Bullets***
- **Services Will Be Looking At Efficiencies**
  - — COTS/NDI
  - — Contracting Out Depot Work
  - — Infrastructure Cuts
  - — New Ways To Train
- **Very Little Production; R&D May Cost More To Give Industry Profits**
- **Electronic Content Will Rise; However, Market Value Could Be Offset By Cheaper COTS**

While Cheney's acquisition strategy--especially ATDs--appears to have merit, the jury is still out. The process from design and development to production was stressed as critical and difficult. The same goes for Aspin's Silver Bullets. No one shot these ideas down, but skepticism was obvious.

One thing is clear, the budget crunch is already forcing each service to search for efficiencies. Commercial-off-the-Shelf (COTS) and Non-Developmental Items (NDI) were mentioned as money savers, however, this subject has two sides. While everyone favors COTS, it appears the customer accepts its use primarily for non-mission-critical items. Affordability may force wide acceptance eventually. NDI didn't get much discussion.

There is a push to compete more depot work. This, of course, will be resisted by the depots. We heard that labs will be protected by the Pentagon and by the Hill. Consolidation, yes. Go away? No.

Infrastructure cuts are underway in most organizations--lowering the overhead just as industry is in the process of doing.

The services are definitely looking for better ways to train. Simulation was the password, however, some interviewees were hesitant about giving up the "dirty" battlefields environment in field training for computers.

Everyone warned of the paucity of production opportunities. The exception was the turn of the century when we would have to replace some platforms, no longer being able to simply upgrade them. With respect to R&D, there was acknowledgment that industry will not be interested long without production unless the government helps them figure out to make R&D work more profitable. Mostly rhetoric, though, and no solid answers.

Finally, electronic content will rise in future systems-- remember smarter, less manpower intensive, more reliable and more effective weapons rely on technology, a la electronics, in most instances. However, if COTS is more widely accepted, this could offset the value of the electronic content since commercial items come with lower price tags.

Viewgraph #19

Fiscally-Driven Projected Forces

	Today	Likely 1997[2]	Possible 2002[2]
Divisions	26 (16 active)	17 (11 active)	13 (7 active)
Corps	5	4	3
Active MC Brigades	9	7	7
Battle Force Ships	545	430	365
Aircraft Carriers[1]	13 (13 active)	11 (10 active)	10 (9 active)
Carrier Air Wings	15	12	11
Attack Submarines	87	75	50
Tactical Air Wings	36 (24 active)	24 (14 active)	20 (12 active)
Strategic Bombers[3]	268	166	146
Airlift Squadrons	25	25	22

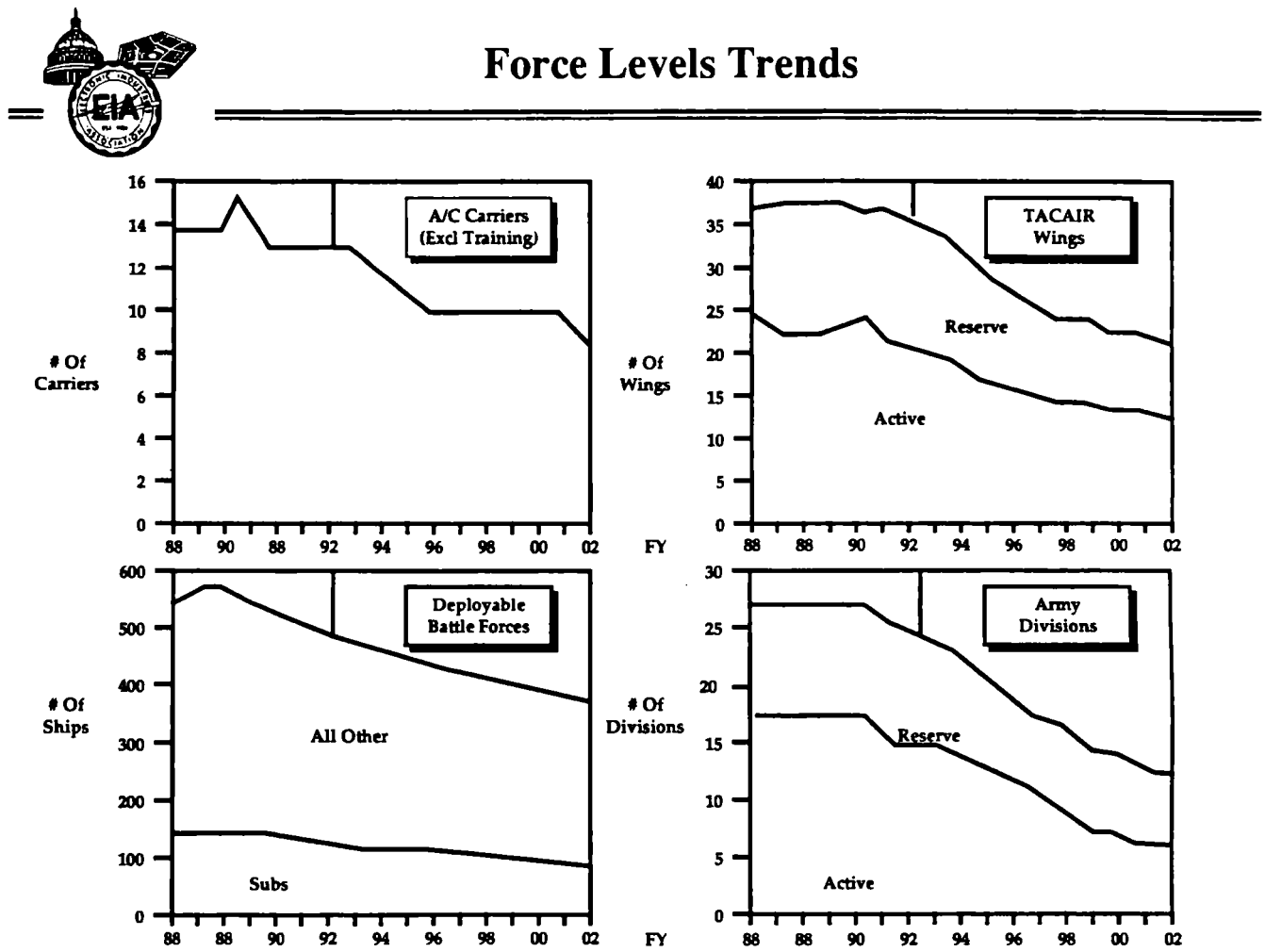
1 - Deployable
2 - If world trend continues toward less threats to U.S. Interests. Higher if "threat" increases.
3 - PAA = Primary aircraft authorization

Just as the topline was budget, not threat driven, so is the projected force structure.

Viewgraph #19 was prepared by the Missions, Programs and Technologies (MP&T) Committee. *Viewgraph #19* displays the traditional force structure model, but radical changes are likely forthcoming in the near future. It is too early to change the paradigm, however, the MP&T Committee will discuss this issue further tomorrow.

The Bush administration's base force represents a 25 percent reduction from FY 1990 levels. Our projections suggest that, by FY 2002, force levels will be between 30 to 50 percent smaller-- depending on the service and mission.

Viewgraph #20



As shown in *Viewgraph #20*, the naval battle force will suffer the fewest reductions. At the end of the forecast period, the 365 ship Navy will have 33 percent fewer active forces than it did in FY 1990. Included in that number are 31 percent fewer carriers and 43 percent fewer subs.

There will be 40 percent fewer Army guard and reserve units and 61 percent fewer active units. Based on the old Air Force measure of TACAIR wings, that branch will have 44 percent fewer fighter/attack wings in FY 2002.

Overall, our projections yield a 40 percent smaller force, not a 25 percent smaller one.

Viewgraph #21

Force Structure

What We Heard

- Tension Continues Between Force Structure And Investment Account Supporters
- Hill Supports Reserves And National Guard Over Active Forces
- Base Force II Revealed After Election

We were told during our interviews that the constant tension between force structure proponents and investment account supporters is a given.

Another continuing debate is the Hill's support for reserves and national guard over active forces. Makes sense--active forces are always moving making them unreliable voting constituents. Also, the guard and reserves back home provide the Washington congressman with a communications pipeline on defense matters.

If re-elected, Bush will likely release Base Force II with the submittal of the FY 1994 budget.

Viewgraph #22

Force Structure

What We Heard

- Current Base Force Structure Too Large And Too Costly For Current Environment
- Hot Topic: Roles And Missions
  - — Services Supposedly Redefining Rather Than Just Paring Down To Eliminate Duplication
  - — Navy Lagging; Army Had To Accept Change Due To Severe Cuts; Air Force Maneuvering For Advantage
  - — Senator Nunn Leading Charge; Powell JCS Report Due Nov. 1992

With the defense budget that will be available, the current base force is simply not affordable. Closely related is the hot topic: roles and missions. The services are supposedly redefining rather than just looking for ways to save money. Change comes slowly. The Navy is being accused of foot-dragging, while the Army has had to face the music--the cuts were so drastic and came so quickly. Meanwhile, the Air Force continues to maneuver for advantage by being proactive rather than waiting for OSD to force their hand.

Viewgraph #23

Election's Effect On Force Structure

What We Heard: Nothing Dramatically Different

- **If Reelected, Bush Will Continue With Base Force Approach:**
  - — But Base Force II Waiting In Wings
  - — Nearer To Aspin's Option C
  - — Will Be Couched To Avoid Similarity To Aspin's Proposal
- **Clinton's Approach Likely To Emulate Current Democratic Main Stream Thinking:**
  - — Somewhere Close To Aspin And Nunn
  - — Defense Advisers Expected To Come From Moderate Wing Of Party

Basically, the outcome will have little effect. Both men have advisers from the moderate side of their party. Affordability and the lack of an overt threat will force both to continue to reduce the numbers. Aspin's Option C seems to be the baseline number, although Bush will release Base Force II carefully worded to avoid similarity to Aspin's approach.

Viewgraph #24

FY 1993-2002 Ten Year Forecast
Evolution In The Defense Electronic Business

- **MTBFs Increasing; Could Affect Spares/Aftermarket**
- **Increasing Acceptance Of Commercial Off-The-Shelf (COTS) Equipment**
- **Affordability Will Be Looked At As Trade-Off For Performance; Numbers-Do-Count Issue Late In Decade**
- **Open Architecture Systems**
- **Mega-Architecturers; e.g., Copernicus**

There are notable changes underway or forthcoming for the electronics industry. Increased Mean-Time-Between-Failures (MTBFs) could affect the size of the spares aftermarket. Countervailing this loss of revenue, however, would be upgrades to the systems, rather than repairs.

Reduced budgets will motivate the user community to consider COTS. I discussed this issue earlier.

It makes sense that affordability is a major issue. We were warned that the high cost of sophisticated warfighting equipment will force serious consideration to a trade-off between numbers and capability, especially at the turn of the century. ***Viewgraph #25*** highlights this and Norm Augustine's warning. As an industry, we were challenged to develop manufacturing processes enabling us to build fewer systems efficiently. The information processing suppliers were applauded, but avionics and radar producers were said to be lagging in miniaturization and cost reduction.

Viewgraph #25

The High Cost Of Buying - Revisited (Augustine's "Final Law Of Economic Disarmament")

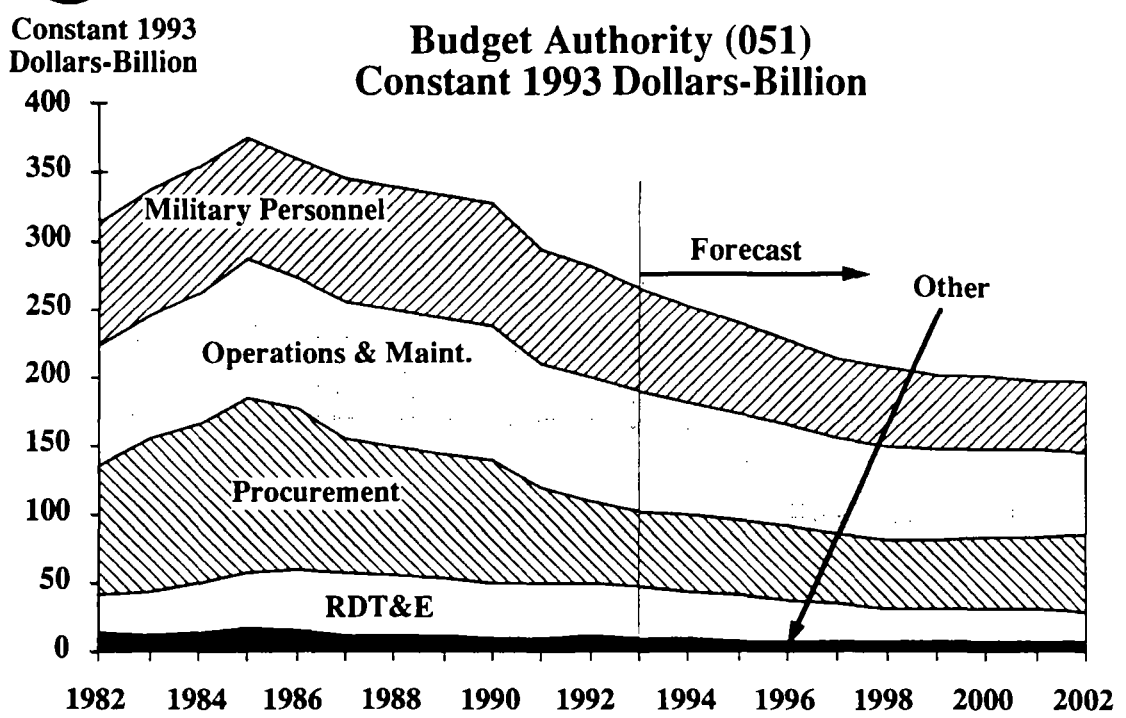
- **Average Annual Real Increases In Unit Costs Since The Cold War Began**
  - Tanks 2.88%
  - Carriers 3.24%
  - Bombers 14.05%
  - Helo's 2.88%
  - Tactical Aircraft 3.24%
- **Unit Purchases Decrease And Factories Close As Budgets Decline And Technology And Overhead Costs Rise**

	Units/Year		Prime Manufacturers		
	1986-1990	Affordable 1996-2000	Prior To 1986	Needed After 1996?	
Tanks	663	173	1	<1	
Warships	10	3.5	4	1	
Bombers	12	0	2	<1	}2
Tac Aircraft	390	84	8	2	
Helo's	240	50	4	1	

The final two items are self-explanatory. We will continue to see acceptance and use of these two approaches.

Viewgraph #26

DoD Budget Forecast



Now that the stage has been set with the major factors we think will affect the topline, it is time to introduce the star--EIA's FY 1993-2002 Department of Defense 051 forecast in FY 1993 dollars.

Viewgraph #27

Forecast

Decline Levels By End Of Century

- DoD Budget Cut Forty Percent From 1990 To 2002
- Operations And Support (Force Structure) Cut Most
- Investment Accounts (Industrial Base) Level Out
  - — The Worst May Be Over For Industry (?)

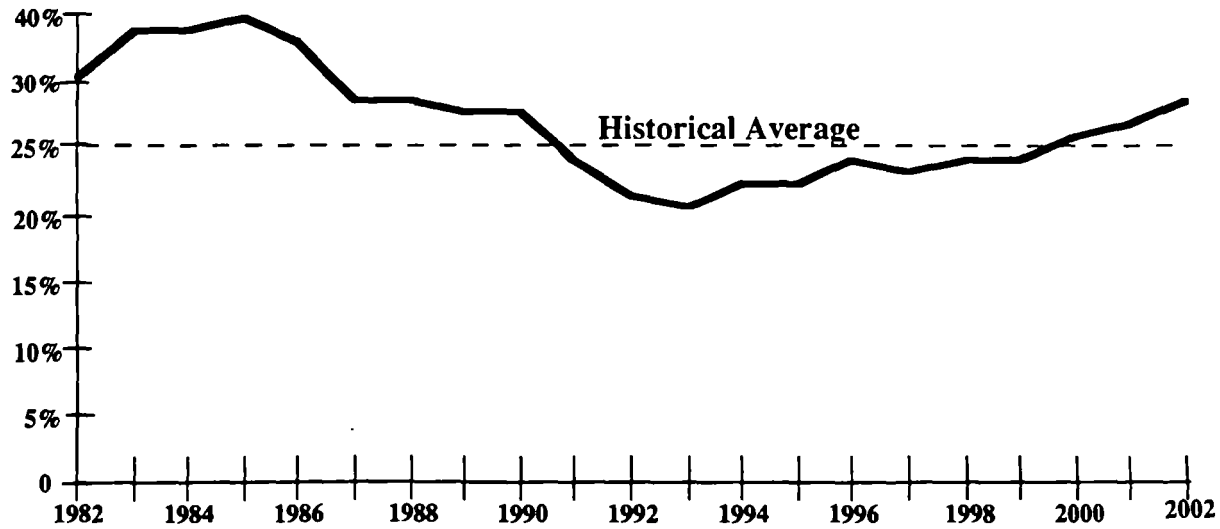
We have gone back historically to provide a better perspective of what has happened to the defense budget. Despite the dramatic 40 percent cut we are forecasting over the period 1990 to 2002, we are now operating at levels only slightly lower than the pre-Reagan build-up period. And, the biggest cuts have come from Operations and Maintenance (O&M) which is in keeping with the end of the Cold War.

Viewgraph #28

Forecast

Procurement Returns To Historical Budget Ratio After Decade Of Preferential Cuts

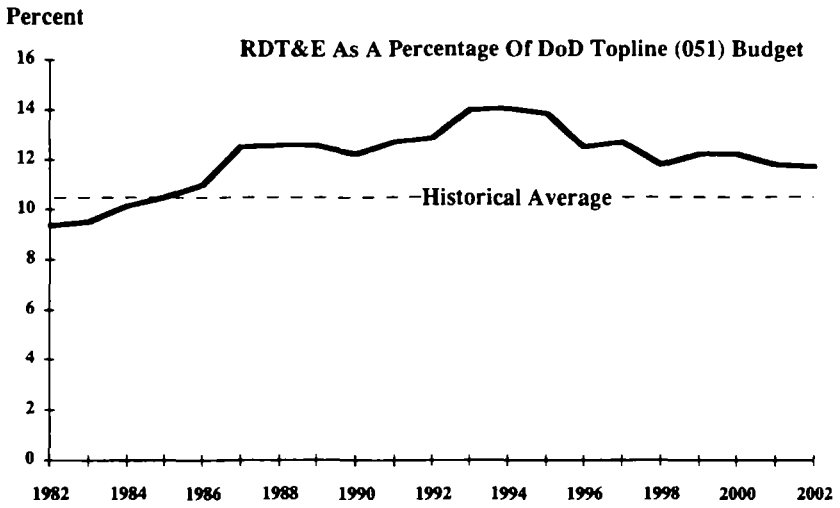
Procurement Percentage of DoD Topline Budget Authority



The light may be at the end of the tunnel for industry--at least our interviews would lead us to believe so. The leveling of the investment accounts at the turn of the century can be explained. Currently, we have fallen below historical ratios for procurement. This can go on only so long before we have to buy stuff--and that stuff is going to cost more because it is going to do more, be less manpower intensive, last longer, be smarter, easier to operate, more effective in the field, and will be produced in smaller quantities. Additionally, we are going to continue to insert new technology, by way of upgrades, into existing platforms to ensure modernization. And, finally our R&D investments at the beginning of the forecast period will have paid off and transitioned into production of systems.

Viewgraph #29

RDT&E Continues Above Historical Average As A Percentage Of Total Budget



Viewgraph #29, by the way, explains the modest decline in RDT&E. The science and technology dollars will remain constant, but 6.5 money will be replaced by procurement dollars.

The good news, however, is that RDT&E remains above its historical average during the entire forecast period.

Viewgraph #30

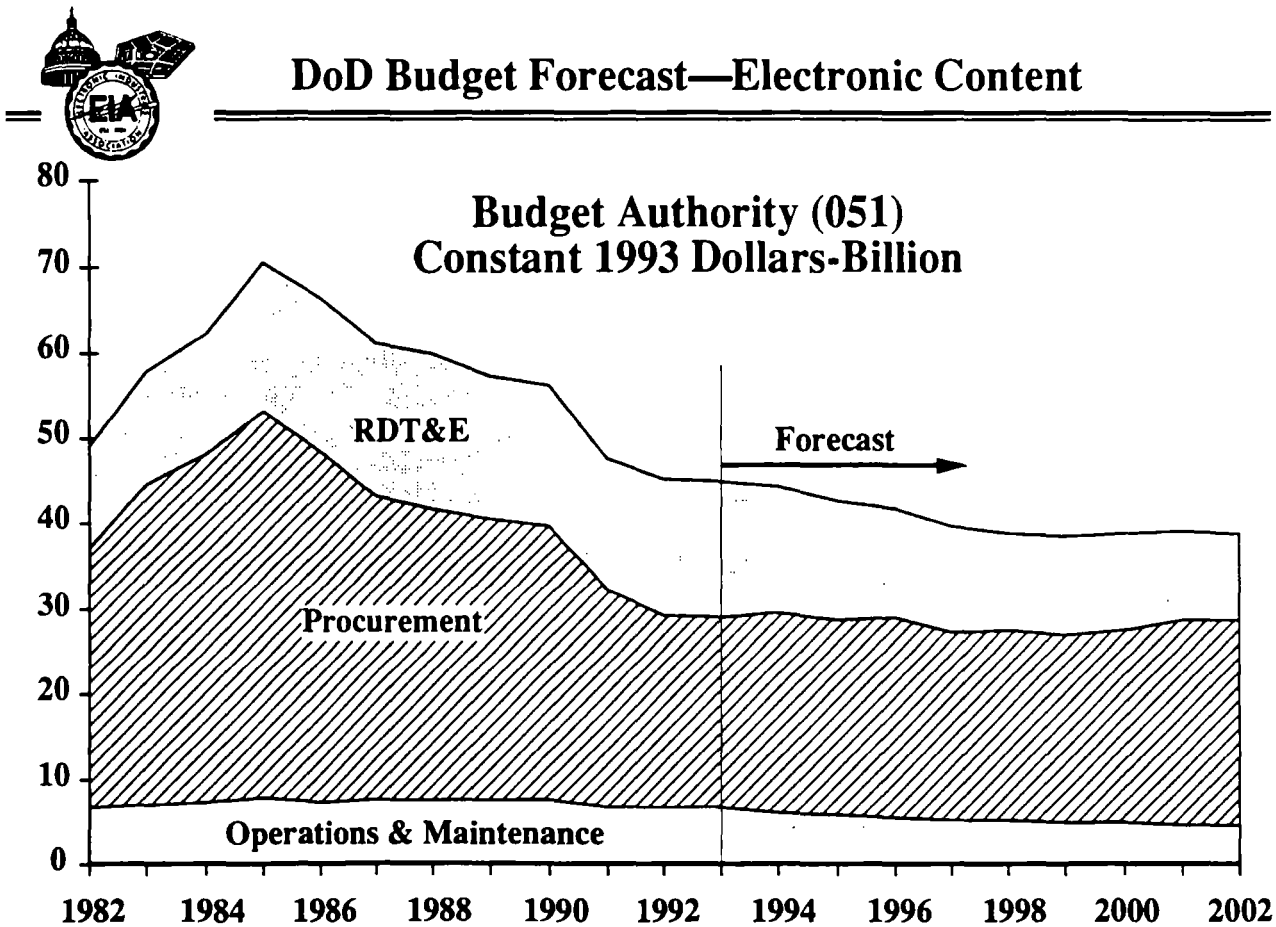
DoD Budget Forecast

Budget Authority Shifts Reflect Priorities Of Post-Cold War Era

	100%	100%	100%	
Other	4.1%	4.0%	3.4%	Force Reductions And Base Closings
RDT&E	9.4%	13.6%	11.8%	
Procurement	30.1%	21.5%	27.9%	High Cost Of Higher Quality Replacement Systems
O&M	27.7%	31.8%	31.1%	Continuing Emphasis On Readiness And Training
Personnel	28.7%	29.1%	25.8%	End Of The Cold War Permits Dramatic Reductions In Force
Fiscal Year	1982	1992	2002	

Viewgraph #30 does not need much in the way of explanation. It does point out the revival of the investment accounts and supports the end of the Cold War and resultant force structure cuts.

Viewgraph #31



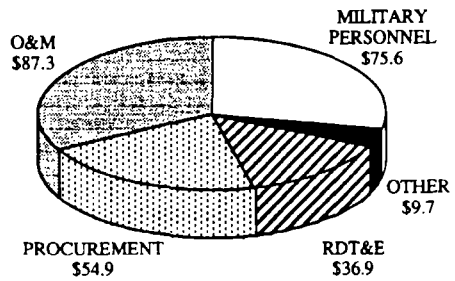
Viewgraph #31 reflects the strength and durability of the defense electronics market. We are forecasting that DoD will spend a total of $409 billion on electronic systems over the ten-year forecast period. Within the flat budget for defense procurement, there will be increasing purchases of electronic equipment. Production will be limited to our most advanced weapon systems and high technology will be inserted into existing equipment through modifications and upgrades. In addition, a majority of the investment made in R&D will be in electronics. As a result, suppliers of state-of-the-art electronic systems can expect modest growth.

Viewgraph #32

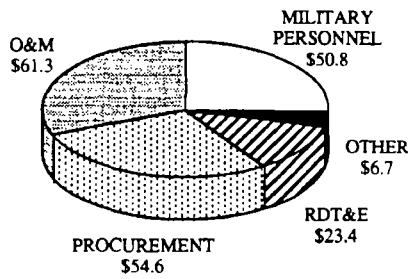
DoD Budget Forecast

Budget Authority (051)

Constant 1993 Dollars—Billions



1993
$264.4 Billion



2002
$196.8 Billion

Viewgraph #32 gives you a picture of the relative size of defense spending in FY 1993 and FY 2002. It also nicely displays the stability of procurement and the sizable cuts in personnel and O&M.

Viewgraph #33

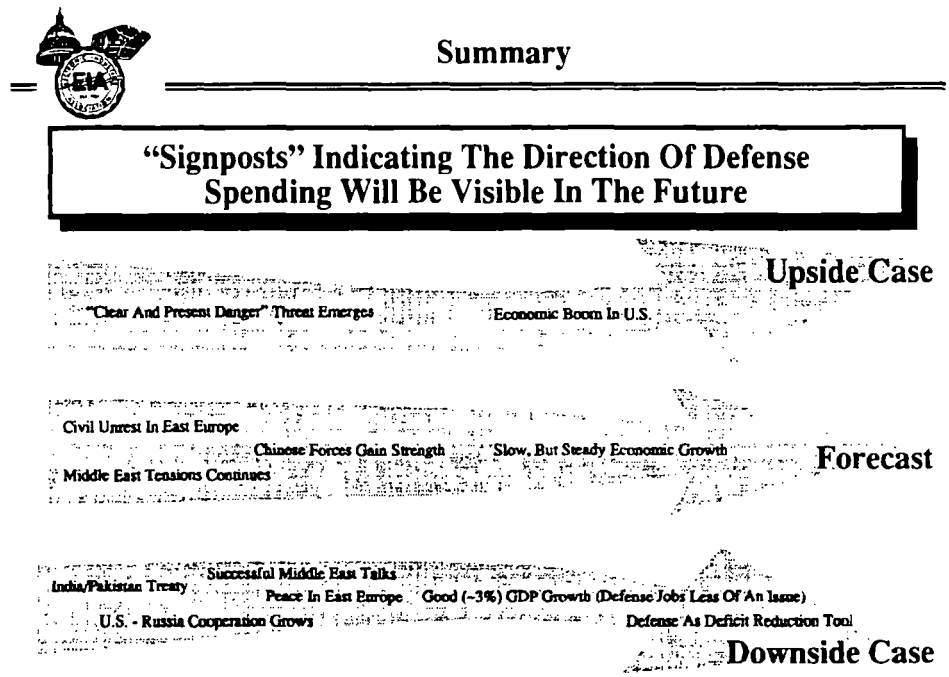
FY 1993-2002 Ten Year Forecast Conclusions

- **Developments Could Shift Forecast**
- **Defense Market Remains World's Largest**

  March 1992 CEO Quote: "It still remains a very large market despite the precipitous decreases in defense spending... The Defense budget is still larger than the U.S. housing market and is about the same size as the U.S. automobile industry."
- **Blurring Of Defense Spending**
- **Competition Remains Fierce In Near Term; Will Lessen As Number Of Firms Disappear**
- **New Congress's Composition Could Affect Defense Spending**
- **Reduced Defense Employment Shrinks Defense Constituency**
- **U.S. Firms Are Accepting Reality Of Shrinking Budgets; Consolidation Managed By Industry; *Economist* Commends U.S. In Comparison To Europe Where Governments Are Taking Charge Of Downsizing**

In conclusion, the forecast we presented today is based on the assumptions we presented at the outset. We do not predict events. However, we would like to discuss briefly developments which could in fact affect the trajectory of our outlook.

Viewgraph #34



Viewgraph #34 indicates significant world and domestic events and the effect they could have on the U.S. defense budget. In our opinion, only an economic boom and/or a clear and present danger would send our forecast upward. Neither is likely. What is more likely are events that could pressure us to reduce spending further--continuing and strengthened peace throughout the world and a domestic program calling for swift deficit reduction.

One could, and many do, look at the U.S. defense market as a half-full glass: it remains the world's largest. One of our industry CEOs is quoted: "It still remains a very large market despite the precipitous decreases in defense spending. The defense budget is still larger than the U.S. housing market and is about the same size as the U.S. automobile industry."

An interesting occurrence to many defense firms is the blurring of defense spending. There are fuzzy areas where domestic and defense spending are overlapping, and this may increase. National security is now encompassing such programs as counter-narcotics, environmental cleanup and economic conversion.

In the short run, as firms are scrambling for the few opportunities, competition remains brutal. As the industry downsizes, it will lessen.

The composition of the new Congress could have a profound effect on support for defense programs. These new members may have less military experience and they will certainly be more uninformed on major issues. As stated earlier, it behooves the defense industry to get its messages to these new players and their staffs as quickly as possible.

Another distressing factor for the industry to consider. As more and more of us leave for the commercial sector, along with our military counterparts, we lose interest in defense issues.

On a lighter note. We are being congratulated by our colleagues overseas--an article in the Economist commends U.S. industry for taking control of its own destiny in the downsizing process.

Viewgraph #35

Summary

EIA Forecast: The Good News

- Procurement Stabilizes
  - — Real Growth In Electronic Technology Insertion Offsets Continual Decline In Structural Materials And Propulsion
- RDT&E Declines
  - — Significant Declines In EMD (6.4) And Dem/VAL (6.3B)
  - — Stable Funding In Science And Technology

I would like to conclude today with EIA's good news. We do expect procurement to stabilize and even increase somewhat at the turn of the century. With respect to the electronics industry, the real growth will be in electronic technology insertion.

RDT&E does decline, but this is due to the fact that new systems will transition from engineering-manufacturing development to production, hence the shifting of spending to procurement dollars. There will be stable funding in science and technology over the next ten years.

