

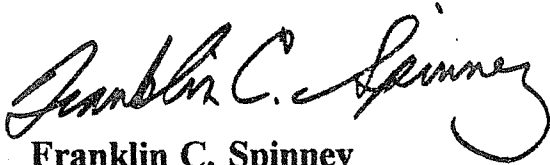
MASTER

ANATOMY OF DECLINE

How Modes of Conduct Evolved During the Cold War are Setting the Stage for a False Choice
Between a Smaller Military, or a "Hollow" Military, or Higher Defense Budgets
In the Mid-to-Late 1990s.

"The way to hell is paved with good intentions."

Samuel Johnson, 1709-84
(English Lexicographer)


Franklin C. Spinney

Date: 1/27/96

Note to Readers:

1. This presentation is still evolving and is not in final form. Readers should bear in mind that it has certain limitations:
 - Part I (Observations and Description) is almost complete, and at this point, I anticipate that most changes will be limited to updating charts with more current information or minor additions which elaborate existing arguments with new information.
 - Part II (Synthesis - Explanation - Evaluation) is in major rework and expansion. While most of my research is complete, it is not completely integrated into the structure of this section. Consequently Part II still has gaps in its idea flow, and some readers may have trouble following, or connecting together, the arguments contained in this section.
 - Part III (Recommendations), with the exception of R1: Shock Therapy, should be considered tentative in form. Since the rationale shaping the design of these recommendations is based in part on the evolving research underpinning but not yet incorporated in Part II, some of the recommendations may seem unsupported or disconnected from Parts I & II. Undoubtedly some of these recommendations will change as my work continues.

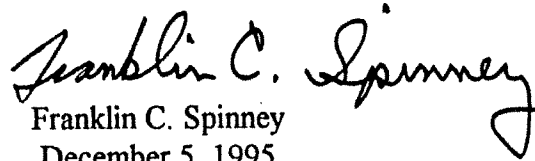
Despite these limitations, I have chosen to distribute the entire presentation. It describes and attempts to explain a systemic pattern of dysfunctional behavior in our national defense decision-making process. This behavior undermines the DoD's adaptation to the end of the Cold War, unnecessarily weakens our military forces, and wastes a prodigious amount of the taxpayers' wealth. I believe the information in Part I is important enough to warrant immediate accessibility to any person having an interest in military affairs.

Moreover, I believe the information contained in this package should be open to criticism from all corners of the national defense debate. I subscribe to the theory that the best test of "truth" is the power of an idea to get itself accepted in a competition in a free market of ideas. Where errors exist, I will correct them. Where legitimate differences of opinion exist, I want to acknowledge them and deal with them in a forthright way. But I can not do either without critical feedback. In this regard, readers can reach me at 703-697-0521.

2. Since the Summer of 1993, I have repeatedly made oral and written requests to the senior management in PA&E for a peer review to check the accuracy of the calculations, methodology, and conclusions contained in this presentation. My requests have been ignored completely. In December 1994, Senators Roth and Grassley asked the General Accounting Office (GAO) to check the accuracy of the

This theory of "truth" borrows from a famous opinion rendered by Justice Oliver Wendell Holmes.

calculations used to construct the procurement mismatch diagrams. On June 15, 1995, Senators Roth and Grassley asked Secretary Perry for an independent review of the *Anatomy of Decline*. Secretary Perry responded on August 3, 1995. Senators Grassley and Roth responded to Mr. Perry's 3 August letter on October 24, saying, in effect, that the 3 August letter did not meet their requirements. I am attaching the 15 June, 3 August, 24 October letters to this note. I urge readers to read the 3 August letter carefully and judge for themselves whether or not this represents a serious assessment of the information contained in this presentation.


Franklin C. Spinney
December 5, 1995

United States Senate

WASHINGTON, DC 20510

June 15, 1995

The Honorable William J. Perry
Secretary of Defense
Pentagon, Room 3E880
Washington, D.C. 20301

Dear Mr. Secretary:

On December 9, 1994, we wrote to you concerning a comprehensive study of Department of Defense (DOD) weapon system costs since 1976 that was provided to Congress by your office of Legislative Affairs. The study in question is entitled Anatomy of Decline and was prepared by the Office of Program Analysis and Evaluation (PA&E). PA&E has been engaged in this project since the 1970s but in recent years has perfected the analysis with extensive contractor data processing support. The upgraded analysis, which is continuing today, has cost the taxpayers in excess of \$200,000.

Several Members of Congress and staff have either heard or received copies of the presentation, which raises some fundamental questions relating to DOD planning, readiness, and resource allocation. In our original letter, we expressed the view that the issues raised in the study were of the highest importance and priority to the Congress. In that letter, we asked that the automated database supporting the study be provided to the General Accounting Office (GAO) as soon as possible. Consistent with our letter to you, we then asked the GAO on December 19th to conduct an independent review to validate the data and methodology employed in the PA&E study.

We are disturbed that officials within the department have not taken our request seriously, leading to considerable waste of GAO's resources. Although the 1996-2001 Future Years Defense Program (FYDP) was completed and distributed in mid-April, the study data was not updated as usual and has not been forwarded to the GAO as promised in Mr. William J. Lynn's letter of February 9, 1995. Furthermore, preliminary work by the GAO found that your office has failed to validate the study. This appears to us to require little effort since the data are taken directly from the FYDP. For instance, PA&E's April 10, 1995, response (attached) to GAO's preliminary questions clearly indicates that no one in PA&E or elsewhere in the Pentagon has made an effort to check out the data and validate the methodologies used - even though your department spent more than \$200,000 on the study, and even though the study has been briefed to a number of high-level DOD officials, Congress, and major defense contractors. The Anatomy of Decline analysis contained specific findings and recommendations for improving programmatic decision-making within the department. Again, the PA&E response indicates an inability to determine what actions might be

taken on the study's recommendations.

We find these revelations very disturbing. The FYDP is the heart of DOD's program planning and budgeting system (PPBS). It is not just a management information system used throughout the department. It is much more than that. It is the road map that helps Congress understand the future consequences of the budget decisions we are asked to make on a daily basis. For us to act on your budget and program estimates, you must be willing to validate the integrity and credibility of the data contained in the FYDP.


Mr. Secretary, we believe that the Anatomy of Decline is a very important and interesting piece of work. It goes right to the heart of the continuing program/budget mismatch that we in Congress grapple with each year.


It is incumbent on DOD to validate the study's findings and to use the findings and recommendations contained in this analysis. We are asking for your personal help in having PA&E, with its unique cost analyses capabilities, conduct an independent validation of the data and methodologies in its own study, Anatomy of Decline. We would very much like to have the results of this review as soon as possible. We would also like you to explain how the study findings will be incorporated in the PPBS decision cycle leading to the FY 1997 budget-submission.

In addition, we would still like you to provide the database to the GAO as promised. We hope there will be no further delay in transferring the entire updated package to the GAO.

We thank you in advance for your attention to this matter. We would appreciate a timely response to our request and hope it will help to ensure vigorous decision-making during the upcoming program review this summer.

Sincerely,


Charles E. Grassley
U.S. Senator


William V. Roth, Jr.
U.S. Senator

Attachment



AUG 1995

The Honorable William V. Roth
United States Senate
Washington, D.C. 20510-1501

Dear Senator Roth:

I am replying to your letter of June 15, 1995, regarding the "Anatomy of Decline" study conducted by Mr. Franklin C. Spinney, an analyst in the Office of Program Analysis and Evaluation (PA&E) within the Office of the Secretary of Defense. As noted in your letter, Mr. Spinney has been pursuing this effort since the late 1970s and, over the years, has presented its evolving findings to senior officials in the Department of Defense, as well as a number of members of Congress and other interested parties within and outside the government.

In response to your earlier letter informing the Department that you and Senator Grassley were requesting an independent evaluation of Mr. Spinney's work by the General Accounting Office (GAO), William J. Lynn, the Director of PA&E, committed to provide the GAO the then-current version of Mr. Spinney's work, which was based on the FY 1995-1999 Future Years Defense Program (FYDP). At the entrance meeting in March, the GAO requested that PA&E update the data to incorporate the new FY 1996-2001 FYDP. To provide this update, it was necessary to have the electronic version of the new FYDP, which was not then complete. The new electronic FYDP is now complete and PA&E provided the GAO staff with updated data in June. We will continue to cooperate fully with the GAO's independent evaluation of "Anatomy of Decline."

In response to your request, I have asked PA&E to review the study's data and its conclusions. With regard to the data, its preliminary assessments indicate that the historical displays of projected and realized U.S. budget deficits and DoD budgets are generally accurate and there are no major discrepancies in the displays for successive projections of procurement budgets and quantities for programs such as the F-15, F-16, F-18, M-1, drawn from the historical FYDP procurement annexes. But, PA&E will continue to work with the GAO, as you requested, to ensure that there is an independent evaluation of this data.

With regard to the study's conclusions, the briefing raises some specific issues that are of concern to the Department. PA&E has reviewed those issues and the remainder of this letter responds to them, and describes the steps that the Department is taking to address them.

"Anatomy of Decline" concludes that the FYDP overestimates likely defense budgets. Much of the data supporting this conclusion is drawn from the 1980s, during which there was a fundamental disagreement between the executive and legislative branches regarding the resources that should be devoted to defense. This disagreement resulted in significant

differences between the outyear projections displayed in successive FYDPs--which represented the executive's view of the resources needed for defense--and the actual budgets appropriated by the Congress--which were substantially smaller. Since the early 1990s, however, the Department has incorporated in the FYDP more realistic outyear projections of the resources that will be devoted to defense and the numbers of major systems that we will be able to buy. These more recent estimates have been far more consistent with Congressional action on the defense budget. For example, in both FY 1994 and FY 1995, Congress has adopted the level of defense spending that the administration proposed. We will continue to adopt realistic projections of future budgets and seek to ensure stability in the outyear defense budget projections upon which the FYDP is based.

"Anatomy of Decline" notes that procurement reductions may lead to adverse developments in weapon systems' aging. This is indeed a problem about which I testified before Congress when presenting the President's budget for FY 1996. The first point I made was that while it is true the modernization budgets are at historic lows, we have been able to take this reprieve without adversely affecting the material condition of our forces because of the force drawdown. Removing the oldest equipment from inventory has helped offset the slow pace at which new systems are entering the force, keeping the average age of our fleets of systems relatively constant. But now that the drawdown is over, current trends indicate that after the turn of the century major weapon systems fleets such as tactical aircraft and helicopters will reach high average ages relative to historical norms; therefore, we will need to increase production of new systems to prevent systems' aging from becoming a problem in the future. As we do this, one should keep in mind that the Cold War benchmarks of systems' ages and production rates may have less relevance today. Also, the advance of technology may make it possible to recapitalize our forces with fewer new systems than currently comprise the fleets. Nonetheless, as I testified, I am concerned about the services' long-term modernization plans in several areas. Mitigating the impact on force structure of equipment aging will be a critical issue that the Deputy Secretary and I consider during this year's preparation of the program and budget for FY 1997-2001.

Earlier this year, to contribute to the analytic foundation for that program review, PA&E and the Under Secretary of Defense for Acquisition and Technology conducted a joint assessment of the long-term consequences of current policies and programs. That assessment, called the Defense Program Projection (DPP), involves a detailed projection nearly 20 years into the future of procurement plans for about 200 major investment programs, and forecasts the resulting trends in force structure, fleet aging and obsolescence. In this context, the DPP helps identify potential overprogramming and "bow wave" issues. It also provides a macro assessment of aging and other trends in various investment areas, helping us locate weak areas of our modernization program that may require remedy in the program review. In addition and perhaps of the most direct relevance to the issues raised in "Anatomy of Decline," this year's version of the DPP includes an assessment of the areas of greatest risk to the long-term program. These

include higher than anticipated costs for weapon systems, the potential for growth in medical and environmental costs, and the possibility of failing to reduce infrastructure costs as quickly as we have planned.

The DPP is an analytic effort initiated during Secretary Cheney's tenure, which Secretary Aspin and I have encouraged and expanded. I have particularly found PA&E's work on the DPP to be extremely valuable as a strategic planning tool to understand the longer-term consequences of FYDP choices and to highlight potential risks. The DPP, along with other analytic products prepared within the Department, contributes to the identification of FYDP issues that we address in the annual program review process. But, let me reassure you that the DPP, which is now completed, has not replaced the FYDP as the focus of PA&E's efforts in the program review. To the contrary, in addition to overseeing the whole program review, PA&E is leading issue teams that focus on the FYDP modernization programs of each military service. These teams, which have membership from the Military Departments and relevant OSD offices, are doing detailed analyses of the major investment programs, as well as the balance between investment and other resource priorities. They also focus on the potential sources of underfunding in the FYDP. Ultimately, the teams bring forward issues and options for review by the Defense Resources Board (DRB) under the chairmanship of the Deputy Secretary of Defense. PA&E's organization and leadership of this process is crucial to our central objective of ensuring that we submit a fully funded and appropriately balanced defense modernization plan that meets our future national security needs.

"Anatomy of Decline" suggests that resources needed for operations and maintenance (O&M) are underestimated. There is a historical trend toward increased O&M costs. But, to understand the causes of this trend, it is useful to distinguish between the O&M costs of defense-wide functions and the costs of operating the forces themselves. First, the underestimation of defense-wide costs during the 1980s and early 1990s owes largely to exceptional growth in the medical and environmental areas. Over more recent years, we have successfully curtailed growth in both medical and environmental clean-up budgets. However, we continue to monitor these areas closely because if the earlier trend of substantial annual growth were to resume, it could undermine the Department's long-term modernization plans.

Second, the costs to operate forces also have risen somewhat, but here the patterns are less clear. The issue is complicated by the fact that these O&M accounts include funding both for infrastructure and for actual training and operations. We have been striving to reduce infrastructure costs through base closures, civilian end strength reductions, and other means. At the same time, we have sought to protect the readiness of our forces by fully funding their operating and training needs. The result of these two efforts is both a push and a pull on the O&M accounts which complicates our understanding of their funding trends. Analyses also are complicated by funding transfers among accounts in recent years, especially those associated with the Defense Business Operations Fund (DBOF). PA&E and other offices are continuing research to improve the department's understanding of O&M trends.

Most importantly, there are no validated models that predictably link O&M funding with the overall readiness and capabilities of our forces. To ensure that the Department's senior leadership receives timely information regarding potential readiness problems, including underfunding of O&M accounts, I have established the Senior Readiness Oversight Council, chaired by the Deputy Secretary of Defense, with membership that includes the Joint Chiefs of Staff. In addition, the Department is developing an electronic readiness tracking system that will provide a central repository of readiness metrics for the key elements of all our forces. Among other uses, this system will enable systematic research on the relationships between readiness "inputs" (i.e., O&M funding) and "outputs" (i.e., the ability of our forces to execute their assigned missions). Finally, I have asked the Under Secretary of Defense for Personnel and Readiness and the Director, PA&E to identify any major readiness funding issues in the FY 1997-2001 FYDP for resolution by the DRB in this year's program review.

The central portion of "Anatomy of Decline" contains many charts indicating that estimates of the budgets needed to acquire weapon systems and the initial planned procurement quantities are over-optimistic. The optimism in weapon system estimates has been documented in several other DoD-sponsored studies: An Analysis of Weapon System Cost Growth, RAND Corporation, 1989; Acquiring Major Systems: Cost and Schedule Trends and Acquisition Initiative Effectiveness, Institute for Defense Analyses, 1989; The Effects of Management Initiatives on the Costs and Schedules of Defense Acquisition Programs, Institute for Defense Analyses, 1992; and Understanding Cost and Schedule Growth in Acquisition Programs, Institute for Defense Analyses, 1994. These studies all conclude that, on average, funding eventually committed to major weapon systems exceeds initial estimates of the systems' costs. The estimated size of the underestimation varies considerably from one study to the next, depending on the time frame of the study, the sample of weapon systems examined, the baseline taken to be the initial cost estimate, and the analytic methods employed. Although the Department does not necessarily accept all their conclusions and methodologies, the studies all parallel Mr. Spinney's conclusion that cost and funding projections tend to be overly optimistic, particularly in the earliest phases of the weapons acquisition cycle. Several points should be kept in mind when interpreting this pattern.

First, the Department's review and oversight processes are specifically intended to counteract the tendency toward optimistic early estimates of technical risks and system costs. Those processes include extensive technical reviews within both the Military Departments and the Office of the Secretary of Defense. Independent cost estimates, which are required at major program milestone reviews, are another key part of the Department's defense acquisition oversight process. Estimating technical risks and costs for complex multi-year weapons programs is an extremely challenging task, and perfection is a desirable but elusive goal. But the Department is firmly committed to its policy of funding programs to their most likely cost, and the Under Secretary for Acquisition and Technology has recently re-emphasized the importance of fully funding acquisition programs. Moreover, historical evidence clearly shows that DoD's record on cost performance, while far from perfect, is superior to other government and private sector organizations that deal with systems of similar complexity.