Viewgraph #36

Forecast Presentation Outline

Introduction

Department Of Defense Forecast

- Assumptions
- Environmental Factors
- Force Structure Outlook
- Topline Forecast

Hardware Category Forecasts

- Drivers And Issues
- Budget Authority Forecast
- Electronic Content Forecast

NASA Forecast

- What We Heard
- Forecast

Summary

I would like to introduce Ron Henderson. Ron will brief you on the individual hardware categories.

HARDWARE CATEGORY FORECASTS
RON HENDERSON
MCDONNELL DOUGLAS

Viewgraph #37

EIA 10 Year Forecast Hardware Subcommittee

Chairman: Ron Henderson, McDonnell Douglas

Aircraft
Ron Henderson, McDonnell Douglas
John Alhoff, McDonnell Douglas
Kristina Erickson, Boeing
Paul Evans, Lockheed

Missiles
Gina Meister, Hughes
Michael Alter, McDonnell Douglas

Vehicles
Mike Hatcher, FMC
John Watkins, Lockheed Sanders

Ships
Tom Rohde, Computing Devices
Charles Alcon, Computing Devices
Linda Peter, General Dynamics

Ordnance/Weapons
Jim Serafin, Brunswick
Kenneth Menges, Motorola
Hughes Petteway, Allied-Signal

Electronics & Communications
Mike Pearson, Rockwell

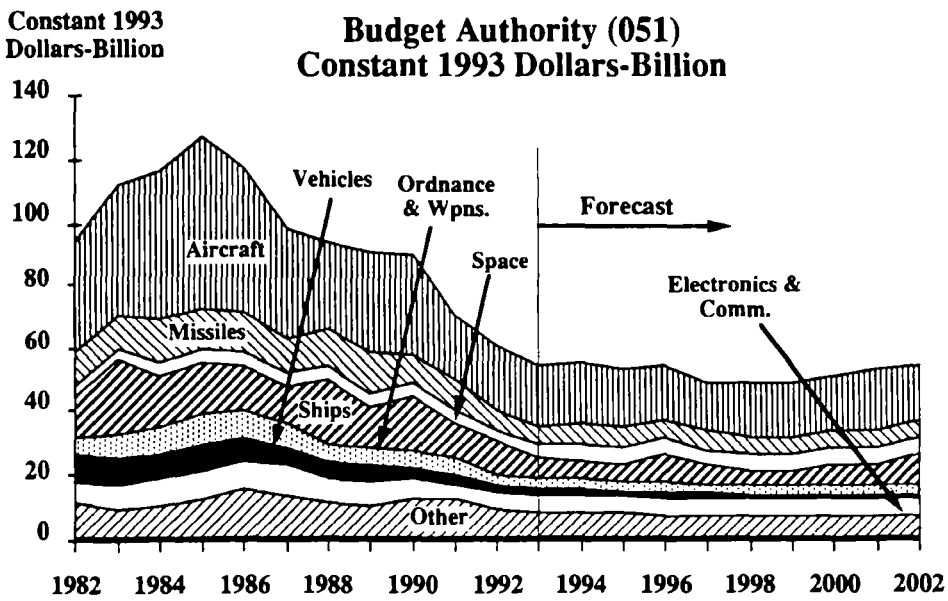
Space
Paul Blumhardt, Martin Marietta
Jim Valk, General Dynamics

Other
Ron Alderton, General Electric

Electronic Content
Greg Rambo, Rockwell

Viewgraph #38

DoD Procurement Budget Forecast



Viewgraph #38 dramatically portrays the steady decrease in DoD procurement which began in 1985; and is expected to bottom out near or slightly below current levels in about 1997. Equipment badly in need of replacement after a decade of neglect following the Vietnam conflict was modernized all at once in the early to mid-1980s, and was very costly.

Beginning in 1985, most of the modernization was complete or well under way. As a result, the procurement budget began to decline. Coupled with the increasing deterioration of the domestic economy, the rate of decrease accelerated as industry wondered how low it would go. The good news is that we see procurement now near the bottom. The bottom will be defined clearly when DoD only buys what is necessary to sustain the minimum required force. Equipment will also be purchased in a carefully sequenced and fiscally constrained plan as shown in *Viewgraph #38*.

Aircraft modernization in the 1980s was very expensive. The B-1 was introduced to augment the aging B-52, and aircraft that were started in the 1960s and 1970s, such as the F-14, F-15, F-16, F/A-18, A-6E, E-2C, H-60 and AH-64, were all produced in large quantities. With the completion of the B-2 program, our forecast is that only airlift, training and (Navy) medium attack are in immediate need of modernization.

With the mid-1980s continuation of the Cold War, expensive ballistic missiles were required in large numbers. The demise of the Soviet Union enabled cancellation of the SICBM and reprogramming of other strategic ballistic missile requirements, as well as reducing the need for conventional missiles carried from aircraft, ships and submarines.

One of the few bright spots in our forecast is in the area of space, where we are forecasting slight growth in procurement. This is also a direct result of the recent shift in our defense posture. Where we no longer need to invest as much in space-based defense against a massive nuclear attack, we see an increased reliance on an integrated network of space systems to support a quick and effective response to unknown major regional contingencies.

Our ships forecast is colored by the redefined need to respond to regional conflicts. Although none of the Navy's missions have gone away, the need for large quantities of surface combatant, carrier, submarine and sealift assets in a 365-ship Navy will be supported by less than half the procurement we saw in the 1980s. Modernization becomes a secondary issue to maintaining the Navy's desired shipbuilding capability.

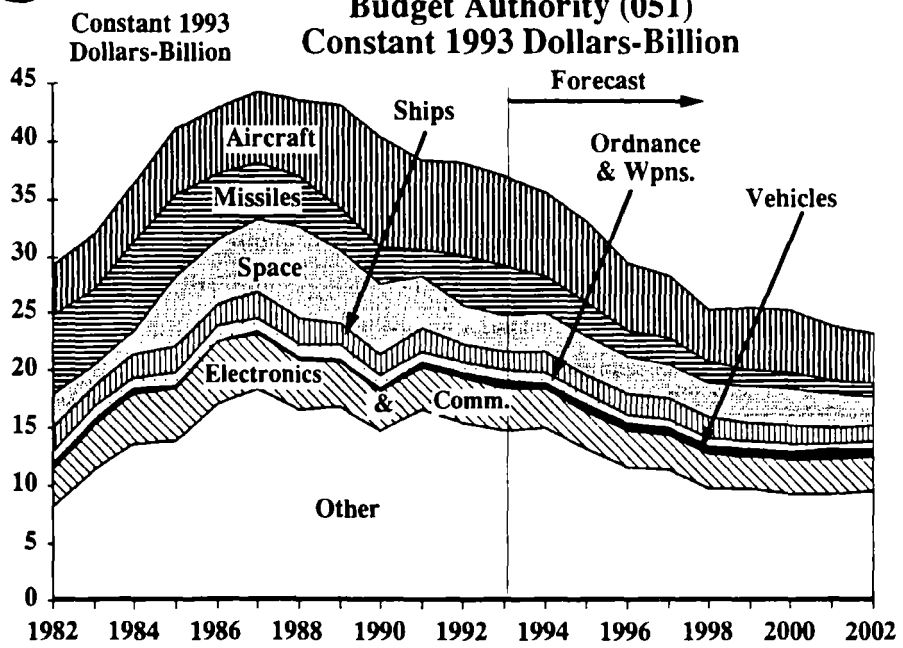
The extent to which the services downsize directly drives the number of personnel and platforms that require ordnance and weapons. In addition, the increased use of simulation means that less ordnance need be expended in training. These factors are reflected in our forecast and are only slightly offset by the increasing cost of precision guidance, greater range and safety enhancements.

During the Reagan build-up the Army embarked on a modernization program with procurement of large quantities of Abrams Tanks and Bradley Fighting Vehicles needed for a massive land war in Eastern Europe. With the Army recently modernized and the threat effectively gone, vehicle procurement is forecast to remain at less that 20 percent of its 1985 peak.

Heavy investment in high technology electronics and communications equipment during the last decade was vindicated during the Gulf War and has acted to soften the effect of budget pressures during the last five years. The continued need to field sophisticated weapons (even though fewer of them) and the requirement to integrate technological advances into older weapons will shield electronics and communications procurement from continued declines.

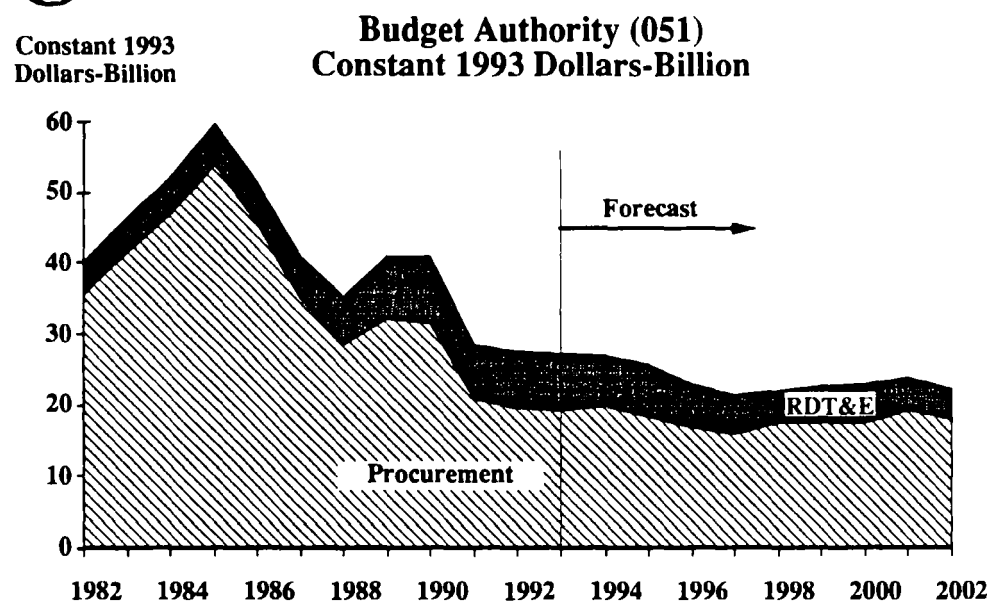
Viewgraph #39

DoD RDT&E Budget Forecast



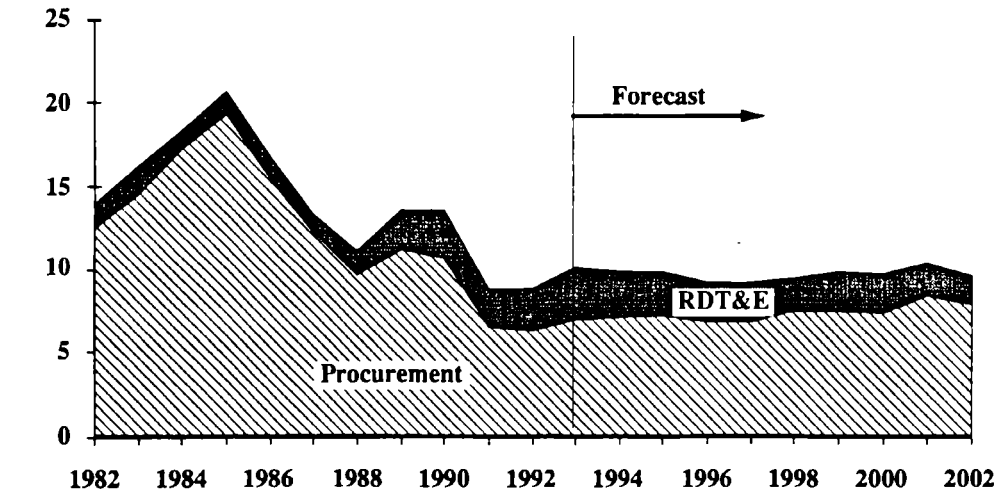
Viewgraph #40

Aircraft Forecast



Viewgraph #41

Aircraft Electronic Content Forecast



As shown in ***Viewgraph #41***, aircraft electronic content remains relatively stable throughout the period. Although the previous viewgraph showed declines in both procurement and RDT&E, the electronic content of those shrinking programs grows. Two factors cause this: 1) the new systems in development and planned for production are more sophisticated with electronic flight controls, digital cockpit displays, electronic fuel control, and greater reliance on central data computers, and also 2) the growth in mods forecast throughout this period is likely to incorporate the most advanced computer/electronic systems as DoD seeks to increase the life and usefulness of current systems. The increase shown in the post 2000 period is driven by planned acquisition of the systems now in development.

Viewgraph #42

Aircraft Forecast

Drivers

- Regional Threat vs. Global War
- Today's Aircraft Are Adequate
- Affordability Scopes Investments
- Low Aircraft Production Runs
- New Starts Limited To Critical Needs
- Investments In Mods And Upgrades
- Aviation Force Structure

As we have already discussed, major threats to U.S. national security continue to diminish. The elimination of a major power confrontation has allowed DoD to make significant reductions in its strategic force posture. The major threat being considered in planning for the Base Force now consists of regional conflicts where the U.S. may still have to confront sophisticated weapons systems. DoD, DIA and the JCS will continue to refine the threat for next generation systems. In the absence of a new major threat, this will buy time and essentially allow DoD to skip one generation of systems. Therefore, new investments will be on modernization of existing systems. Acquisition emphasis will necessarily be on mobility system improvements to support rapid deployment of modernized, conventional capabilities. This has already been demonstrated in Desert Storm and in developing crises in Eastern Europe.

A 50 percent reduction in aircraft investment over Reagan 1985 levels is anticipated by 1997. In addition weapons systems development costs continue to rise, leading to procurement of fewer, though more capable systems. Low production rates will become the norm. As a result, there will be few to no new starts during the forecast period in the absence of any major new threat. No more than one major, new system per service will be affordable.

As described earlier, projected DoD Budgets will not support presently planned Aviation Base Force Levels. The U.S. Air Force will be forced to reduce force levels and to re-prioritize system needs. For example, mobility systems may take priority over tactical aircraft procurement to support the changing National Security Strategy. The U.S. Navy is also expected to reduce the number of traditional carriers, thus reducing the number of new aircraft needed throughout the period. Simply stated, the U.S. Navy will not be able to afford planned aircraft procurements. The U.S. Army Aviation Modernization Plans have not been executed because of budget constraints and less than adequate requirements validation. Army modernization needs will be reduced significantly, consistent with reduced force levels required to meet future national strategy. The U.S. Special Operations Command (USSOCOM) will administer its own Major Force Program 11 budget for the first time in FY 1994 placing additional strain on limited DoD budgets. USSOCOM needs and funding issues will be addressed in a special market study later in the conference.

Viewgraph #43

Aircraft Forecast

Issues

- Air Force Sustainment/Aircraft Mix
- Excess Fighter Inventory
- Training System Needs
- Changes To Basic Blue Water Mission
- Sequential Acquisition Of Navy Aviation/Ships
- Future Role Of USMC Aviation
- Medium Lift For USMC
- Significant Reduction Of Army Acquisition Budget
- Army Aviation Modernization Plan Viability

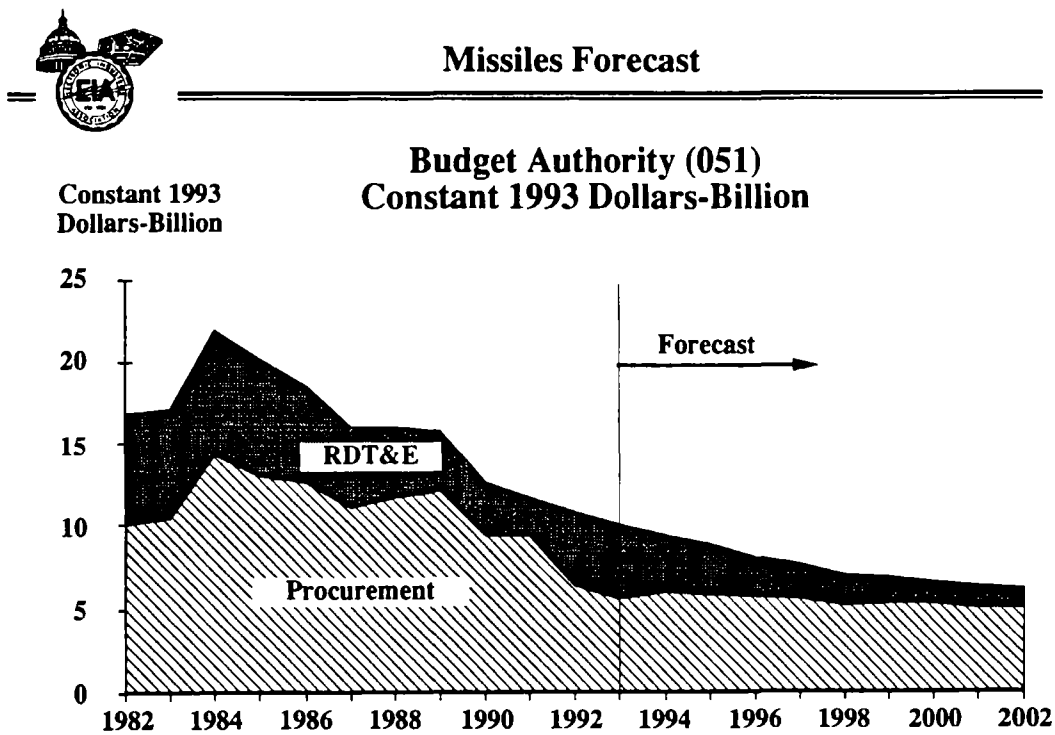
Forecast DoD budget authority will not sustain the Base Force long term. Therefore, a review of roles and missions among the services is in progress by JCS and will be followed by restructuring and additional force structure cuts. (JCS is reportedly planning a Base Force II that would undercut the Base Force I Levels, originally planned to support two major regional crises.) In the future, DoD will have to rely heavily on reserve augmentation if two major crises erupt simultaneously. The JCS Roles and Mission Review could also change the future aircraft forecast mix. This will probably lead to more emphasis on Joint Service Acquisition Programs. Joint programs have not worked very well in the past, however severe affordability issues associated with currently planned programs such as A-X and MRF just might convince the services to make them work in today's budget environment.

The Air Force has taken the lead in planning for a global force to develop coherent employment capabilities. However, limited budgets and excessive aircraft inventories will force the Air Force to downsize and reevaluate the mix of aircraft needed for future war fighting scenarios. Emphasis will be on fast reaction, range, speed and accuracy of delivery systems. Training system needs are being reevaluated and "fly but not buy" acquisition policies will also impact new program starts. It is likely that some new programs will become "Silver Bullet" programs. Our MP&T Committee will go into much more detail about specific programs tomorrow.

U.S. Navy affordability issues and overall threat reassessment will also drive changes to the traditional Navy Blue Water Mission resulting in lower force structure needs. The current aviation acquisition plan is simply not affordable in today's budget climate, therefore the Navy will be forced into sequential introduction of new systems. Funding of medium lift needs for the U.S. Marine Corps (USMC) and the future role of USMC Fixed Wing Aviation are issues that could also affect/change our EIA Forecast. In short, the Navy will be forced to make hard decisions between procurement of aviation and ships. Sequential acquisition discussed earlier will force postponement of major new systems such as the A-X/SSF.

The U.S. Army aircraft acquisition budget is only about 40 percent of its peak level during the Reagan years and is not expected to improve significantly. Revisions to the Army Aviation Modernization Plan will address system upgrades vice new program starts. Accordingly, the Comanche Light helicopter faces an uphill battle and is tied to future modernization reviews. Again, we will discuss specific program forecasts in tomorrow's MP&T session.

Viewgraph #44

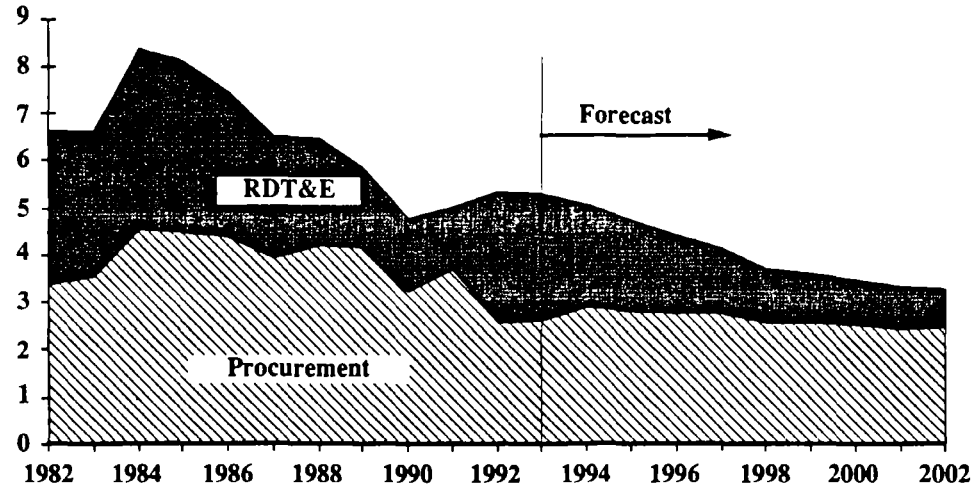


Viewgraph #45

Missiles Electronic Content Forecast

Constant 1993 Dollars-Billion

Budget Authority (051)
Constant 1993 Dollars-Billion



Missile electronic content remains relatively stable as a percentage of the overall missile investment accounts (RDT&E plus procurement) at an average of 53 percent over the forecast period. Electronic content as a percentage of missile RDT&E dollars averages around 65 percent over the forecast period, with systems such as TMD and smart weapons comprising a higher relative electronic content. Electronic content as a percentage of missile procurement dollars averages around 48 percent. The declining dollars associated with missile electronic content closely follows the decline in the topline investment accounts, with lower out-year RDT&E being the primary driver. DoD's emphasis on upgrading older existing weapon systems at the expense of new starts should rule out any substantial increases in missile electronic content in the near future.

Viewgraph #46

Missile Forecast

Drivers

- **Reduction/Change In Threat**
  - Ballistic Missile Procurement Takes Hit
  - Upgrades/Mods To Compensate For Critical Weapon Performance Shortfalls
- **Procurement/R&D Budget Squeeze**
  - Mods Funded, Fielding Of Next Generation Systems In Question
- **Changing Force Structure**
  - Fewer Wings, Ships, Subs
- **Strong Emphasis And Support For TMD**
  - Growth Area In Missile RDT&E/Procurement Throughout Forecast Period

A changing world threat scenario and the pressures associated with a significant R&D and procurement budget squeeze have had a significant impact on the missile forecast. Ballistic missile procurement has taken a heavy hit within the Strategic and Theater Nuclear missile category, reflecting the administration's attempt to reconcile defense spending with the collapse of the Soviet threat. Program cancellations have resulted among all the services, including the SICBM and AAAM, while upgrades and modifications to existing programs are being funded to compensate for critical weapon system performance.

The missile forecast is also affected by the changing force structure, i.e. a reduction in missile carrying platforms. For example, a decrease in the number of aircraft associated with the reduction in Tactical Fighter Wings will have an impact on programs in the air-to-air category. There will be competition for hook space not only on air-launched platforms, but also on ships and submarines carrying missiles.

The nature and composition of the next generation ballistic missile defense is a real driver in the missiles forecast. The refocus and shift in composition of the SDI program has led to a great deal of customer and congressional support for theater missile defense, a significant element within the missile forecast approaching $1 billion per year throughout the forecast period.

Viewgraph #47

Missile Forecast

Issues

- **Future Of Missile Leg Of Strategic Triad**
  - Mobile Missile Deterrent Programs Cancelled
- **Changes In Air-To-Air Mission**
  - Too Many Programs, Not Enough Budget
  - Looking To Mods Of Existing Systems As Viable Alternatives
- **Funding And Composition Of TMD Programs**
  - Emphasis On Ground-Based Systems
- **Size And Mission Of UAV Market**
  - Boosted Interest Within The Services
  - Will Mission Benefits Justify Overall Cost?
- **Focus On Affordability**
  - Cheaper, Smarter, Yet Fewer
  - Emphasis On Joint Service Programs

The debate continues as to the future of the missile leg of the strategic triad. While overall missile spending fell approximately 16.3 percent in the Pentagon's FY 1993 budget request, ballistic missile procurement absorbed approximately 43 percent of the cut, accounting for roughly 21 percent of the total missile spending. The jury is still out on the future of the triad.

Funding for the Air-to-Air mission is dependent on the number of aircraft and their mission requirements. In the past year, we have seen the cancellation of AAAM, developed to meet Outer Air Battle requirements. The

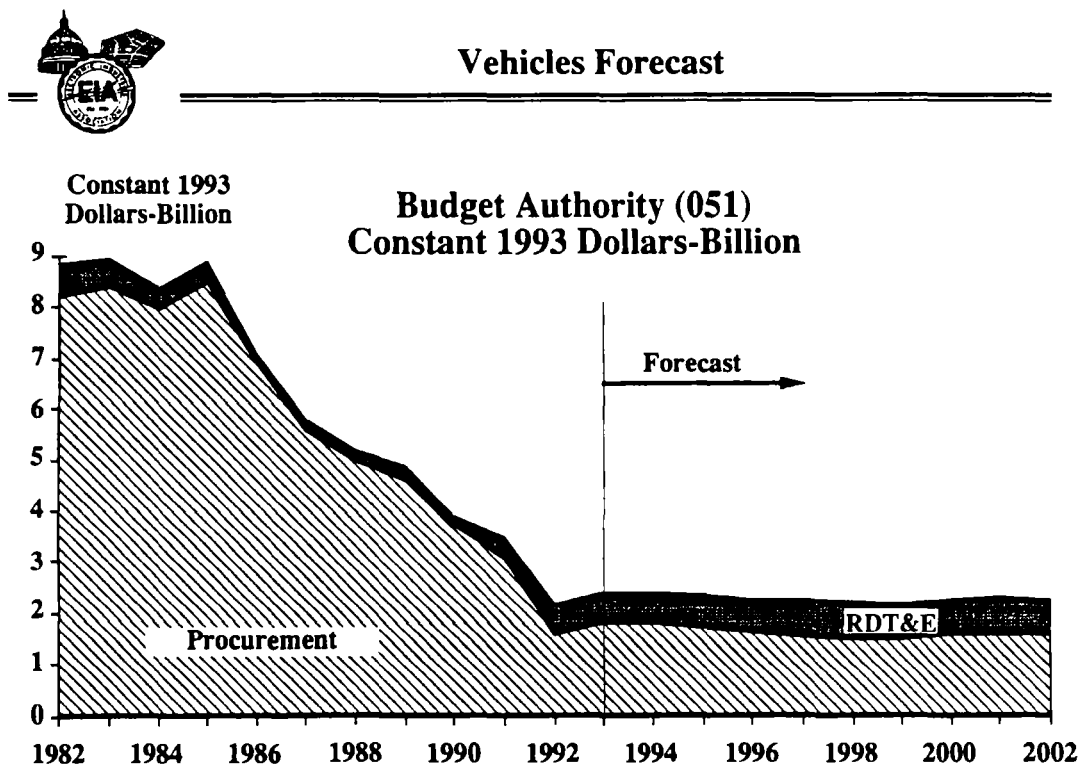
projected cost of systems suggested that modifications of existing systems may be a viable alternative to meet future requirements.

The composition in funding for theater missile defense programs is still being defined. It is likely that competition for funding among the key programs will occur, with overall cost being the significant discriminator. Historically, SDI-related work has been covered under the space forecast, however, a significant amount of budget authority is being shifted to the missiles forecast as a result in the emphasis of ground-based systems.

UAVs have sparked a considerable amount of interest since the Gulf War. Their successful performance has boosted support for the systems and the services have indicated the technology is in line with R&D priorities. However, concern remains whether mission requirement benefits will justify the cost. Our forecast reflects emphasis on UAV use for surveillance, bomb damage assessment and reconnaissance.

Development and production of missiles at affordable levels will be key to each program's future. Since the missiles category encompasses numerous programs, competition for funding will exist and DoD will emphasize insertion of proven technologies into existing weapon systems where operational needs can still be met. We will see a move by the services to work jointly in the pursuit of new technology thrusts for smarter and cheaper, yet fewer weapon systems. Like aircraft, future missile production levels will be limited by budget constraints.

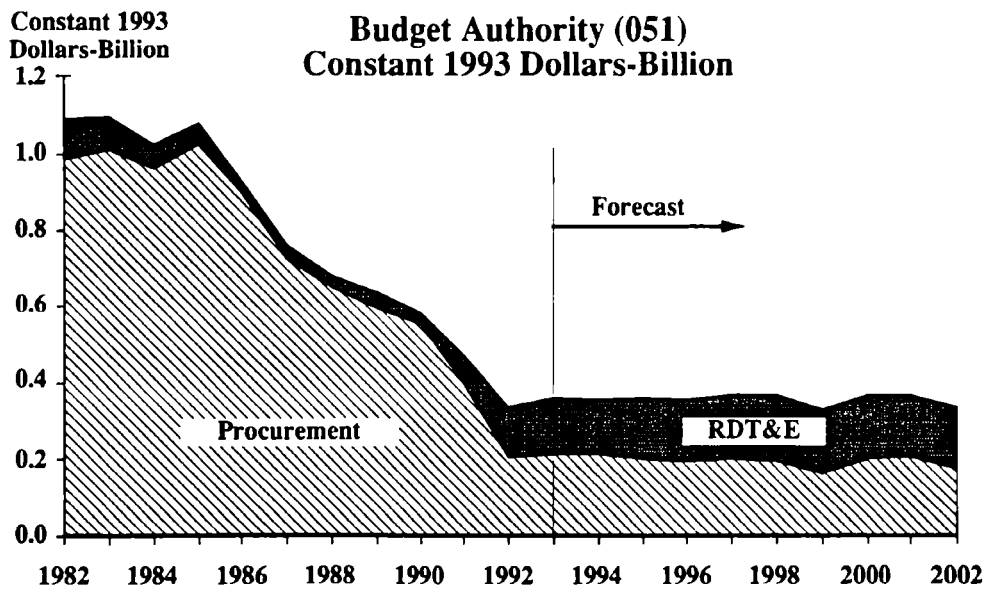
Viewgraph #48



The vehicle forecast is not good news. *Viewgraph #48* reflects the projected termination of the Bradley Fighting Vehicle and Abrams Tank production programs, as well as severe reductions in general within the DoD vehicle procurement budget authority. In 1985, for example, vehicle procurement was about $8.5 billion (in 1993 dollars). During the forecast period, procurement varies between $1.8 billion in FY 1993 and FY 1994 to a low of $1.5 billion toward the end of the century. Recent efforts by Congress to preserve the tank industrial base could provide some relief. RDT&E remains relatively constant throughout the forecast period at $.6 to $.7 billion.

Viewgraph #49

Vehicles Electronic Content Forecast



The relatively low level of electronic contact in vehicle production is caused by the low volume of vehicles in the forecast that have a significant degree of electronic subsystems. Sixty to seventy-five percent of the production dollars during the forecast period is allocated to vehicles such as trucks and other service support vehicles that contain little electronic content. This is in contrast to 1988 when about seventy-five percent of the funding was allocated to tracked combat vehicles.

There is higher electronic content, percentage wise, in RDT&E than there is in procurement (24 percent for RDT&E versus 12 percent for procurement). This reflects a trend for high electronic content to be contained in system upgrades and in the future ground combat vehicles of the Armored System Modernization (ASM) umbrella program, which has a healthy funding profile during the forecast period.

Viewgraph #50

Vehicles Forecast

Drivers

- Production Termination Of Tanks And Fighting Vehicles
- No Credible Threat To Drive Force Modernization
- Force Structure Cuts Reduce Vehicle Inventory Requirements
- No High-Tech, Large-Volume New Starts
- Army's Tactical Wheel Vehicle Modernization Program
- Restructured ASM Program

As I mentioned earlier, Bradley Fighting Vehicle and Abrams Tank production are terminated early in the forecast period. These two programs alone had annual funding of $3 billion during their peak production years.

Second, there are no large volume, high dollar value programs to absorb the Bradley or Abrams funding. There are a number of new vehicle programs entering production. However, production quantities are only in the tens or hundreds rather than thousands as was the case for both Bradley and Abrams.

This situation is caused by two factors we are all aware of:

- First, there is no credible threat to drive a robust force modernization program.
- The second factor is that force structure cuts reduce quantity requirements for future programs, as well as programs with on going production.

Even though we see no high tech/large volume starts, we are optimistic that the Army's Wheel Vehicle Modernization Programs will continue to enjoy healthy funding.

The Army's Armored Systems Modernization (ASM) program receives a significant portion of the RDT&E funding.

Viewgraph #51

Vehicles Forecast

Issues

- **Tank Fleet Upgrade**
- **IFVs Inventory Shortfall**
- **Light Tank Replacement**
- **Today's Procurement vs. Future Technologies**

Will in fact, tank production be allowed to go cold? If it does go cold, it will be the first time since prior to World War II that the U.S. is without a tank production capability. The base could be kept warm, however by upgrading tank fleet to one or more possible configurations. It is not clear at this time, however, that if the upgrades are approved, and they are expensive, where the money to pay for them will come from. Nevertheless, Congress today appears willing to continue limited production for industrial base reasons.

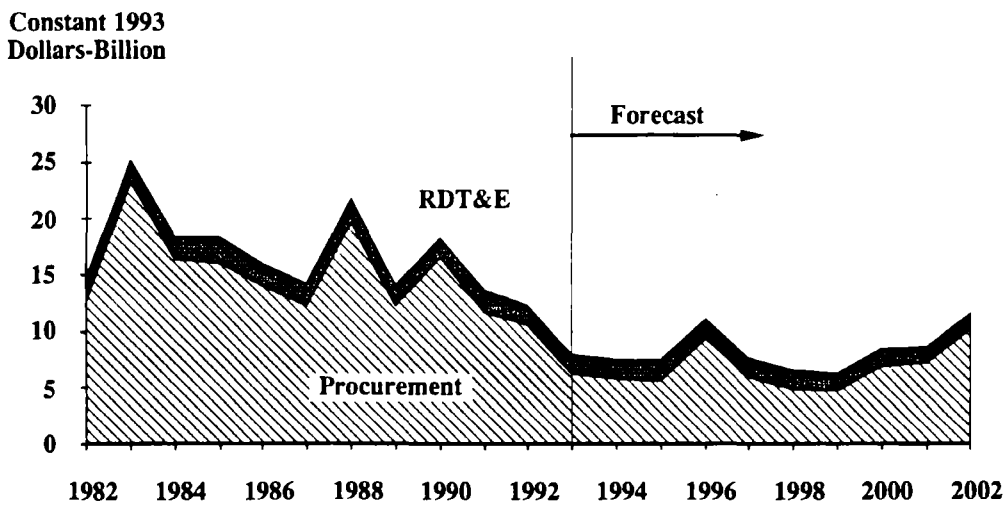
In a similar vein, the Army has identified a need for new production of 1300 infantry fighting vehicles.

Funding constraints will preclude developing next-generation technologies while simultaneously purchasing new equipment. Again budgetary constraints will force stretch out of planned buys and delay new technology development.

Viewgraph #52

Ships Forecast

Budget Authority (051)
Constant 1993 Dollars-Billion



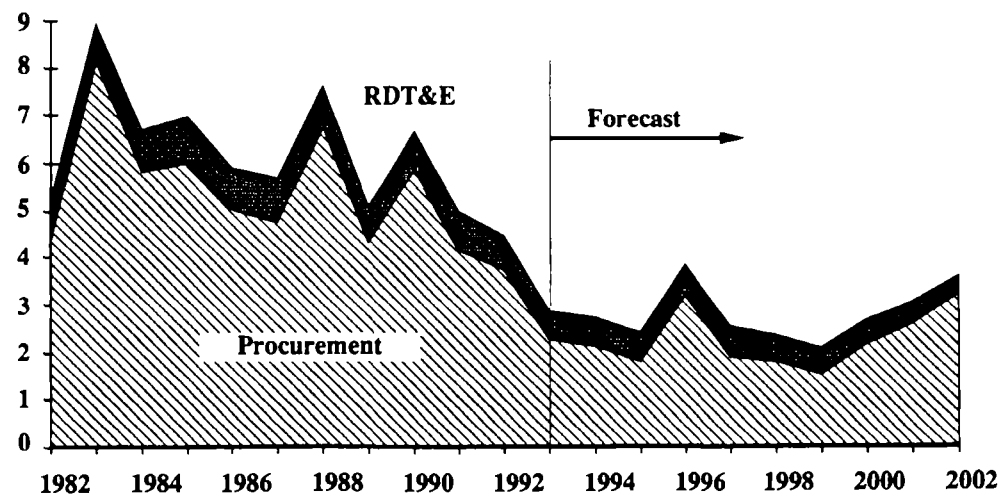
The significant reduction in procurement indicates a decline to a 365-ship Navy by the year 2002. Destroyers will continue to be procured at a modest rate; submarine procurements will be limited by affordability. The spikes in FY 1996 and FY 2002 reflect funding for planned new aircraft carrier requirements.

Viewgraph #53

Ships Electronic Content Forecast

Constant 1993
Dollars-Billion

Budget Authority (051)
Constant 1993 Dollars-Billion



The electronic content of Navy RDT&E will remain rather constant in the $.4-$.6 billion range. The electronic content within procurement for other than upgrades will be strongly influenced positively by new combat system requirements in the early years of the 21st Century. New carrier buys planned account for the sharp increase in FY 1996.

Viewgraph #54

Ships Forecast

Drivers

- Affordability
- Force Structure Reductions And Realignments
- Service Life Extensions Via Upgrades/Modernizations
- Redefinition Of "Battle Group"
- Navy Assumption Of A Lead Role For Initial Force Projection Into Regional Conflicts
- Amphibious Requirements/SEALIFT

Responding to foreseeable budget constraints, deployable ships will decline to 365 with technology upgrades for warfare improvement via service life extension programs being applied to the smaller fleet. Regional conflicts will replace the Blue Water threat mandating a flexible, prompt response to threats around the globe. Traditional carrier battle groups will transition to varied types of platform groupings to interact more closely with the international community and to determine the impact on our national interests. The SSBNs will continue as the strategic Navy deterrent. The number of aircraft carriers will decline to nine. Amphibious and sealift requirements are currently being re-evaluated.

Viewgraph #55

Ships Forecast

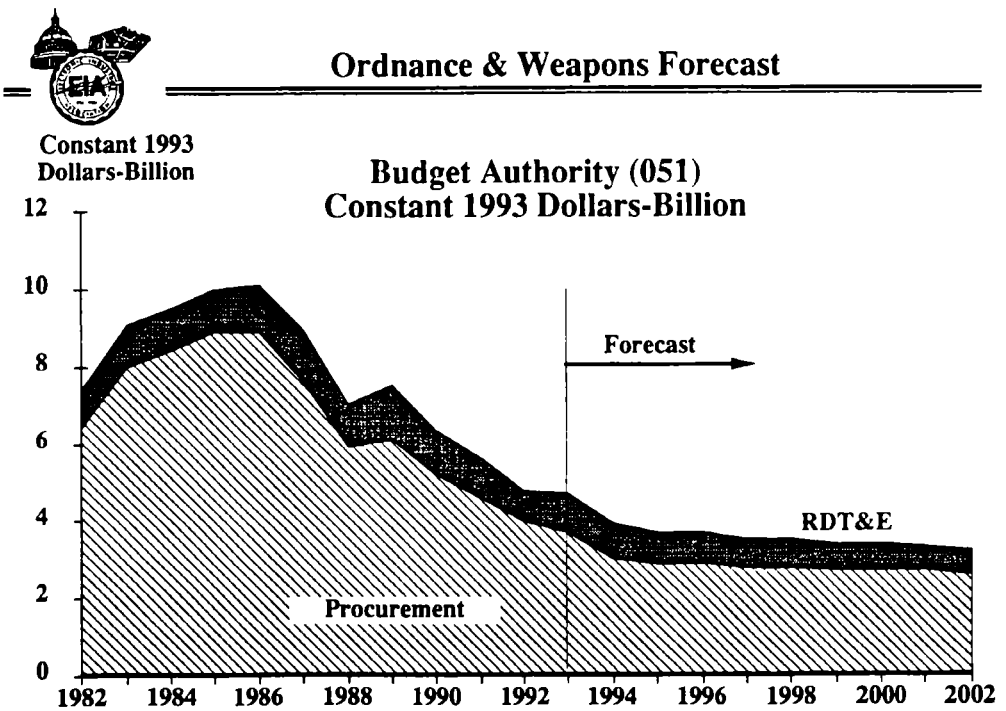
Issues

- Industrial Base (Nuclear And Non-Nuclear)
  - Carrier Construction
  - Cruiser/Destroyer Construction
  - Attack Submarine Construction
- Selection Of Major Systems/Subsystems To Continue Through EMD/Production
- Shallow Water Operations (ASW And MCM)
- Outyear Shipbuilding/Force Level

The nuclear and non-nuclear shipbuilding base to maintain surface combatant, carrier and subsurface construction will be severely challenged. A fleet reduction to 365 ships will further strain affordable new construction. There are too many new programs chasing too few dollars.

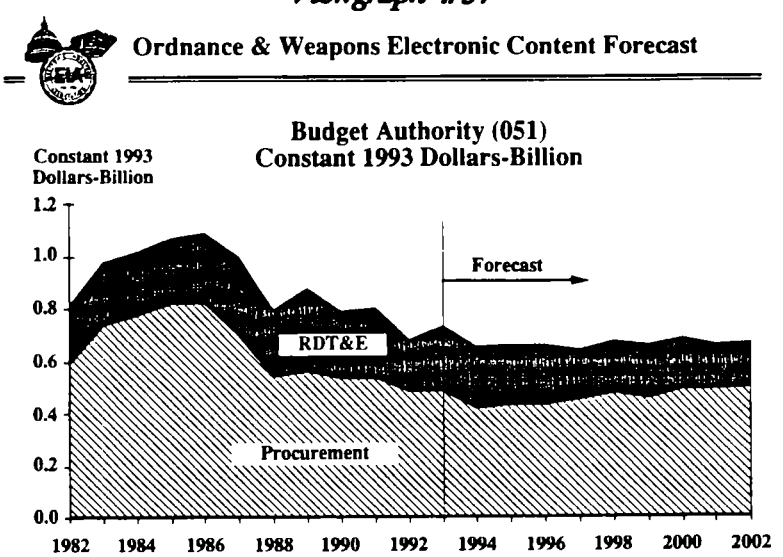
Advance Technology Demonstrations will increase substantially; releases to EMD and production will decline. The focus will center on those programs which can contribute to the critical technology needs of regional conflict in shallow waters, such as mine countermeasures. Ship construction may decline to a as few as four per year at the turn of the century.

Viewgraph #56



The rapid increase in ordnance and weapons funding that occurred during the Reagan defense build-up helped to upgrade weapons and increase ammunition stocks. Reduced force structure, increased ammunition inventory levels and constrained budgets, especially with regard to the Army, are reflected in the moderately declining ordnance and weapons forecast over the next ten years.

Viewgraph #57



The electronic content contained within the ordnance and weapons category reflects a slight increase in procurement due primarily to the forecast greater use of precision guided munitions.

Viewgraph #58

Ordnance And Weapons Forecast

Drivers

- Force Structure Reductions
- Emphasis On Precision Guided Munitions
- Requirement For Greater Stand-Off Capability
- Increased Use Of Submunitions

As force structure is reduced, there is a corresponding reduction in platforms and personnel that require weapons, ordnance and ammunition. The relatively recent emphasis on precision guided munitions was strongly supported by the results of Desert Storm and results in one of the few bright spots in the hardware category.

A number of ammunition, artillery, and rocket product improvement efforts are based on increasing the range of these systems. Likewise, the days of direct overflight to attack targets with dumb munitions are over, with the move to have standoff capability for bombs and munitions.

The use of smart submunitions and the emergence of several previously classified programs offers further support for the hardware category. Although procured in smaller numbers than their dumb counterparts, the higher costs associated with these systems serves to increase the forecast.

Viewgraph #59

Ordnance And Weapons Forecast

Issues

- Retention Of Industrial Base
  - GOCO's vs. Contractor Facilities
  - Critical Industry; Can't Commercialize
- Live Fire Training vs. Simulation
- Insensitive Munitions Requirement
- Product Improvements Instead Of New Weapons
- Precision Guided Munitions May Require Expensive Fire Control Upgrades

The industrial base of ordnance and weapons suppliers, especially those producing ammunition, is threatened because they cannot commercialize. An additional issue is whether to maintain government owned/contractor operated facilities (GOCOs) or support contractor production lines. Support for the industrial base is further reduced with the move to single source suppliers on numerous programs.

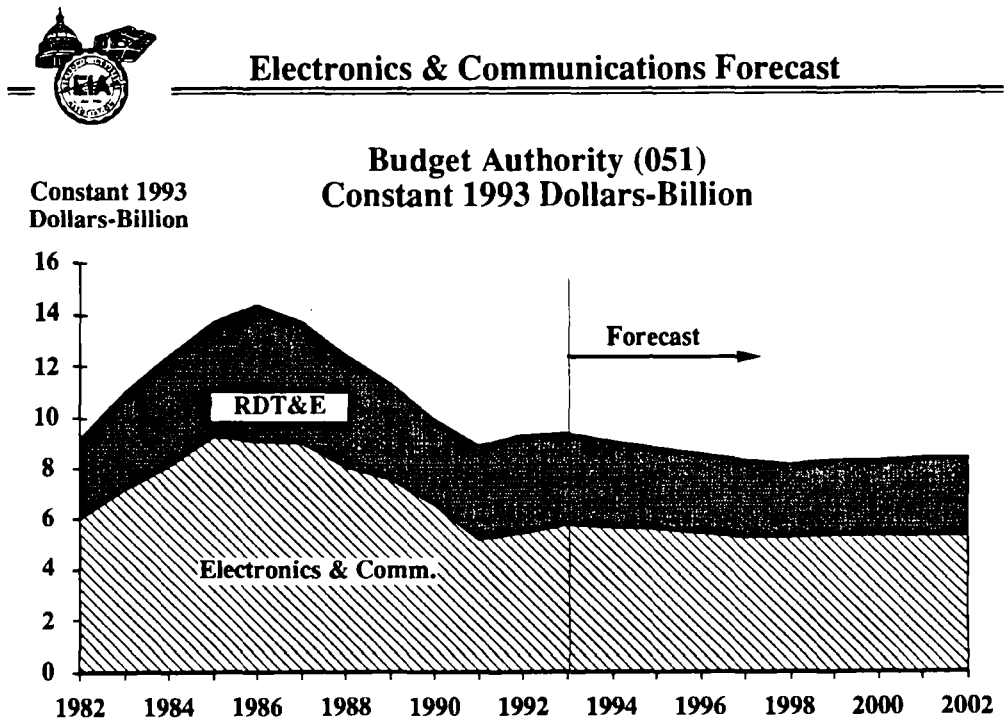
The greater use of simulation serves to reduce the expenditure of ordnance for live fire training. This however is good for the electronics industry in that it shifts training money into electronic-intense simulation.

The services have a requirement to reduce cook-off and sympathetic detonation munitions from accident and gun fire. Older munitions fail to meet this requirement and new munitions are often granted waivers to the requirement. If the requirement is enforced, increases in R&D as well as procurement funds will be required in order to replace the non-compliant ordnance inventory.

Making do with current systems through product improvements and mods instead of acquiring new systems will serve to keep budgets in the hardware area depressed.

The price tag of fire control upgrades needed to employ precision guided munitions must be addressed. For example, to upgrade the bomber force to carry the new family of PGMs, estimates have been made as high as $3 billion.

Viewgraph #60



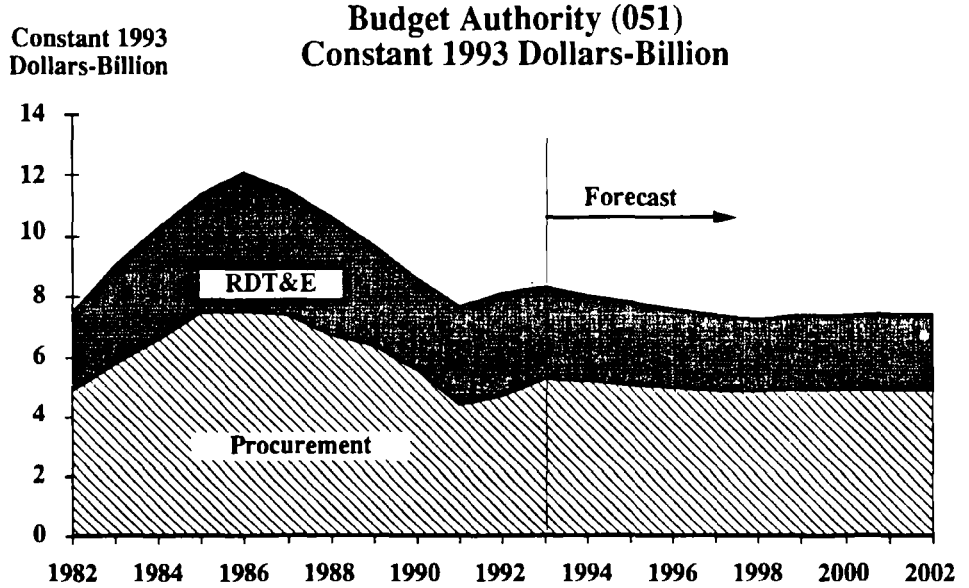
The electronics and communications market will decline as the available budgets decline. In the short term, trade-offs will be made in favor of weapons and platforms.

The demands for increased automation in the command and control process will expand. Winning the "information war" is fundamental to achieving military objectives. As recognition of this fact grows, electronics and communications will capture a larger share of the RDT&E and procurement budget.

As unit costs fall, increased capability will be demanded by a broader group of users and total demand will increase (e.g. GPS, communications, computers, and displays for individual soldiers.)

Viewgraph #61

Electronics & Communications Electronic Content Forecast



The electronic content of electronics and communications tracks very closely with the electronics and communications market.

The basic question is, "What parts of electronics and communications are not electronic content?" Some examples are the cost of vehicles and facilities within communications programs and the cost of operating various laboratories that are covered in some RDT&E funding lines. These items, as a percent of electronics and communications may increase slightly in the near term as the cost of electronic hardware drops, but they will rapidly return to normal percentages as increased capability is added to the main electronic missions.

Viewgraph #62

Electronics And Communication

Drivers

- Changing Strategy And Declining Budgets
  - Threat Refocused From Global Nuclear War To Regional Conflicts
  - Comm-On-The-Move Instead Of Fixed Networks
- Advancing Technology
  - Sensors And Computers Generate Enormous Amounts Of Data
  - Computer Technology Enables Advanced Communication Transport, Communication Management, And Information Management Techniques
- Development Of Common Architectures
  - 300+ Communication Plans Under A Common Architecture
  - Common Protocols, Message Formats
- Installed Base
  - Changes Will Be Evolutionary

The electronics and communications market will be sustained by the need to maintain our military technical advantages to meet regional threats. The budget declines will limit the total amount spent, and changing defense objectives and strategies will disrupt the fixed lines of communications needs.

Commercial systems will take larger portions of the military business, especially for common-user long-haul global networks and for common-user wide area switched backbone systems, as they are better able to provide higher levels of capacity, security, precedence, and ruggedness required by military users.

The wide use of advanced sensors and computers will continue to provide data in volumes far too great for effective use by the commander. Information management (fusion, decision aids, what-if simulations, advanced displays, etc.) will play an increasingly larger role in the electronics and communications environment.

These changes will be evolutionary, driven by common agreement on standards for protocols, wave forms, displays, hardware, and software.

Viewgraph #63

Electronics And Communication

Issues

- **Use Of Commercial Common-User Networks vs. Unique "Stovepipes"**
  - Capacity
  - Security
  - Precedence
  - Rugged (EMP And Shock)
- **Standard Hardware And Software For Open Architectures**
  - Standards Available To Anyone
  - NDI/COTS Investment Required To Play
  - Electronics And Communications Hardware Becoming A Commodity Market
- **Plans For Information Management Are Still Incomplete**
  - Will They Survive Their Champions?

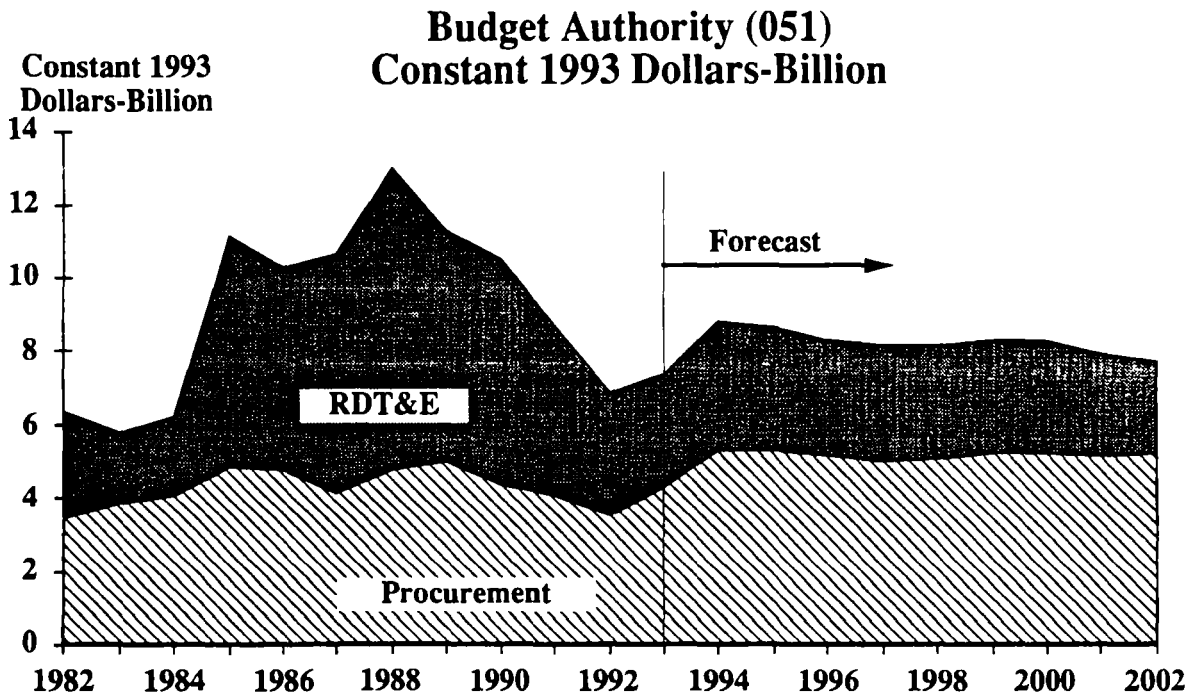
DoD customers will have the option of using commercial common-user networks for their communications needs or developing and operating their own dedicated "stove-pipe" systems. They have traditionally opted for the latter when the four listed requirements are important. The commercial systems are increasingly able to meet the special demands for military communications while the threats to military communications are being reduced. As a result, the great bulk of military traffic will flow through commercial channels.

As open architectures, with standard hardware, software, protocols, display formats, and message formats, are implemented, the need for large government funded developments, followed by assured production runs, will disappear. Except for very unique systems, each contractor will have to fund his own products and compete on a "catalog" basis for specific applications. Margins will drop.

Although highly detailed plans are being developed, they are still incomplete, especially in the out years. Although many critics claim that the plans will not outlive their champions, the fundamental requirements remain and are common to all services. They will be implemented in one form or another.

Viewgraph #64

Space Forecast



A major portion of the nation's military space investment involves maintenance and operations of large, shared constellations of satellites with their supporting ground systems. These include:

- DSCS, TACSAT, FLTSACOM Satellites
- GPS
- METSAT, etc.

These systems are being modernized with the deployment of MILSTAR and new generation navigation and meteorological satellites.

The nation also maintains large networks of surveillance satellites for use in support of strategy and tactical force operations. The tactical attack assessment and warning network is scheduled to be modernized over the next ten years.

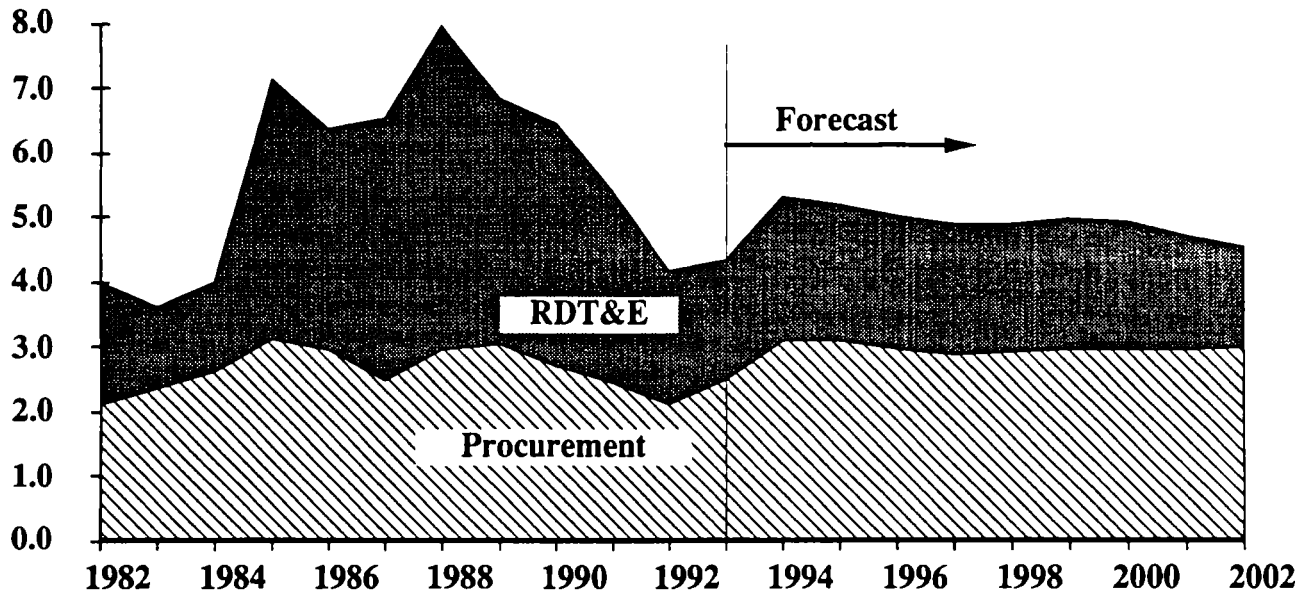
Space will also play an important role if and when the nation moves forward with the next generation air defense systems. Both strategic and theater defense systems will rely primarily on space based systems for early warning and targeting information.

Military space budgets were down in 1991 and 1992 primarily due to the restructuring of MILSTAR and the redefinition of the Follow-on Early Warning System. 1993 will also be down due to significant cuts in SDI budgets for space. This year's ten-year forecast with the exception of FY 1993 assumes constant levels of budgets over the forecast period.

Viewgraph #65

Space Electronic Content Forecast

Budget Authority (051)
Constant 1993 Dollars-Billion



The electronic content is forecasted to remain constant at about 60 percent of total space budgets over the period of the forecast. This is due to the fact that there is little shift in the nature and levels of the R&D and procurement activities during the period. Specifically:

The shifting of threat priorities from massive nuclear attacks to diverse tactical regional conflicts diminishes the need to provide costly protection against potential adverse nuclear radiation or blast effects.

The shift to use of greater numbers of less expensive spacecraft will place increased emphasis on use of less expensive space-based signal processing systems.

Requirements for future space based tactical surveillance and targeting systems require better quality imagery and greater accuracy. This will require better electro-optical and multi-mode sensor systems.

Proliferation of lower cost space platforms plus more dispersed tactical user organizations will place greater emphasis on deployment of new more efficient communication links and control systems.

Today's constrained budget environment requires greater emphasis on lower cost--longer life--more maintainable systems. At the same time smaller, less expensive spacecraft will require new smaller, lighter weight power supplies.

Viewgraph #66

Space Forecast

Drivers

- Controlling The High Ground
  - Reliable Early Warning Systems That Address Both Strategic And Tactical Missile Threats
  - Defenses Against Ballistic Missiles Of All Ranges
  - Combat Operations Support For Highly Mobile Tactical Forces
  - Improved Access To Space - Timely, Reliable, And Cost-Effective
  - Freedom Of Operations In Space
- SDI Markets For Space Decline

The ability to respond effectively and quickly to major regional contingencies against foes well armed with advanced weaponry will be fundamental to future military and political successes. Critical to the maintenance of this capability is our integrated network of space systems that are capable of providing real-time and near-real-time support to deployed and enroute forces of U.S. ground, air, and sea combatants. The drivers on *Viewgraph #66* list the operational capabilities that are required to achieve our space objectives and to support the future needs of the nation's forces. The overall SDI market for space will gradually decline.

Viewgraph #67

Space Forecast

Issues

- Arms Control Treaties And Alliance Agreements
- Implementation Of Strategic Defense Initiatives
- Growth In Regional Threats
- Affordability

The issues on *Viewgraph #67* identify the challenges that need to be successfully addressed if we are to meet our space objectives for the future.

The Arms Control Treaties and Alliance Agreements curtail the nation's ability to develop and deploy adequate surveillance and targeting systems or space-based interceptors to permit deployment of an affordable Global Protection System.