Second, a significant portion of what is often called "cost growth" actually represents deliberate changes in program content over the life of a weapon system. As technical opportunities become available or new threats emerge, the Department adapts the content of its acquisition programs. Although such changes in program content are often well justified--and they are reflected in updated cost estimates and FYDP projections as they are approved--there also is sometimes a bias in the system to achieve maximum technological sophistication and performance without regard to unit cost. To address this bias, we have made cost control a central objective of our acquisition reform initiatives. Specifically, we are changing the acquisition process to treat cost as an independent variable. This change is meant to ensure that the initial cost targets for weapon systems are given equal weight with performance requirements and that as development proceeds, decisions on performance improvements are consciously weighed in the light of their implications for cost. In this way, we hope to avoid, or at least reduce, cost increases that are driven by continual attempts to achieve maximum performance without regard to cost. Treating cost as an independent variable is concerned not only with preventing growth in cost beyond an initial estimate, but also with reducing the costs of acquiring a weapon system. Similarly motivated are our acquisition reforms that substitute commercial for unique military specifications, make greater use of commercial-off-the-shelf components, and streamline the acquisition process.

Third, in reviewing historical patterns of changes in program costs over time it is important to take into account past instability in the defense budget and the associated changes in the rates at which quantities of many acquisition programs were procured. For example, during the 1980s when there was a fundamental disagreement between the executive and legislative branches regarding the appropriate level of defense spending, early projections of high procurement rates in the outyears of the FYDP were often scaled back significantly in later years, causing increases in unit costs. The best policy prescription for avoiding this undesirable pattern is to ensure that the Department incorporates in the FYDP realistic outyear projections of available resources. As I said earlier, I believe the Department's record in this regard has been much better in the past few years.

Fourth, at the start of this Administration, we recognized the importance of a realistically funded FYDP. Accordingly, to determine if the defense program that we inherited in 1993 was properly funded, we commissioned a Defense Science Board (DSB) task force to evaluate the program and render a judgment. After a detailed analysis of the full defense program, the DSB panel identified underfunding of \$23 billion in the FY 1993-97 FYDP, including about \$3 billion specifically identified as *underfunding in acquisition accounts*. As a direct consequence of this report, we corrected these shortfalls through a combination of program reductions and increases in the Department's overall funding level.

In closing, I want to emphasize that the Department will continue to cooperate fully with the GAO's independent assessment of "Anatomy of Decline." The Department recognizes a number of the risks highlighted by this study and, most importantly, is taking aggressive steps to mitigate these risks and ensure the long-term viability of our defense program. Preparing a

balanced and sustainable defense program is a challenging task that involves a myriad of complex, inter-related topics. Consequently, I believe a wide range of analyses can contribute to that task -- including both Mr. Spinney's study and the Defense Program Projection. The Office of Program Analysis and Evaluation is crucial to my determination as Secretary to recognize the risks to our program, identify corrective courses of action, and make the hard choices to reconcile our strategy, resources and programs.

Sincerely,

William J. Perry

United States Senate

WASHINGTON, DC 20510

October 24, 1995

The Honorable William J. Perry
Secretary of Defense
Pentagon, Room 3E880
Washington, D.C. 20301

Dear Mr. Secretary:

We are writing to follow up on our letter to you dated June 15, 1995, requesting an independent review of the study entitled Anatomy of Decline prepared by the Office of Program Analysis and Evaluation (PA&E).

In our letter, we underscored the importance of this piece of work. We pointed out that it goes right to the heart of the continuing program/budget mismatch that we in Congress must grapple with each year. But we told you that we were most troubled by the fact that not one person in PA&E or elsewhere in the Pentagon had made an effort to check out the data and validate the methodologies used - even though your department spent more than \$200,000.00 on the study; even though the study had been briefed extensively within the department, Congress, and defense industry; and even though it points to fundamental flaws in the department's premier decision-making tool - the Future Years Defense Program (FYDP).

Because of the far reaching implications of the Anatomy of Decline, we asked for your personal help in having PA&E, with its unique cost analyses capabilities, conduct an independent validation of the data and methodologies used in the Anatomy of Decline.

Your response to our letter is dated August 3, 1995.

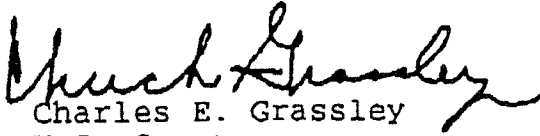
We have carefully reviewed your response and respectfully conclude that it does not address our primary concern: the need for an independent evaluation of the data and the methodologies used in the study.

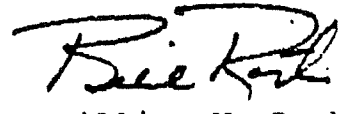
Mr. Secretary, the Anatomy of Decline is a mountain of data. We need to know if that data is accurate and complete. And we need to know if the methodologies used are valid. Your letter contains nothing more than general, anecdotal material about some of the study's conclusions. In our view, it does not provide a validation of the data and methodologies. That task remains undone.

We therefore renew our request for an independent review of the PA&E study.

Your cooperation in this matter would be appreciated. We would also like to thank you for being so cooperative in transferring the study's automated database to the General Accounting Office.

Sincerely,


Charles E. Grassley
U.S. Senator


William V. Roth, Jr.
U.S. Senator

AIM OF PRESENTATION

**To Understand Why It Is Difficult for the Defense Department to
Adapt to Change in the Real World.**

Definition #1: Adaptation

**An Alteration or Adjustment in Structure or Habits by which a Group or Organization of Individuals
Improves its Condition in Relationship to its Environment**

... by ...

Changing its Internal Structure to Cope with the Opportunities and Constraints of its Environment

... and/or by ...

Trying to Change the Environment to Meet the Needs of its Internal Structure (Which is often Impossible).

With This Definition in Mind, We Can Identify the
GOAL of the Decision Process Shaping Defense Policies & Budget Plans:

Continuously Adapt Military Forces to the ...

- Emerging Threats, Strategies, & Opportunities of the Post-Cold War Era
 - Changing Fiscal Realities (Post-Reagan/Bush Budget Shambles)
- ... Yet ...
- Keep Military Forces Ready for Combat on Short Notice.

Executive Soundbite:

... By Examining the Process of Adaptation From a *Variety* of Perspectives, This Presentation Will Show ...

... Why ...

More Money Spent the Same Way Will Actually
Accelerate the Dissipation and Decay of our Military Forces.

... How ...

A Self-Interested, Cynical, & Ambitious Military-Civilian-Political Elite Created this Situation
by Forgetting the Noble Ideals of the *Constitution* Each Member has Sworn to Uphold.

... Why ...

This Elite Produced A \$1.5 Trillion Budget Plan that is *Not Accountable*
to Itself, the President, Congress, or the American People, Whom it Purports to Serve.

... & What ...

Reforms Might Restore *Common Sense, Checks & Balances, Honesty & Integrity, & Accountability* to the
Decision Process Shaping Defense Policies and Budget Plans.

The Remainder of this Presentation is an In-Depth Elaboration of these Statements.

Contents

Introduction: Epistemological Orientation and Methodological Overview

Part I: Observations & Description (From Macroscopic Structure to Microscopic Action)

- A. Evolution of Forces (Physical Changes: 1950 - 1994 & 1995 -1999 & Beyond)
 - Cost Growth - Modernization Rates - Force Structures - Optempos
 - 1st Orientation
- B. Mismatches & Evolution (How Collective Decisions Shape the Evolution of Forces)
 - Federal Plans - Defense Plans - Defense Production & Cost Predictions
 - Reorientation
- C. Modes of Conduct (How the Behavior of Individuals Shapes Collective Decisions)
 - Front Loading & Political Engineering
 - Reorientation
- D. Two Questions:
 - Are DoD Decision Makers Repeating the Mistakes of the Early 1970s?
 - Will the Current Reform Agenda Prevent a Recurrence of this Pathological Behavior?
- E. Recapitulation: A Systemic Portrait of the Emergent Properties

Part II: Synthesis - Explanation - Evaluation

- A. Origins of Order
- B. Dynamic Stability of an Undesirable Order
- C. Relation to Design of Federal Government
- D. Intellectual Appreciation & Moral Evaluation

Part III: Recommendations

- A. Rationale
- B. Short Term
- C. Long Term

Bibliography

Appendix

Epistemological Orientation

Focus of Effort:

We are going to Gather Variety of Observations About Reality,

Analyze these Observations from a Variety of Perspectives

... and ...

Combine these Observations & Analyses into a New Description of Reality.

Before Beginning, It Seems Appropriate to Ask -

What Do We Mean by the Word *Observation*?

... and ...

How do Observations *Relate* to One's Description of Reality?

Observations -- Orientation (*Analyses & Synthesis*)

A Simple Introduction to Method:

- **What is a Pyramid?**

Mental Images:

- ✓ Top
- ✓ Side
- ✓ Bottom

- **Boyd's Thought Experiment:**

Mental Images:

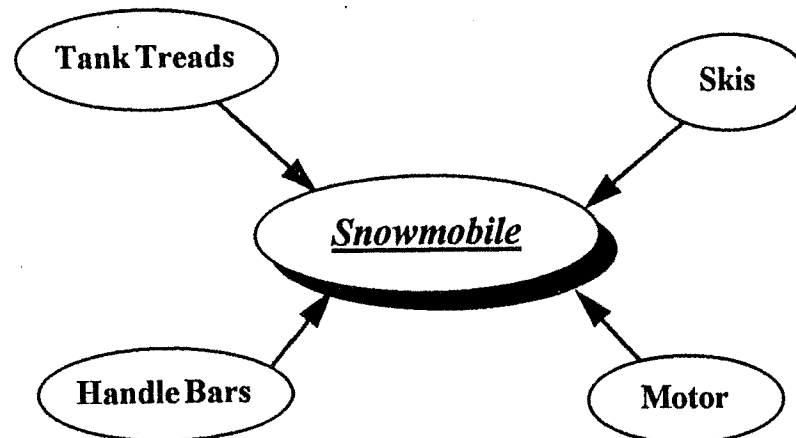
- ✓ *Setting:* Skiers on sky slope, snow, chair lifts, alpine lodge, etc. (retain *skis*, discard the rest)
- ✓ *Setting:* Summer at lake, speedboats, outboard motors, water skiers, etc (retain *motor*, discard the rest)
- ✓ *Setting:* Tour de France, bicycle racers, festivities, etc. (retain *handle bars*, discard the rest)
- ✓ *Setting:* Boy in toy store at Christmas, tinsel, candy, Barbie Dolls, toy tank, etc. (retain *tank treads*, discard the rest)

Question:

What do we have?

What is a Pyramid?

- Viewed from the top, it is a square with intersecting diagonals.
- Viewed from the side, it is a triangle.
- Viewed from the bottom, it is an opaque square.



What is a Snowmobile?

Answer: It is a New Combination made up of parts extracted from previously unrelated domains.

Point:

All Observations of the External World are Filtered through the Cognitive Apparatus of the Observer,
...and therefore ...

Observations Should Not Be Separated From the Mental Processes of the Observer.

Implication:

Any Description of a Complex Reality Can Be Viewed Through the Variety of the
Different Perspectives Making Up Each Individual's Mental Orientation.

Epistemological Problem:

How Does One Evolve a Relevant Orientation for Apprehending the Complexity of Observations in the Real World?

To Answer This Question,
Let Us Probe More Deeply into the Nature of Observations
... and ...
The Relationship Between the Observer and the Observed
... and the way we ...
Synthesize these Observations into a Useful Picture of Reality.

Observations Can Be Categorized by the Interaction Between the *Observer* and the *Object of Observation*

Classical Physics (Newton & Laplace):

- The universe is a system *Reversible Deterministic Events* that exists as an objective reality *Independent* of the Observer. Observations are *events in themselves*, and a complete description of these events is theoretically possible. Uncertainty about the description is, therefore, the result of ignorance. [Bronowski 2: 63-4]

Relativity (Einstein):

- The universe is a system of *Reversible Deterministic Events* that exists as an objective reality, but one's description of that reality is *dependent* upon the position of the Observer in the system. Between each Event and the Observer, there must pass a *Signal*, e.g., a ray of light, which can not be taken out of the observation. The fundamental unit of observation is the *Relation* between the event, the signal, and the observer. Uncertainties about the *system as it is* are the result of ignorance (God does not play dice.), but some events are *unknowable* to man because of the nature of the signal -- e.g., the constant speed of light makes it impossible to apprehend simultaneous events at a great distance. [Bronowski 2: 102-3]

Quantum Mechanics & the Principle of Complementarity (Bohr's interpretation of Heisenberg's Uncertainty Relation):

- Events at the atomic level can only be described in terms of *Alternative Possibilities and Relative Probabilities of Occurrence*: Heisenberg showed why it is impossible to make precise, simultaneous measurements of the position and momentum of an electron. Bohr interpreted this result to mean that (1) the *Interaction* between the object of observation (the quantum system) and the observing mechanism is *Nondecomposable*; (2) no single observation or observing mechanism can completely describe the system; and (3), while various observations may describe complimentary portions of the same reality, it is *impossible* to combine them into a single, complete description of the whole of reality. [Prigogine: 222-9; Britannica: V15, 159 & V23, 876]

Natural Science: Evolutionary Biology, Culture, & Epistemology (Lorenz, Campbell, Hall):

- Events in the external world are perceived through an *Evolutionary Neurosensory System* that acquired its present form through interaction with and adaptation to the *Subset* of events in the *Outer World* which affects *Survival*. Since these sensing mechanisms necessarily superimpose *Partial Images* of the outer world on the fluctuating mental states of the *Internal Neurosensory Organization*, one must *Compensate* for the physiological and psychological mechanisms present in the observer to construct a viable image of reality. [Lorenz 1:1-19, Campbell: 47-89]

Methodological Implications:

Our aim is to understand how a complex military-economic-political decision process interacts with its ever-changing environment.

In this context, it is important to appreciate that this *Interaction* is shaped partially by the *Evolving "Neurosensory Organization"* of the DoD -- a procedures-driven bureaucracy composed of many individuals, who are organized into overlapping factions, each pursuing unique as well as common interests.

Our ability to comprehend this interaction is constrained by at least two limitations:

- Since we can not isolate its components to examine their microscopic action-reaction relations in a scientifically-controlled experiment, all observations are necessarily those of an ever-changing kaleidoscope of tightly and loosely coupled relationships operating in an *uncontrolled* way.
- Moreover, our observations of the outputs of this ever-changing interaction rely on information produced by decision-making procedures (e.g., the PPBS/DAB processes) that were evolved by the DoD to cope with the changing conditions of its environment. Therefore, in some important circumstances, the activity of producing the information influenced the very interaction that the information itself purports to describe. It is well established that such non-decomposable, self-referencing processes introduce *non-linear* effects that can produce unpredictable dynamics and irregular complexities.

Implications of these Cognitive Limitations:

One can not assume, a priori, that a complete description of this social interaction is practically or even theoretically possible, either by postulating the ideal of an uninvolved objective observer (as did Newton & Laplace), or the ideal of an unobtainable universal description (as did Einstein).

When the wealth of reality overflows any language or theoretical structure, then the ideas implicit in the *Complimentarity Principle* (Bohr) and *Evolutionary Epistemology* (Campbell, & Lorenz) imply we must use a *Variety of Perspectives* to represent partial or complimentary aspects this same reality.

Therefore, a germane description depends crucially upon our ability to evolve an appropriate *variety of perspectives*.

Raises Question:

How do we evolve an operational description from a *variety* of perspectives?

Answer:

Through a self-correcting process of *observations-analyses/synthesis-hypothesis-test*.¹

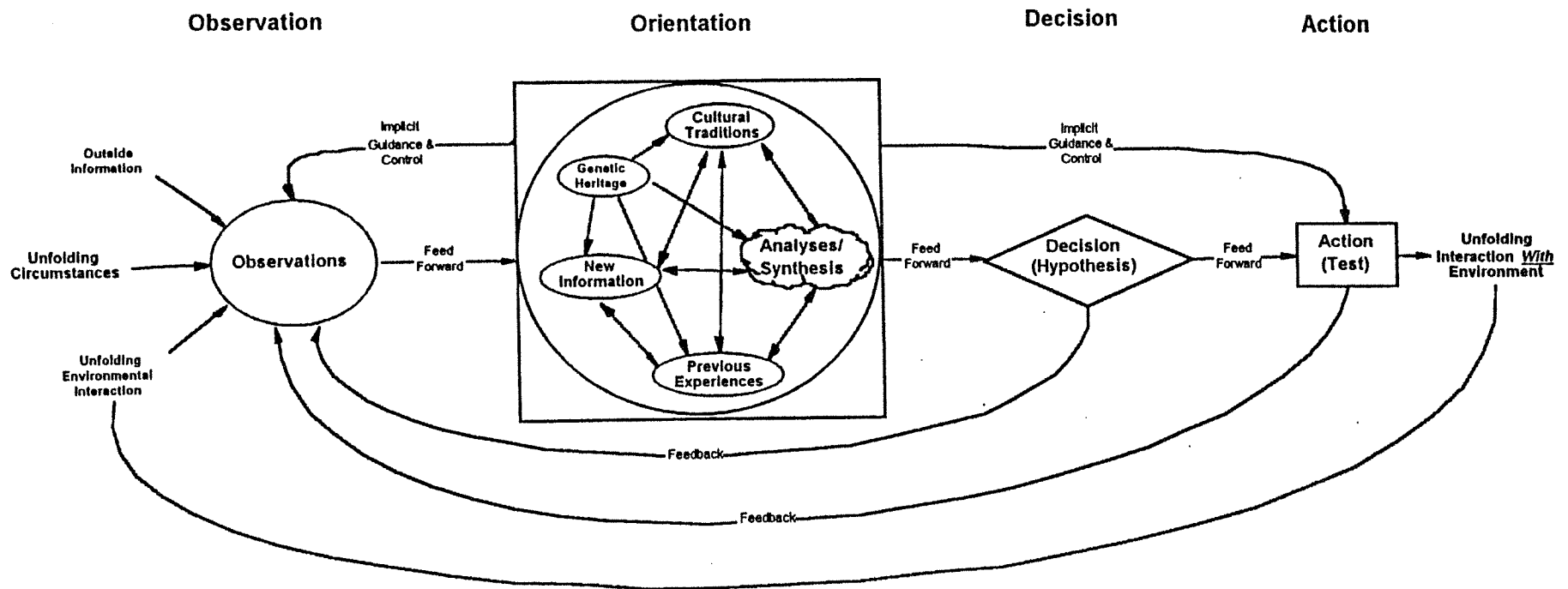
... That is, our strategy will be to ...

Evolve a new description via a " ... process of reaching across many perspectives; pulling each and every one apart (analyses), all the while intuitively looking for those parts of the disassembled perspectives which naturally interconnect with one another to form a higher order, more general elaboration (synthesis) of what is taking place [Boyd 5:4]."

... and to continually examine that description for ...
internal consistency as well as the consistency of the match between the description and reality.

¹ This interpretation of the scientific method is described by Boyd (references 4 and 5).

The OODA "Loop"



Point:
 The Analytic/Synthetic Process by Which our Mental Orientation Interacts With the External World is an Evolving, Open-Ended, Far-From-Equilibrium Process with Positive as Well As Negative Feedback.
 (Source: Boyd 1-5)

Part I

OBSERVATIONS & DESCRIPTION:

From Macroscopic Structure to Microscopic Action

EVOLUTION OF FORCES

HISTORY: 1950-1995

CURRENT PLAN: FY 1996-2001 FYDP & BEYOND

FIRST ORIENTATION

MODERNIZATION

(Procurement Quantities, Inventory, & Costs)

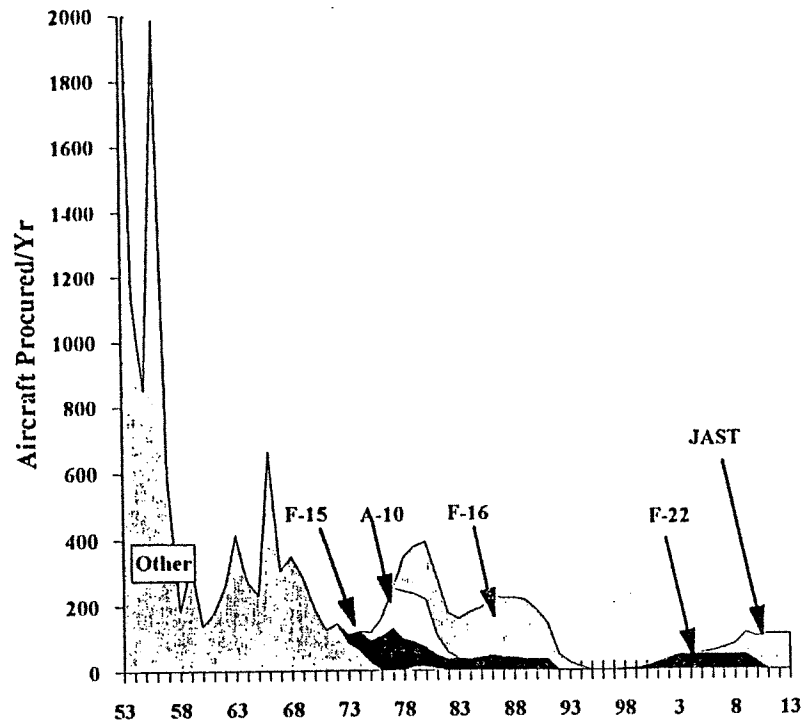
- Case Study: Tactical Fighter/Attack Forces in Air Force, Navy, & Marine Corps
- Generalization

OPERATIONS

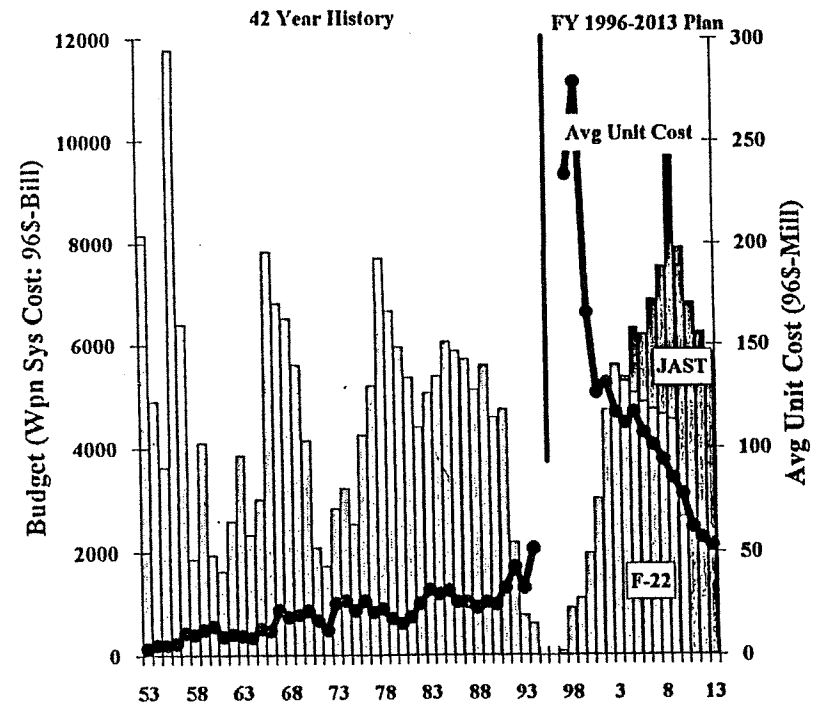
AIR FORCE TACAIR MODERNIZATION (FY 1953-2013)

FY 1996-2001 FYDP + FY 2002-2013 Plan

PROCUREMENT



ECONOMICS OF AF FTR/ATK PROCUREMENT



Key Points:

Production Declines Because Actual Costs Grow Faster than Budgets -- F-22/JAST Magnifies Destructive Trend.

... Yet FY 1996-2013 Plan for F-22/JAST ...

Assumes Future Costs Will Decline Sharply Because Outyear Budgets Will Baloon Rapidly to Cold War Levels.

Procurement Economics of AF Fighter/Attack Aircraft

	1953-62	1963-72	1973-82	1983-92	1993-02	2002-13
Total Aircraft Procured (#s)	7,688	2,994	2,347	1,800	116	792
Total Budget (Billions-FY96\$)	\$47.0	\$43.9	\$48.1	\$50.3	\$13.3	\$68.6
Total Budget (% Growth)		-7%	+10%	+5%	-74%	+36%
Average Cost/Plane (Millions-FY96\$)	\$6.1	\$14.7	\$20.5	\$28	\$115	\$86.7
Average Cost/Plane (% Growth)		+140%	+40%	+36%	+309%	+210%
<u>Cost Growth Minus Budget Growth (%)</u>		+147%	+30%	+31%	+383%	+174%
	% chg relative to preceding decade				% chg relative to 1983-92	

Key Point:

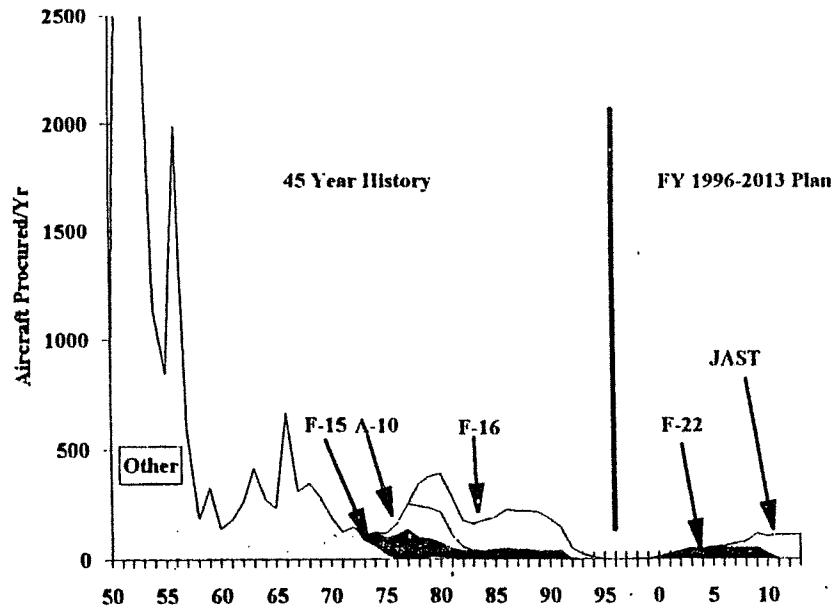
Unit Costs Increase Faster than Budgets!

AIR FORCE FIGHTER/ATTACK FORCES

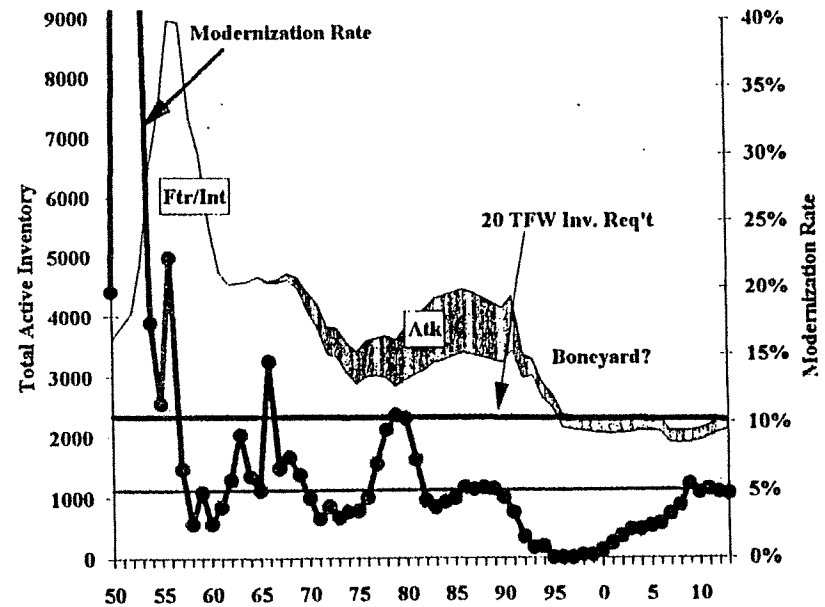
PROCUREMENT - INVENTORY - MODERNIZATION RATES

FY 96-01 FYDP + FY 2002-2013 Plan

PROCUREMENT QUANTITY



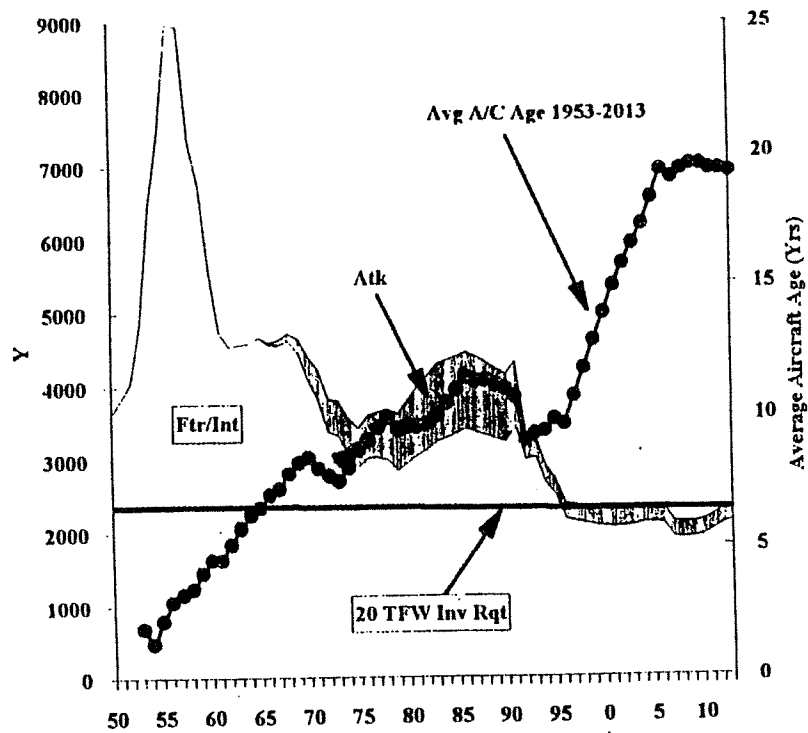
AF FTR/ATK/INT INVENTORY



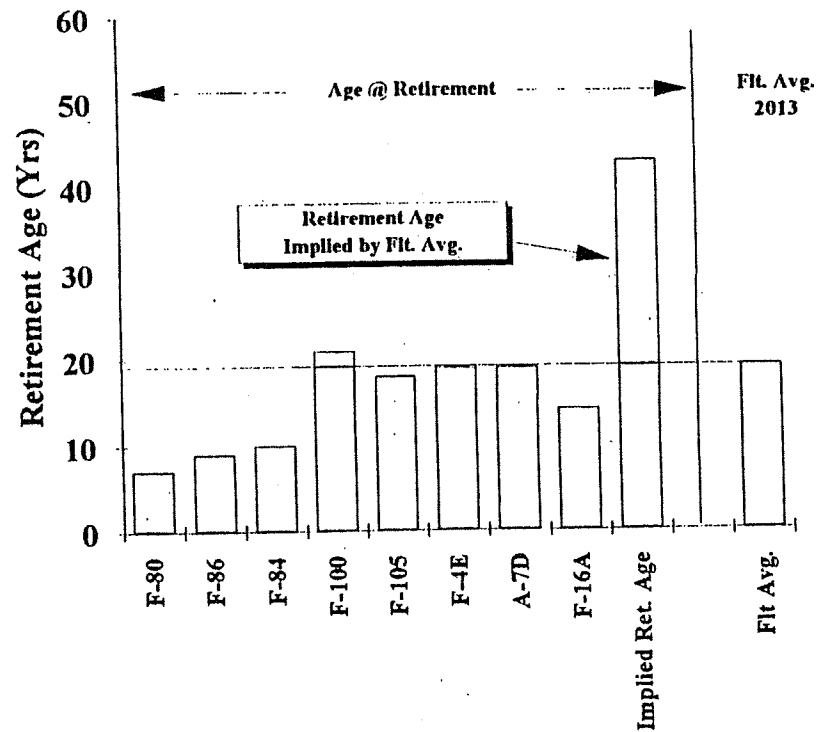
AIR FORCE FIGHTER/ATTACK FORCES INVENTORY - AVERAGE AIRCRAFT AGE - RETIREMENT

FY 1996-2001 FYDP + FY 2002-2013 Plan

Ftr/Atk/Intcptr Inventory & Age



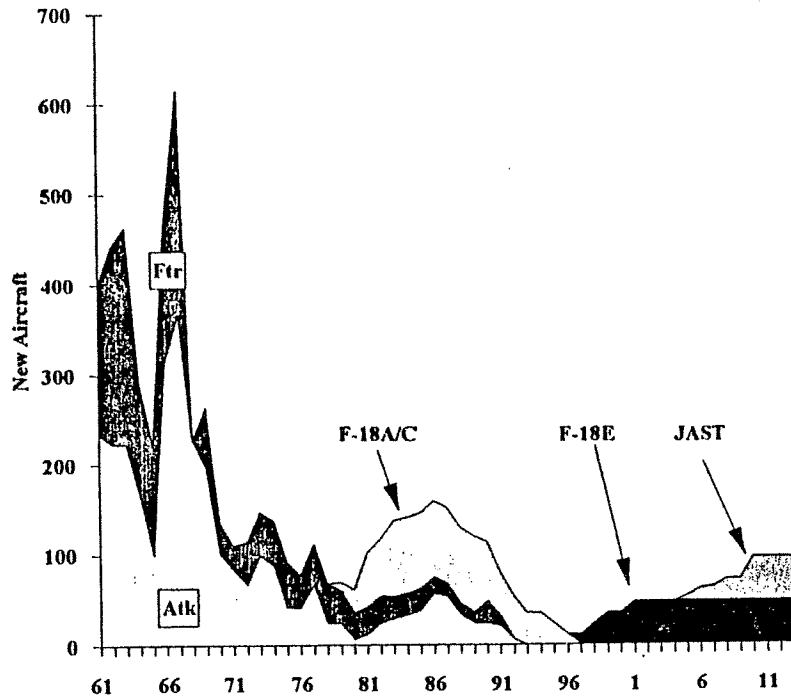
A/C Retirement Age vs. Avg. Age in 2013



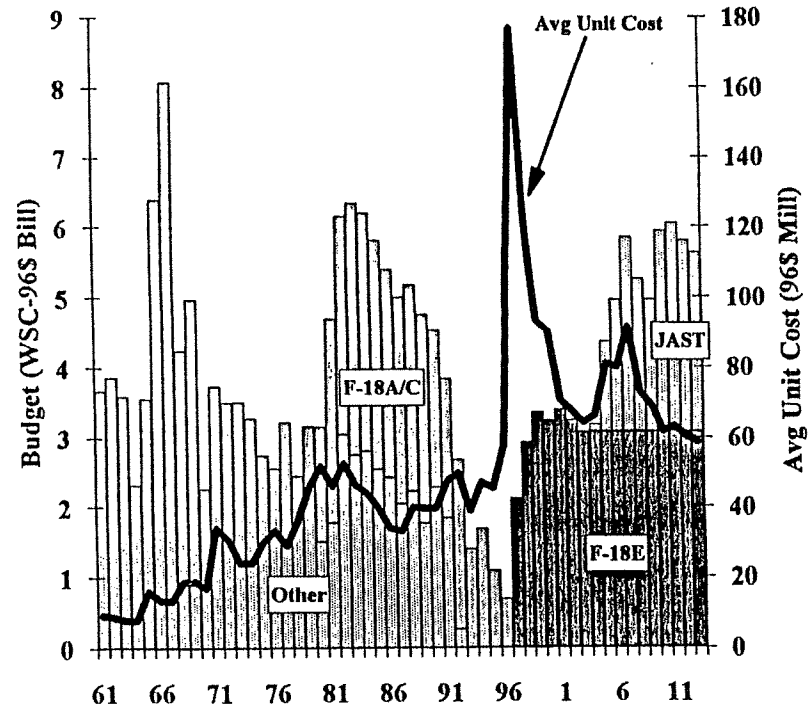
NAVY/MC FIGHTER/ATTACK MODERNIZATION (FY 1962-2013)

FY 1996-2001 FYDP + Long-Range Plan (FY 02-13)

Procurement



Economics of Ftr/Atk Procurement



Economics vs. Post-Cold War Planning Assumptions:

Although Actual Costs Have Grown Much *Faster* than Budgets Over the Long Term,

1996-2013 Plan Assumes -

Even *Higher Costs* of F-18E & JAST Will *Decline* as Production Increases.