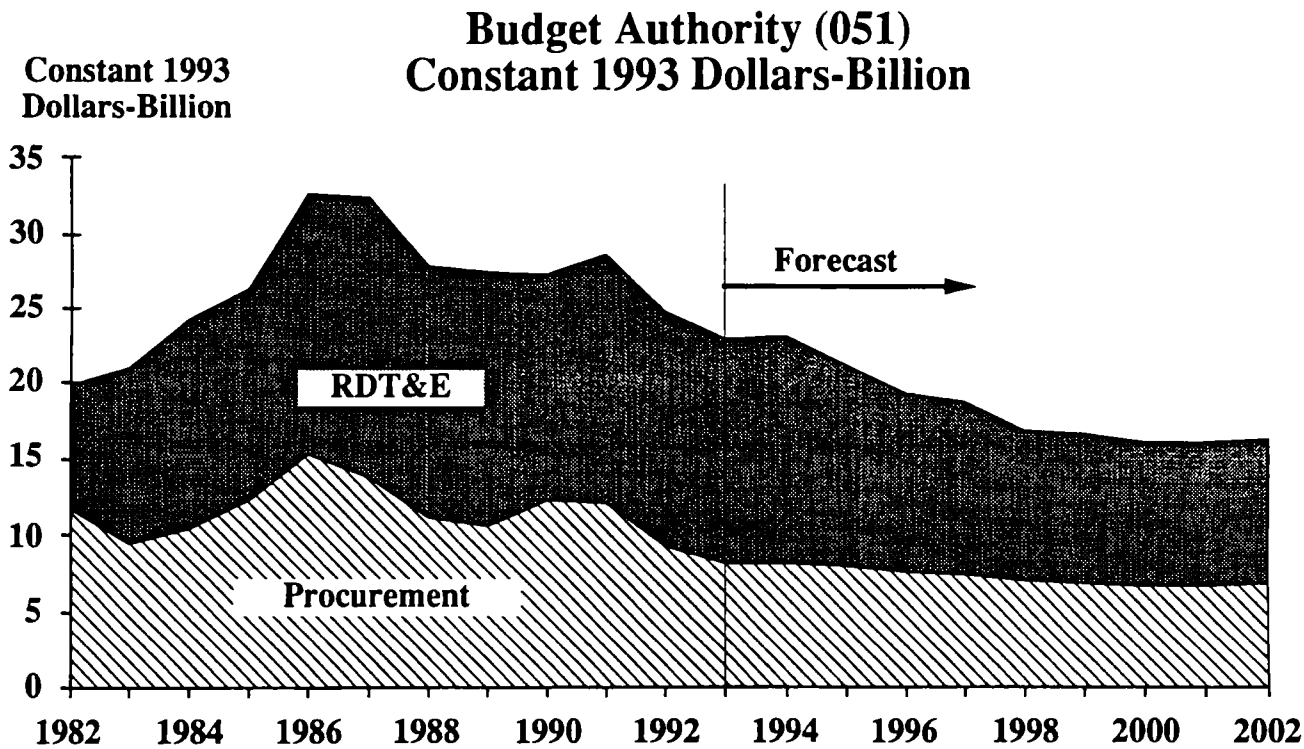
Lack of a national consensus on the Strategic Defense Initiative continues to constrain progress involving new space initiatives.

As our National Security Forces are restructured and downsized to accommodate the latest shift in national priorities, emphasis will shift towards posturing these forces to counter potential threats from third-world regions.

Future requirements for space systems will also be constrained by affordability.

Viewgraph #68

"Other" Forecast

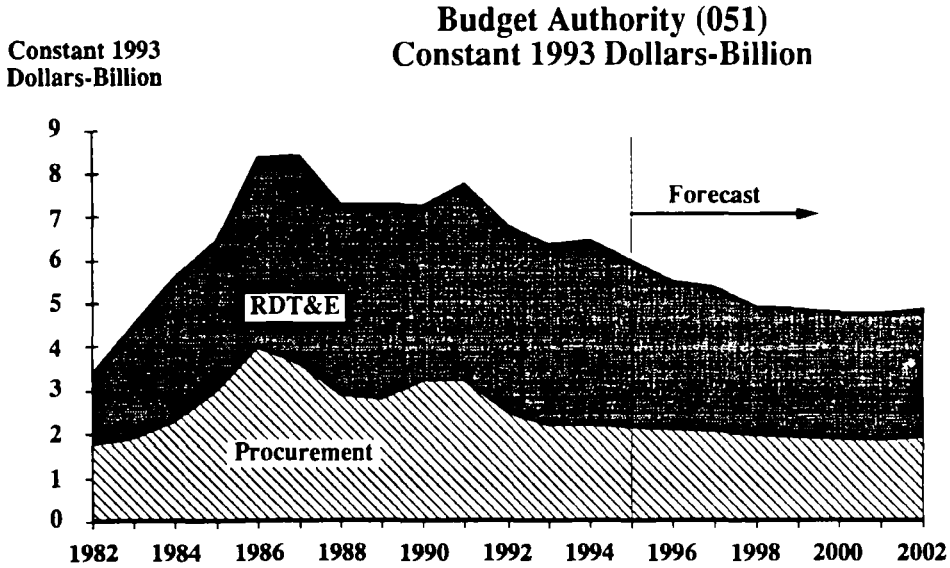


The procurement portion of the "other" hardware category includes diverse support and subsystem equipments plus unidentified programs and unallocated budget amounts. Trends in this area are assumed to track the aggregate of those for the remaining hardware categories.

RDT&E "other" includes generic research programs, operation of R&D facilities plus unidentified programs and unallocated budget amounts.

Viewgraph #69

"Other" Electronic Content Forecast



Increasing electronic content for "other" procurement and RDT&E is attributed to expanded use of electronics in support systems (e.g. simulators, training devices, test equipment, etc.) needed to respond to the more sophisticated equipment being fielded and to the declining manpower base. Unidentified/unallocated programs are assessed at the average rate for the remaining hardware categories.

NASA FORECAST
ROBERT HANSEN
ROCKWELL INTERNATIONAL

Viewgraph #70

Forecast Presentation Outline

Introduction

Department Of Defense Forecast
- Assumptions
- Environmental Factors
- Force Structure Outlook
- Topline Forecast

Hardware Category Forecasts
- Drivers And Issues
- Budget Authority Forecast
- Electronic Content Forecast

NASA Forecast
- What We Heard
- Forecast

Summary

Now we turn to our third annual forecast of the National Aeronautics and Space Administration (NASA) budget. Our presentation includes a summary of what we heard in our interviews as well as our forecast of the budget and the electronic marketplace.

But first I would like to recognize the members of the EIA NASA forecast team. Howard Williams of Aerojet, Lee Wright of Motorola, John McIver of Boeing and Alan Keisner of McDonnell Douglas all worked very hard conducting interviews and pulling this forecast together. It has been a real privilege for me to have worked with such a talented group of professionals.

Viewgraph #71

NASA Interviews

Interviews Covered A Broad Spectrum Of Viewpoints

Think Tanks	Administration/NASA	Congress
Cal Tech	NASA Headquarters	House Authorizations
Space Policy Institute	NASA Centers	Senate Appropriations
	OMB	
	Commerce	OTA
	National Space Council	CBO

In a manner similar to that used in the development of the defense budget forecast, we interviewed many people involved in NASA's policy making and budgetary processes. These interviews included professional staff from key Congressional committees, senior NASA managers, and experts on NASA within the government and in think tanks. This broad spectrum of opinions provided us with insights and perspectives that we combined, compared and consolidated to develop our forecast. Thus, this forecast doesn't directly reflect either the administration's plans, or the position of any Congressional committee, but what we believe will emerge from the overall process.

Viewgraph #72

What We Heard

NASA Attempting Fundamental Changes

- New Administrator Conducting Agency Wide Fundamental Review
- Driver Was Fact That Current Programs Require Large Budget Increases Which Appear Highly Unlikely
- Budget Wedge Sought For New Initiatives Within Flat Topline Budget Profile
- Programs Will BE Redesigned, Restructured Or Terminated
- *Smaller-Faster-Cheaper* Is The New Watchword
- New NASA Vision And Strategic Plan Being Prepared

The new NASA Administrator, Dan Goldin, is trying to make fundamental changes in the agency's culture. Mr. Goldin is conducting an agency wide review using independent "Red" and "Blue Teams" to find ways to reduce program costs. In this process, informed non-advocates--who constitute the Red Team--and program advocates--who are the Blue Team--conduct separate evaluations of their programs and organizations. Their results will be compared to develop final restructuring recommendations. This review was initiated because it became obvious to the Administrator that current and proposed programs will require unrealistic budget increases.

Their approach is to make cuts from existing programs and use those funds to permit new program starts within a flat top-line budget profile. Programs will be redesigned, restructured or terminated to achieve savings, shorten schedule and reduce risk. Their motto is smaller, faster, and cheaper. This philosophy is becoming a reality with the emergence of the small Explorer (for Space Physics) and Discovery (Solar System explorer) programs.

A new NASA vision and a Strategic Plan are also being developed.

Viewgraph #73

What We Heard

Budgetary Realities Worsening Through Fiscal 1995 (At Least)

- Budget Summit Limits Near Term Funding
  - — Spending Capped While Program Demands Increasing
  - — NASA Will Take Share Of Reductions—Bill Payer For HUD-VA
- Congressional Support May Change
  - — ~150 New Members Of Congress Next Year
  - — NASA Will Be Challenged To Educate Many New Members
- "Peace Dividend" Will Not Be Spent In Space
  - — Can't Cut DoD Enough To Solve Funding Shortfalls
- Many View NASA As Another DoD

The budget summit agreement of 1989 limits domestic discretionary spending growth to the rate of inflation through 1993. Within this nominal budget freeze, NASA, Housing and Urban Development (HUD), Education and Veteran Affairs all have increasing spending demands. The HUD and Veteran Affairs budget increases will likely continue to be paid for in part at NASA's expense, at least in the near term.

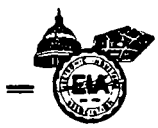
Congressional support for NASA could change significantly next year, for better or worse due to the extraordinary turnover of as many as 150 seats. This change-over will likely impact the makeup of key committees and various coalitions.

Additionally, changes in the administration's economic team may impact support for civil space.

Last year we heard of hopes that part of the "peace dividend" would be spent in the civil space arena. This year we heard this is not likely to happen. DoD budget cuts won't be enough to meet rising domestic spending requirements.

Faced with this budgetary situation, many in Congress view NASA as another DoD that should be trimmed to support higher priority needs.

Viewgraph #74



What We Heard

Prospects Beyond FY 95 Depend On Economy, An Inspiring Vision And Public Support

- **Budget Pressures Must Be Relieved For NASA To Grow**
- **Economic Benefits Will Be More Important**
  - — Aeronautics Seen As High Leverage Investment
- **Smaller, Faster, Cheaper Programs Emphasized To Provide Steady Stream Of Results**
- **Environmental Issues Will Sustain Earth Sciences**
- **Bipartisan Consensus Required For Space Programs**
  - — Requires Support Of American People

Real growth in the NASA budget is not likely until current problems with the federal budget and national economy are alleviated. Our forecast is consistent with a slow recovery of the economy and modest growth in the Gross Domestic Product over the next decade. In this environment, economic benefits resulting from NASA programs will be a more important factor in determining their share of federal monies. The aeronautics program, in particular, is seen as a high leverage investment because of the significant positive effect which jet airliner sales have on the U.S. trade balance.

Small cost-constrained unmanned space programs will be pursued to provide a steady stream of scientific results, particularly in the area of environmental science.

NASA must maintain and build a national bipartisan consensus in order to go forward toward its vision. NASA must regain the support and confidence of the American people to do this.

Viewgraph #75

NASA Forecast

Drivers

- Federal Budget Pressures
- Efforts To Reduce Federal Deficit
- Budgetary Competition With High Priority Domestic Programs
- Role Of NASA In Environmental Research
- Contributions To Economic Growth
- NASA Activity Distributed Over Many Congressional Districts

There are six principal drivers behind our NASA forecast. The first three: budget pressures, federal deficit and domestic program priorities, all center around the government's challenge of meeting urgent domestic needs in a fiscally responsible manner. Domestic program priorities will be key drivers since NASA is in the same budget category as Housing and Urban Development and Veteran Affairs.

An upside driver is the role of NASA programs in environmental research.

NASA's contribution to economic growth through improved U.S. competitiveness and programs that are convertible to viable commercial space business could also provide upside drivers.

Finally, NASA centers and contractors are spread over many Congressional districts which contributes to our assumption and large programs like the Space Station will continue to be funded.

Viewgraph #76

NASA Forecast

Issues

- Success Of Ongoing Review/Restructuring Of NASA And Its Programs
- Attitude Of New Congress Toward NASA And Man-Space
- Priorities Of New Administration Economic Team
- Performance Of The National Economy
- Role Of NASA In Building National Competitiveness
- Development Of National Consensus On Space Exploration

In last year's forecast, we said that NASA needed to restructure to accommodate current budget realities. The ongoing review and restructuring ordered by Mr. Goldin should produce favorable progress in this direction.

A thirty percent turnover in Congress lends uncertainty to the forecast. For example, if new members demand conservative fiscal policies and federal spending reductions, NASA's budget could be reduced further.

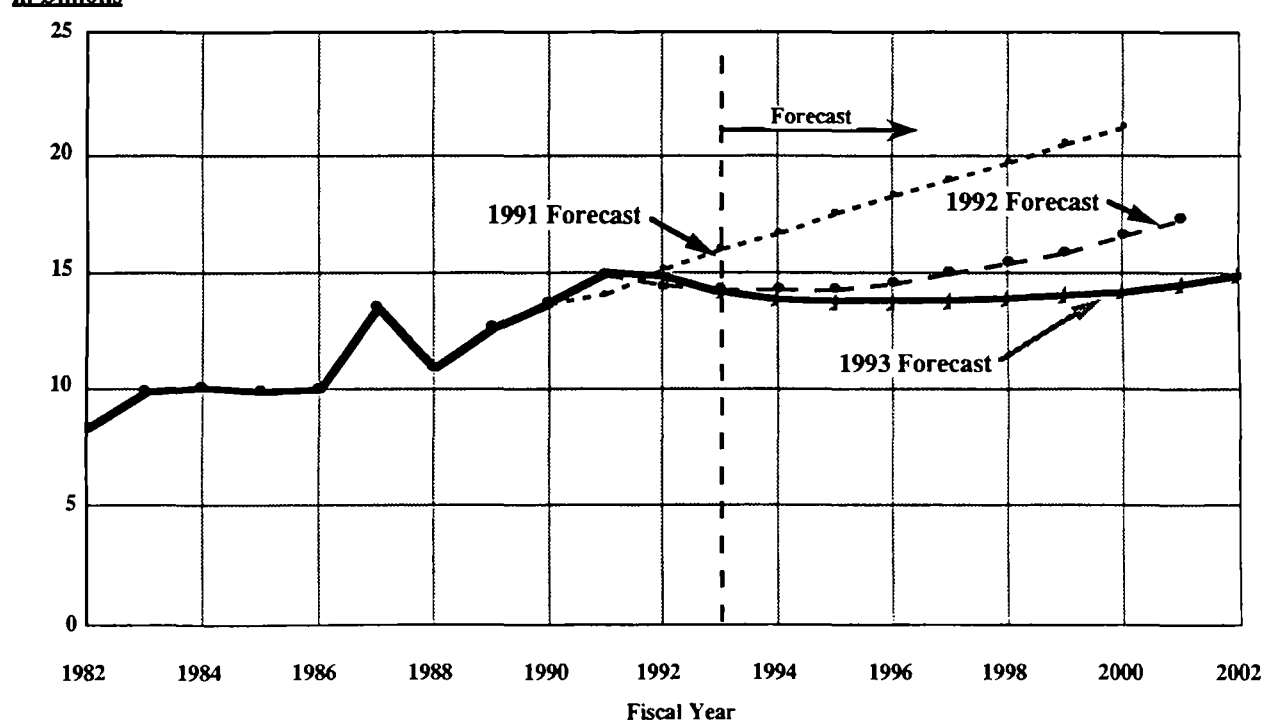
Our forecast assumes a two to three percent average annual economic growth rate, but significant deviation from this could certainly impact NASA's budget.

If NASA is unable to develop a consensus with Congress and the scientific community on future directions and composition of our space program, our forecast for out-year funding could turn out to be optimistic.

Viewgraph #77

NASA Forecast

NASA Funding Prospects Decline With Worsening Federal Budget Situation

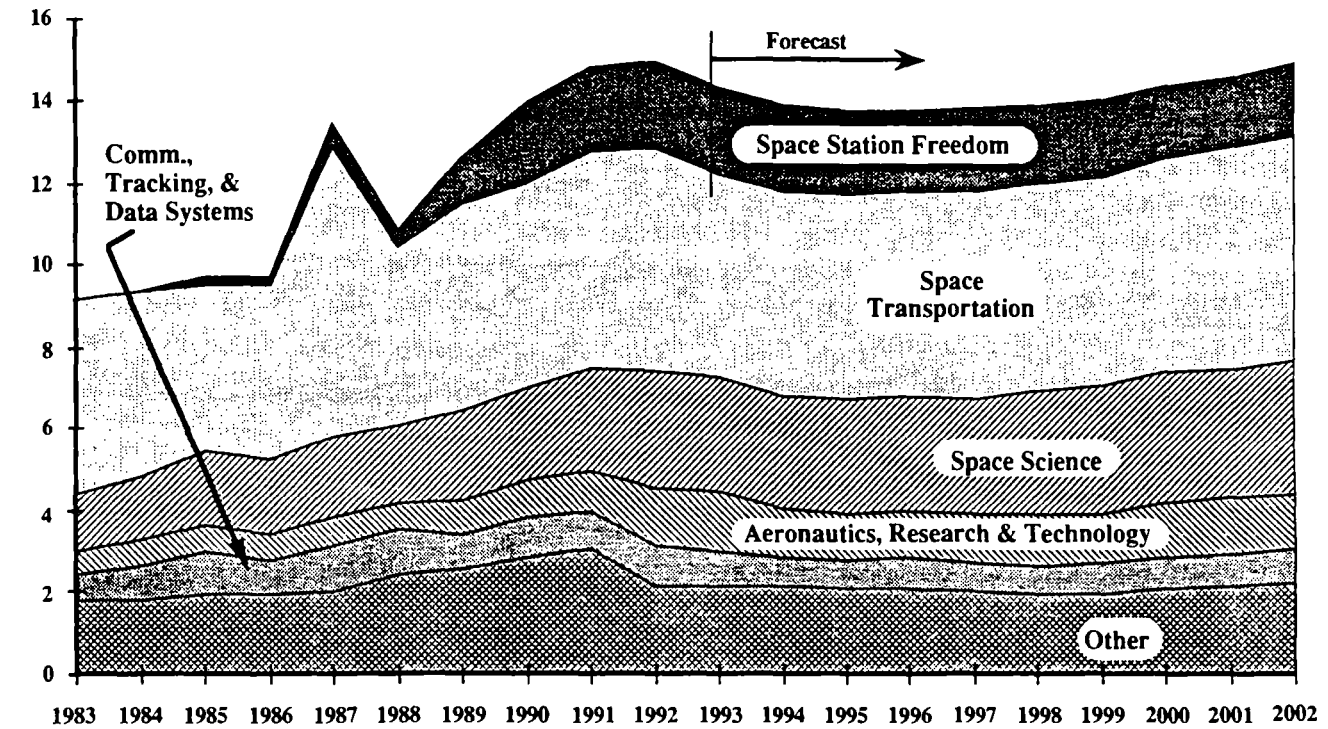


Viewgraph #77 shows our top-line budget forecast compared to our prior forecasts. As you can see we anticipate lower budgets than in the past. The worsening federal budget situation is driving budgets down through 1995 and limiting prospects for real budget growth until the last few years of our forecast period.

Viewgraph #78

NASA Forecast

Real Growth Resumes Late in Forecast



Viewgraph #78 is our forecast of the main elements of NASA's budget through the year 2002. What is most striking about this forecast is the lack of any real winners or losers in terms of funding allocations. Despite declining budgets that fall short of current requirements, NASA is dedicated to maintaining a "balanced program" which treats each element relatively equally. This sentiment for spreading budget cuts evenly is supported by many in Congress and the administration. The relative share of the budget dedicated to each of these programmatic areas will remain fairly constant. The Missions, Programs and Technology Committee briefing will have more to say about the impact on specific programs.

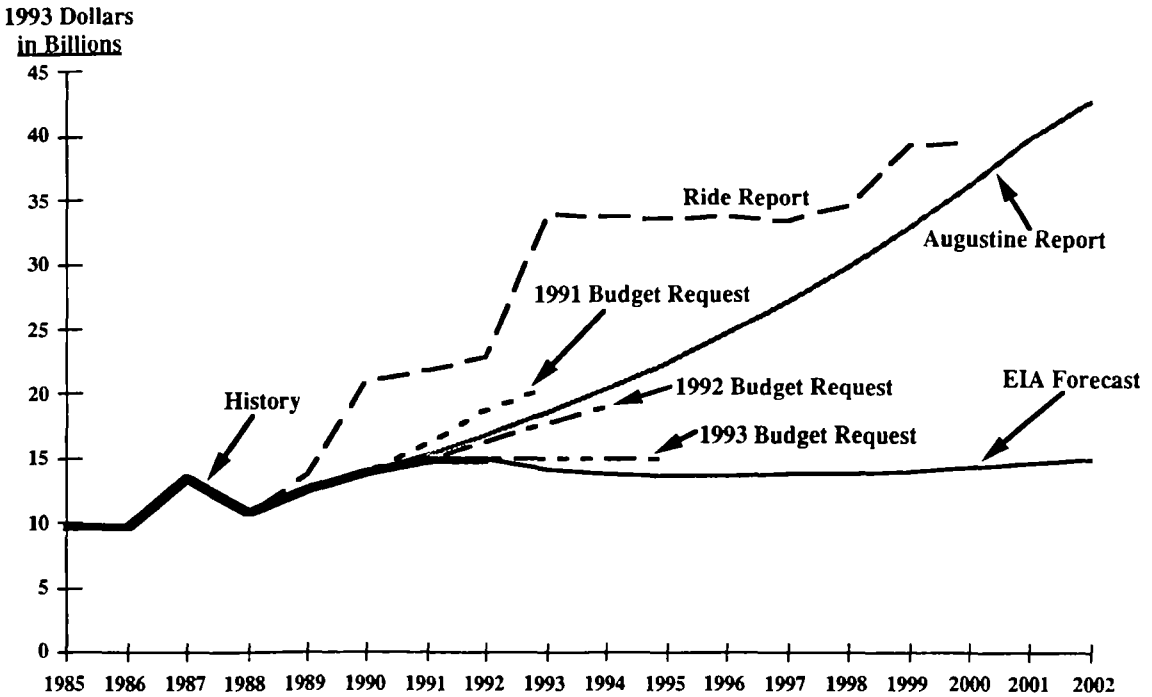
We do anticipate some increasing budget share to be dedicated to the Space Science budget. Modest real budget increases of one to two hundred million dollars per year are likely in this budget category for investment in the small Discovery class programs mentioned earlier.

It is worth noting that we anticipate little change in total Space Transportation funding even while NASA attempts to trim the cost of operating the Space Shuttle fleet. This is because any such savings are likely to be spent in developing next generation space launch equipment instead of being distributed elsewhere.
Beginning in about 1998, we anticipate that NASA's budget will again begin to grow, albeit slowly. By then, the national economy should be growing, alleviating the federal budget crisis that limits NASA's budget today. Also, the favorable publicity resulting from operation of the space station and the steady stream of results from Discovery and EOS programs should rekindle public support. As a result, we anticipate that by 2002 NASA will be back at about the budget level they enjoyed last year.

Viewgraph #79

NASA Forecast

Aggressive Strategic Visions Have Not Been Supported



Viewgraph #79 illustrates NASA's dilemma in attempting to arrive at a sustainable long-range budget that is acceptable to Congress. It also illustrates our difficulty in producing a ten-year forecast which will remain reasonably credible from year to year.

Two basic criteria of acceptability for NASA budget plans are that they be based on a long range strategic vision with specific goals and objectives, and that they meet fiscal constraints based on current economic realities.

Both the Sally Ride and Norm Augustine Commissions dealt with alternative strategic options and budgets for NASA's long range future activities. While those efforts met the strategic vision criteria, they required real growth rates in the NASA budget which could not be sustained in this recessionary economic environment.

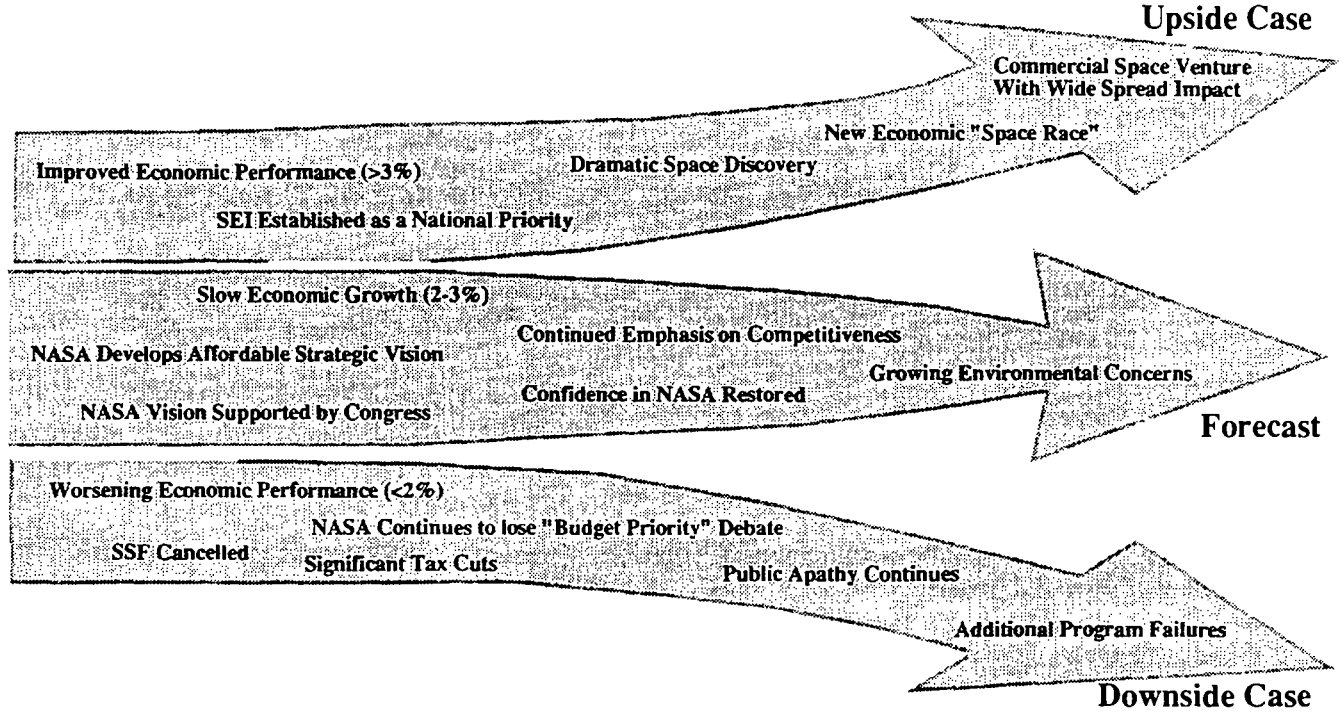
The administration's 1992 budget request was consistent with guidance received from Congress the prior year. Yet NASA's request was cut dramatically. The same thing happened again this year. Even Congress has had difficulty defining a long term budget profile for NASA.

Administrator Goldin's philosophy is to produce an attainable strategic vision for NASA within expected fiscal constraints. To do this they must fit programs that were initiated during recent periods of budgetary optimism into a flat budget profile. This will not be a simple feat.

Viewgraph #80

NASA Forecast

"Signposts" to the Future Direction of NASA Budget



The direction of NASA's budget will be primarily driven by future political, social, scientific, and economic developments. The purpose of *Viewgraph #80* is to highlight "signposts" that will signal whether we are on the path charted in our forecast, or if we are beginning to move toward greater or lesser funding trends.

I have already discussed the assumptions listed in the middle arrow which underlie our forecast.

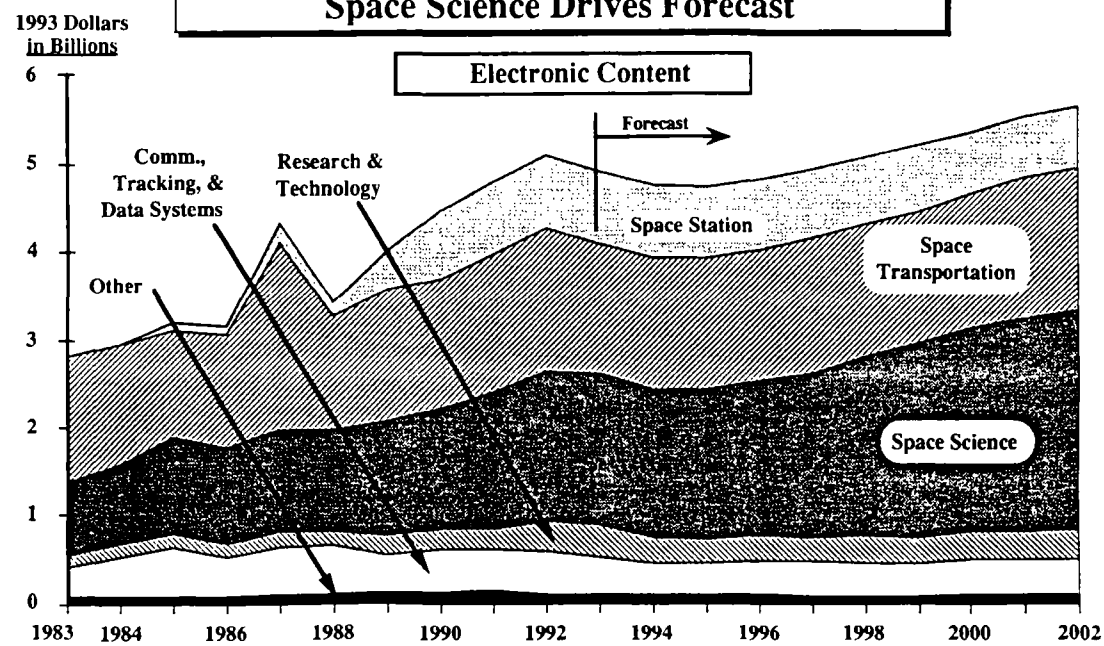
Factors that would cause us to move toward the upside include: improved U.S. economic performance; a new space race with the European Community or Japan; the occurrence of a dramatic space discovery, such as detection of an asteroid that could pose a threat to the Earth; and the establishment of space exploration as a national priority. Occurrence of these developments, individually or collectively, would impact the NASA budget in a very positive way.

On the down side, a worsening economy, a growing deficit, significant tax cuts, a lack of Congressional consensus supporting the space program, continuing public apathy toward space exploration or additional program failures could all lead to reduced funding for NASA.

Viewgraph #81

NASA Forecast

Increasing Importance of Micro-Electronics In Space Science Drives Forecast



Total electronic content of NASA programs closely tracks the Agency's budget authority. The Space Science portion of the budget is the main driver for electronics and the only area of significant growth. This growth is anticipated as electronic payloads become more complex to meet the needs of high volume data sensing, acquisition, processing and down-linking. Space Transportation is the second largest contributor and will continue with steady electronic content as system upgrades, such as new shuttle avionics, evolve through the nineties. Communications and tracking continues to be driven by TDRSS and Deep Space Net upgrades.

Viewgraph #82

NASA Forecast

Summary

- Budget Expected To Decline Through FY 1995
- Slow Real Growth (~ 1-2%) Beginning In FY 1998
- Significant Restructuring Underway To Fit Current Programs Within Declining Budgets
- New Starts Possible For *Smaller-Faster-Cheaper* Programs

To conclude, we expect NASA's budget to decline in real terms through FY 1995, for a total reduction of about eight percent from FY 1992 funding. After a couple years of flat funding, we project a return to slow real growth through the end of the forecast period.

In the mean time, NASA will undergo a significant restructuring of programs and organization in order to adapt to these budget prospects. This adaptation will not be easy and will take time. Ultimately, NASA's hopes for the future hinge on their ability to make this transition effectively.

And to end on a high note, within this austere budget, we anticipate new opportunities for industry in smaller-faster-cheaper programs. Although their budgets will be limited to $150 to $200 million dollars total, their span will be relatively short and there may be several such programs to pursue. Thus, in addition to providing a steady stream of scientific data, which is their purpose, these new programs may provide a small but steady stream of programs to help maintain critical engineering and manufacturing skills, within NASA and industry.

Viewgraph #83

Forecast Presentation Outline

Introduction

Department Of Defense Forecast
- Assumptions
- Environmental Factors
- Force Structure Outlook
- Topline Forecast

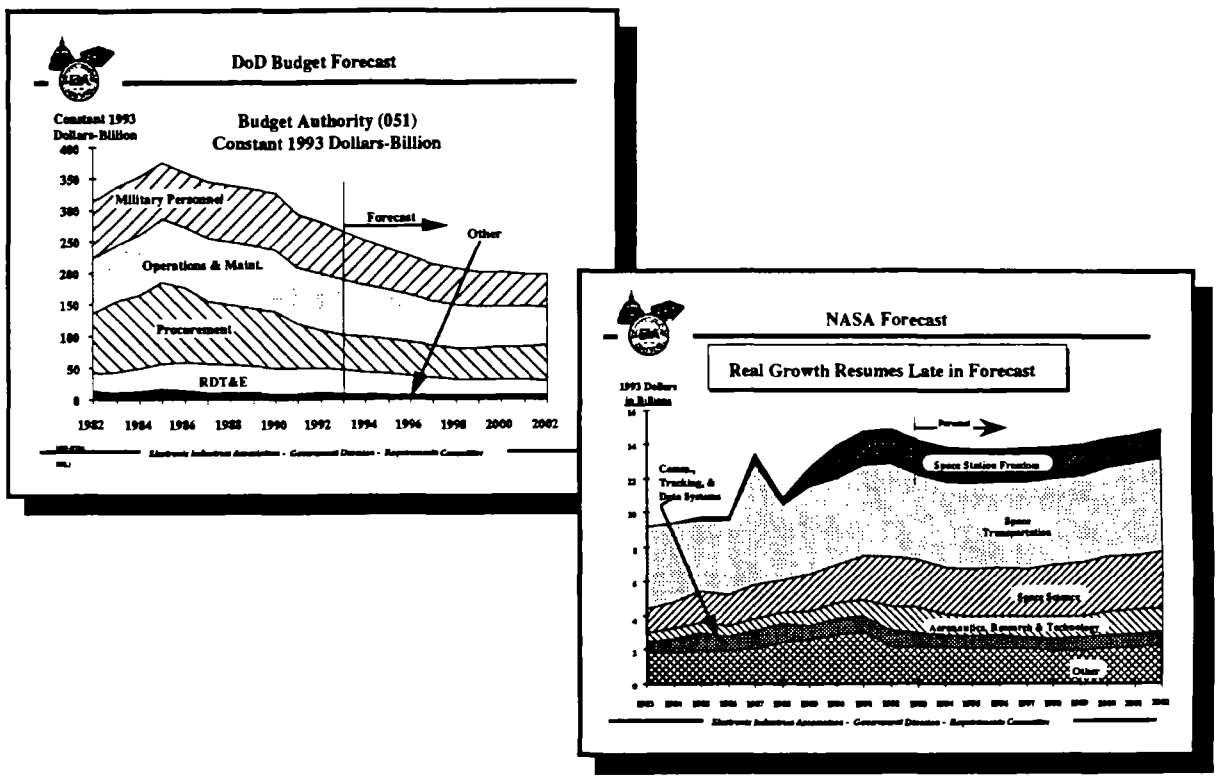
Hardware Category Forecasts
- Drivers And Issues
- Budget Authority Forecast
- Electronic Content Forecast

NASA Forecast
- What We Heard
- Forecast

Summary

Viewgraph #84

EIA 10-Year Forecast Summary



Viewgraph #85

EIA Forecast: Three Important Messages

- **Despite Overall Decline In DoD Forecast, Electronics Market Remains Durable**
- **DoD Procurement Stabilizes**
- **After Small Decline NASA Funding Stabilizes, With Real Growth Toward End Of Decade**

QUESTION AND ANSWER SESSION

QUESTION: COTS hardware in a tactical environment is limited when reliability and parts availability (on or about 30 months) are considered. This becomes costly. Was this discussed during the EIA interviews?

ANSWER: I think we did have that discussion with a couple of interviewees and that is where the dichotomy over the use of Commercial-Off-The-Shelf (COTS) equipment arises. I think affordability is driving the community to look at more COTS, but there is concern about mission critical items, the support of systems in the battlefield, the fact that commercial systems tend to move through the cycle more quickly and become obsolete more quickly. Perhaps our speaker this afternoon from OSD may talk about this issue. But, yes that is a problem that is being looked at.

QUESTION: Given the ups and downs reflected in past DoD and to a lesser degree NASA budgets, why does EIA insist on posing a relatively smooth forecast?

ANSWER: If you look at the hardware accounts where the scale is more granulated, you will see that we do have definite hiccups, especially in the ships account, in the aircraft category, and to a lesser degree in some of the others. But when you apply these numbers to a much larger model as we do for the total forecast, it does tend to look smooth. If you look at the numbers in the background section, you will see that there are differences year by year.

QUESTION: Do you see an increase in GOCO and possibly a nationalization of critical industries to preserve them? (This is what the United Kingdom did.)

ANSWER: That is a really good question. Unfortunately, it did not come up this year, but it is one that I think we should add to the repertoire for next year and start to keep an eye on. Perhaps you might ask that of the speaker this afternoon.

QUESTION: Are civilians working for DoD included in each category or under military personnel?

ANSWER: Civilian personnel are included within each category.

QUESTION: I noted a lack of interviews with four key Congressional committees, the House and Senate Authorization Committees and the House and Senate Intelligence Committees. Why?

ANSWER: The answer is that this is a budget forecast. We concentrate on the budget committees. If we talked to the other defense committees, we would be talking programmatics and that is the purview of the EIA Missions and Programs Committee and our market study teams. They are the ones that need to talk to those committees to get the details at the program level. We have for the past years concentrated primarily on the budget committees and feel good about the results.

QUESTION: Bill Perry forecasts procurement will be cut to one-third of 1990 levels, yet EIA projects an increasing share for procurement in late 1995. Please rationalize the difference.

ANSWER: I think that Dr. Perry did say that both President Bush and Governor Clinton would continue to reduce force structure, personnel and Operations and Maintenance (O&M). We use that assumption also for our force structure and then we looked to the minimum procurement RDT&E accounts, the equipment and the R&D spending we would need to support the minimum force and that is how we arrived at our numbers. Most of those numbers were discussed with the community during our interviews and there was support for our approach.

QUESTION: Bill Perry said modernization would take a two-thirds hit off 1986. EIA's survey looks like only one-half.

ANSWER: I think it is a matter of what you call modernization and what systems are being cut. We were looking at strictly the investment accounts.

QUESTION: How do you explain the differences with Dr. Perry on DoD procurement?

ANSWER: It seems to me that in part of Dr. Perry's statement, he supported the fact that both presidential candidates want a strong defense, albeit with a smaller force, and that supports the contention that we brought forth from our interviews. That, in order to have a well equipped, ready-to-go force, you are going to have to spend money on equipment. And that means at the turn of the century actually buy stuff as I said earlier. We will upgrade to a certain extent, but all the platforms at that point cannot be simply upgraded. So we will stand by our forecast that this nation will spend the money to buy the goods and services that our forces need to keep them ready.

QUESTION: We hear that RDT&E will have greater stability than the balance of DoD. *Viewgraph #32* shows a large cut. Please comment.

ANSWER: I think that is a misunderstanding throughout the defense industry. I think the literature has talked about the protection of R&D. What we found and what Geoff Bentley surfaced in his technology study that you are going to hear tomorrow was that the protection was for the science and technology base rather than the whole RDT&E account. And as one of our interviewees pointed out, procurement has really been cut and that it is RDT&E's turn to take its share. So, what we are showing is that in the 6.3A spending, as that progresses into engineering manufacturing development and then into production, we see the shifting of funds from RDT&E into procurement. We obviously didn't go well into the next century to know whether that cycle would reverse itself, but that is what our future forecast will look at.

QUESTION: (Inaudible)

ANSWER: When we looked at the aircraft and Navy accounts, we didn't go into the detail as to why a procurement account was starting to come back up in 1996 and 1997. You will see that tomorrow. But basically there are a couple of new major systems coming in that are very expensive tactical air which really drives that up. You might wonder about production rates and I won't get into that today either, but the point is that it was our consensus those programs would go at some production level as Dr. Perry indicated this morning prototyping is not enough. So when you see those numbers tomorrow I think you will get a better feel for why that procurement line started to increase slightly in the 1997 timeframe.

QUESTION: What causes the significant spike in the 1996 ships forecast?

ANSWER: There was a procurement of a new carrier which simply drove that quantity of money up. Now, there is more to it than that though. There are several roles and mission reviews underway right now which says the Navy really wants to get to an all-nuclear fleet by the year 2024. We really think that first one will go. Whether the one in 1998-1999 goes is another question.

QUESTION: Your comment on a shipbuilding rate of four per year would extend to an 80-120 ship Navy based on 20-30 year service life of a ship. When do you see the bottom of the curve, and in which fiscal year must the decision be made to stabilize the Navy at 350-400 ships?

ANSWER: Well, first of all as pointed out, what I meant to say was four year combat ships by the turn of the century. Again, that is a significant question. It is one being addressed right now by several groups in JCS in

terms of mobility requirements, in terms of combatant requirements and decisions have to be made relatively quickly. Like in 1997, 1998 maybe even 1996-1997 budget. Lots of lead time there. I don't know the answer to that, but if they are going to maintain the 350-400 ship Navy they talk about--that is another question--then you really can't come off the three to four year by the turn of the century. But we think that is where it is headed right now unless somebody turns it around. There are some arguments also in the ship area in terms of mobility, in terms of how many fast railroad ships are required. That is going to take a significant amount of money and that is being discussed right now.

QUESTION: Will the redefined "battle group" have any manned aircraft assets, i.e., space surveillance versus E-2, Tomahawk versus A-6/AX, RPVs versus EA-6?

ANSWER: I wish I knew the answer to that. I am from McDonnell Douglas. We are trying very hard to make sure that it does include aircraft and I am sure it will. It is going to take a long time to transition to the kind of special battle groups they are talking about. As we told you, there is only enough money there to buy one major system at a time. So if you program out the F/A-18 for example or the A-6, whichever one you want to pick, that is going to take 10 to 15 years for the buyout. Then there is going to be about another program behind that. So if you talk about buying new assets to put on those special battle groups, it is probably going to have to be well after the turn of the century. You are talking about just modernizing, using what you have, it will probably be joint operations of perhaps the Navy and the Air Force working together to provide the outer air battle coverage. There are some studies underway to look at that right now including the B-1 review.

QUESTION: In view of recent Congressional direction to reduce space funding by 15 percent and Air Force Secretary Rice's statement that space and communications will have 18 percent of a greatly reduced Air Force budget, why do you show a growth and not a drop in the space budget?

ANSWER: Well, that is due to the programmatic nature of the space budget. There are a lot of very important programs that are coming in that tend to buoy that forecast up. And if you read Rice's statement about how he plans to comply with that direction, it will be through finding savings in the operation and downlinking and distribution of data as opposed to actually changing the programmatics. So as a result, we just couldn't reduce it any further without again facing things that the nation hasn't yet faced up to in terms of force structure.

QUESTION: If SDI dollars are included in the RDT&E forecast, it looks like the 1992, 1993, 1994 forecasts are all SDI. Is that so?

ANSWER: No, in fact there are a lot of other programs in the space budget that are pushing those numbers up.

QUESTION: In the space forecast, is the National Launch System (NLS) included or a heavy lift vehicle?

ANSWER: Again, we forecasted a larger level. There is money for boosters and booster development, but the Missions and Programs Committee will be able to give you a better feel for whether it is NLS or something else.

QUESTION: CNN is reporting a major cover-up in the Hubble telescope failure and a possible investigation. How would such press impact the outlook?

ANSWER: I think we covered that in our up and down arrows. Negative press in terms of more programmatic failures is not of benefit to NASA.

QUESTION: Given that Dan Goldin's days are numbered and NASA bureaucrats can't wait for him to go, what is your prognosis for NASA reorganization given a Clinton presidency?

ANSWER: One, that is speculation on two counts. The election is still a few days away, but also Dan Goldin is a Democrat. So it is not sure he is gone. However, let me say that our forecast really is not dependent on the two candidates because both candidates are very supportive of space. Al Gore's record in the Senate has been very pro-NASA. We anticipate like with DoD there would be some shifting of priorities and programs. We will leave that again to the Missions and Programs Committee to address. But overall, we think that the NSA budget will not be dramatically impacted by a Clinton presidency versus a Bush presidency.

QUESTION: How does the national aerospace program relate to NASA programs if at all? If it is related, any projection to its future and viability?

ANSWER: NASA does contribute a portion to the NAS program and budget amounts are in our space transportation budget. As to the viability of the program, you will have to come back tomorrow and listen to the Missions and Programs Committee.

QUESTION: Many of us are interested in budgets for modeling and simulation. Where do we find budget line items in our handout?

ANSWER: You will have to tune in again tomorrow for the Missions and Programs and the Science and Technology presentations. There is quite a bit of information on those topics.

QUESTION: Is NASA's role in building national competitiveness in direct competition with industry?

ANSWER: I like this question because the answer is absolutely not. NASA, for instance, is investing in the high speed commercial or high speed civil transport program. Their investment is in terms of how do I make jet engines quieter? How do we make engines that are efficient at a high altitude to make very little ozone and nitrous oxide? Those kinds of technical questions, those funds are going through Boeing, McDonnell Douglas, Pratt Whitney, and General Electric, whoever in industry has the knowledge. The whole intent is to provide something that would be of use to those industries when they would take that program forward. It is not to take over industry's role. It is very well structured in that sense.

QUESTION: What is the average government tax rate which is the cost of transactions in procurement and how much is left to contractors of the RDT&E budget and procurement budgets? Do you see this tax rate changing?

ANSWER: This is at a level that we do not go into in our forecasting. Will it be changing? I think we mentioned earlier that there may be some increases in the cost of RDT&E due to the contractor's need to make a profit. The tax rate all depends upon how the government cuts its own bureaucratic infrastructure associated with those programs. We just did not forecast that.

QUESTION: With regard to R&D profitability and cost type contracts, how does the committee suggest that DoD deal with low ball bids by qualified companies?

ANSWER: First of all, I am not much of an expert on this subject. We did not get into this. We touched on the difficulty in achieving profitability in RDT&E contracts. We even had that discussion on the Hill, we didn't really find any answers forthcoming. EIA has a Government Procurement Relations Council that addresses acquisition issues in a lot more detail.

With regard to today's environment though, what may be forthcoming is that companies are simply not in a position to low ball because companies have to make money. That is where we are in our history right now. So perhaps you won't even have to encounter that and also I think the best value approach has been one of the best ways to circumvent the low ball. In fact, I know one major competition, the ground based radar, went to the highest bidder.

TEN-YEAR FORECAST BACKGROUND DATA

Viewgraph #86

Defense Electronics Market
Ten-Year Forecast
U. S. Department Of Defense
And
National Aeronautics And Space Administration
Budgets
FY1992 To FY2001

Electronic Industries Association
Government Division/Requirements Committee
Ten Year Forecast Subcommittee

October 20, 1992

Tables, Definitions, Acronyms

Viewgraph #87

Index

Viewgraph #88

DOD Budget Authority (051) Forecast

Table 1

(1993 Dollars in Billions)

Fiscal Year / Title	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority												
Military Personnel	84.4	81.8	75.6	69.8	65.9	61.9	58.2	56.5	54.3	53.2	51.2	50.8
Operations & Maint.	89.5	89.4	87.3	82.1	78.1	74.0	70.5	68.2	65.9	64.5	62.7	61.3
Procurement	70.9	60.4	54.9	55.5	53.4	54.8	49.6	49.3	49.2	51.2	53.1	54.9
RDT&E	38.5	38.1	37.0	35.6	33.1	29.6	28.2	25.3	25.5	25.4	23.9	23.3
Other	10.3	11.3	9.7	8.7	8.3	7.8	7.3	7.0	6.8	6.8	6.7	6.6
Total	293.6	281.0	264.5	251.7	238.8	228.1	213.8	206.3	201.7	201.1	197.6	196.9
Percentage Change												
Military Personnel	-3.1	-3.1	-7.6	-7.7	-5.6	-6.1	-6.0	-2.9	-3.9	-2.0	-3.8	-0.8
Operations & Maint.	-1.2	-0.1	-2.3	-6.0	-4.9	-5.2	-4.7	-3.3	-3.4	-2.1	-2.8	-2.2
Procurement	-1.4	-14.8	-9.1	1.1	-3.8	2.6	-9.5	-0.6	-0.2	4.1	3.7	3.3
RDT&E	-6.4	-1.0	-2.9	-3.8	-7.0	-10.6	-4.7	-10.3	0.8	-0.4	-5.9	-2.5
Other	-17.5	9.7	-14.2	-10.3	-4.6	-6.0	-6.4	-4.1	-2.9	0.0	-1.5	-1.5
Total	-8.0	-4.3	-5.9	-4.8	-5.1	-4.5	-6.3	-3.5	-2.2	-0.3	-1.7	-0.4
Distribution Percentage												
Military Personnel	28.7	29.1	28.6	27.7	27.6	27.1	27.2	27.4	26.9	26.5	25.9	25.8
Operations & Maint.	30.5	31.8	33.0	32.6	32.7	32.4	33.0	33.1	32.7	32.1	31.7	31.1
Procurement	24.1	21.5	20.8	22.1	22.4	24.0	23.2	23.9	24.4	25.5	26.9	27.9
RDT&E	13.1	13.6	14.0	14.1	13.9	13.0	13.2	12.3	12.6	12.6	12.1	11.8
Other	3.5	4.0	3.7	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Electronic Content												
Procurement	25.5	22.6	22.4	23.2	22.7	23.4	21.9	22.2	22.0	22.5	23.9	24.1
RDT&E	15.5	16.1	16.0	15.2	14.2	13.0	12.5	11.5	11.7	11.5	10.7	10.2
Operations & Maintenance	6.8	6.8	6.6	6.2	5.9	5.6	5.4	5.2	5.0	4.9	4.8	4.7
Total	47.7	45.5	45.0	44.6	42.9	42.0	39.8	38.8	38.7	38.9	39.3	39.0

Viewgraph #89

DOD Procurement Forecast (BA) By EIA Category

Table 2

(1993 Dollars in Billions)

Fiscal Year / Title	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority												
Aircraft	20.7	19.6	19.3	19.8	18.4	17.0	16.0	17.4	17.4	17.5	19.2	18.0
Missiles	9.4	6.4	5.6	6.0	5.9	5.7	5.6	5.3	5.4	5.3	5.1	5.1
Space	4.1	3.5	4.3	5.3	5.3	5.2	5.0	5.1	5.2	5.2	5.2	5.2
Ships	11.7	10.5	6.3	5.8	5.7	9.3	5.9	4.9	4.7	6.8	7.2	10.1
Ordnance & Wpns.	4.6	4.0	3.7	3.0	2.9	2.9	2.8	2.8	2.7	2.7	2.7	2.6
Vehicles	3.1	1.6	1.8	1.8	1.7	1.6	1.6	1.5	1.5	1.6	1.6	1.6
Electronics & Comm.	5.2	5.5	5.8	5.7	5.6	5.5	5.3	5.3	5.4	5.4	5.4	5.4
Other	12.1	9.3	8.1	8.1	7.9	7.6	7.4	7.0	6.9	6.7	6.7	6.8
Total	70.9	60.4	54.9	55.5	53.4	54.8	49.6	49.3	49.2	51.2	53.1	54.9
Percentage Change												
Aircraft	-34.3	-5.3	-8.4	3.6	-6.9	-7.5	-5.2	10.4	0.2	0.7	12.1	-8.3
Missiles	0.0	-31.9	-12.2	7.2	-2.4	-2.8	-2.4	-5.6	2.5	-1.9	-3.8	0.0
Space	-6.8	-14.6	22.3	24.4	0.2	-2.8	-3.1	1.5	2.0	0.0	-0.6	1.0
Ships	-29.1	-10.3	-40.0	-8.7	-1.0	63.2	-36.8	-17.3	-3.4	44.7	5.6	41.2
Ordnance & Wpns.	-11.5	-13.0	-7.5	-18.9	-3.3	0.0	-3.4	0.0	-3.6	0.0	0.0	-3.7
Vehicles	-16.7	-48.1	12.5	0.0	-5.0	-5.8	-3.7	-3.2	0.0	4.0	1.9	0.0
Electronics & Comm.	-21.2	5.8	5.5	-1.7	-1.8	-1.8	-3.6	0.0	1.9	0.0	0.0	0.0
Other	-1.6	-23.1	-12.9	0.0	-2.5	-3.8	-2.6	-5.4	-1.4	-2.9	0.0	1.5
Total	-20.9	-14.8	-9.0	1.0	-3.7	2.5	-9.5	-0.6	-0.2	4.1	3.7	3.4
Distribution Percentage												
Aircraft	29.2	32.5	35.2	35.6	34.5	31.0	32.3	35.4	35.3	34.2	36.2	32.8
Missiles	13.3	10.6	10.2	10.9	11.0	10.4	11.3	10.7	11.0	10.4	9.6	9.3
Space	5.8	5.8	7.8	9.6	10.0	9.5	10.1	10.4	10.6	10.2	9.7	9.5
Ships	16.5	17.4	11.5	10.4	10.7	17.0	11.9	9.9	9.6	13.3	13.5	18.5
Ordnance & Wpns.	6.5	6.6	6.7	5.4	5.4	5.3	5.7	5.7	5.5	5.3	5.1	4.7
Vehicles	4.3	2.6	3.3	3.2	3.2	2.9	3.1	3.0	3.1	3.0	3.0	2.9
Electronics & Comm.	7.3	9.1	10.6	10.3	10.5	10.0	10.7	10.8	11.0	10.6	10.2	9.8
Other	17.1	15.4	14.7	14.6	14.8	13.9	14.9	14.2	14.0	13.1	12.6	12.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Viewgraph #90

DOD RDT&E Forecast (BA) By EIA Category

Table 3

(1993 Dollars in Billions)

Fiscal Year / Title	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority												
Aircraft	7.8	7.9	7.8	7.2	7.2	6.0	5.5	4.6	5.3	5.6	4.7	4.4
Missiles	2.4	4.4	4.4	3.3	2.9	2.4	2.1	1.8	1.6	1.4	1.3	1.2
Space	4.6	3.4	3.1	3.5	3.3	3.1	3.1	3.1	3.1	3.1	2.8	2.5
Ships	2.0	1.7	1.6	1.7	1.7	1.8	1.8	1.7	1.6	1.6	1.4	1.4
Ordnance & Wpns.	1.0	0.8	1.0	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6
Vehicles	0.4	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Electronics & Comm.	3.7	3.8	3.6	3.4	3.2	3.1	3.0	2.9	2.9	2.9	3.0	3.0
Other	16.6	15.5	14.8	15.0	13.3	11.7	11.3	9.9	9.7	9.4	9.4	9.5
Total	38.5	38.1	37.0	35.6	33.1	29.6	28.2	25.3	25.5	25.4	23.9	23.3
Percentage Change												
Aircraft	-17.9	1.3	-1.3	-7.9	0.0	-17.1	-8.3	-15.7	15.2	5.7	-16.1	-6.4
Missiles	-28.4	86.1	0.0	-24.3	-12.0	-17.3	-11.8	-16.5	-12.7	-10.2	-7.1	-7.8
Space	-24.6	-26.1	-8.8	11.3	-4.7	-4.8	-0.2	-1.9	0.0	1.1	-10.0	-10.4
Ships	8.5	-12.9	-4.6	3.6	2.6	2.8	1.1	-7.1	-6.6	2.9	-12.1	-0.4
Ordnance & Wpns.	-9.4	-22.2	25.0	-10.0	-11.1	0.0	-12.5	0.0	0.0	0.0	-14.3	0.0
Vehicles	105.5	46.0	4.5	-0.8	8.2	1.8	3.1	0.7	-1.4	-0.1	1.7	-1.7
Electronics & Comm.	8.8	2.7	-5.3	-5.6	-5.9	-3.1	-3.2	-3.3	0.0	0.0	3.4	0.0
Other	11.4	-6.6	-4.3	1.1	-11.3	-12.0	-3.4	-12.4	-2.0	-3.1	0.0	1.1
Total	-4.7	-0.9	-2.9	-3.8	-6.9	-10.7	-4.5	-10.3	0.6	-0.3	-5.9	-2.5
Distribution Percentage												
Aircraft	20.3	20.7	21.1	20.2	21.7	20.1	19.3	18.2	20.8	22.0	19.7	18.9
Missiles	6.1	11.5	11.9	9.4	8.9	8.2	7.6	7.1	6.1	5.5	5.4	5.1
Space	12.0	8.9	8.4	9.7	9.9	10.6	11.1	12.1	12.0	12.2	11.7	10.7
Ships	5.1	4.5	4.4	4.7	5.2	6.0	6.3	6.6	6.1	6.3	5.9	6.0
Ordnance & Wpns.	2.7	2.1	2.7	2.5	2.4	2.7	2.5	2.8	2.7	2.8	2.5	2.6
Vehicles	1.1	1.6	1.7	1.7	2.0	2.3	2.5	2.8	2.8	2.8	3.0	3.0
Electronics & Comm.	9.6	10.0	9.7	9.6	9.7	10.5	10.6	11.5	11.4	11.4	12.5	12.9
Other	43.2	40.7	40.1	42.2	40.2	39.6	40.0	39.1	38.1	37.0	39.3	40.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Viewgraph #91

Electronic Content Forecast--Aircraft (BA)

Table 4

(1993 Dollars in Billions)

Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority												
Procurement	20.7	19.6	19.3	19.8	18.4	17.0	16.0	17.4	17.4	17.5	19.2	18.0
RDT&E	7.8	7.9	7.8	7.2	7.2	6.0	5.5	4.6	5.3	5.6	4.7	4.4
Total	28.5	27.5	27.1	26.9	25.6	22.9	21.5	22.0	22.7	23.1	23.9	22.4
Electronic Content %												
Procurement	32.0	32.0	35.9	36.1	39.0	40.1	43.0	42.9	43.1	42.0	44.0	44.0
RDT&E	28.0	32.0	41.0	37.0	37.0	39.0	41.0	43.0	45.0	42.0	39.0	38.0
Total	30.9	32.0	37.4	36.3	38.4	39.8	42.5	42.9	43.5	42.0	43.0	42.8
Electronic Value												
Procurement	6.6	6.3	6.9	7.1	7.2	6.8	6.9	7.5	7.5	7.4	8.4	7.9
RDT&E	2.2	2.5	3.2	2.7	2.7	2.3	2.2	2.0	2.4	2.4	1.8	1.7
Total	8.8	8.8	10.1	9.8	9.8	9.1	9.1	9.5	9.9	9.7	10.3	9.6

Viewgraph #92

Electronic Content Forecast--Missiles (BA)

Table 4

(1993 Dollars in Billions)

	Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority													
Procurement		9.4	6.4	5.6	6.0	5.9	5.7	5.6	5.3	5.4	5.3	5.1	5.1
RDT&E		2.4	4.4	4.4	3.3	2.9	2.4	2.1	1.8	1.6	1.4	1.3	1.2
Total		**11.8**	**10.8**	**10.0**	**9.4**	**8.8**	**8.1**	**7.7**	**7.1**	**7.0**	**6.7**	**6.4**	**6.3**
Electronic Content %													
Procurement		39.3	40.5	46.9	48.0	48.1	48.8	49.6	49.2	48.0	48.0	48.2	48.8
RDT&E		56.1	63.1	60.8	65.0	65.4	66.2	64.9	63.7	64.8	65.4	66.0	65.6
Total		**42.7**	**49.7**	**53.0**	**54.0**	**53.9**	**54.0**	**53.8**	**52.9**	**51.8**	**51.6**	**51.8**	**52.0**
Electronic Value													
Procurement		3.7	2.6	2.6	2.9	2.8	2.8	2.8	2.6	2.6	2.5	2.5	2.5
RDT&E		1.326	2.7764	2.6752	2.1652	1.9169	1.6054	1.3882	1.1377	1.0102	0.9156	0.8587	0.7865
Total		**5.0**	**5.4**	**5.3**	**5.1**	**4.7**	**4.4**	**4.2**	**3.7**	**3.6**	**3.5**	**3.3**	**3.3**

Viewgraph #93

Electronic Content Forecast--Space (BA)

Table 4

(1993 Dollars in Billions)

	Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority													
Procurement		4.1	3.5	4.3	5.3	5.3	5.2	5.0	5.1	5.2	5.2	5.2	5.2
RDT&E		4.6	3.4	3.1	3.5	3.3	3.1	3.1	3.1	3.1	3.1	2.8	2.5
Total		**8.7**	**6.9**	**7.4**	**8.8**	**8.6**	**8.3**	**8.1**	**8.2**	**8.3**	**8.3**	**8.0**	**7.7**
Electronic Content %													
Procurement		60.6	60.6	58.5	58.4	57.9	57.8	57.4	57.5	57.4	56.9	57.3	57.5
RDT&E		63.7	60.3	59.5	63.9	64.3	64.5	64.4	64.4	64.4	64.3	63.3	62.2
Total		**62.2**	**60.5**	**58.9**	**60.6**	**60.3**	**60.3**	**60.1**	**60.1**	**60.0**	**59.7**	**59.4**	**59.1**
Electronic Value													
Procurement		2.5	2.1	2.5	3.1	3.1	3.0	2.9	2.9	3.0	3.0	3.0	3.0
RDT&E		2.9	2.1	1.8	2.2	2.1	2.0	2.0	2.0	2.0	2.0	1.8	1.6
Total		**5.4**	**4.2**	**4.4**	**5.3**	**5.2**	**5.0**	**4.9**	**4.9**	**5.0**	**5.0**	**4.7**	**4.6**

Viewgraph #94

Electronic Content Forecast--Ships (BA)

Table 4

(1993 Dollars in Billions)

	Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority													
Procurement		11.7	10.5	6.3	5.8	5.7	9.3	5.9	4.9	4.7	6.8	7.2	10.1
RDT&E		2.0	1.7	1.6	1.7	1.7	1.8	1.8	1.7	1.6	1.6	1.4	1.4
Total		13.7	12.2	7.9	7.4	7.4	11.1	7.7	6.5	6.3	8.4	8.6	11.5
Electronic Content %													
Procurement		35.5	35.6	35.5	36.7	31.6	34.3	32.4	36.8	32.4	31.8	36.0	31.7
RDT&E		43.1	43.1	38.5	34.9	34.7	34.9	34.6	34.1	33.9	31.8	31.0	29.1
Total		36.6	36.6	36.1	36.3	32.3	34.4	32.9	36.1	32.8	31.8	35.2	31.4
Electronic Value													
Procurement		4.2	3.7	2.2	2.1	1.8	3.2	1.9	1.8	1.5	2.2	2.6	3.2
RDT&E		0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.4
Total		5.0	4.5	2.9	2.7	2.4	3.8	2.5	2.4	2.1	2.7	3.0	3.6