... Moreover ...

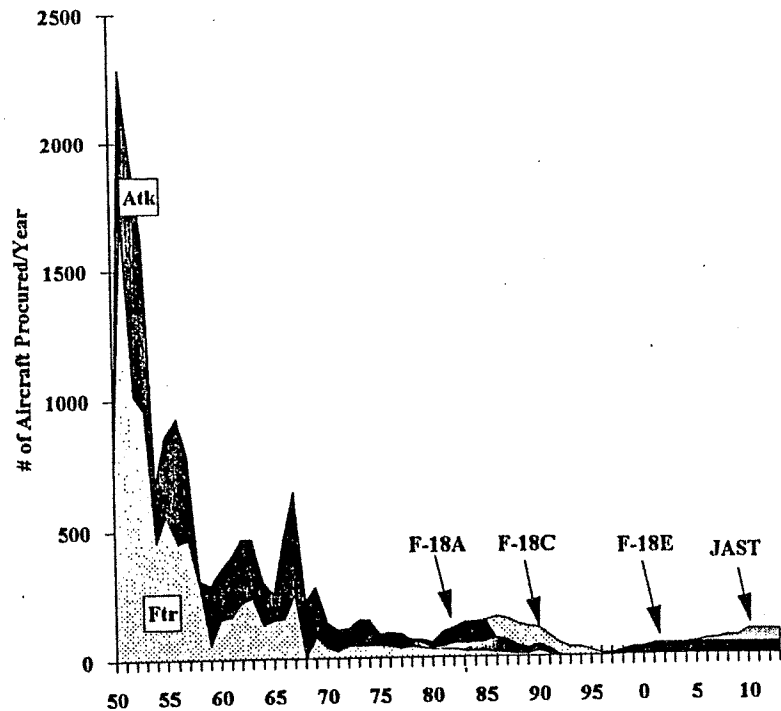
Future Tacair Budgets Will *Grow Rapidly* to Cold War Levels.

NAVY/MC FIGHTER/ATTACK FORCES

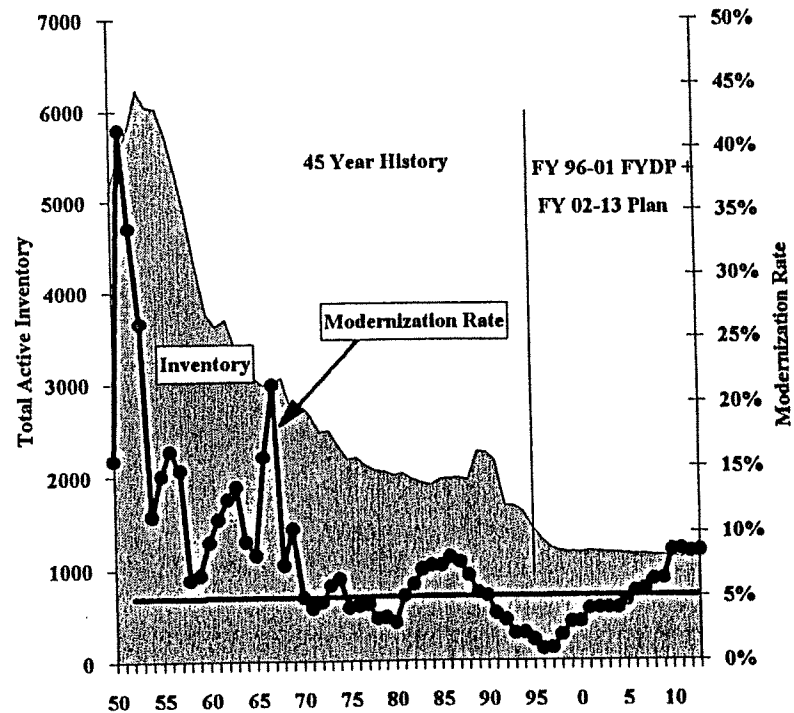
PROCUREMENT - INVENTORY - MODERNIZATION RATES

FY 96-01 FYDP + Long-Range Plan (FY 02-13)

DoN Ftr/Atk Procurement



Inventory & Modernization Rates



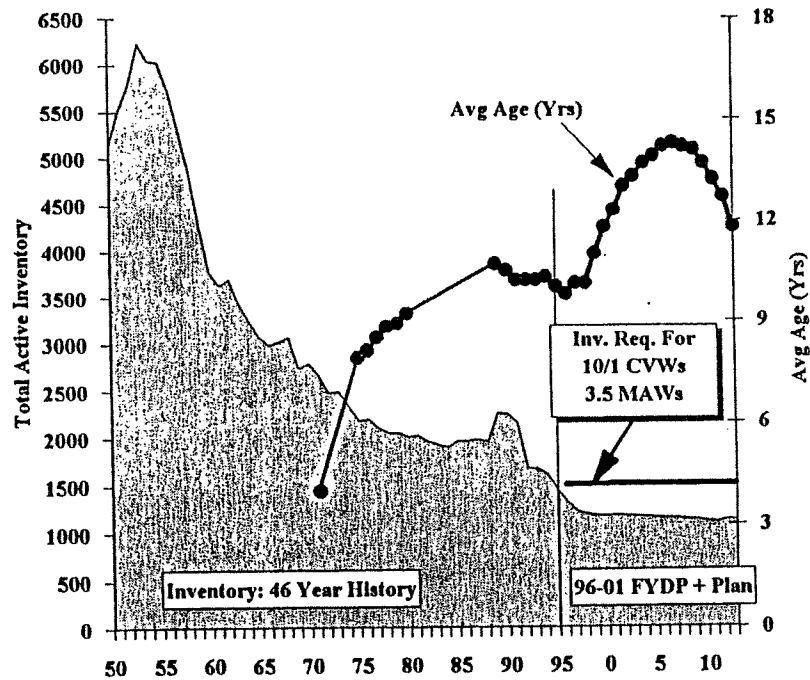
NAVY/MC FIGHTER/ATTACK FORCES INVENTORY - AVERAGE AGE - CARRIERS

FY 96-01 FYDP + FY 02-13 PLAN vs. FULL STRENGTH REQUIREMENT

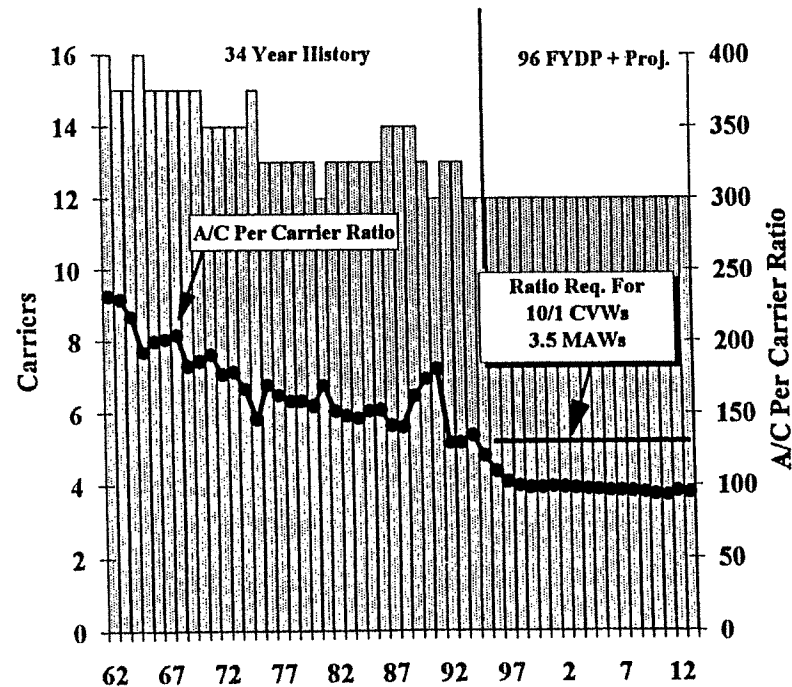
Full Strength Inventory Requirement:

- 10 Active + 1 Reserve CVWs @ 60 PAA per CVW
- 3.5 MAW Equivalents With 12 PAA Ftr. Sqns. & 20 PAA Lt. Atk. Sqns.
- Plus 25% for Training & 15% for Depot & R&D Pipelines
- No Marine Squadrons Permanently Assigned to Carriers

Inventory & Average Age



Ftr/Atk Inventory Per Attack Carrier



Consequences:

While No One Can Predict the Details of Future Events,
A Perfect Execution of these Plans is Setting the Stage for an Unfolding Environment of Uncontrollable Selection Pressures
That Will Almost Certainly Push the Air Force and Navy Along Some Combination of the Following
Capability-Degrading, Pathways as They Move into the Twenty-First Century:

- Additional "unplanned" cutbacks in force size caused by pressure to retire the oldest airplanes without replacement in order to reduce the rising O&M burden of an aging inventory;
- Increasing pressure to reduce training tempos caused by mushrooming infrastructure inefficiencies and rising per unit O&M costs which are consequences of assigning a smaller number of older aircraft to combat units, bases, and carrier battle groups;
- Decreasing combat readiness caused by growing political-economic pressures to bail out the deficient modernization program by robbing the readiness budget;
- Increasing personnel retention problems caused by the higher maintenance workloads and morale-busting workarounds needed to support aging, depot-intensive, hi-tech equipment;
- Increasing morale problems and declining training opportunities caused by pressure to increase the proportion of deployed units to make up for shortages of aviation squadrons;
- Reduced commitments in order to harmonize the national strategy to the constraints of a shrinking force structure made inevitable by an inadequate modernization program;
- Increasing pressure to replace combat aircraft and traditional human-centered military strategies with a variety of high-cost, closed-looped, surveillance-recce-C4I-PGM "force multipliers" and mechanistic, technology-centered strategies derived from untestable, speculative hypotheses about a so-called "revolution in military affairs."

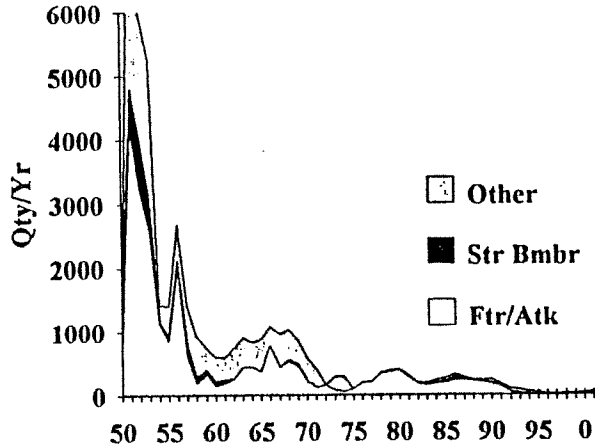
Raises Questions:

In the Real World of Omni-Present Cost Overruns, Inexorable Growth of Operating Costs, and Inexecutable Bow Waves,

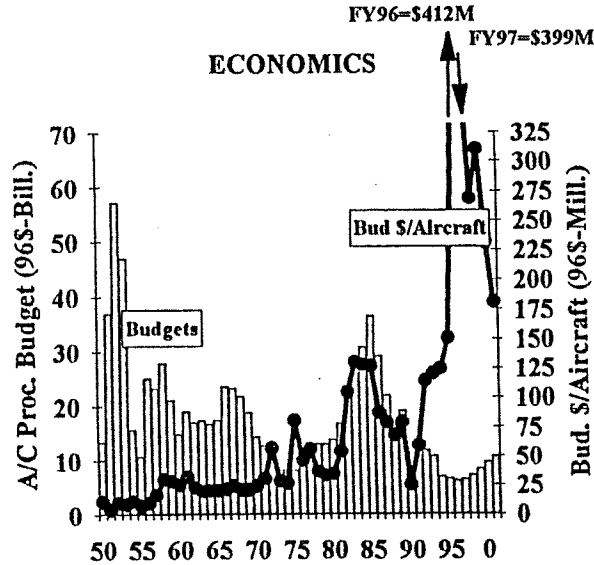
1. Will the Capability Improvements of the F-22, F-18E/F, and JAST be large enough to Offset the likely capability-degrading trends?
2. If not, will these programs unleash Political Selection Pressures that force the Defense Department to Trade Off readiness and force structure to protect its procurement program and the industrial base which benefits from the flow of procurement dollars?

AF AIRCRAFT: MODERNIZATION & INVENTORY (FY96-01 FYDP)

PROCUREMENT



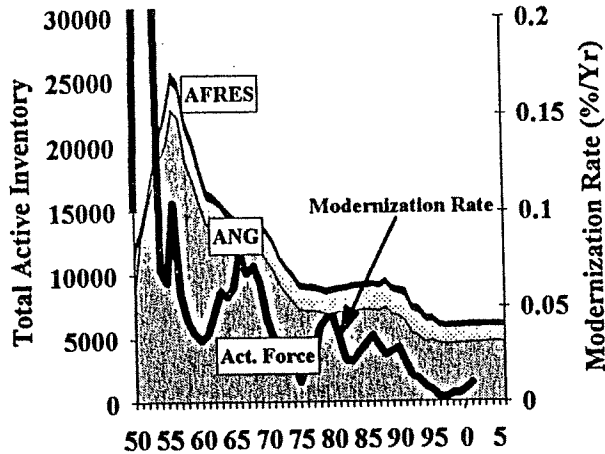
ECONOMICS



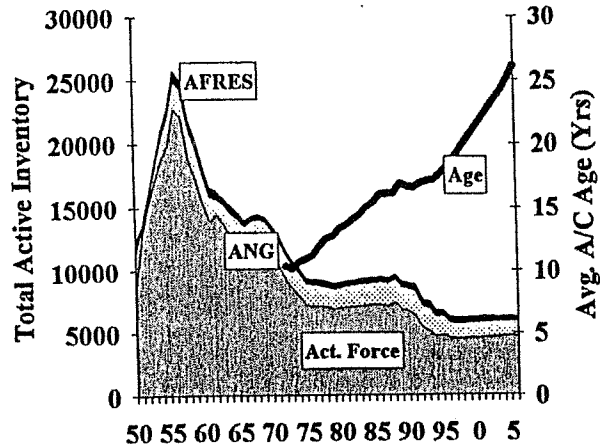
10 Year Economic Snapshots

Period	#s Proc	Constant 96\$	
		Budget	Bud \$/AC
52-61	21,099	\$262B	\$12.4M
62-71	8,384	\$183B	\$21.8M
72-81	2,792	\$114B	\$40.8M
82-91	2,464	\$218B	\$88.4M
92-01	480	\$85B	\$176.7M

INVENTORY & MODERNIZATION



INVENTORY & AVG. AGE



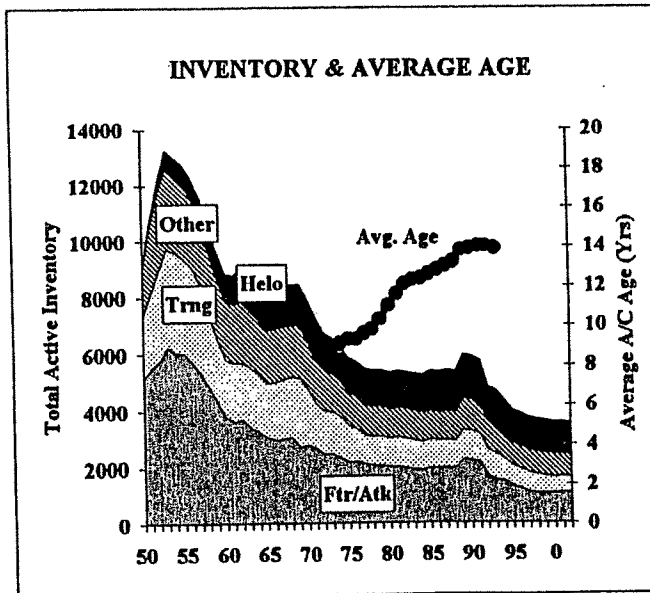
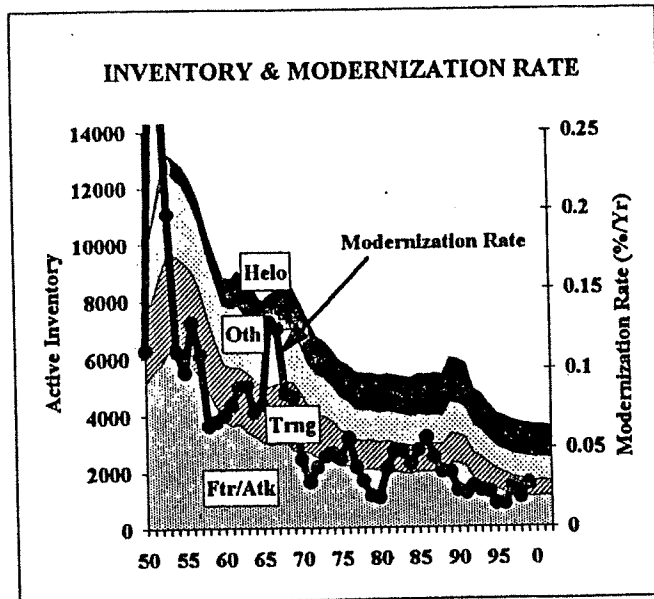
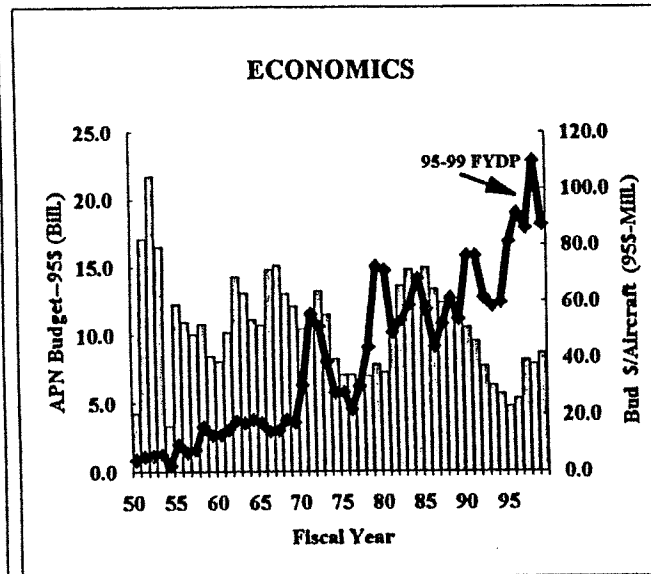
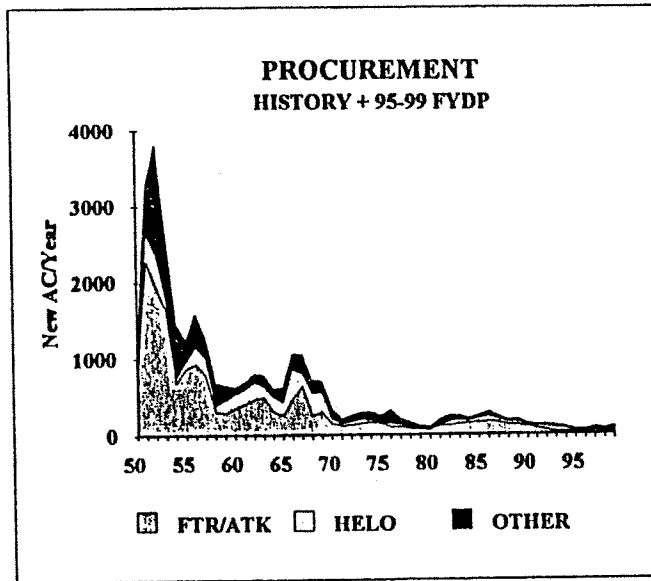
Average Age (Yrs)

	FY76	FY96	FY06	FY13
Ftr/Atk	9	10	19	23*
Airlift	12	20	26	33**
Bmbr	17	18	28	35
Tnkr	16	33	43	50

* = w/o JAST

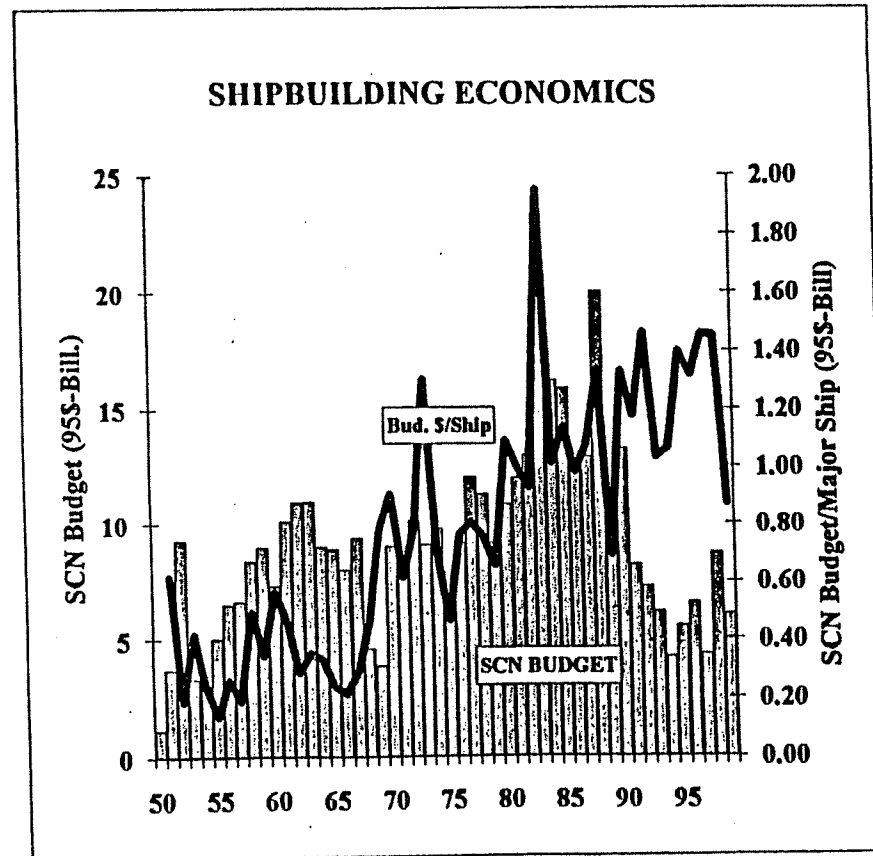
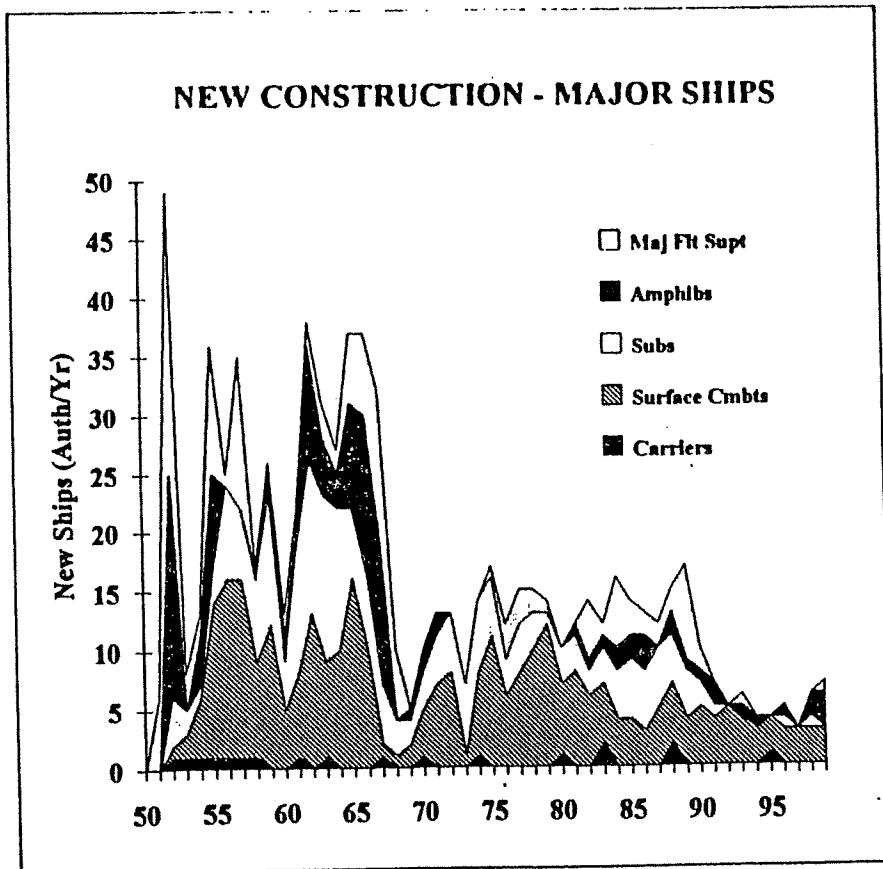
** = C-17 capped @ 40 a/c

NAVY/MC AIRCRAFT MODERNIZATION FY 95-99 FYDP (BOTTOM-UP REVIEW)



FLEET MODERNIZATION

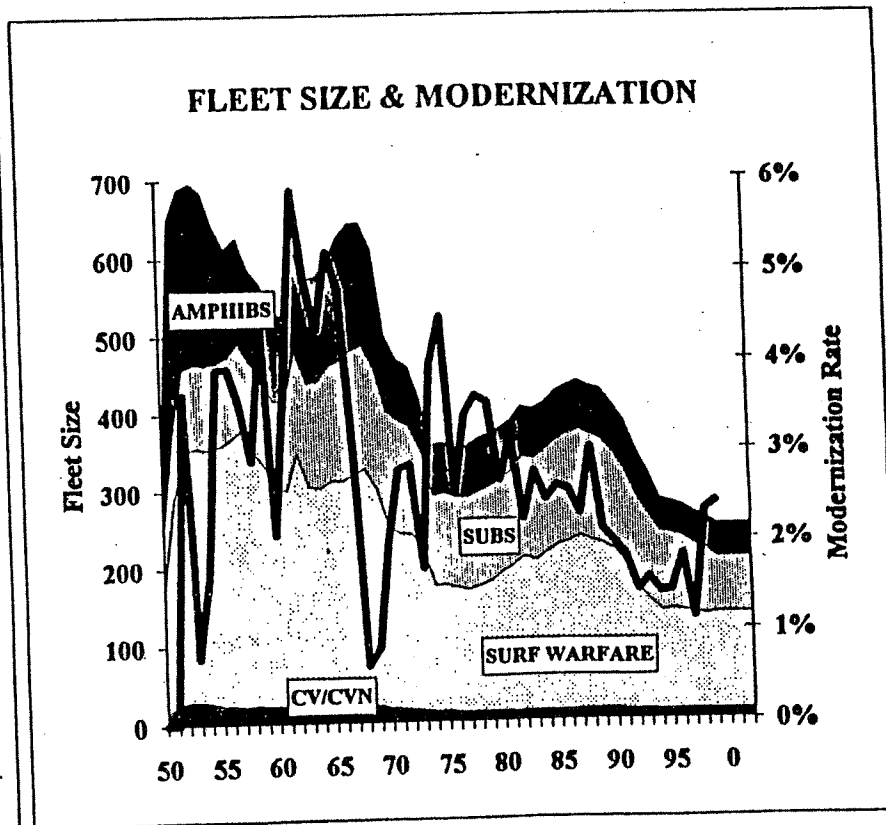
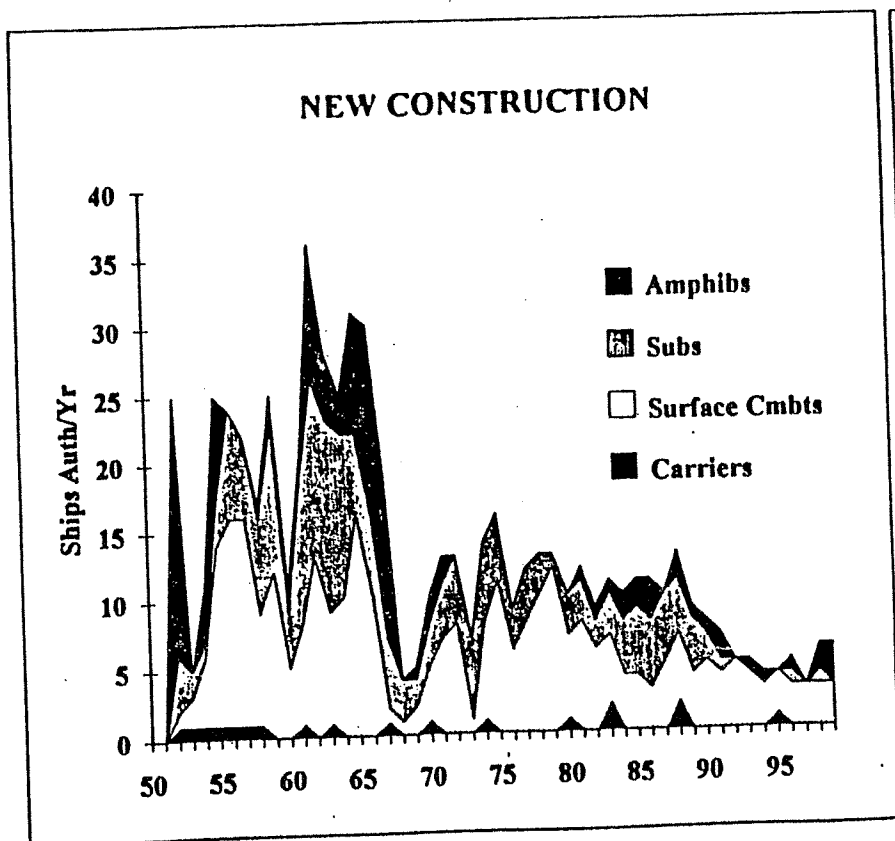
FY 95 FYDP (BOTTOM-UP REVIEW)



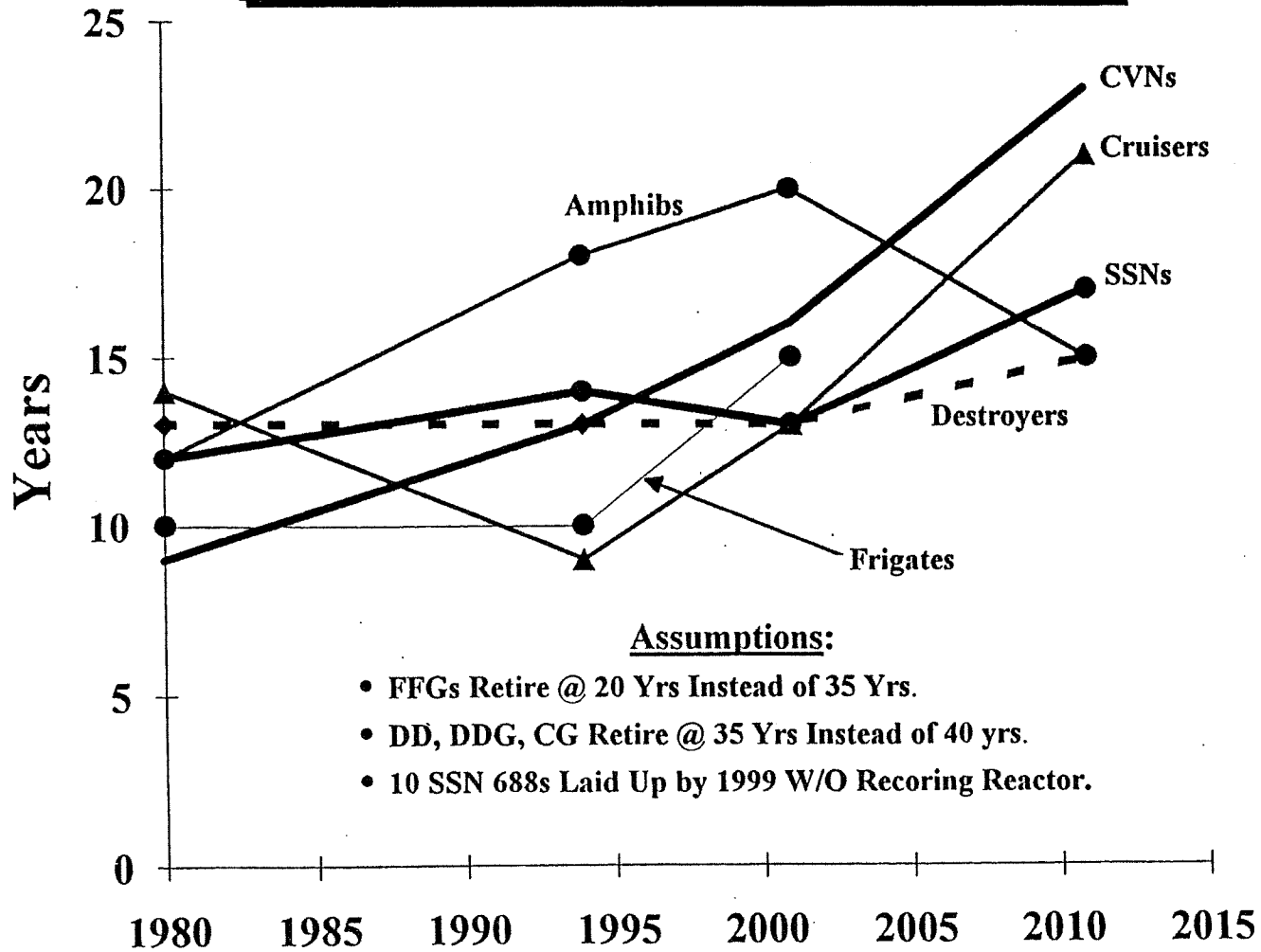
NAVY FLEET (MAJOR COMBATANTS)