Viewgraph #95

Electronic Content Forecast--Ordnance & Weapons (BA)

Table 4

(1993 Dollars in Billions)

	Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority													
Procurement		4.6	4.0	3.7	3.0	2.9	2.9	2.8	2.8	2.7	2.7	2.7	2.6
RDT&E		1.0	0.8	1.0	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6
Total		5.6	4.8	4.7	3.9	3.7	3.7	3.5	3.5	3.4	3.4	3.3	3.2
Electronic Content %													
Procurement		11.6	12.0	13.0	14.0	15.0	15.0	16.0	17.0	17.0	18.0	18.0	19.0
RDT&E		25.8	25.0	25.0	26.0	28.0	28.0	28.0	28.0	29.0	29.0	29.0	29.0
Total		14.2	14.2	15.6	16.8	17.8	17.8	18.4	19.2	19.5	20.3	20.0	20.9
Electronic Value													
Procurement		0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5
RDT&E		0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total		0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.7	0.7

Viewgraph #96

Electronic Content Forecast--Vehicles (BA)

Table 4

(1993 Dollars in Billions)

Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority												
Procurement	3.1	1.6	1.8	1.8	1.7	1.6	1.6	1.5	1.5	1.6	1.6	1.6
RDT&E	0.4	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Total	3.5	2.2	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.3
Electronic Content %												
Procurement	13.0	13.0	12.0	12.0	12.0	12.0	13.0	13.0	10.9	13.0	13.0	11.0
RDT&E	17.0	22.0	23.0	23.0	23.0	24.0	24.0	24.0	24.0	24.0	23.0	23.0
Total	13.5	15.5	14.8	14.8	15.1	15.6	16.5	16.5	15.1	16.4	16.1	14.7
Electronic Value												
Procurement	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
RDT&E	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.4	0.3

Viewgraph #97

Electronic Content Forecast--Elec. & Comm. (BA)

Table 4

(1993 Dollars in Billions)

Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority												
Procurement	5.2	5.5	5.8	5.7	5.6	5.5	5.3	5.3	5.4	5.4	5.4	5.4
RDT&E	3.7	3.8	3.6	3.4	3.2	3.1	3.0	2.9	2.9	2.9	3.0	3.0
Total	8.9	9.3	9.4	9.1	8.8	8.6	8.3	8.2	8.3	8.3	8.4	8.4
Electronic Content %												
Procurement	84.0	85.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
RDT&E	89.0	90.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0
Total	86.1	87.0	88.1	88.1	88.2	88.2	88.2	88.2	88.3	88.3	88.2	88.2
Electronic Value												
Procurement	4.4	4.7	5.2	5.1	5.0	5.0	4.8	4.8	4.9	4.9	4.9	4.9
RDT&E	3.3	3.4	3.1	2.9	2.7	2.6	2.6	2.5	2.5	2.5	2.6	2.6
Total	7.7	8.1	8.3	8.0	7.8	7.6	7.3	7.2	7.3	7.3	7.4	7.4

Viewgraph #98

Electronic Content Forecast--Other (BA)

Table 4

(1993 Dollars in Billions)

	Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority													
Procurement		12.1	9.3	8.1	8.1	7.9	7.6	7.4	7.0	6.9	6.7	6.7	6.8
RDT&E		16.6	15.5	14.8	15.0	13.3	11.7	11.3	9.9	9.7	9.4	9.4	9.5
Total		28.7	24.8	22.9	23.1	21.2	19.3	18.7	16.9	16.6	16.1	16.1	16.3
Electronic Content %													
Procurement		26.6	26.8	26.9	27.1	27.2	27.4	27.6	27.8	28.0	28.2	28.2	28.2
RDT&E		27.4	27.8	28.1	28.5	28.8	29.2	29.6	30.0	30.4	30.8	30.8	30.8
Total		27.1	27.4	27.7	28.0	28.2	28.5	28.8	29.1	29.4	29.7	29.7	29.7
Electronic Value													
Procurement		3.2	2.5	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.9	1.9	1.9
RDT&E		4.5	4.3	4.2	4.3	3.8	3.4	3.3	3.0	2.9	2.9	2.9	2.9
Total		7.8	6.8	6.3	6.5	6.0	5.5	5.4	4.9	4.9	4.8	4.8	4.8

Viewgraph #99

Table 5

Budget Categories for 051 Account

CONGRESS APPROPRIATION CATEGORY	DOD FYDP PROGRAMS	DOD/CONGRESS RESEARCH CATEGORIES (R&D)
1. MILITARY PERSONNEL	1. STRATEGIC FORCES	6.1 RESEARCH
2. O&M	2. G.P. FORCES	6.2 EXP. DEV.
3. PROCUREMENT	3. INTEL. & COMM.	6.3 ADV. DEV.
4. RDT&E	4. AIRLIFT/SEALIFT	6.4 ENG. DEV.
(6.1 - 6.5 OF R&D PLUS OPER'L. SYS. DEV.)	5. GUARD & RESERVE	6.5 MGT. SUPT.
BA01 - TECH BASE (6.1, 6.2)	6. R&D	X.X OPER'L. SYS. DEV. (PE #S OUTSIDE OF FYDP PROGRAM #6)
BA02 - ADV. TECH. DEV. (6.3A)	(6.1 - 6.5 OF RESEARCH)	MAJOR MISSION AREAS
BA03 - STRATEGIC PROG (6.3, 6.4 PLUS X.X)	6.1 - RESEARCH (BA01)	100 STRATEGIC SYSTEMS
BA04 - TACTICAL PROG (6.3, 6.4 PLUS X.X)	6.2 - EXPL. DEV. (BA01)	200 TACTICAL PROGRAMS
BA05 - INTEL. & COMM. (6.3, 6.4 PLUS X.X)	6.3 - ADV. DEV. (BA02 - BA05)	300 C3I PROGRAMS
BA06 - DEFENSEWIDE MISSION SUPT. (6.5 PLUS X.X)	6.4 - ENG. DEV. (BA03 - BA05)	400 DEFENSEWIDE MISSION SUPT.
5. MILITARY CONSTRUCTION	6.5 - MGT. AND SUPT. (BA06)	500 SCIENCE & TECHNOLOGY PRGM.
6. FAMILY HOUSING	7. CENTRAL SUPPLY & MAINTENANCE	
7. SPECIAL FOREIGN CURRENCY	8. TRAINING, MEDICAL & OTHER	
8. REVOLVING & MGT. FUNDS	9. ADM. AND ASSOC. ACTIVITIES	
	10. SUPT. OF OTHER NATIONS	
	11. SOF	

Table 6 ARMY — ALLOCATION OF PROCUREMENT AND RDT&E ACCOUNTS TO EIA CATEGORIES

PROCUREMENT			RDT&E			EIA CATEGORIES											
						AIRCRAFT		MISSILES		SPACE		SHIPS		ORDNANCE & WEAPONS		VEHICLES		E & C		OTHER	
ARMY APPN			APPN			PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E
2031A	AIRCRAFT PROCUREMENT		2040A	RDT&E		2031A (all)	06XX2XXA plus Op Sys Devel		06XX3XXA plus Op Sys Devel	-0-	-0-	-0-	-0-		06XX6XXA plus Op Sys Devel		06XX6XXA plus Op Sys Devel		selective		06XX1XXA 06XX8XXA selective
BA	01	Aircraft	BA	01	Technology Base																
	02	Mods. of Aircraft		02	Adv. Technology Dev.																
	03	Spares & Rep. Parts		03	Strategic Programs																
	04	Support Equip./Facilities		04	Tactical Programs																
				05	Intelligence & Comm.																
2032A	MISSILE PROCUREMENT			06	Defense-Wide Support			2032A (all)													
BA	02	Other Missiles																			
	03	Mod. of Missiles																			
	04	Spares & Repair Parts																			
	05	Support Equip./Facilities																			
2033A	WEAPONS & TRACKED COMBAT VEH.													2033A BA02		2033A BA01					
BA	01	Tracked Combat Vehicles																			
	02	Weapons & Other Combat Veh.																			
2034A	PROCUREMENT OF AMMUNITION													2034A (all)							
BA	01	Ammunition																			
	02	Ammunition Prod. Base Support																			
2035A	OTHER PROCUREMENT															2035A BA01		2035A BA02		2035A BA03	
BA	01	Tactical & Support Vehicles																			
	02	Communications & Elect. Equip.																			
	03	Other Support Equip.																			

Viewgraph #100

Table 6 NAVY — ALLOCATION OF PROCUREMENT AND RDT&E ACCOUNTS TO EIA CATEGORIES (Cont'd)

PROCUREMENT			RDT&E			EIA CATEGORIES													
NAVY APPN						AIRCRAFT		MISSILES		SPACE		SHIPS		ORDNANCE & WEAPONS		VEHICLES		E & C		OTHER	
						PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E
1506N	AIRCRAFT PROCUREMENT	1319N	RDT&E			1506N (all)	06XX2XXN plus Op Sys Devel		06XX3XXN plus Op Sys Devel	-0-	-0-		06XX5XXN plus Op Sys Devel		06XX6XXN plus Op Sys Devel		06XX6XXN plus Op Sys Devel		selective		06XX1XXN 06XX0XXN selective
BA	01 Combat Aircraft	BA	01 Technology Base																		
	02 Airlift Aircraft		02 Advanced Tech. Dev.																		
	03 Trainer Aircraft		03 Strategic Programs																		
	04 Other Aircraft		04 Tactical Programs																		
	05 Mod. of Aircraft		05 Intelligence & Comm.																		
	06 Aircraft Spares		06 Defense-Wide Support																		
	07 Aircraft Support Equip./Fac.																				
1507N	WEAPONS PROCUREMENT							1507N						1507N							
BA	01 Ballistic Missiles							BA01						BA03							
	02 Other Missiles							BA02						BA04							
	03 Torpedoes & Related Equipment													BA05							
	04 Other Weapons																				
	05 Spares & Repair Parts																				
1611N	SHIPBUILDING & CONVERSION											1611N (all)									
BA	01 Fleet Ballistic Missile Ships																				
	02 Other Warships																				
	03 Amphibious Ships																				
	04 Mine Warfare & Patrol Ships																				
	05 Auxiliaries, Craft & PY Prog Costs																				
1810N	OTHER PROCUREMENT											1810N		1810N				1810N		1810N	
BA	01 Ships Support Equipment											BA01		BA03(partial)				BA02		BA03(partial)	
	02 Communications & Electronics Equip.													BA04						BA05	
	03 Aviation Support Equipment																			BA06	
	04 Ordnance Support Equipment																			BA07	
	05 Civil Engineering Support Equipment																			BA08	
	06 Supply Support Eq2uipment																				
	07 Personnel & Command Support Equip.																				
	08 Spares & Repair Parts																				
1109N	PROCUREMENT MARINE CORPS							1109N						1109N		1109N		1109N		1109N	
BA	01 Ammunition							BA03						BA01		BA02(partial)		BA04		BA06(partial)	
	02 Weapons & Combat Vehicles													BA02(partial)		BA05				BA07	
	03 Guided Missiles & Equipment															BA06(partial)				BA08	
	04 Communications & Electronics Equip.																				
	05 Support Vehicles																				
	06 Engineer & Other Equipment																				
	07 Spares & Repair Parts																				
	08 Defense-Wide Support																				
0380N	COASTAL DEFENSE AUGMENTATION																			0385N (all)	
BA	01 Coast Guard Support																				

Viewgraph #101

Table 6 AIR FORCE AND AGENCIES — ALLOCATION OF PROCUREMENT AND RDT&E ACCOUNTS TO EIA CATEGORIES (Cont'd)

PROCUREMENT		RDT&E		EIA CATEGORIES															
				AIRCRAFT		MISSILES		SPACE		SHIPS		ORDNANCE & WEAPONS		VEHICLES		E & C		OTHER	
AIR FORCE				PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E	PROC.	RDT&E
APPN		APPN		3010F (all)	06XX2XXF plus Op Sys Devel		06XX3XXF plus Op Sys Devel		06XX4XXF plus Op Sys Devel	-0-	-0-		06XX6XXF plus Op Sys Devel		06XX6XXF plus Op Sys Devel		selective		06XX1XXF 06XX8XXF selective
3010F	AIRCRAFT PROCUREMENT	3600F																	
8A	01 Combat Aircraft	8A	01 Technology Base																
	02 Airlift Aircraft		02 Advanced Technology Dev.																
	03 Trainer Aircraft		03 Strategic Programs																
	04 Other Aircraft		04 Tactical Programs																
	05 Mod. of Inservice Aircraft		05 Intelligence & Comm.																
	06 Aircraft Spares & Repair Pts.		06 Defense-Wide Support																
	07 Aircraft Support Equip./Fac.																		
3020F	MISSILE PROCUREMENT					3020F		3020F											
8A	01 Ballistic Missiles					BA01		BA05											
	02 Other Missiles					BA02													
	03 Mod. of Inservice Missiles					BA03													
	04 Spares & Repair Parts					BA04													
	05 Other Support																		
3080F	OTHER PROCUREMENT											3080F		3080F		3080F		3080F	
8A	01 Munitions & Assoc. Equip.											BA01		BA02		BA03		BA04	
	02 Vehicular Equipment																		
	03 Electronics & Telecomm. Equip.																		
	04 Other Base Maint. & Support Equip.																		
AGENCIES																			
APPN		APPN																	
03000	PROCUREMENT	04000	RDT&E DEFENSE AGENCIES	partial	partial	-0-	partial	-0-	partial	-0-	-0-	-0-	partial	partial	-0-	partial	partial	partial	partial
8A	01 Major Equipment	8A	01 Technology Base																
			02 Advanced Technology Dev.																
03500	PROC. NAT'L GUARD & RESERVE EQUIP.		03 Strategic Programs																
8A	01 Reserve Equipment		04 Tactical Programs																
	02 National Guard Equipment		05 Intelligence & Comm.																
			06 Defense-Wide Support																
03600	DEFENSE PRODUCTION ACT PURCHASES																		
8A	01 Defense Prod. Act Purchases	04500	RDT&E DUSD T&E																
		8A	06 Defense-Wide Support																
03700	NATO COOP. DEFENSE PROGRAMS																		
8A	01 NATO Coop. Def. Programs	04600	RDT&E DIR. OT&E																
		8A	06 Defense-Wide Support																
03900	DEF. CHEM. DEMILITARIZATION PROGRAM																		
8A	01 Def. Chem. Demil'n. - RDT&E																		
	02 Def. Chem. Demil'n. - PROCUREMENT																		
	03 Def. Chem. Demil'n. - O&M																		

Telegraph #102

Viewgraph #103

NASA Budget Authority

Table 7

(1993 Dollars in Billions)

Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Budget Authority												
Space Station Freedom	2.1	2.1	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.8	1.7	1.7
Space Transportation	5.2	5.4	4.9	5.0	5.0	5.0	5.1	5.1	5.1	5.2	5.4	5.5
Space Science	2.6	2.8	2.8	2.8	2.8	2.8	2.8	3.0	3.1	3.2	3.2	3.3
Research & Technology	0.9	1.4	1.5	1.2	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.3
Comm., Tracking, & Data Systems	0.9	1.0	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Other	3.1	2.2	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3
Total	**14.8**	**14.9**	**14.3**	**13.9**	**13.7**	**13.6**	**13.8**	**13.9**	**14.0**	**14.3**	**14.6**	**14.9**
Percentage Change												
Space Station Freedom	4	2	0	0	-5	0	0	-5	0	-8	-2	2
Space Transportation	7	3	-9	2	0	0	2	0	0	1	4	2
Space Science	16	10	1	-3	0	0	1	7	3	3	0	3
Research & Technology	9	54	4	-19	-4	0	0	9	0	8	0	0
Comm., Tracking, & Data Systems	1	3	-13	-11	-1	0	0	0	0	3	3	3
Other	8	-29	-3	-3	-2	-2	0	0	0	5	5	3
Total	**8**	**1**	**-4**	**-3**	**-1**	**-1**	**1**	**1**	**1**	**2**	**2**	**2**
Percentage of Total												
Space Station Freedom	13.9	14.1	14.7	15.1	14.6	14.7	14.5	13.7	13.6	12.2	11.7	11.7
Space Transportation	35.4	36.2	34.3	36.0	36.4	36.6	37.0	36.7	36.4	36.0	36.7	36.6
Space Science	17.4	18.9	19.9	19.9	20.2	20.3	20.3	21.6	22.1	22.3	21.9	22.1
Research & Technology	6.3	9.6	10.3	8.6	8.3	8.4	8.3	9.0	8.9	9.4	9.2	9.0
Comm., Tracking, & Data Systems	6.3	6.4	5.8	5.3	5.3	5.3	5.3	5.3	5.2	5.2	5.3	5.3
Other	20.8	14.8	15.0	15.0	14.9	14.7	14.5	14.4	14.3	14.6	15.1	15.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Electronic Content												
Space Station Freedom	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7
Space Transportation	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6
Space Science	1.5	1.7	1.7	1.7	1.7	1.7	1.9	2.0	2.2	2.3	2.4	2.5
Research & Technology	0.2	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Comm., Tracking, & Data Systems	0.5	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Other	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Total	**4.8**	**5.1**	**4.9**	**4.8**	**4.7**	**4.8**	**4.9**	**5.1**	**5.2**	**5.4**	**5.5**	**5.7**

Viewgraph #104

Table 8

Price Deflators

TITLE	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
DOD GNP DEFLATOR ESTIMATE (3/92) 1993=100	94.0	96.4	100.0	103.8	107.8	111.9	115.6	119.8	124.2	128.9	133.9	139.2
PERCENT CHANGE	4.7	2.6	3.7	3.8	3.9	3.8	3.4	3.6	3.7	3.8	3.9	4.0
DEFENSE DEPARTMENT (BA) DEFLATORS												
MILITARY PERSONNEL	92.9	95.7	100.0	104.5	109.3	114.2	118.1	122.4	126.9	131.7	136.9	142.4
OPERATIONS & MAINTENANCE	95.3	96.6	100.0	103.9	107.9	112.1	116.0	120.1	124.6	129.3	134.3	139.7
PROCUREMENT	93.8	96.8	100.0	103.2	106.6	110.0	113.5	117.6	121.9	126.6	131.5	136.8
RDT&E	93.8	96.8	100.0	103.4	106.8	110.4	113.9	118.0	122.4	127.1	132.0	137.3
MILITARY CONSTRUCTION	93.6	96.8	100.0	103.3	106.8	110.3	114.0	118.1	122.4	127.1	132.1	137.3
FAMILY HOUSING	94.3	96.8	100.0	103.3	106.7	110.2	113.7	117.8	122.2	126.8	131.8	137.0
OTHER	93.9	96.8	100.0	103.5	106.7	110.9	114.2	118.3	122.7	127.4	132.3	137.6
TOTAL BA (051)	94.0	96.4	100.0	103.8	107.8	111.9	115.6	119.8	124.2	128.9	133.9	139.2

APPENDIX A
LIST OF ACRONYMS AND ABBREVIATIONS

Δ	Greek letter: means "change in"
#	Number
$	Dollars or Cost
%	Percent
&	and
>	Less than
<	Greater than
00	Year 2000
01	Year 2001
050	National Security Function in U.S. Government Federal Budget
051	DoD Portion of National Security Function of Federal Budget
3-D	Three Dimensional
3d	Third (as in Third World)
5000.1/.2	DoD Directive 5000.1 & DoD Instruction 5000.2 on System Acquisition
6.1	Basic Research
6.2	Exploratory Research
6.3	Advanced Development
6.3A	"Non System" Advanced Development
6.3B	Demonstration/Validation of a DAB Program (prior Milestone II)
91	1991
91 R	1991 President's Budget Request
92	1992
97	1997
99	1999
=	equal
@	at
A	Army
A&E	Architecture and Engineering
A-6	Presently-operational Aircraft Carrier-Based Navy, Long-Range, Medium/Heavy Attack Aircraft (A-X is planned A-6 replacement)
A-10	Specialized Air Force Close Air Support Aircraft
A-12	Navy's Low-observables Advanced Tactical Aircraft
A-7	Formerly Navy and Air Force first-line short-range strike and close Air Support Aircraft
A-7F	Advanced version of Air Force A-7D
A-X	Next-generation Navy medium attack aircraft to replace A-6E and canceled A-12
A/C, a/c	Aircraft
A/O, AO	Action Officer
AAA	Advanced Amphibious Assault (USMC Vehicle) (formerly AAAV)
AAAM	Advanced Air-to-Air Missile (follow on to ALM-54)
AAAV	Advanced Amphibious Assault Vehicle
AAED	Advanced Airborne Expendable Decoy (A2ED)
AAM	Air-to-Air Missile
AAMS	Air Attack Mobility System (future UAV)
AARS	Advanced Airborne Radar System
AAS	Advanced Automation Systems
AAV/IM	Autonomous Aerial Vehicle/Intelligent Munition
AAV7	Amphibious Assault Vehicle (USMC)
AAW	Anti-Air Warfare
AAWS-H	Advanced Anti-tank Weapon System-Heavy
AAWS-M	Advanced Anti-tank Weapon System-Medium

AAWWS	Advanced All-Weather Weapon System
ABF	Advanced Bomb Family (Navy development to replace MK 80 series of bombs)
ABM	Anti-Ballistic Missile
ABN	Airborne
ABT	Air Breathing Threat
AC-130	Gunship Version of Air Force C-130 turboprop Medium-Lift Transport
ACA	Advanced Cargo Aircraft
ACAT	Acquisition Category
ACCS	Army Command and Control System (tactical)
ACDA	Arms Control and Disarmament Agency
ACDS	Advanced Combat Direction System (AEGIS)
ACE	Allied Command Europe
ACES	U.S. Equivalent of the Israeli Arrow Program
uACF	Area Control Facility
ACM	Advanced Cruise Missile
ACRV	Assured Crew Return Vehicle (NASA)
ACS	Afloat Correlation System (Navy)
ACS	Airborne Common Sensor
ACSAS	Advanced Conformal Submarine Acoustic Sensor
ACTS	Advanced Communications Technology Satellite (NASA)
AD	Armament Division of the Air Force
AD	Advanced Development
AD/EXJAM	Air Defense Expendable Jammer
Ada	Standard DoD High Order Language
ADAM	Area Denial Artillery Munition
ADARS	Air Deployable Active Receiver System
ADATS	Forward Area Air Defense Line-of-Sight Heavy System
ADCAP	Advanced Capability (EA-6B upgrades)
ADCATT	Air Defense Combined Arms Tactical Trainer
ADDS	Automated Data Distribution System
ADI	Air Defense Initiative
ADISC(2)	Air Defense Initiative Simulation for Command and Control
ADP	Automated Data Processing
ADS	Airborne Detection System
Adv	Advanced
ADVCAP	Advanced Capability
AEGIS	Navy Anti-Air Warfare Weapon System
AERO	EOS Atmospheric Aerosols Satellite (NASA)
AEW	Airborne Early Warning
AEW&C	Airborne Early Warning and Control
AF	Air Force
AF ATA	Air Force version of Navy A-12 Advanced Tactical Aircraft
AF-PGW	Adverse-Weather/All-Weather Precision-Guided Weapon
AFAS	Advanced Field Artillery System (part of Army HFM/ASM program)
AFB	Air Force Base
AFCENT	Allied Forces, Central Europe (NATO)
AFMC ADP	Air Force Materiel Command Automated Data Processing
AFNET	Air Force Network
AFOTEC	Air Force Operational Test & Evaluation Command
AFSC	Air Force Systems Command
AFV	Armored Family of Vehicles
AGM-130	Rocket-powered stand-off version of GBU-15 E/O guided glide bomb
AGS	Armored Gun System (latest version, a part of Army HFM/ASM program
AGVT	Advanced Ground Vehicle Technology
AH-64	Army Apache Helicopter

AH-66 LONGBOW	Comanche Helicopter with Fire and Forget HELLFIRE Capability
AHIP	Army Helicopter Improvement Program (OH-58D)
AHPS	Advanced Helicopter Pilotage System
AI	Artificial Intelligence
AIC	Army Intelligence Center
AIEWS	Advanced Integrated EW Systems
AIM	Airborne Intercept Missile
AIM (-7,-9,-54 & -120)	Air Intercept Missiles (-7 SPARROW, -9 SIDEWINDER, -54 PHOENIX, and-120 AMRAAM)
AIP	Air-Independent Propulsion (for submarines)
AIR DEF	Air Defense
AIRCMM	Airborne Countermeasures (Electronic Combat)
AIS	Automated Information Systems
AIWS	Advanced Interdiction Weapon System
AJ	Antijam
aka	also known as
AKEM/HVM	Advanced Kinetic Energy Missile/Hypervelocity Missile
ALARM	British Aerospace Anti Radiation Missile
ALBM	Air Land Battle Management (DARPA program)
ALCM	Air-Launched Cruise Missile
ALFS	Advanced Low Frequency System (dipping SONAR)
ALICAT	Advanced Long Wavelength IR Circuit Array Technology
ALMV	Air Launched Miniature Vehicle
ALPS	Accidental Launch Protection System
ALPS/LPS	Accidental Launch Protection System/Launch Protection System
ALR-56C	Radar Warning Receiver (F-15)
ALS	Advanced Launch System
ALSP	French Air-to-Surface Missile Prototype
ALT	EOS Ocean Circulation and DCE Sheet Mass Balance Satellite (NASA)
ALV	Air Launched Vehicle
AMASS	Airport Movement Area Safety System
AMBER	Code name for Unmanned Aerial Vehicle (DARPA)
AMC	Army Material Command
AMCCOM	Armament, Munitions and Chemical Command (Army)
AMDAS	Airborne Shallow Water Mine Detector
AMDS	Advanced Mine Detection System
AMLCD	Active Matrix Liquid Crystal Display
AMNS	Advanced Mine Neutroligation Experiment
AMPHIB	Amphibious
AMPS	Automated Mission Planning System for Army Aviation
AMRAAM	Advanced Medium Range Air-to-Air Missile (AIM-120)
AMS-H	Advanced Missile System-Heavy
AMSS	Advanced Multi-Mission Sensor System
AMV	Armored Maintenance Vehicle
ANCC	Advanced Network Control Center (NASA)
ANG	Air National Guard
AO	Attack Operations
AOE Ship	Navy Support Ship
APC	Armored Personnel Carrier
APGM	Advanced Precision Guided Munition (155mm)
APL/JHU	Applied Physics Laboratory/Johns Hopkins University
APL/PSU	Applied Physics Laboratory/Penn State University
APL/UW	Applied Physics Laboratory/University of Washington
AQUILA	Army Remotely Piloted Vehicle (program terminated)
AQS-20	Airborne Mine Acoustic Mine Detection System
ARDEC	Armament Research Development and Engineering Command (Army)

ARDS	Airborne Radar Demo System
ARH/HOJ	Active Radar Homing/Home-On Jam
ARIADNE	An Underwater Surveillance System (DARPA/Navy Project)
ARIANE	French Commercial Launch Booster
ARISTOTELES	Applications and Research Involving Space Technologies Observing the Earth's Field from Low Earth Orbiting Satellite (NASA)
ARM	Anti-Radiation Missile
ARNET	Army - Avionics part of SIMNET
Arrow	Israeli TMD program
ARS	Advanced Rocket System
ARSP	Airborne Reconnaissance Support Program
ARTCC	Air Route Traffic Control Center
ARTEMIS	Common Lunar Lander and Rover (NASA)
Artemis	Air Force Program to develop and demonstrate capability to deliver conventional weapons against time-critical fixed and mobile targets with precision
ARTS	Automated Remote Tracking System
ASAM	Advanced Ship-to-Air Missile
ASARS	Advanced Synthetic Aperature Radar System
ASAS	All Source Analysis System (Army)
ASAS-X	All Source Analysis System Objective System
ASAT	Anti-Satellite
ASCM	Advanced Space Computing Module
ASD	Aeronautical Systems Division (Air Force)
ASD	Assistant Secretary of Defense
ASE	Aircraft Survivability Equipment
ASEAN	Association of South East Asia Nations
ASEMA	Advanced Special Electronic Mission Aircraft
ASLCM	Advanced Sea Launched Cruise Missile (aka EXCALIBUR)
ASLP	Conceptual French Theater Nuclear Weapon
ASM	Armored Systems Modernization (Army) (was HFM)
ASM	Air-to-Surface Missile
ASMS	Advanced Strategic Missile System (technology program)
ASOC	Acoustical Signal Processor Common Operational Software
ASOC	Air Support Operations Center
ASPJ	Airborne Self-Protection Jammer (ALQ-165)
ASR	Advanced Special Receiver (ALR-67)
ASRAAM	Advanced Short Range Air-to-Air Missile (NATO joint follow-on to AIM-9 SI SIDEWINDER AAM)
ASRM	Advanced Solid Rocket Motor
ASTE	Advanced Strategic & Tactical Expendible
ASTEC	Advanced Satellite Technologies and EMF Communications
ASTOR	Airborne Standoff Radar
ASTOVL	Advanced Short Takeoff, Vertical Land Aircraft
ASTP	Advanced Submarine Technology Program
ASTS	Advanced Surveillance and Tracking System
ASTT	Advanced Surveillance Tracking Technology
ASW	Anti-Submarine Warfare
ASW/SOW	Anti-Submarine Warfare/Standoff Weapon
ASWOC	ASW Operations Center
ASWS	Advanced Strike Weapon System
AT	Anti-Tank
AT4	Light Multipurpose Weapon
ATA	Advanced Tactical Aircraft (aka A-12 Navy)
ATACC	Advanced Tactical Air Command Center
ATACMS	Army Tactical Missile System

ATAM	Air-to-Air Missile
ATARS	Advanced Tactical Airborne Reconaissance System
ATAS	Air-to-Air Stinger
ATB	Advanced Technology Bomber (aka B-2)
ATBM	Anti-Tactical Ballistic Missile
ATC	Air Traffic Control
ATCCS	Army Tactical Command and Control System
ATD	Advanced Technology Demonstration
ATDRSS	Advanced Tracking and Data Relay Satellite System (NASA)
ATE	Automatic Test Equipment
ATF	Advanced Tactical Fighter (Air Force's next generation air superiority fighter to replace F-15)
ATIRCM	Advanced Tactical IRCM
ATIS	Advanced Traveler Information Systems
ATLANTCOM (LANTCOM)	Atlantic Command (U.S. Unified Command)
ATM	Anti-Tactical Missile
ATMS	Advanced Traffic Management System
ATNAVICS	Air Traffic Navigation and Communications System
ATP	Acquisition, Tracking & Pointing (Strategic)
ATP	Advanced Tactical Patriot (BMD)
ATR	Automatic (or Aided) Target Recognition
ATRJ	Advanced Tactical Radar Jammer
ATRS	Automatic Tactical Radar System
ATS	Advanced Tactical Support (Navy aircraft concept to replace S-3, E-2, EA-6, perhaps KA-6)
ATSSB	Advanced Technology Standard Satellite Bus
ATTD	Advanced Technology Transition Demonstrator (Army)
ATTU	Atlantic to the Urals
AU	Major Avionics Upgrade
Auton	Autonomous
AV-8B	USMC's VSTOL attack aircraft ("Harrier")
AVCATT	Air or Avionics Combat Arms Tactical Trainer
AVCS	Advanced Vehicle Control Systems
AVP	Acoustic Video Processor
AVR	Aviation Rescue Vessel
AVSCOM	Aviation Systems Command (Army)
AVTA	Armored Vehicle Technology Associate
AW	(Tactical) Air Warfare
AWACS	USAF E-3A Airborne Warning and Control System
AWACS/RSIP	Airborne Warning and Control System/Radar Sensitivity Improvement Program
AW-PGW	Adverse-Weather/All Weather Precision Guided Weapon
AWS	Advanced Warning System
AXAF	Advanced X-Ray Astrophysics Facility (NASA)
B	Billion (as in dollars)
B-1	Strategic Bomber (B-1B is operational with USAF)
B-2	Stealth Bomber, Advanced Technology Bomber (ATB)
B-52	Strategic Bomber, 30 years old
BA	Budget Authority
BAA	Broad Area Announcement
BAI	Battlefield Air Interdiction
BAT	Brilliant submunition
BDA	Battle or Bomb Damage Assessment
BDM	Bunker Defeat Munition
BE	Brilliant Eyes (SDI)

BE	Belgium
BF	Budget Function: A system used by the OMB to categorize (20 categories) Federal Spending
BFA	Battlefield Functional Area
BFV	Bradley Fighting Vehicle (M2)
BGPHES	Battle Group Passive Horizon Extension System
BGV	Boost Glide Vehicle
BICES	Battlefield Information and Exploitation System
BIF	Battlefield Identification, Friend System
BIL	Billion
BILL	Swedish anti-tank weapon (RBS-56)
BIM	Ballistic Intercept Missile
BIS	Board of Inspection and Survey
BL	Baseline
"Black"	A program or programs that are classified under a special access
Blivet	"Ten pounds in a 5-lb pail"
Blk	Block
BLU-108	Submunition Payload Candidate for JDAM
BLU-97	Submunition Payload Candidate for JSOW
BM	Battle Management
BM	Ballistic Missile
BM/C3	Battle Management/Command, Control and Communications
BMD	Ballistic Missile Defense
BMDS	Buried Mine Detection System
BMEWS	Ballistic Missile Early Warning System
BMO	Ballistic Missile Office (now part of AF Space Systems Division)
BP	Brilliant Pebbles (element of SDI program)
BPI	Boost-Phase Intercept
BQM-147A	Ex Drone (proposed for UAV missions)
BRITE	Basic Research in Industrial Technologies for Europe
BSTS	Boost Surveillance and Tracking System
BSY-1	Submarine ASW Combat Systems for SSN-688 class
BSY-2	Submarine Combat System for SSN-21
BTI	Balanced Technology Initiative
BVR	Beyond Visual Range
C(2)	Command and Control
C(2)I	Command, Control and Intelligence
C(3)	Command, Control and Communications
C(3)I	Command, Control, Communications and Intelligence
C(4)	Command, Control, Communications and Computers
C(4)I	C4/Information Systems
C++	An advanced version of the "C" compuer programming language
C-17	AF next-generation medium/Heavy-Lift Transport Aircraft
C-141	Presently-operational Air Force Lon-Haul Airlift Aircraft. Planned to be replaced by the C-17
C-4	Version of TRIDENT Missile Prior to D-5
C-5	USAF Heavy-lift Transport Aircraft
C-XX	Follow-on to C-5, or perhaps a light transport
C2V	Command Control Vehicle
C/MH-53	Special Operations Forces Version of H-53 Helicopter
CAAD	Corps Area Air Defense
CAD/CAM	Computer Aided Design/Computer Aided Manufacturing
CAI	Combined Arms Initiative
CALO	Contingency Action Limited Objectives
CALOW	CALO Warfare

CALS	Computer Aided Logistics Support
CALS/TIMS	Computer Aided Logistics Support/Technical Info Management System
CAM	Chemical Agent Monitor
CAMEO	Collaboration on Advanced Multispectral Earth Observation
CAMMS	Combined Arms Multi-Mission System (Stinger follow-on)
CAPS	Computer-Aided Paperless System
CARG	Compounded Annual Real Growth
CART	Conventional Arms Reduction Treaty
CAS	Close Air Support
CAS-X	New Close Air Support Aircraft to follow A-10, A-16
CASE	Computer Assisted Software Engineering
Cassini	System Exploration Satellite
CATFAE	Catapult-Launched Fuel Air Explosive
CAX	Computer Aided Exercise
CB	Counter Battery or Chemical Biological
CBG	(Aircraft)-Carrier Battle Group (also CVBG)
CBO	Congressional Budget Office
CBT	Combat
CCD	Cover, Concealment and Deception
CCIS	Command and Control Information Systems
CCS	Combat Control System
CCT	Clean Coal Technology
CCTT	Close Combat Tactical Trainer (Army)
CD	Concept Definition
CDAA	Circular Disposed Array Antenna
CDI	Conventional Defense Initiative
CECOM	Communications Electronics Systems Command (Army)
CENTCOM	Central Command (U.S. Unified Command)
CENTURION	A possible lower-cost follow-on to SSN-21 class submarine
CET	Computers and Electronic Technology
CEWI	Communications Electronic Warfare Intelligence
CFE	Conventional Forces in Europe
CGS	Common Ground Station
CH-47D	Chinook Helicpter
CH-53	USMC's Heavy Lift Helicopter
CHAALS	Communications High Accuracy Airborne Location System (Army)
CHEM	EOS Atmospheric Chemical Species and Ocean Surface Stress Satellite (NASA)
CHS	Common Hardware and Software (part of Army C2 System)
CIA	Central Intelligence Agency
CICA	Competition in Contracting Act
CILOP	Conversion in lieu of Procurement
CIM	Corporate Information Management
CINC	Commander-in-Chief (Unified or Specified Command)
CINCSOC	CINC Special Operations Command
CINCSPACE	CINC Space
CIP	Capital Investment Plan
CIS	Commonwealth of Independent States
CITV	Commanders Independent Thermal Viewer
CIWS	Close In Weapons System (Phalanx)
CLO	Counter low observables
CM	Countermeasure
CM	Countermines
CMCA	Cruise Missile Carrier Aircraft (concept for transport-type aircraft to carry cruise missiles for stand-off launch)
CMRL	Corporate Management Research Lab (Army)

CMT	Critical Mobile Targets
CMU	Cheyenne Mountain Upgrade
CMV	Combat Mobility Vehicle
CN	Counter Narcotics
CNA	Center for Naval Analysis
CNO	Chief of Naval Operations
CNR	Combat Net Radio
CO	Contracting Officer
COC	Council on Competitiveness
COCOM	Coordinating Committee for Multilateral Export Controls
COEA	Cost and Operational Effectiveness Analysis
COLOR	EOS Oceanic Biomass and Productivity Satellite (NASA)
COMINT	Communications Intelligence
COMM	Communications
COMNET	Communications Network
COMPLAW	Comprehensive Law Enforcement Capabilities Improvement
COMSEC	Communications Security
CONAD	Continental Air Defense
CONUS	Continental United States
COOP	Cooperative
Copernicus	Navy's C3 Architecture
Copperhead	Army Laser-guided cannon-launched guided projectile
CORPSAM	Hawk Replacement (Proposed Army Air Defense System)
COTF	Commander Operational Test & Evaluation Force (Navy)
COTS	Commercial-off-the-Shelf
CPALS	Protection Against Limited Strikes vs CONUS
CRADA	Cooperative Research and Development Agreement
CRAF	Comet Rendezvous Asteroid Fly-by (NASA)
CRIT	Critical
CROESUS	Navy plan for Copernicus
CRT	Cathode Ray Tube
CS	Combat Support
CSBM	Confidence and Security Building Measures
CSCE	Conference on Security and Cooperation in Europe
CSOC	Consolidated Space Operations Center
CSS	Communications Support System
CSSCS	Combat Service Support Computer System (Army)
CST	Conventional Stability Talks
CTAPS	Contingency TACS (Theater Air Control System) Automated Planning System
Ctr	Counter
Ctrs	Centers
CV	Aircraft Carrier
CV-22	Version of V-22 for Special Operations Forces (SOF)
CVBG	Aircraft Carrier Battle Group (also CBG)
CVC(2)	Combat Vehicle Command and Control
CVN	Aircraft Carrier (Nuclear Powered
CVO	Commercial Vehicle Operations
CVP	Combat Vehicle Protection
CVR	Cockpit Voice Recorder
CW	Chemical Warfare
CY	Calendar Year
CZI	Centralny Zargal Inzynierii/Central Board of Engineering
D-5	Sea-launched ballistic missile for Trident submarines
D-5.5	Potential new missile program to follow D-5

D-6	Potential new missile program to follow D-5
D.C.	District of Columbia
DA	Defense Agencies
DAACM	Direct Airfield Attack Combined Munition
DAB	Defense Acquistion Board
DAES	Defense Acquisition Executive Summaries
DARPA	Defense Advanced Research Projects Agency
DAZER	Infantry Man-Portable EOCM System
DBOF	Defense Business Operations Fund
DCA	Dual-Capable Aircraft (Conventional & Nuclear)
DCA	Defense Communications Agency
DCIS	DECA Commissary Information Systems
DCMAO	Defense Contracting Military Assistance Office
DCMC	Defense Contract Management Command
DCT	Desktop Computer Terminal
DDG	Guided Missile Destroyer
DDG-51	Arleigh Burke class destroyer
DDN	Defense Data Network
DDV	Destroyer Variant (to DDG-51 class)
DE	Directed energy
DEA	Drug Enforcement Agency
DEADEYE	Navy 5" ship-launched projectile similar to Copperhead
DECM	Defensive (or Deception) Countermeasures (EC)
DEF SUPR	Defense Suppression
DEF-WIDE	Defense-Wide
DEMO	Demonstration
DEM/VAL	Demonstration/Validation Phase
Dept	Department
DESKTOP IV, V	Air Force Personnel Computer Contract
DEW	Directed Energy Weapon
DFAC	Defense Finance & Accounting Center
D-GBR	Developmental Ground-Based Radar
DGPS	Differential Global Positioning System
DIRCM	Directional IRCM
DISA	Defense Information Systems Agency (was DCA)
DISN	Defense Information Systems Network
Div	Division
DL	Data Link
DLA	Defense Logistics Agency
DMA	Defense Mapping Agency
DMR	Defense Management Review
DMS	Data Manipulation System (for TR-1)
DMS	Defense Meteorological Satellite Program (DoD)
DMSI	Defense Modeling & Simulation Initiative
DMSO	Defense Modeling & Simulation Office
DMSP	Defense Message System Program
DNA	Defense Nuclear Agency
DOC	Department of Commerce
DoD	Department of Defense
DOE	Department of Energy
DoJ	Department of Justice
DoT	Department of Transportation
DOT&E	Director, Operational Test and Evaluation (DoD)
DRB	Defense Resources Board
DRFM	Digital Radio Frequency Memory
DS/S	Desert Storm/Desert Shield

DSAA	Defense Security Assistance Agency
DSARC	Defense Systems Acquisition Review Council (now DAB)
DSB	Defense Science Board
DSCS	Defense Satellite Communications System
DSN	Deep Space Network (NASA)
DSP	Defense Support Program
DSSR	Deep Space Surveillance Radar
DST	Defense and Space Talks
DSTAR	Defense Strategic and Tactical Array Reproducibility (Infrared Focal Plane Array Producibility -- FPA Manufacturing)
DSTS	Deep Space Tracking System
DSV	Defense Suppression Vehicle
DTBM	Depressed Trajectory Ballistic Missile
DTRC	David Taylor Research Center
DVG	Direct-Vision Goggles
E&C	Electronics and Communications
E(2)I	Endo-Exo Atmospheric Interceptor (part of SDI)
E-2C	Navy's Carrier-based AEW&C aircraft (latest version)
E-X	Advanced Electronic Combat aircraft, perhaps carrying HPM
e.g.	For example
ea	Each
EADTB	Extended Air Defense Test Bed
EC	European Community
EC	Electronic Combat
ECM	Electronic Countermeasures
ECM/EOCM	Electronic Countermeasures/Electro-Optical Countermeasures
ECPs	Engineering Change Proposals
EDM	Engineering Development Model
EDMIS	Engineering Drawing Management Information Systems
EDO	Extended Duration Orbiter (NASA)
EEC	European Economic Community
EFA	European Fighter Aircraft
EFM	Enhanced Fighter Maneuverability (DARPA X-31 program)
EFS	Enhanced (Pilot) Screening Systems (light training aircraft)
EFTA	European Free Trade Association
EHF	Extremely High Frequency
EIA	Electronic Industries Association
EL	Electroluminescent
ELBS	Extended Line Barrier System
ELINT	Electronic Intelligence
ELV	Expendible Launch Vehicle
EM	Electromagnetic
EMC	Electromagnetic Compatibility
EMD	Engineering and Manufacturing Development Phase of a program, formerly FSD
EMDG	Euromissile Dynamics Group
EMF	Electro-Magnetic Force (Guns)
EMI	Electromagnetic Interference
EMP	Electro-Magnetic Pulse
EMSP	Enhanced Modular Signal Processor (aka UYS-2)
ENVIR	Environment
EO, E/O	Electro-Optical
EO-IR	Electro-Optical/Infrared
EOCM	Electro-Optical Countermeasures
EOS	Earth Observation System (NASA)

EOS "B/N"	EOS "Broken Into" (NASA)
EOS -A, -B	EOS with different sets of instrumentation (NASA)
EOS DIS	EOS Data Information System (NASA)
EPA	Environmental Protection Agency
EPFA	European Free Trade Association
EPLRS	Enhanced Position Location Reporting System (Army)
EPW	Earth Penetrating Weapon
ER	Environmental Restoration
ER AMRAAM	Extended Range Advanced Medium Range Air-to-Air Missile
ERAPS	Expendable Reliable Acoustic Path System
ERINT	Extended Range Interceptor
ERIS	Exoatmospheric Re-entry Intercept Vehicle
ESAM	Evolutionary (or Enhanced) Surface-to-Air Missile
ESD	Electronic Systems Division (Air Force)
ESM	Electronic Wartime Support Measures
ESPRIT	European Strategic Program for R&D in Information Technologies
EST	Estimated
ET/EM	Electro Thermal/Electro Magnetic
ETAS	Elevated Target Acquisition Sensor
ETO	Earth to Orbit (NASA)
EUCLID	A European Technology Consortium
EUCOM	European Command (U.S. Unified Command)
EURAM	European Research in Advanced Materials
EW	Electronic Warfare
EWCM	Electronic Warfare Command Module
EWS	Early Warning System
EXCIMER	Short Wavelength Laser
EXCOM	Executive Committee
EXJAM	Expendable Jammer (AD: Artillery Delivered; HE: Hand Emplaced)
F&F, F/F	Fire and Forget
F(3)	Form, Fit, and Function
F-14	Navy's First-line Air Defense Fighter Aircraft
F-14D+	Further improved F-14D; latest version of F-14
F-15	Air Force's First-line Air Superiority Fighter
F-16	Air Force Multi-role "lightweight" Fighter Aircraft
F-18	Navy/Marine Corps Multi-role "lightweight" Fighter
F/O	Follow-on
FAA	Federal Aviation Administration
FAAD	Forward Area Air Defense (Army)
FAAD C2	Forward Area Air Defense Command and Control System
FAAD/ADATS	Forward Area Air Defense/Air Defense Anti-Tank System
FAAD/PMS	Forward Area Air Defense/Pedestal Mounted Stinger
FAASV	Field Artillery Ammunition Support Vehicle
FAAV	Future Attack Aerial Vehicle (Army)
FAD	Fleet Air Defense
FARR	Strategic warning system
FARRP	Forward Area Refueling and Re-supply Point
FARV	Future Ammunition Re-Supply Vehicle (part of Army HFM/ASM program)
FBI	Federal Bureau of Investigation
FCST	Forecast
FDR	Federal Data Recorder
FDS	Fixed Distributed System (Navy)
FEL	Free Electron Laser
FERC	Federal Energy Regulatory Commission

FET	Field Effect Transistor
FEWS	Follow-on Early Warning Systems
FEWSG	Fleet Electronics Warfare Support Group
FFID	Friendly Force Identification
FFRDC	Federally-Funded Research and Development Center
FFX	Future Frigate
FHWA	Federal Highway Adminstration
FIFV	Future Infantry Fighting Vehicle (part of Army HFM/ASM program)
FIREMAN	Fire Support and Maneuver Control System (USMC)
FIS	Federal Information Systems
FLIR	Forward Looking Infrared
FLOT	Forward Line of Troops
FLV	Family of Launch Vehicles
FMS	Foreign Military Sales
FO	Fiber Optics
FOFA	Follow-on Forces Attack
FOG-M	Fiber-Optic Guided Missile
FOG-S	Fiber-Optic Guided Skipper (Navy air-to-surface missile)
FOIA	Freedom of Information Act
FOTARS	Follow-on Tactical Airborne Reconnaissance System
FOTL	Follow-on to LANCE missile
FOTS	Follow-on to Stinger
FPA	Focal Plane Array
FPDC	Federal Procurement Data Center
FR	France
FRA	Federal Railroad Administration
FRG	Federal Republic of Germany
FSAF	Future Surface to Air Missile Family (Europe)
FSD	Full Scale Development
FSED	Full Scale Engineering Development
FSV	Future Support Vehicle
FSX	Fighter aircraft being developed for Japanese Air Force
ft3	cubic foot
FTI	Fixed Target Indicator
FTS	Flight Telerobotic Servicer (NASA)
FW	Fixed Wing
FWD, Fwd	Forward
FY	Fiscal Year
FYDP	Five-Year Defense Plan (now 6-year plan in DoD)
FYP	Five-Year Plan (USSR)
GaAs	Gallium Arsenide
GaAs MIMIC	Gallium Arsenide Monolithic Millimeter Wave Integrated Circuits
GAO	General Accounting Office
GATERS	Ground Air Teleoperated Robotic System
GBI	Ground Based Interceptor Missile
GBL	Ground Based Laser
GBR	Ground Based Radar
GBS	Ground Based Sensor
GDP	Gross Domestic Product
GEMSS	Ground Emplaced Mine Scattering System
GEN-X	Generic Expendible
Gen.	General (military rank)
GL Hellfire	Ground Launched Hellfire
GLLD	Ground Laser Location and Detection Office
GNP	Gross National Product

GNSS	Global Navigation Satellite Service
GOCO	Government-owned, Contractor-operated
GOES	Geostationary Operational Environmental Satellite
GPALS	Global Protection Against Limited Strike
GPF	General Purpose Forces
GPS	Global Positioning System (also called NAVSTAR)
GR, IGRV	Improved Guardrail (V)
GR/CS	Guardrail/Common Sensor
GRANITE SENTRY	nee' NORAD Command and Control System (NCCS)
Gravity Probe "B"	Program to test Relativity Theory (NASA)
Gray	Systems not built by Soviets, belonging to possible threats
GRH, G-R-H	Gramm-Rudman-Hollings Balanced Budget Act
GRISLEY HUNTER	Manned Aircraft with FLIR in Support of Low Intensity Conflict
GRO	Gamma Ray Observatory (NASA)
GSA	General Services Administration
GSTS	Ground Surveillance and Tracking System (aka Long Wavelength Infrared Probe)
GV	Ground Vehicle
GWEN	Ground Wave Emergency Network
H-53	Heavy Lift Helicopter (USMC)
H-60	Army's Utility Tactical Transport Rotorcraft
HAC	House Appropriations Committee
HAC/PAH-2	French/FRG common anti-tank helicopter under development
HALE	High Altitude Long Endurance (unmanned aerial vehicle)
HARM (LCS)	High Speed Anti-Radiation Missile (Low Cost Seeker)
Harpoon	Radar-guided Anti-ship ASM
HASC	House Armed Services Committee
HATMD	High Altitude Tactical Missile Defense
Have Nap	Israeli-designed Command-Guided ASM
HBR	House Budget Resolution
HCST	High-Speed Commercial Transport
HDTV	High Definition Television
HEAVY ICBM	Soviet SS-18 ICBM
HEDI	High Endo-atmospheric Defense Intercept
Hellfire	Army Anti-tank Weapon
helos	Helicopters
HEP	High Energy Physics
HERT	Headquarters Emergency Relocation Team (Strategic Air Command)
HFAJ	High Frequency Anti-Jam
HFM	Army Heavy (armored) Force Modernization program (now ASM)
HGA	High Gain Array Sonobuoy System
HGP	Human Genome Program
HGV	Hypersonic Glide Vehicle
HHS	Health and Human Services
High Gain	Acoustic Sensor (ASW)
Hill	Slang for the U.S. Congress
HIMAD	High and Medium-altitude Air Defense
HIP	Howitzer Improvement Program (Army)
HLA	Horizontal Line Array Sonobuoy
HMD	Helmet Mounted Display
HML	Hardened Mobile Launcher (for small ICBM)
HMMWV	High Mobility Multipurpose Wheeled Vehicle
HMS	Helmet Mounted Sight
HMX	Next-generation Medium Lift Helicopter (V-22 was to fill this need) (called MLR)

HOL	Higher Order (computer) Language
HOMS	Hellfire Optimized Missile System
HP	High-performance
HPM	High-Power Microwave
HSCT	High-speed Commercial Transport
HST	Hubble Space Telescope (NASA)
HUD	Head-Up Display
HUD	Department of Housing and Urban Development
HVM	Hypervelocity Missile
HVY	Heavy
I&C	Intelligence and Communcations
I&W	Indications and Warning
I(2)EU	ICBM Integrated Electronic Upgrade
I(2)R	Imaging Infrared (seeker)
I-CAS	Improved-CAS
I-CASE	Integrated Computer Aided Software Engineering
IAU	International Accounting Unit
ICBM	Intercontinental Ballistic Missile
ICCM	Intercontinental Cruise Missile
ICE	Independent Cost Estimate
ICNIA	Integrated Communication, Navigation and Identification Avionics
ICP II	Inventory Control Point II
ICS/SCAN	Integrated Communications System/Shipboard Communication Area Network)
ID	Identification
IDAP	Integrated Defense Avionics Program
IDAS	Integrated Defensive Avionics System
IEM	Integrated Electronic Mast
IEPG	Independent European Program Group
IEW	Intelligence Electronic Warfare
IEWCSS	Integrated Electonic Warfare Common Sensor System
IFF	Identification Friend or Foe
IFFN	Identification Friend, Foe or Neutral
IFOF	Interdiction of Follow-on Forces
IFTE	Intermediate Forward Test Equipment
IFV	Infantry Fighting Vehicle (M3)
IG	Inspector General
IHFR	Improved High Frequency Radio
IIR	Imagin Infra-Red
IMINT	Imagery Intelligence
IMIP	Industrial Modernization Incentives Program
IMU	Inerial Measurement Unit
INEWS	Integrated Electronic Warfare System
INF	Intermediate Range Nuclear Forces
INFOSEC	Information Security
INS	Immigration and Naturalization Service
INT	Intelligence
INTEG	Integration or Integrated
INTEL	Intelligence
INTNL	Internation
IOC	Initial Operational Capability
IPF	Improved Processing Facilities
IPG	Internal Planning Group
IPL	Integrated Priority List
IPPD	Integrated Process and Product Development

IR	Infrared
IR&D, IRAD	Independent Research and Development
IRBM	Intermediate Range Ballistic Missile
IRCM	IR Countermeasures
IRM	Information Resource Management
IRST	Infrared Search and Track
IRTGSM	Infrared Terminally-Guided Submunition
ISA/AMPE	Inter-Service Agencies/Automated Message Processing Exchange
ISAR	Inverse Synthetic Aperature Radar
ISEC	Information Systems Engineering Command (Army)
ISEPD	Information Systems Engineering Prototyping Development
ISPS	Integrated Strike Planning System
ISTP	International Solar-Terrestrial Physics Program (NASA)
ISYSCON	Integrated System Control
ITAS	Improved Target Acquisition System
ITDN	Integrated Tactical Data Network
ITV	Improved TOW Vehicle
IUSS	Integrated Undersea Surveillance System (Navy)
IV&V	Independent Validation and Verification
IVHS	Intelligent Vehicle Highway System
IVIS	Inter-Vehicle Information System
IVSN	Initial Voice Switched Network
JAC	Joint Appropriations Committee
JAGUAR	Tactical Directed Energy Weapon for M-1 Tank
JASORS	Joint Advanced Special Operations Radio System
JAWCTS	A concept for a single aircraft to follow on both AWACS and JSARS, which incorporates most of both aircraft's capabilities to serve as a single airborne Air-and-Ground Surveillance and Battle Management platform
JCALS	Join Computer-Aided Acquisition Logistics System
JCMPO	Joint Cruise Missile Project Office
JCS	(Organization of the) Joint Chiefs of Staff
JDAM	Join Direct Attack Munition (basically precision guidance added to 2000 lb and perhaps 500 lb bombs
JIA	Joint Integrated Avionics
JIAWG	Joint Integrated Avionics Working Group
JOPES	Joint Operational Planning and Exercise System
JP	Joint Program
JPATS	Joint Primary Aircraft Training System
JPL	Jet Propulsion Laboratory
JROC	Joint Requirements Oversight Council (Vice Chairman JCCS and Vice Chief of 4 Services)
JSCAMPS	Joint Service Common Airframe Multiple Purpose Systems
JSIPS	Joint Service Imagery Processing System
JSOW	Joint Standoff Weapon
JSTARS	Joint Surveillance Target Acquisition and Reconnaissance System (E-8)
JSTARS Adjunct	Air vehicle to fill possible gaps in JSTARS coverage
JSTPS	Joint Strategic Target Planning System
Jt	Joint
JTACMS	Joint Tactical Missile System
JTFP	Joint Tactical Fusion Program
JTIDS	Joint Tactical Information Distribution System
Just Cause	U.S. Intervention in Panama, Dec '89
JUSTIS	Joint Uniform Services Information System
JWACTS	Joint Follow-on to AWACS, JSTARS, Rivet Joint in one aircraf

KA-6	Aerial Refueling Version of Navy A-6A Aircraft
KBS/DBMS	Knowledge Based Systems/Data Base Management Systems
KC-X(N)	Conceptual plan for the Navy to "own" their own land-based aerial refueling aircraft
KE	Kinetic Energy
KEASAT	Kinetic Energy Anti-Satellite
KEM	Kinetic Energy Missile
KEW	Kinetic Energy Weapon
KFP	Korean Fighter Program
"Kick-the-Can"	Deferring significant decisions to later years due to the lack of a consensus or due to a budget squeeze
KKV	Kinetic Kill Vehicle
KR-135 R	Re-engined verision of the USAF KC-135 Aerial Refueling Aircraft
L	Lift
L-F	Leader-Follower
Lab	Laboratory
LADAR	Laser Radar
LAMPS	Light Airborne Multi-Purpose System (Navy ASW Helicopter)
LAMS/MFR	Local Area Missile System/Multi-Functional Radar
LANCE	Army Short-range Tactical Nuclear Weapon
LAV	Light Assault Vehicle
LAV-AD	Light Armored Vehicle - Air Defense
LAV-AG	Light Armored Vehicle - Assault Gun
LAW	Light Anti-tank Weapon
lb.	Pound of weight
LBR	Laser Beam Rider (AAWS-M)
LBSR	Lightweight Battlefield Surveillance Radar
LCC	Life Cycle Cost
LCC-ASAS	Limited Capability Configuration - All Source Analysis System
LCD	Liquid Crystal Display
LCS	Launch Control System (ICBM)
LCS	Liquid Crystal Shutter
LCS	Low Cost Sensor
LCS	Low Cost Sonobuoy (Navy)
LDDI	Less Developed Defense Industry
LDMS	Low Demand Message System
LDW	Large Diameter Weapon
LEAP	Light Exo-Atmospheric Projectile
LEB	Lebanon
LED	Light Emitting Diode
LEP	Life Extension Program
LF	Land Forces
LF	Low Frequency
LFA	Low Frequency Active
LGB	Laser-Guided Bomb
LHX, LH	Army Light Helicopter - Next Generation
LIC	Limited (Low) Intensity Conflict
LIFESAT	Life Sciences Satellite (NASA)
LLTV	Low Light Level Television
LLWAS	Low Level Windshear Alert System
LMD	Limited (Ballistic) Missile Defense
LO	Low Observable
LORAINE	Long-Range Air Intercept Experiment (aka Ballistic Intercept Missile)
LOS-F-H	Line-of-Sight-Forward-Heavy (ADATS)
LOSAT	Line-of-Sight Anti-Tank Vehicle (part of Army HFM/ASM program)

LPD	Low Probability of Detection
LPI	Low Probability of Intercept
LPIR	Low Probability of Intercept Radar
LPS	Launch Protection System
LR	Long Range
LRAACA	Long Range Air ASW Combat Aircraft (aka P-7)
LRAT	Long Range Anti-Tank
LRCSOW, LRCSW	Long Range Conventional Stand-Off Weapon
LRIP	Low Rate Initial Production
LRR	Long Range Radar
LRSAM	Long-Range Surface-to-Air Missile
LSD	Landing Ship Dock
LSDIS	Light and Special Division Interim Sensor
LV	Launch Vehicle
LVTP-7	Landing Vehicle Tracked Personnel (USMC)
LW	Land Warfare
LWIR	Long Wavelength Infrared
M	Missions
M	Million
M-1, M1	Abrams Tank (M1A1, M1A2, M1A3 are various versions)
M-60	Battle Tank (Army)
M/DOT	Millimeter Wave/Decoy Optimization Test
M/M OSP	Multimission Optronic Stabilized Payload (for RPVs)
M/S	Milestone
M/YR	Millions per Year
M88A1	Armored Recovery Vehicle
MA	Mission Area
MAC	Military Airlift Command (Air Force)
MAC C2	Military Airlift Command/Command and Control
MAC-EW	Military Airlift Command-Electronic Warfare
MAD	(Strategic) Mutually-Assured Destruction
MADOM	Magnetic and Acoustic Detection of Mines (Navy)
Maglev	Magnetic Levitation
MAISRC	Major Automated Information Systems Review Council
MAMS	Military Airspace Management System
MANTECH	Manufacturing Technology
MAP	Military Assistance Program
MARAD	Maritime Administration
MARK 500	Re-entry Vehicle (Navy)
MARV	Maneuvering Re-entry Vehicle
MASINT	Measurement and Signature Intelligence
MATES	Multi-Band, Anti-Ship, Cruise Missile Defense, Tactical Electronic Warfare System
Maverick	USAF Air-Launched Anti-Armor Missile
MBFR	Mutual and Balanced Force Reductions
MBT	Main Battle Tank (e.g. M1, M60)
MC	U.S. Marine Corps
MCD	Missile CM Device
MCE	Modular Command Element (USAF)
MCM	Mine Countermeasures
MCOTEA	Marine Corps Operational Test & Evaluation Agency
MCRDAC	Marine Corps Research, Development & Acquisition Command
MCS	Manueuver Control System (Army)
MCT	Mercury-Cadmium-Telluride
MCTACCS	Marine Corps Tactical Command and Control System