NEW CONSTRUCTION - INVENTORY - MODERNIZATION RATES

FY 95 POM (BOTTOM-UP REVIEW)



Average Age of Navy Ships

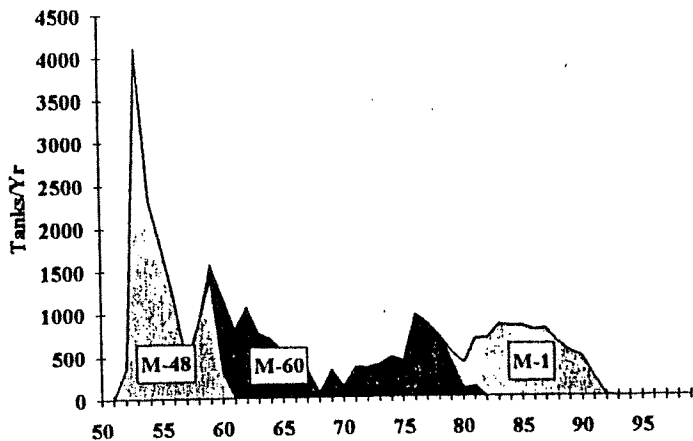


ACTIVE ARMY MANEUVER FORCES

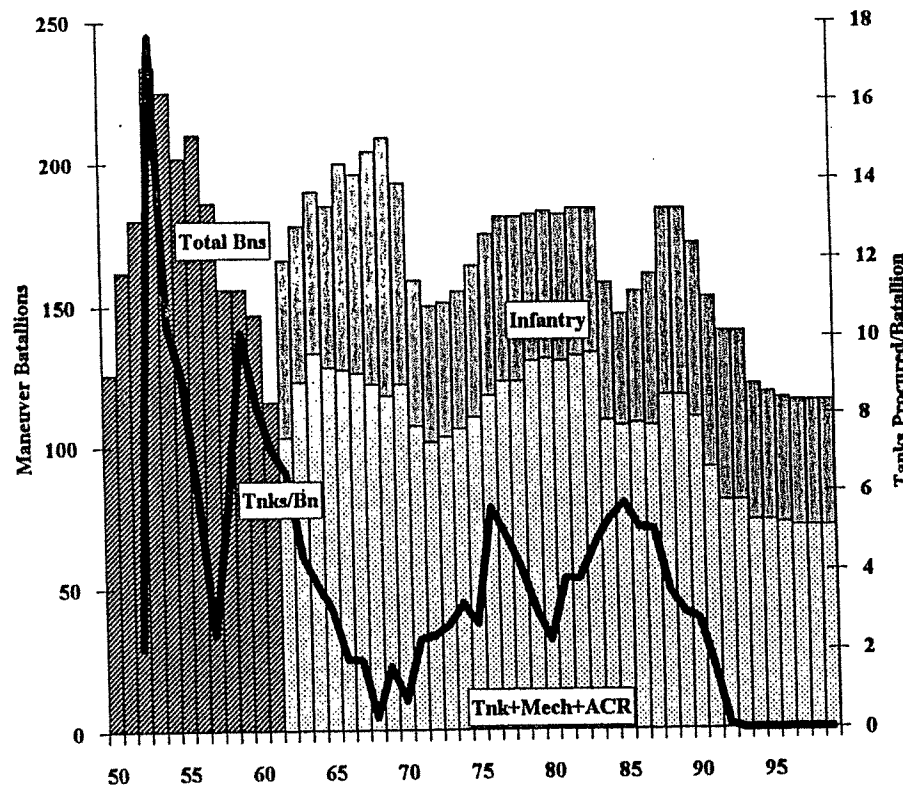
TANK PROCUREMENT - FORCES - MODERNIZATION

FY 95-99 FYDP (BOTTOM-UP REVIEW)

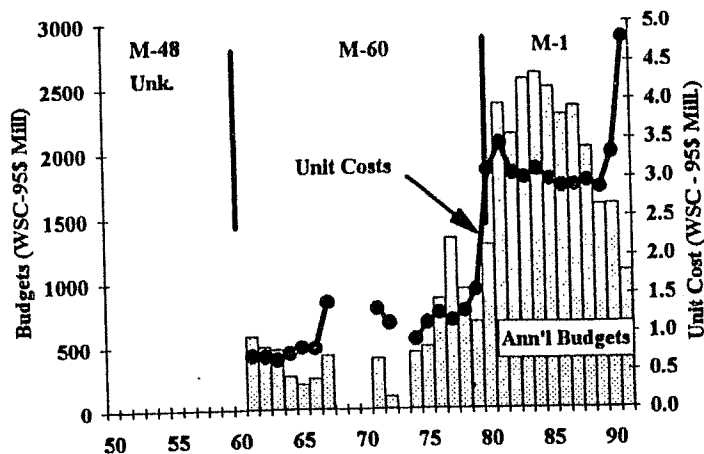
TANK PRODUCTION



ACTIVE ARMY: MANEUVER BATTALIONS



Economics of Tank Procurement (1961-91)

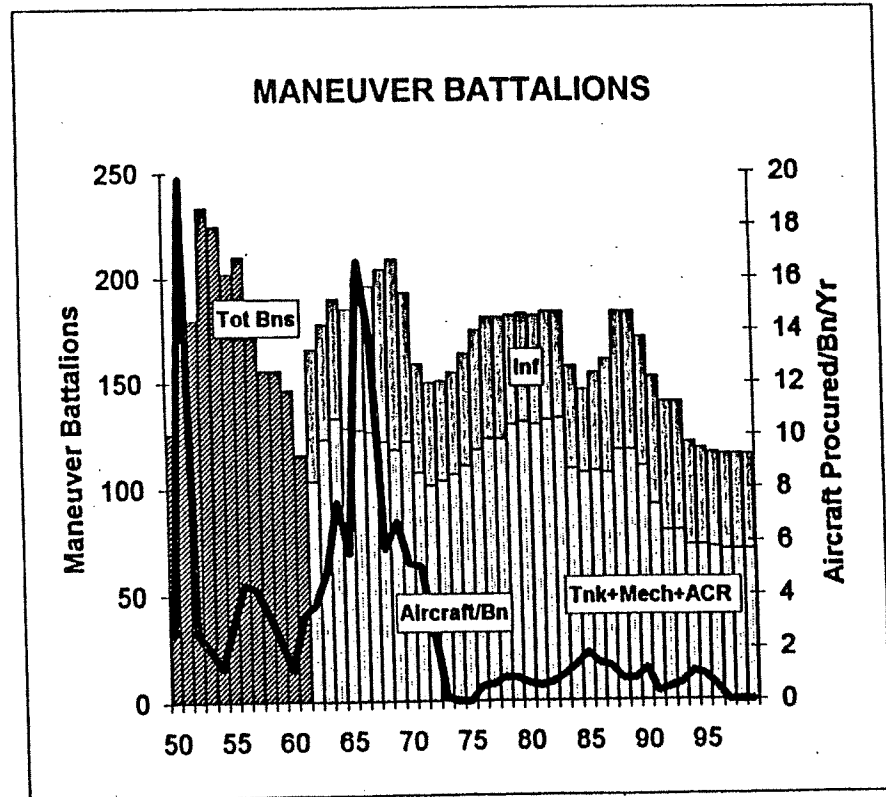
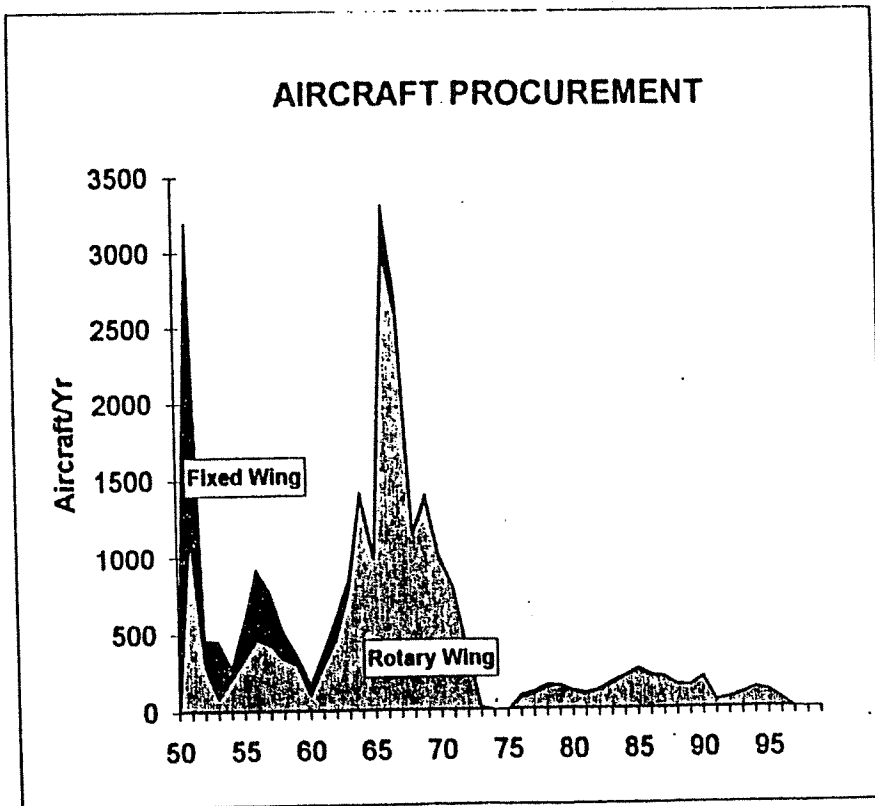


Impact of Policy to Protect Industrial Base During Late 1990s:
M-1A2 Upgrade will cost \$4.5Mill/Cy,
versus
\$3.1 Mill/Cy for new M-1 & \$1.2 Mill.Cy for M-60.

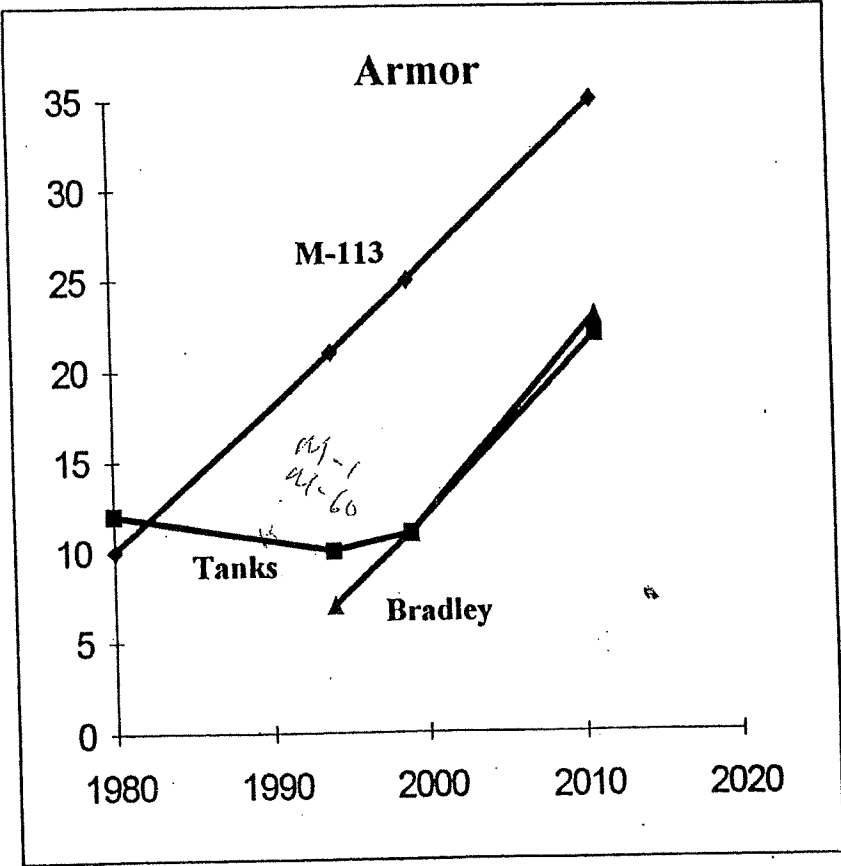
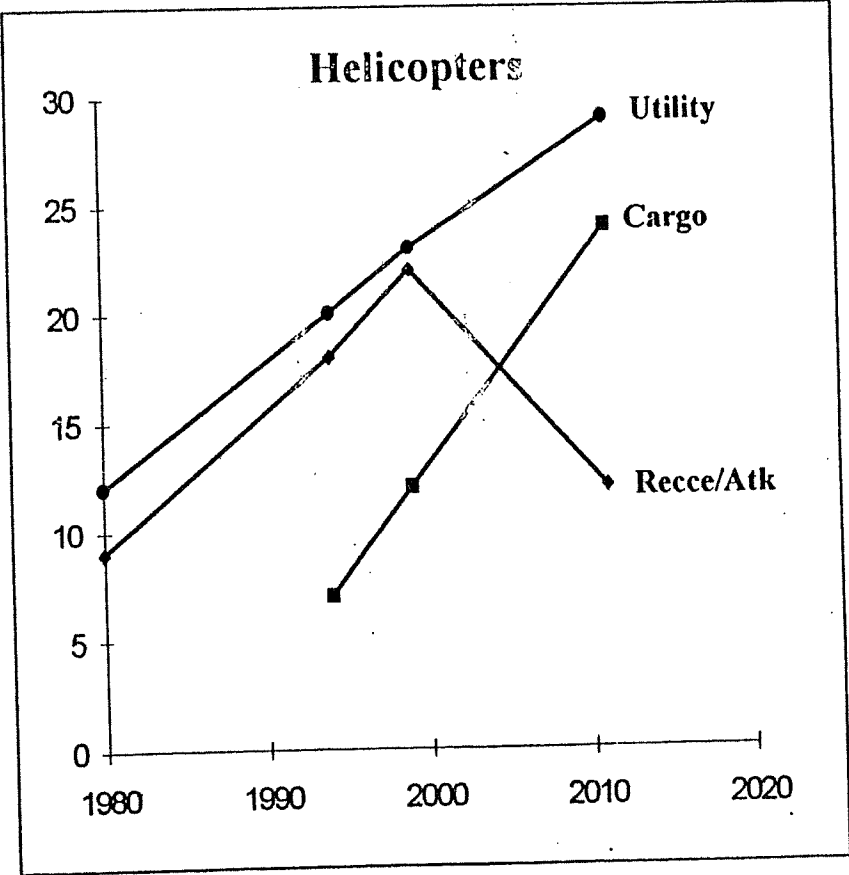
ACTIVE ARMY MANEUVER FORCES

PROCUREMENT - FORCES - MODERNIZATION (Aircraft)

FY 95-99 FYDP (BOTTOM-UP REVIEW)



Average Age of Army Equipment



*M-1
Avg
1980
1990
2000
2010
2020
M1-1
M1-60
Avg
1980
1990
2000
2010
2020*

OPERATIONS

FORCE SIZE and O&M BUDGETS

OPTEMPOS

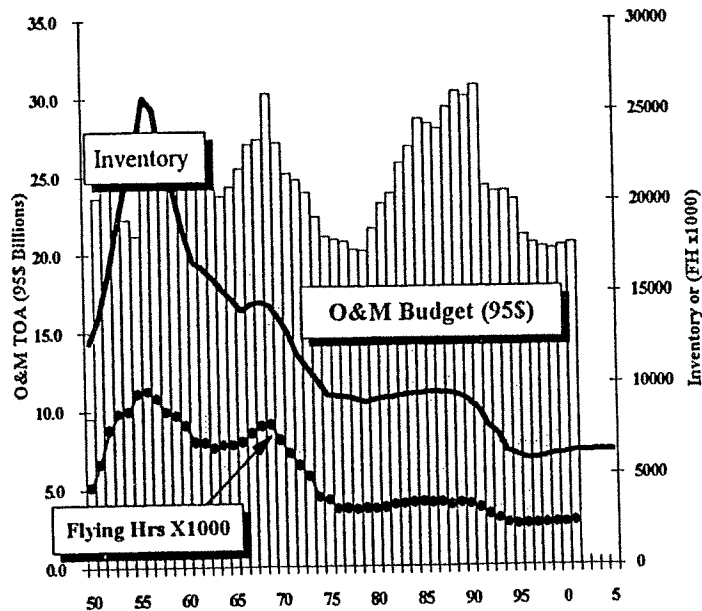
ECONOMICS OF AIR FORCE OPERATIONS

O&M - INVENTORY - FLYING OPERATIONS

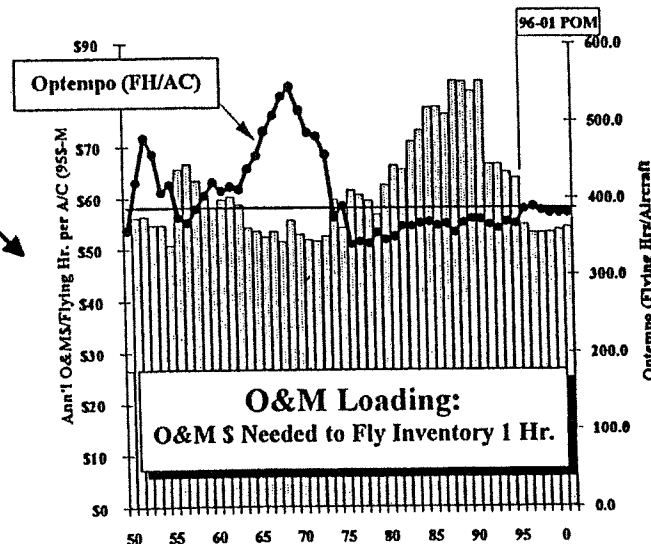
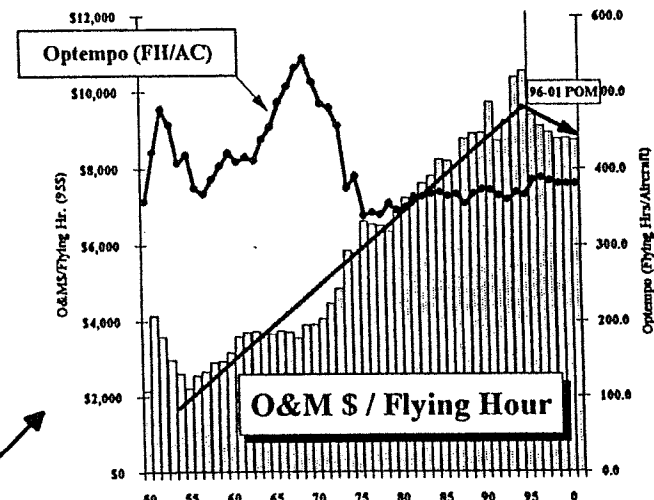
FY 96-01 POM (BOTTOM-UP REVIEW)

TOTALS:

Inventory - Flying Hours - O&M\$



Input/Output Ratios



Question:

Is it Reasonable to Assume that the Future AF O&M Budget Will Become More Efficient on a Per Unit or Flying Hour Basis?