MDAP	Major Defense Acquisition Programs
MDLT	Mine Detection Laser Technology
MDS	Meteorological Data System
MELIOS	Miniature Eye Safe Laser Infrared Observation Set
MEP	Mission Equipment Package (part of LHX)
MESUR	Mars Exploratory Survey (NASA)
MET	Meteorological (Weather)
METSAT	Meteorological Satellite
METT-T	Mission, Enemy, Troops, Terrain and Time
MFD	Multifunction Display
MFP	Major Force Program (part of DoD six-year development plan program packaging)
MG	Major General
Mgt	Management
MH-47E	Chinook Helicopter (SOF Version)
MHC	Mine Countermeasures Ship
MICNS	Modular Integrated Communications Navigation System
MICOM	U.S. Army Missile Command
MIDS	Multifunction Information Distribution System (Joint US/NATO)
MIFASS	Marine Integrated Fire and Aerial Support System
mil, Mil	Military
MILAN	French Anti-Tank Missile
MILCON	Military Construction
MILPERS	Military Personnel
MILSTAR	Military Strategic and Tactical Relay Satellite
MIMIC	Microwave/Millimeter Wave Monolithic Integrated Circuit
MIPs	Million Instructions Per Second
MIRADOR	Minefield Reconnaissance and Detector System
MIRV	Multiple Independently Targetable Re-entry Vehicle
MIRVed	Ballistic missile having more than one warhead
MIS	Management Information Systems
MK	Mark (means version #)
MK-15	New Cooperative Identification System
Mkt	Market
MLR	Medium Lift Replacement (MC next generation aircarft, was to be V-22)
MLRS	Multiple Launch Rocket System
MLRS-TGW	Multiple Launch Rocket System/Terminally Guided Weapon
MLS	Microwave Landing System
MLV	Medium Launch Vehicle
MM	Minuteman
MM 4	Upgraded version of Minuteman II
MM 5	Upgraded version of Minuteman III
MM II	Minuteman II ICBM with one warhead
MM III	Minuteman III with three warheads
MMW	Millimeter Wave
MNS	Mine Neutralization System
MNTM	Multi-National Technical Means
MOB/SURV	Mobility and Survivability
Mod	Modified
MODS	Modifications
MOPMS	Modular Pack Mine Systems
MOU	Memorandum of Understanding
MP	Mission Planning
MP	Master Plan
MPA-90	Maritime Patrol Aircraft for the 1990s (FRG)
MPIM	Multi-purpose Individual Munition

MPT, MP&T	Missions, Programs, and Technologies
MRDFS	Man-portable Radio Direction Finding System
MRF	Multi-Role Fighter (Follow-on to F-16)
MRSR	Multi-Role Survivable Radar
MRTFB	Major Range and Test Facility Base
MS	Milestone
MSAM	Mobile (or Medium) Surface-to-Air Missile
MSE	Mobile Subscriber Equipment (Army)
MSN	Mission
MSOW	Modular Standoff Weapon
MSR	Mars (Rover) Sample Return (NASA)
MSS	Mission Support System
MSTART	Missile System to Attack Relocatable Targets
MTACCS	Marine Tactical C2 System
MTI	Moving Target Indicator
MU	Major Upgrade (eg. AGILE FALCON variant of F-16)
MV-22	Marines Assault Transport (OSPREY baseline application)
MW	Mine Warfare
MWIR	Medium-Range (8-15 microns infrared)
MWK	Mars Network (NASA)
MWS	Missle Warning System
MX	Peacekeeper ICBM with ten warheads
MX IMU	Peacekeeper Inertial Measurement Unit
MX Silo	Peacekeeper ICBM in Silo Basing
MX/RAIL	Peacekeeper ICBM, deployed on railroads
MX/RG, MXRG	Peacekeeper ICBM in rail mobile housing
MYP	Multi-Year Procurement
N	Navy
N/AF	Navy, Air Force
NA, N/A	Not Applicable or Not Available
NAAD	North American Air Defense (Command)
NAAWS	NATO Anti-Air Warfare System
NACISA	NATO Communications and Information Systems Agency
NACMA	NATO Air Command and Control System Management Agency
NADC	Naval Air Development Center
NAEW&C	NATO Airborne Early Warning and Control System
NAILS	National Airspace Integrated Logistics System
NAS	National Airspace System
NAS	National Academy of Sciences
NAS/ROOM	National Airspace Systems/Recovery Communications
NASA	National Aeronautics and Space Administration
NASP	National Aerospace Plane
NASP-MAS	NASP-Military Aerospace System variant
NATF	Navy version of Air Force ATF
NATO	North Atlantic Treaty Organization
NATO AAWS	NATO Anti-Air Warfare System
NATO ACCS	NATO Air Command and Control System
NAV	Navigational
NAVAIR	Naval Air Systems Command
NAVMACS IV	Naval Modular Automated Communications System IV
NAVRAM	Navy Retail Accounting Management System
NAVSEA	Naval Sea Systems Command
NAVSPAWAR	Naval Space and Warfare Systems Command
NB(2)C	Nuclear, Biological, Ballistic Missile, and Chemical
NBC	Nuclear, Biological, Chemical

NBCRS, NCRS	Nuclear Biological Chemical Reconnaissance System
NCA	National Command Authority
NCC	Network Control Center (NASA)
NCSC	Naval Coastal Systems Center
NCTP	National Critical Technologies Plan
NCTR	Non-Cooperative Target Recognition
NDI	Non-Developmental Item
NDS	Nuclear Detection Sensor
NDV	NASP-Derived Vehicle (NASA)
NEAR	Near-Earth Asteriod Rendezvous (NASA)
NES	National Energy Strategy
NF-22	"Navy-ized" version of F-22
NF/A-22	"Navy-ized" version of F-22, modified to meet A-X OR
NFR-90	NATO Frigate Replacement for the 1990s
NG	National Guard
NGCR	Next Generation Computer Resource, Navy
NHSTA	National Highway Traffic Safety Administration
NIAG	NATO Industrial Advisory Group
NIH	National Institutes of Health
NIST	National Institute of Standards and Technology
NITF	National Imagery Transmission Format
NL	Netherlands
NLOS/AD	Non-Line of Sight - Air Defense
NLOS/AT	Non-Line-of-Sight/Anti-Tank
NLS	National Launch System
NMD	National Missile Defense
NMR	Nuclear Magnetic Resonance
NMRF	Navy version of Air Force's Multi-Role Aircraft
NNM	Non-nuclear Manufacturing
NOAA	National Oceanographic and Atmospheric Agency
Non-ALCM	Bomber which does not carry ALCM
NORAD	North American Air Defense
NORDA	Naval Ocean Research and Development Activity
NOSC	Naval Ocean Systems Center
NPO	Russian Space Agency
NPSS	National Planning/Strategic System
NRAC	Naval Research Advisory Committee
NRL	Naval Research Laboratory
NRRPC	National Rail Road Passenger Corporation
NSC	National Security Council
NSC	National Space Council
NSF	National Science Foundation
NST	Nuclear and Space Talks
NSWC	Naval Surface Weapons Center
NSWP	Non-Soviet Warsaw Pact
NTM	National Technical Means
NTTS	NATO Terrestrial Transmission System
Nuc Prop	Nuclear Propulsion
NULKA	Shipboard Decoy Rocket
NUSC	Naval Undersea Systems Center
NV	Night Vision
NW	Naval Warfare
NWC	Nuclear Weapon Complex
NWS	North Warning System

O	Outlays
O&M	Operations and Maintenance
O&O	Operational and Organizational
O&S	Operations and Support
O/A	On or about
OA-10	Forward Air Controller version of USAF A-10 close air support aircraft
OACM	Offboard Active Countermeasures
OASD	Office of the Assistant Secretary of Defense
OBEWS	On-Board EW Simulator
OBU	OSIS Baseline Upgrade
OCR	Optical Character Recognition
ODC	Office of Defense Cooperation
OFF-BD	Off-Board
OJCS	Organization of the Joint Chiefs of Staff
OMAS	Organic Mine Avoidance System
OMB	Office of Management and Budget
OMG	Operational Manueuver Groups
OMV	Orbital Maneuvering Vehicle (NASA)
ONR	Office of Naval Research
ONT	Office of Naval Technology
Op Tempo	Operational Tempo
OP-05	Deputy Chief of Naval Operations (Air)
OPBAT	Operation Bahamas
OPEC	Organization of Petroleum Exporting Countries
OPNAV	Office of Chief of Naval Operations
Ops, Opns	Operations
OR	Operational Requirement
ORCHIDEE	Observatoire Radar Coherent Heliporte D'Investigation des Elements (France heliborne surveillance radar)
Ord	Ordnance
OSD	Office of the Secretary of Defense
OSI	On-Site Inspection
OSIA	On-Site Inspection Agency
OSIS	Ocean Surveillance Information System
OSL	Orbiting Solar Laboratory (NASA)
OSS	Operational Support System
OSTP	Office of Science and Technology Policy
OT&E	Operational Test and Evaluation
OTA	Office of Technology Assessment
OTEA	Army Operational Test and Evaluation Agency
OTH	Over-the-Horizon
OTH-B	Over-the-Horizon - Backscatter Radar
OTH-T	Over-the-Horizon Targeting
OTHR	Over-the-Horizon Radar
OTS	Off-the-Shelf
OV-106	Next Shuttle Orbiter
OV-1D	Army Mohawk Aircraft Equipped With SLAR, Photographic or IR Sensor
P	Programs
P(3)I	Pre-Planned Product Improvement
P-3	Navy 4-engined Land-Based Maritime Patrol Aircraft (based on Lockheed Electra)
P/BD	Program/Budget Decision (made by Secretary of Defense or Deputy Secretary of Defense on upcoming-FY93 budget; staffed by OSD/Comptroller

P1	Procurement accounts listed by program issued with President's budget by OASD (comptroller)
PA&E	Program Analysis and Evaluation
PAC	Patriot Advanced Capability
PAC3	Patriot Upgrade Program
PACER SNOW	IRCM System installed on MAC aircraft
PACOM	Pacific Comand (U.S. Unified Command)
Paladin	Improved M109 Howitzer (HIP or A6 version)
Patriot	Army's First-line Long-range Air Defense Missile
PAVE PAWS	Early Warning Radar
PD	Passive Defense
PDR	Preliminary Design Review
PE	Price-to-Earnings Ratio
PE	Program Element (of FYDP)
Pegasus	DARPA Air Launched Orbital Vehicle
PEO	Program Executive Officer
PGM	Precision Guided Munitions
Pgm	Program
PHIGS	Programmer's Hierarchical Interface Graphics System
PI	Product Improvement
PIP	Product Improvement Program
PK	Peacekeeper (MX) ICBM
PL	Public Law
PLGR	Precision Lightweight GPS Receiver
PLRS	Position Location Reporting System (USMC)
PLS	Personnel Launch System (NASA)
PLS	Palletized Loading System
Plt	Plant (i.e., industrial facility)
PM	Program Manager
PMA-281	Navy Program Office
PMC	Permanently Manned Capability (NASA)
POES	Polar Orbiting Environmental Satellite, aka NOAA series
POM	Program Objectives Memorandum
POPEYE	Israeli Air-to-Ground Missile
PPBS	Planning, Programming and Budgeting System (DoD's 6-yr. plan)
PPM	Perimeter Portal Monitoring
PRC	Pre-Combat Readiness Category
PRC	Peoples Republic of China
PRES	President's
PRISM	Prototype Reusable Integrated Software Modules
PROC	Procurement
Program 11 Budget	Eleventh of Eleven parts of PPBS, covering Special Operations Command of DoD
Proj	Projection (also Project)
PSC	Product Service Code
PYTHON	Israeli Air-to-Air Missile
Q	Quarter year
Q&A	Questions and Answers
QR	Quick Reaction
QTY, qty	Quantity
qtys	Quantities
QUICKFIX	Tactical Heliborne Electronic Warfare Jamming System
QUICKLOOK	Non-Communication Detection, Location and Identification System

R&AT	Research and Advanced Technology
R&D	Research and Development
R&M	Reliablility and Maintainabiliy
R1	RDT&E budget breakdown by program issued by OASD/(comptroller) with each President's budget
RAAMS	Remote Anti-Armor Mine System
RACC	Regional ASW Control Center
RACE	R&D in Advanced Communications Europe
Rad Hard	Radiation Hardened
RADC	Rome Air Development Center (USAF)
RADINT	Radar Intelligence
RADM	Rear Admiral
RAH-66	Next-generation light helicopter, Comanche (Army) (was LHX, then LH)
RAIDS	Rapid Air Defense System
RAM	Radar Absorbent Material
RAM	Rolling Airframe Missile (5 inch)
RAPIER	Rapid Emerging Reconstitution (North American Air Defense)
RASSP	Rapidly Prototyped Application Specific Signal Processor
RCC	Robotic Command Center
RD&T	Research, Development and Testing
RDA	Research, Development and Acquistion
RDI	Reconnaissance Detection Identification (NBC)
RDS	Rapid Deployable System (Acoustic Sensor)
RDT&E	Research, Development, Test and Evaluation
REACT	Rapid Execution and Combat Targeting
Real	Real growth in budget (over inflation)
Recce/RECON	Reconnaissance
REF	Reference
REMBASS	Remotely Monitored Battlefield Sensor System
Remfg	Remanufactured
REP	Republic, also Representative
Res	Reserves
RES/NG	Reserves/National Guard
Retro	Retrofit
RF	Radio Frequency
RFI	Request for Information
RFP	Request for Proposal
RISTA	Reconnaissance, Intelligence, Surveillance and Target Acquisition
ROA	Return on Assets
RIF	Reductions-in-Force
ROBAT	Robotic Obstacle Breaching Assault Tank
ROC	Required Operational Capability
ROCC	Regional Operations Control Center
ROE	Return on Equity
ROTH-R	Relocatable Over-the-Horizon Radar
RPA	Rotocraft Pilot's Associate
RPV	Remotely Piloted Vehicle
RSI	Rationalization/Standardization/Interoperability
RSIP	AWACS Radar Sensitivity Improvement Program
RSPA	Research and Special Projects Administration
RSTA	Reconnaissance, Surveillance, Target Acquisition
RTADS	Royal Thai Air Defense System
RTIC	Real Time (External Situation Awareness Data) into the Cockpit
RV	Re-entry Vehicle, i.e. Ballistic Missile Warhead
RW	Rotary Wing
RWR	Radar Warning Receiver

S&E	Supplies and Equipment
S&L	Savings and Loan
S&M	Simulation and Modeling
S&T	Science and Technology
S&TNF	Strategic & Theater Nuclear Forces
S&TP	Science and Technology Program
S-3	Presently-operational USN carrier-based ASW aircraft
S/B	Should Be
S/C	Spacecraft
S/O	Standoff
S/W	Software
SAC	Senate Appropriations Committee
SAC	Stategic Air Command (U.S. Specified Command)
SAC Unit CPU	Strategic Air Command Post Upgrade
SACEUR	Supreme Allied Commander, Europe
SADARM	Sense and Destroy Armor (Fire and Forget Munition)
SAIMS	Standardized Advance in Imaging Systems
SAIRS	Standardized Advanced IR Imaging Systems
SAM	Surface-to-Air Missile
SAMSON	Semi-Autonomous Mobile System for Ordnance Neutralization
SAR	Synthetic Aperture Radar
SAR	Search and Rescue
SARs	Selected Acquisition Reports (DoD)
SASC	Senate Armed Services Committee
SASS	Small Aerostat Surveillance System
SATCOM	Satellite Communications
SAVA	Standard Army Vetronics Architecture
SBCFA	Shore-Based Combat Facility Automation
SBIS	Sustaining Base Information System
SBL	Space Based Laser
SBR	Space Based Radar
SBSS	Space Based Surveillance System
SBWAS	Space Based Wide Area Surveillance
SCAT	Scout/Attack
SCDL	Surveillance Control Data Link
SCOTT	Single Channel Objective Tactical Terminal
SCUD	NATO name for Soviet Ballistic Missile
SD	Strategic Defense
SDI	Strategic Defense Initiative
SDIAE	Strategic Defense Initiative Acquisition Executive
SDIARC	Strategic Defense Initiative Acquisition Review Council
SDIO	Strategic Defense Initiative Organization
SDS	Surveillance Data System (ASW)
SDV	Self-Directed Vehicle (Underwater)
SE	South East
SE&I	System Engineering and Integration
Sea LARS	Sea-based Launch and Recovery System
SEACATT	Sea Combined Arms Tactical Trainer (Navy)
SEA LANCE	Submarine-launched Stand-off Anti-submarine Weapon
SECC	Survivable and Enduring Command Centrs
SECDEF	Secretary of Defense
SEEK SPARTAN	Adaption of ATF avionics to older aircraft
SEI	Space Exploration Initiative (NASA)
SEI	Software Engineering Institute
SEMA	Special Electronics Mission Aircraft
SEMA-X	Special Electronic Mission Aircraft-Experimental

SEMATECH	Semiconductor Manufacturing Technology Initiative
SETA	Systems Engineering and Technical Assistance
SEU	Single event upset
SFW	Sensor-Fuzed Weapon
SGSM/DGSM	Standard JSTARS Ground Station Module/Downsized Ground Station Mod
SHAPE	Supreme Headquarters Allied Power, Europe
SICBM	Small ICBM, also called Midgetman
SICBM (WCS)	Small Intercontinental Ballistic Missile (Weapon Control System)
SIGINT	Signals Intelligence
SIGMA STAR	The 5 Battlefield Fuctional Areas plus interconnecting communication (Army 5-pointed star)
SIMNET	DARPA program for Advanced Simulator Networking Technology
SIMNET	Simulation Network
SINCGARS	Single Channel Ground Air Radio Systems
SIOP	Strategic Integrated Operating Plan
SIPE	Soldier Integrated Protective Ensemble
SIRTF	Space Infrared Telescope Facility (NASA)
SKIPPER	Laser Guided Bomb-Powered (Navy)
SL	Sea Launched
SLAM	Stand-off Land Attack Missile (command-guided verson of Harpoon missile using Maverick I2R guidance)
SLAR	Side Looking Airborne Radar
SLAT	Short-Range Land-Attack (Theater Nuclear) Weapon
SLBM	Submarine Launched Ballistic Missile
SLCAIR	Strategic Laser Communications Airborne
SLCM	Sea Launched Cruise Missile--TOMAHAWK
SLCSAT	Strategic Laser Communications Satellite (NAVY)
SLEP	Service Life Extension Program
SLEW	Shipboard Lightweight EW System
SLMV	Sea-Launched Maneuvering Vehicle
SLQ-54	Ship EW System (to follow SQL-32)
SLSDC	St. Lawrence Seaway Development Corporation
SLV	Standard Small Launch Vehicle
SM-2	Standard Missile 2 (Navy)
SMAW	Shoulder-launched Multipurpose Assault Weapon
SMC	Space and Missile Systems Center (USAF)
SMTD	Submarine Torpedo Defense
SNF	Short-range Nuclear Forces
SNNC	Strategic Non-Nuclear Capability
SO	Strategic Offensive
SO	Special Operations
SO/LIC, SOLIC	Special Operations/Low Intensity Conflict
SOA	State of the Art
SOARS	Satellite Onboard Attack Reporting System
SOCC	Sector Operations Control Center
SOCOM	Special Operations Command (U.S. Unified Command)
SOF	Special Operations Forces
SOIF	System Operations and Integration Function
SORPROS	S/O Radar Program Studies
SOSUS	Sound Surveillance system
SOTAS	Standoff Target Acquisition System
SOUTHCOM	Southern Command (U.S. Unified Command)
SP	Space mission area
SPACECOM	Space Command (U.S. Unified Command)
Spacetrack	Spacecom's Space Object Inventory Capability

SPADOC	Space Defense Operations Center
SPAWAR	Space and Naval Warfare Systems Command
Specs	Specifications
Spl Asst	Special Assistant
SPO	System Program Office (Air Force)
SPOT	Satellite Pour L'Observation de la Terre
SPT	Support
SPY-1	Aegis Radar (Navy)
SQQ-89	Surface ship ASW System
SQY-1	Improved (SQQ-89) surface ship ASW System
SR	Short Range
SRAAWS	Short Range Anti-Air Weapon System (Navy)
SRAM	Short Range Attack Missile (Nuclear A ir Force)
SRAM-T	SRAM-Tactical (Nuclear version)
SRAW	Short Range Assault Weapon
SRM-X	Short Range Missile - Experimental
SRT	Strategic Relocatable Target
SRTS	Short Range Thermal Sight
SS	Second Source
SS&T	Space, Science and Technology
SS-11, -13, -17, -19	Soviet ICBMs
SS-18	Soviet Heavy ICBM
SS-24	Soviet Rail Mobile ICBM
SS-25	Soviet Road Mobile ICB
SS-N-6,-8,-17,-20,-23	Soviet Fleet Ballistic Missiles Submarine
SSBN	Strategic Submarine Ballistic Nuclear
SSBN-X	Next Generation Strategic Nuclear Ballistic Missile Submarine (Experimental)
SSF	Space Station Freedom (NASA)
SSF (FEL)	Space Station Freedom (First Element Launch) (NASA)
SSF Evol	Space Station Freedom Evolution (NASA)
SSF/AC	Space Station Freedom/Assembly Complete (NASA)
SSM	Surface-to-Surface Missile
SSMD	Surface Ship Missile Defense
SSN	Attack Submarine Nuclear
SSN-21	Follow-on Attack Submarine to the U.S. SSN-688 class
SSN-688I	Improved version of SSN-688 class submarine
SSS	Satellite Servicing System (NASA)
SSTD	Surface Ship Torpedo Defense
SSTS	Space Surveillance and Tracking System
STAFF	Smart Target Activated Fire and Forget Tank Round
START	Strategic Arms Reduction Treaty (yet to be finalized)
START II	Follow-on to START Treaty
STC	Supreme Headquarters Allied Powers Europe Technical Center
STD MSL	USN air defense missile: STANDARD
STDN	Spaceflight Tracking and Data Network (NASA)
STDS	Standards
STGT	Second TDRSS Ground Terminal (NASA)
STINGER	Army Crew-served Anti-air missile
STINGRAY	Tactical Directed Energy Weapon
STINGRAY	Electro-optical Countermeasures System for Ground Vehicles
STOVL	Short Take-off Vertical Landing
STRAP	Straight Through Receptor Antenna Performance
STV/SEV	Space Transfer Vehicle/Space Excursion Vehicle (NASA)
Sub	Submarine
Sub-Strike	Anti-Submarine Mine

SUBAD	Submarine Air Defense
Sublimit	Treaty limit subservient to more global limits
SURVEIL	Surveillance
SV-22	ASW Variant of V-22
SWA	Southwest Asia
SWIP	System Weapon Improvement Program (a modest upgrade)
SWIZ	Switzerland
SWPS	Strategic War-Planning System
SYDP	Six Year Defense Plan (effective in DoD with 92 POM)
T	Technologies
T	Timing -- program has questionable ability to reach IOC within forecast period
T&E	Test and Evaluation
T&S	Training and Simulation
T-IV	Titan IV
TA	Tactical Air
TAC	Tactical Air Command (USAF)TAC III, TAC-3, -4 Tactical Advanced Computer-III (was Destop-III, or TAC-4: next version)
TAC Mod	Tactical Air Command Modernization
TACAIR	Tactical Aircraft
TACAWS	Tactical Army Counter Air Weapon System
TACCIMS	Theater Automated Command Control Information Management System
TACDEW	Tactical Directed Energy Weapon
TACFIRE	Tactical Fire Direction System (one of Army Command and Control System being replaced by AFATDS)
TACIT RAINBOW	Joint Airborne Defense Suppression Missile, Long Loiter
TACJAM	Tactical Communications Jammer (Army)
TACMS	Tactical Missile System
TACOM	Tank-Automotive Command (Army)
TACS	Tactical Air Control System
TACSAT	Tactical Satellite (a "light" satellite for use by theater commander)
Tact.	Tactical
TAF	Tactical Air Forces
TAIS	Tactical Airspace Integrated System
TALD	Tactical Air-Launched Decoy
TAMPS	Tactical Aircraft Mission Planning System (USAF)
TAOM	Tactical Air Operations Module
TASM	Tactical Air-to-Surface Missile
Taurus	DARPA Land-launched Pegasus
TBD	To Be Determined
TBMD	Tactical Ballistic Missile Defense
TCMD	Tactical Cruise Missile Defense
TD	Torpedo Defense
TDA	Tactical Decision Aid
TDOA/DD	Time Difference of Arrival/Differential Doppler
TDP	Technical Development Plan
TDP	Technical Data Package
TDRSS	Tracking and Data Relay Satellite System (NASA)
TE	Thermoelectrically
TEAMMATE	AN/TRQ-32 Signals Intelligence System
TEAMPACK	A Non-Communications Electronic Receiving System, AN/MSQ-104
TEC	Test Evaluation Command
TECH BASE	Technology Base
TENCAP	Tactical Explotation of National Capabilities
TFCC	Tactical Flag Command Center (Navy)

TFEL	Thin Film Electroluminescent
TGW	Terminally Guided Warhead
THAAD	Theater High Altitude Area Defense
TIARA	Tactical Intelligence and Related Activities
TIM	Technical Integration System
TITAN 4	USAF Heavy Lift Booster
TLAM/N	Tomahawk Land Attack Missile (Nuclear)
TLI	Treaty Limited Items
TMAP	Teleoperated Mobile Anti-Armor
TMD	Tactical Munitions Dispenser
TMD	Theater (ballistic) Missile Defense
TMD-GBR	Theater Missile Defense - Ground Based Radar
TMDI	Tactical Missile Defense Initiative
TNF	Theater Nuclear Forces
TOC	Tactical Operations Center
Tomahawk	U.S. Cruise Missile
TOMCAT 21/F-14 ++	Advanced version of F-14D; essentially a new aircraft
TOMS	Total Ozone Mapping Satellite (NASA)
TOPEX	Ocean Topography Experiment (NASA)
TOPS	Toward Other Planetary Systems (NASA)
TOR	Tentative Operational Requirement
TOV	Teleoperated Vehicle
TOW	Tube-launched, Optically-tracked, Wire-guided (anti-armor) Missile
TOW II	Improved warhead version of TOW
TPALS	System for Protection Against Limited Strikes by Theater Ballistic Missiles
TPSY	Tactical Radar
TQM	Total Quality Management
TR	Tacit Rainbow
TRACKWOLF	A Tactical Ground Based High Frequency Collection and Direction Finding System
TRADOC	Training and Doctrine Command (Army)
TRAILBLAZER	AN/TSQ-114 Signals Intelligence System
TRANSCOM	U.S. Transportation Command
Transp.	Transportation
TRI-TAC	Tri-Service Tactical Communications
TRIAD	Land and sea-based Ballistic Missiles plus long-range Air-Breathing aircraft "legs" of U.S. Strategic Offensive Forces
TRIDENT	U.S. Ballistic Missile Nuclear Submarine (first line)
TRIDENT/D5	Trident II Missile
Trigat	European built medium range anti-tank missile
TRMM	Tropical Rainfall Measuring Mission Satelitte (NASA)
Trust Fund	Revenues form user fees or taxes. Expenditures made for specific purpose
TSIP	TOW Sight Improvement Program
TSS	Tactical Surveillance System
TSSAM	Tri-Service Standoff Attack Missile (formerly a "black" program)
TCCS	Tactical Terminal Control System
TTTS	Tanker, Transport Training System
TUGV	Teleoperated Unmanned Ground Vehicle
TVA	Tennessee Valley Authority
TWAA, TW/AA	Threat Warning and Attack Assessment
TWS	Thermal Weapons Sight
TWT	Traveling Wave Tube

U.S., US	United States
UAMS	Unmanned Air Mobility System (future UAV)
UARS	Upper Atmospheric Research Satellite (NASA)
UAV	Unmanned Aerial Vehicle
UAV	Unmanned Autonomous Vehicle
UAV-MR	Unmanned Aerial Vehicle-Mid-Range
UFO	Ultra High Frequency (UHF) Satellite Follow-on
UGV	Unmanned Ground Vehicles
UH-X (Light)	Follow-on utility light helicopter (replaces UH-1 in the Army)
UH-XX	Follow-on utility helipcopter (replaces UH-60 in the Army)
UHF	Ultra High Frequency
UK	United Kingdom
ULANA	Unified Local Area Network Architecture
UMPS	Unit Mission Planning System
UMTA	Urban Mass Tranist Administration
UN	United Nations
UNA	Use No Abbreviations
UNIX	Computer operating system
UOP	Universal Operator Position
UPC	Unit Price Cost
Update II,II+, IV	Avionic Mission System updates of P-3 aircraft
USA	United States Army
USAF	United States Air Force
USCG	US Coast Guard
USD(A)	Under Secretary of Defense for Acquisition
USMC	United States Marine Corps
USN	United States Navy
USSOC	United States Special Operations Command
USSR	Union of Soviet Socialist Republics
UTACCS	U.S. Army Europe Theater Automated Command Control System
UTTMDS	Upper Tier Tactical Missile Defense System
UUV	Unmanned Underwater Vehicle
UV	Ultra-Violet
UW	Underwater
UYS-2 (EMSP)	Enhanced Modular Signal Processor
UYS-3	Follow-on to EMSP
V	Program has questionable viability for IOC prior to year 2000
V-22	Tri-Service VSTOL aircraft
VA	Veteran's Affairs
VAD	Vetronics Architecture Demo
VBM	Vehicle Blinde Modulaine - European Family of Vehical/Common Chassis Program
VCDD	Vetronics Crew Display Demonstration
VEH	Vehicle
VEMASID	Vehicle Magnetic Signature Duplicator
VETRONICS	Vehicle Electronics
VFAX	Next-Generation Carrier-Based Navy Fighter-Attack Aircraft
VFX	Next-Generation Carrier-Based Navy Fighter-Interceptor Aircraft
VHSIC	Very High Speed Integrated Circuit
VIDS	Vehicle Integrated Defense System
VLA	Vertical Launch Anti-submarine Rocket
VLS	Vertical Launch System
VLS	Visible Light Sensors
VLSI	Very Large Scale Integration
VSAD	Vetronics System Architecture Demonstration

VSCS	Voice Switching and Control System
VSTOL	Vertical or Short Takeoff & Land (aircraft)
VTS	Vessel Traffic Surveillance
w/o	without
WAM	Wide Area Munition (or Wide Area Mine)
WCS	Weapon Control System
"Weasel" A/C	Air Force fighter aircraft modified to specialize in Air Defense Suppression missions
WEU	Western European Union
WGs	Working Groups
WHEC	USCG High Endurance Cutter
WHO	War Headquarters
Wiesel	Small German Tracked Vehicle Being Evaluated for U.S. Army Use
WIS	WWMCCS Information System
WLB	USCG SeaGoing Buoy Tender
WLM	USCG Coastal Buoy Tender
WM	Waste Management
WMEC	USCG Medium Endurance Cutter
WP	Warsaw Pact (also (WTO)
Wpn	Weapon
WSGT	White Sands Ground Terminal (NASA)
WTO	Warsaw Treaty Organization
WWABCP	World Wide Airborne Command Post
WWFO	Wild Weasel Follow-on
WWI	World War I
WWII	World War II
WWMCCS	World-wide Military Command and Control System
X-30	Designation of the experimental NASP prototype
X-RROD	Guided Hypervelocity tank round
YR/Yrs	Year, years