Let's Examine How Organizational Infrastructure is Changing in the AF:

Separate Beddown Locations													
# of "Independent" Flags (CC Ftr/Atk/Intepr Units)													
Unit Size:	12	15	18	24	30	33	36	48	54	66	72	<i>Equiv. TFWs</i>	<i>Flag Ratio # Flags Per Wing Equiv..</i>
Active Force													
FY 90			1	5			3	4		1	18	25	1.28:1
FY 96 POM	1		1		2		2	2	8	3		13.1	1.45:1
												% Change	-48%
													+13%
Reserves													
FY 90			34	18		1						15	3.53:1
FY 96 POM	35	14										8.2	5.97:1
												% Change	-38%
													+69%

Note on Rank Escalation:

**In 1990, All Wing Commanders Were Colonels
By 1996, All Wing Commanders Will Be Generals**

Let's Examine How Base Infrastructure Is Changing In The Air Force: (Base Load Factors: FY90 vs 96)

Airbases	Ramp Space X1000	Load Factors			Airbases	Ramp Space X1000	Load Factors		
		FY90	FY96 POM	Chg			FY90	FY96 POM	Chg
Duke Field	1950	0%	21%	21%	Tinker	6740	39%	34%	-5%
Whiteman	5550	2%	11%	9%	Keesler	1610	40%	53%	13%
Patrick	2170	6%	0%	-6%	Luke	3430	41%	35%	-6%
McClellan	7828	7%	0%	-7%	Little Rock	8695	45%	37%	-8%
Homestead	9999	8%	1%	-7%	Dyess	8465	53%	39%	-14%
MacDill	8406	8%	Closed		McChord	4634	63%	65%	2%
Bergstrom	3589	12%	3%	-9%	Altus	5760	66%	63%	-3%
Maxwell	3000	13%	13%	0%	Norton	5806	68%	Closed	
Mather	6965	15%	Closed		Eaker	3566	68%	Closed	
Elmendorf	6274	16%	25%	9%	Grand Forks	3548	69%	68%	-1%
Eielson	5302	16%	12%	-4%	McGuire	6921	69%	92%	23%
Moody	2759	18%	34%	16%	Kelly	4325	70%	64%	-6%
Anderson	7357	19%	Closed		Barksdale	8725	73%	36%	-37%
Selfridge	5513	20%	17%	-3%	Sey. Johnson	3379	74%	45%	-29%
Pease	9508	20%	Closed (ANG)		Fairchild	4977	75%	89%	14%
Shaw	4052	20%	17%	-3%	Charleston	5502	77%	122%	45%
Nellis	4785	21%	26%	5%	McConnel	3425	77%	109%	32%
Robbins	3397	21%	15%	-6%	Grissom	3982	78%	Closed	
Langley	5957	22%	11%	-11%	Castle	5924	80%	Closed	
Pope	10119	22%	17%	-5%	Beale	2858	81%	49%	-32%
Plattsburg	9528	24%	Closed		Dover	8139	83%	76%	-7%
George	4666	24%	Closed		Wurtsmith	3500	84%	Closed	
Mtn. Home	4850	24%	36%	12%	Griffiss	3493	84%	1%	-83%
England	3959	25%	Closed		Hurburt	2600	95%	120%	25%
Holloman	5625	26%	16%	-10%	Wright-Pat.	5517	103%	28%	-75%
Tyndall	3001	26%	30%	4%	Minot	2800	115%	49%	-66%
March	9720	29%	26%	-3%	Travis	7967	117%	128%	11%
Scott	1851	32%	26%	-6%	Loring	2359	129%	Closed	
Offut	5862	34%	38%	4%	K. I. Sawyer	2555	129%	1%	-128%
Malstrom	3181	36%	46%	10%	Westover	1715	158%	157%	-1%
Eglin	5709	37%	34%	-3%	Carswell	2337	171%	Closed (ANG)	
Cannon	3324	38%	27%	-11%	Davis-Mon.	1066	188%	170%	-18%

	FY 90	FY96	Change
Total Ramp Space (X 1000)	322076	244213	-77863
# of Bases closed			13
Average Load Factors	46%	41%	-5%

2-11-96

Observation:

Despite a Substantial Reduction in Combat Forces Between FY90 and FY96,

Flag Ratios Increased and Base Load Factors Decreased.

... Moreover ...

The Evolving Phenomenon of Combat Forces Shrinking Faster than Organizational and Physical Infrastructure is

Consistent with the 40 Yr. Pattern of Adaptation During of the Cold War.

Impression of Input/Output Efficiencies:

These Changes Appear Inconsistent With the POM's Prediction of Decreasing O&M \$/FH in the Future.

Conclusion:

Projected Improvements in O&M Efficiency May Be Illusory.

A High Readiness O&M Budget Could Be Much Higher Than Predicted,

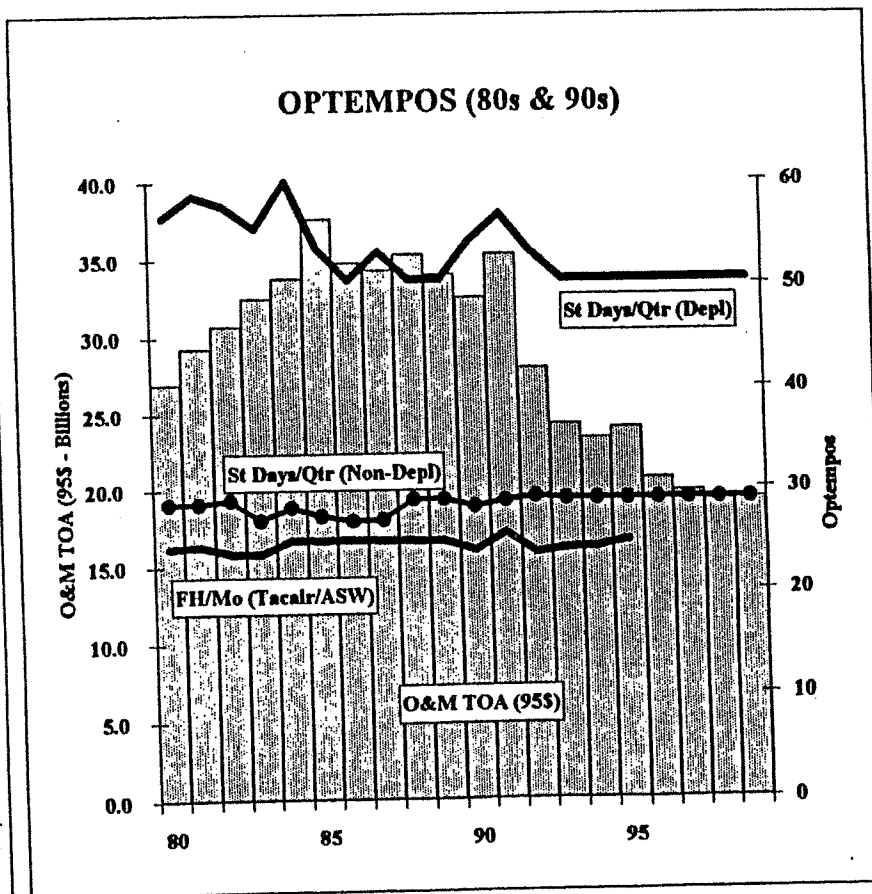
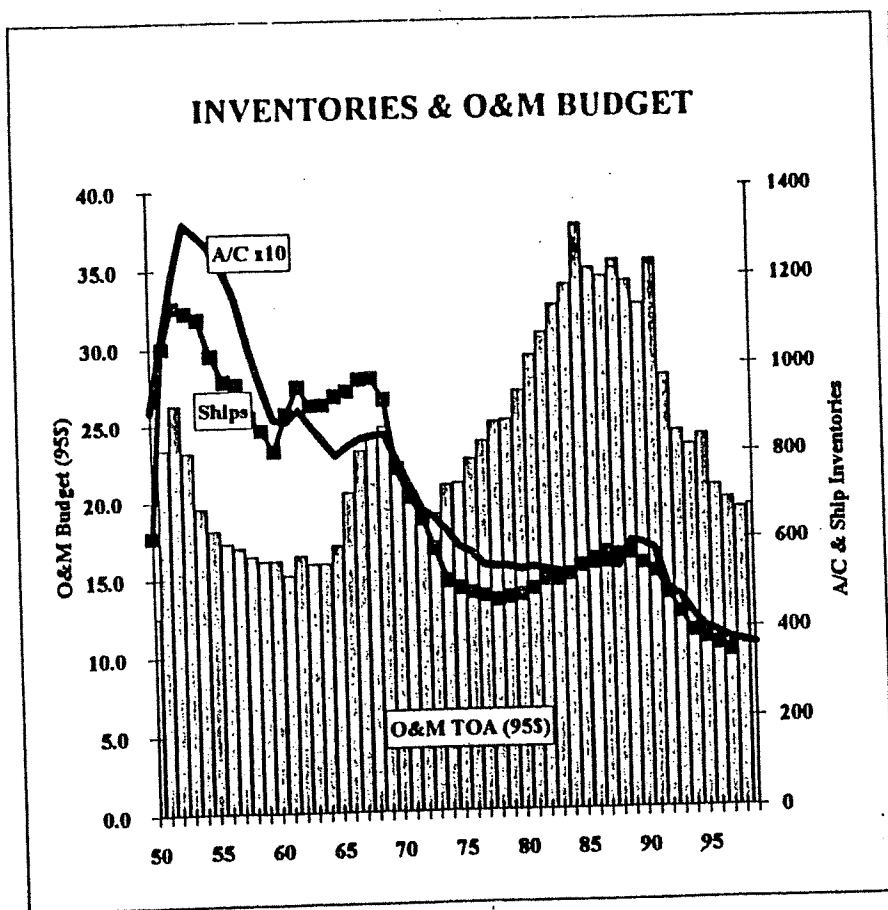
... Unless ...

We Consolidate Units, Close More Bases, or Choose to Shrink the Air Force Again

ECONOMICS OF NAVY/MC OPERATIONS

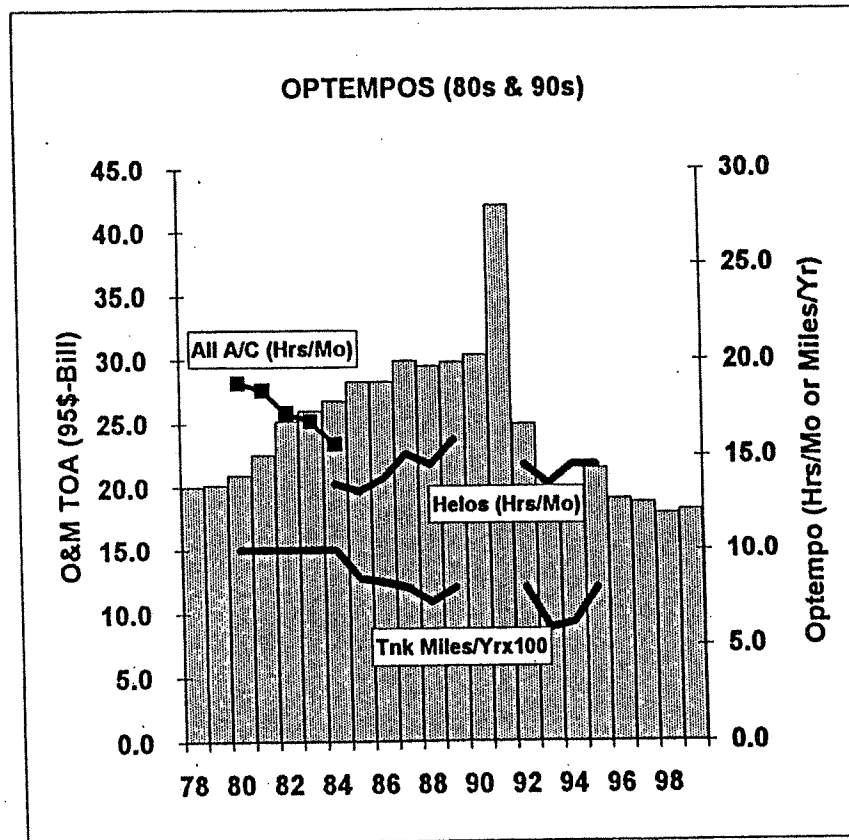
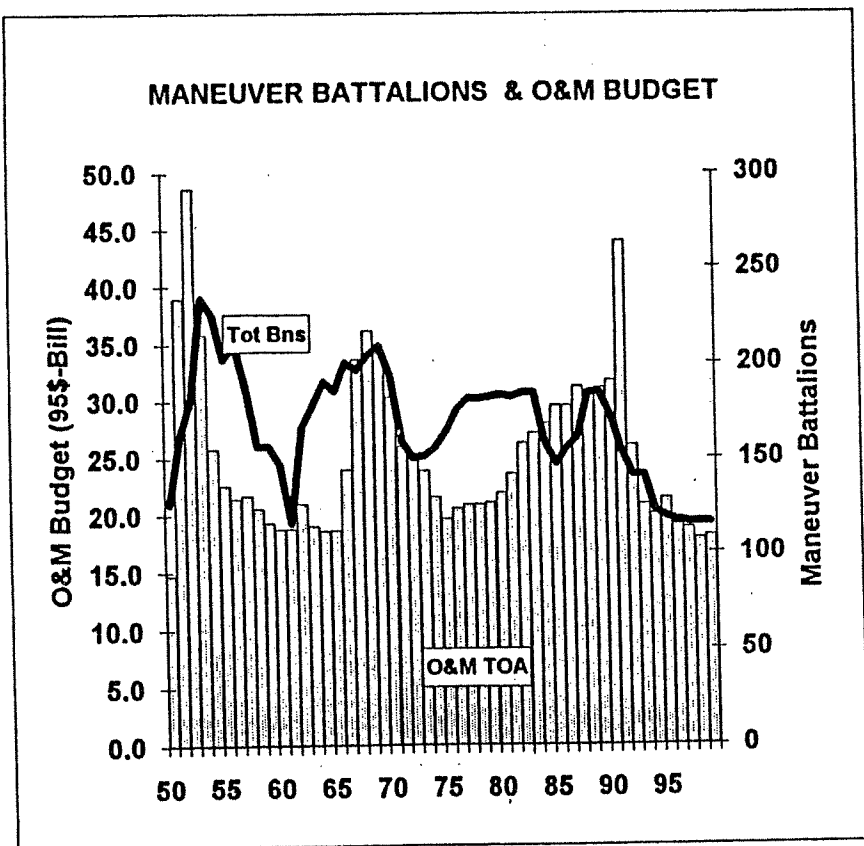
O&M - INVENTORIES - OPTEMPOS

FY 95-99 FYDP (BOTTOM-UP REVIEW)



ECONOMICS OF ARMY OPERATIONS

FY 95-99 FYDP (BOTTOM-UP REVIEW)



Active Army Maneuver Forces

Changes in Organizational & Basing Infrastructure: FY 1988 vs. FY 1996						
Base	FY 1988		Round Out	FY 1996		# of Bns (% Change)
	Unit	# Bns		Unit	# Bns	
Ansback	1 AR	10				-100%
Garlstadt	2 AR (FWD)	3				-100%
Frankfurt	3 AR	10				-100%
Goppingen	1 MX (FWD)	3				-100%
Wurtzburg	3 MX	10		3 MX (FWD)	6	-40%
Bad Kreuznach	8 MX	10		1 AR (FWD)	6	-40%
Korea	2 IN	7		2 IN	9	29%
Hawaii	25 IN (L)	9		25 IN (L)	6	-33%
Ft Hood	1 CAV	6	Y	1 CAV	9	50%
Ft Hood	2 AR	6		2 AR	6	0%
Ft Riley	1 MX	6		1 AR & 3 MX (Rear)	6	0%
Ft Carson	4 MX	9		2 AR	3	-67%
Ft Polk	5 MX	6	Y	5 MX Deactivated; Replaced by 2nd ACR Lt		-50%
Ft Stewart	24 MX	6	Y	24 MX	9	50%
Ft Bragg	82 AB	9		82 AB	9	0%
Ft Campbell	101 AA	9		101 AA	9	0%
Alaska	6 IN (L)	4	Y	10 MTN (L)	3	-25%
Ft Ord	7 IN (L)	9		7 IN Deactivated; Base Closed		-100%
Ft Lewis	9 IN (MTZ)	9		25 IN (L)	3	-67%
Ft Drum	10 MTN (L)	6		10 MTN (L)	6	0%
Total		147	4		90	0
Ft Irwin	177 AR BDE	2		177 AR BDE Redesignated 11 ACR		
Ft Knox	194 AR BDE	3				
Ft Benning	197 IN BDE	3				
Berlin	BERLIN BDE	3				
Panama	193 IN BDE	2				
Total		13			0	
Grand Total - # Bns Active Army		160			90	-44%
Div Equiv @ 9 Bn/Div		18			10	-44%

Key Reductions :

Europe:

**-4.1 Div. Equiv.
-4 Bases**

United States:

**-3.7 Div. Equiv.
-1 Base Closed**

Point:

The Army Appears to Have Increased the Inefficiency in its Infrastructure (i.e., like the Air Force).

The Nonlinear Economics of Operations

Snapshot of Changes: 1980 Versus 1990:

- In Constant FY95\$, DoD's Military/Civilian Payroll Increased by 6% , but the O&M Budget (excluding pay) increased by 58%.
- The # of AF A/C changed by less than -1%, Navy A/C by + 9%, Navy Ships by +14%, and Army Bns by -6%, while Total DoD Manpower Increased by 5%.
- Optempos Per Unit of Force Remained Constant (Except AF Tacair, which Increased by 22% Between 1980 & 1984)

**If Inventories & Optempos Remained Relatively Constant & the Non-Pay O&M Budget Increased by 58%,
Where Did the Money Go? What Did the Money Buy?**

I Believe the Money Flowed into at Least 4 Areas:

- Rising Equipment Costs: Contrary to the promises of lower life-cycle costs, equipment developed in the 70s & 80s is *More Expensive to Operate*: The shift to "Black Box/Remove & Replace" maintenance technologies, while substituting replacement for repairs at the point of activity, actually increased total support costs by (1) shifting repairs to intermediate and distant depot levels; (2) increasing dependence on complex, computerized diagnostics equipment which suffer from the chronic "*Can Not Duplicate*"^{***} phenomenon (This equipment must also be supported by the logistics system.); (3) increasing dependency on high-cost, difficult-to-retain skilled labor; and (4) by proliferating the variety as well as quantity of higher-cost, individually accountable spare parts (which increases direct supply costs & indirect logistics management costs).
 - **Result: Operating Costs are Not Only Higher, Future Costs are More Difficult to Predict!**
- Increasing Inefficiencies in Infrastructure: Cutbacks in organizational, base, & depot infrastructure have not kept pace with force reductions over the *long term*, consequently per unit overhead costs have increased. On 1/26/95, SecDef said *recent cutbacks continue the long-term trend*: in last 8 years, forces shrunk by 33%, while bases shrunk by only 20% (NYT, 1/27/95, pg. A16).
- Backlogs: Some of budget increases during 80s paid for repairs of real property & equipment that were postponed during the 70s.
- Arbitrary Accounting Practices & Waste: Shift to DBOF moved dollars from procurement to O&M but *worsened* the accounting problems in what was already a notorious swamp of waste, fraud, and abuse.

**No One in the Pentagon Understands the Micro-Economics of Operations
Well Enough to Account for the Nonlinear Relations Between Budget Inputs & Readiness Outputs.**

Therefore, All Predictions of Future Readiness Outputs Based On Assumptions of More Efficient Dollar Inputs are Suspect!

^{**} Between 6/92 and 6/93, the fire control systems on tactical fighters had the following CND rates: F-16C/D - 29%, F-15 C/D - 31%, F-15E - 27%

Observation:

For Years, a Succession of Presidents, Defense Secretaries, and Pro-Defense Members of Congress have Insisted that *High Readiness* for Combat is the *Top Budget Priority* in the DoD,

... and yet ...

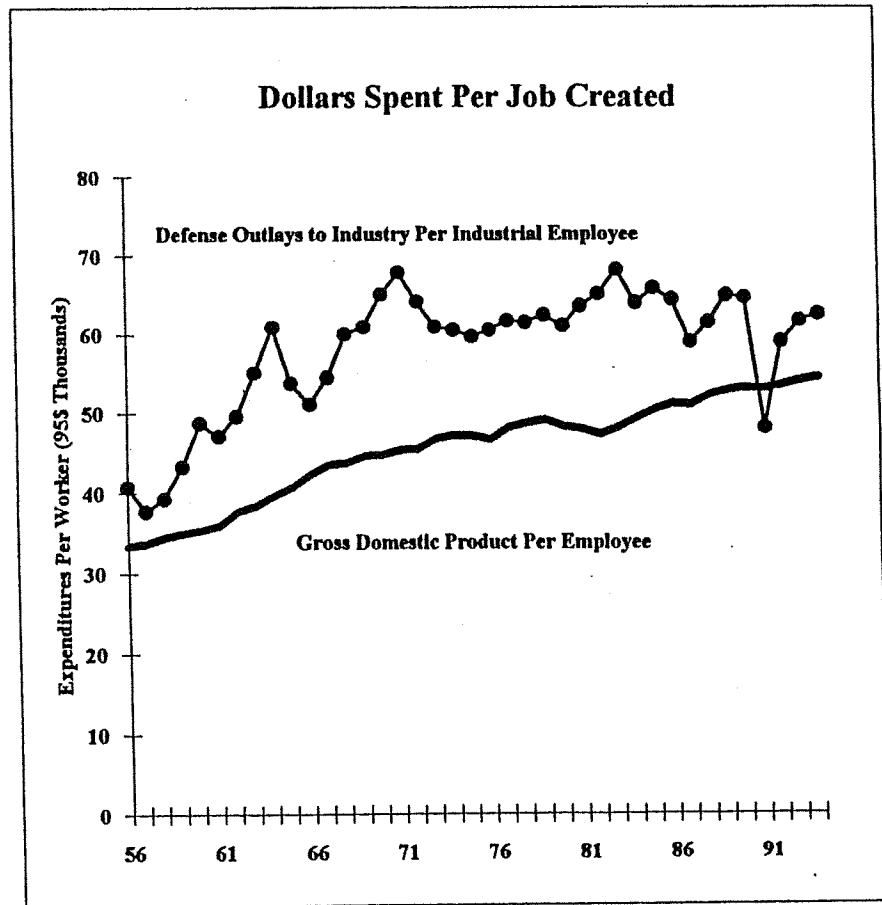
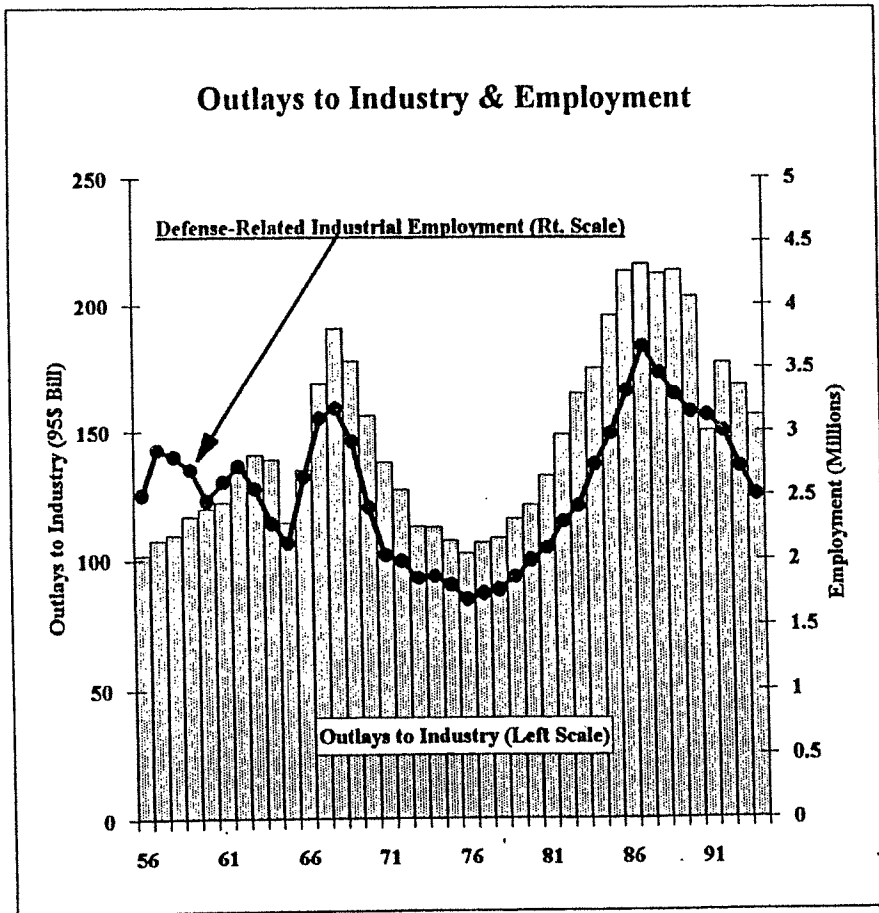
The PPBS/DAB Processes (i.e., the Internal "*Neurosensory Organization*" Evolved by Senior Decision Makers in the DoD) Do Not Have A High-Level Subsystem to Correlate the Cost of Operations with the Array of Corresponding Readiness Outputs.

Raises Questions:

- How Can One Assert Readiness is a Top Priority When One Can Not Quantify the Input-Output Relationships of Day-to-Day Operations?¹
- If Readiness is Truly the Top Priority, then Why do Senior Decision Makers Expend Far More Effort and Time on Acquisition Decisions than on Operations and Maintenance (O&M) or Sustainability Decisions?
- If Readiness is Truly the Top Priority, How can One Explain the Presence of an Elaborate Acquisition Management Subsystem (i.e., the DAB Process as well as the Procurement and RDT&E Annexes of the FYDP) and the Absence of a Comparable O&M-Related Information Collection and Decision-making Subsystem?

¹ We will see how the evolution of modes of cognition that tolerate accounting ambiguities in the O&M budget is consistent with, and indeed reinforces, a value system that places a higher priority on near-term procurement commitments than on the long-term consequences of those commitments.

Economics of Job Creation in the Defense Industry



1st ORIENTATION:
EVOLUTION OF FORCES
(Adaptation Viewed as a Result)

Pattern of Change During 40 Years of Cold War:

- Investment Costs Grew Faster than Budgets.
- Forces Became Smaller.
- Modernization Rates Decreased (=> Equipment Became Older on Average).
- The Cost of Operations Clearly Increased, but We Can *NOT* Quantify the Input/Output Relations.
- Only Positive Correlation of Inputs to Outputs Relates Defense \$ to Job Creation In Industry.

Increased Spending Seems to Accelerate the Evolutionary Process. Spendup in 80s:

- Magnified Long-Term Cost Spiral.
- Generated Modest, but Unsustainable, Short-Term Increases in Force Size.
- Produced Lower Rates of Modernization than Achieved in Earlier "Buildups."
- DiD Not Produce Increased Operating Tempos.
- Increased Government-Dependent, Jobs in Private Sector (i.e., Political Patronage) by 84%.

KEY POINTS:

1. There is a Sense of Order & Consistency in this Evolutionary Result.
2. From DoD's Point of View, This Pattern of Evolution Is Not the Desired Outcome.
(During the Cold War, DoD Tried to Build Larger & Newer Forces as well as High Readiness.)

Raises Question:

What Influences Intervened to Bring About this Undesired Outcome?

MISMATCHES & EVOLUTION

Aim of Presentation (Revisited)

Understand Why It Is Difficult for the Defense Department, Viewed as a Collective Entity, To Adapt to Change in the Real World

... and up to this point ...

We have Examined Evidence of Evolution, or Adaptation seen as a Result, from a Static Perspective.

... however ...

To Understand *How* DoD Adapts, We Need to Examine the Influences which *Actuated* the Undesired Evolution.
This Implies a Need to Shift our Orientation from a Static to a *Complementary* Dynamic Perspective.

Point of Departure:

What do we Mean by Adaptation and What are the Criteria for Evaluating the Action that Brings it About?

Definition #1: Adaptation

An alteration or adjustment in structure or habits by which a group or organization of individuals improves its condition in relationship to its environment

... by ...

- Changing its internal structure to cope with the challenges and constraints of its environment.

... or by ...

- Trying to Change the environment to meet the needs of its internal structure (which is often impossible).

Adaptation in Action:

(Criteria: *Theme for Survival, Vitality, and Growth*)

Superior Decision Makers Continuously Improve the "Fit" of their Organization to its Ever-Changing Environment by

Improving the Fit Today

...while ...

Increasing the Organization's Fitness to Cope with Unpredictable Changes in the Future.

Organizing Idea:

One Way of Measuring the "Goodness of Fit" is to Examine its Opposite: a "Mismatch."

Fact of Life:

**While DoD Planners Can Shape or Influence Their Political/Economic Environment,
They Do Not Totally Control that Environment.**

... Therefore ...

Actual Decisions Are Also Shaped By & Ultimately Matched To that Environment.

Why?

The Environment Selects

... and therefore ...

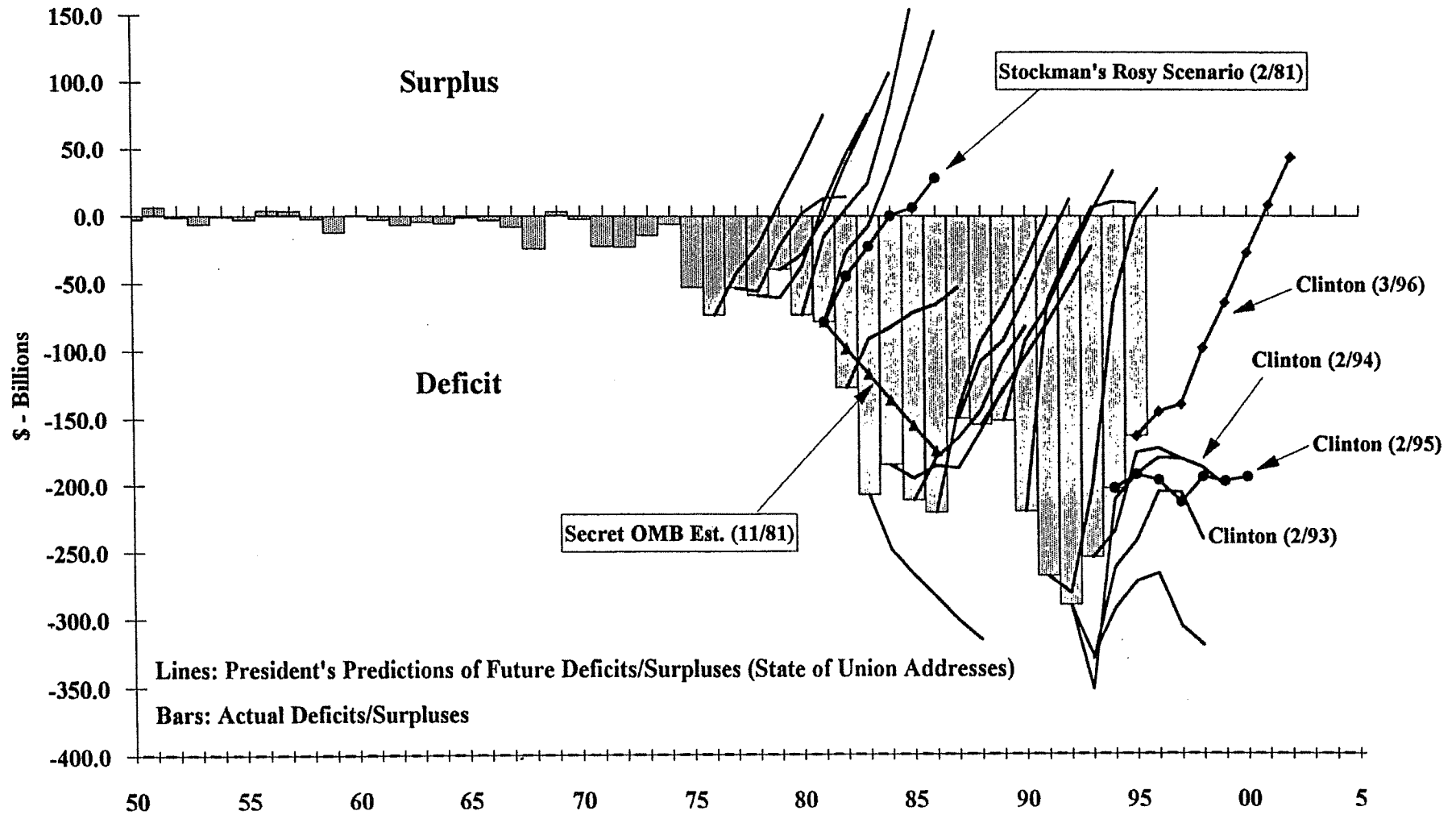
Any Mismatches Between Plans and Reality Indicate Other Forces are Driving the Real Decisions.

With this Idea in Mind,

**Let's Build a Complementary Dynamic Perspective of the Anatomy of Decline By Examining
How Mismatches Shape the Pattern of Evolution:**

- **Federal Budget Predictions: The Deficit *Mismatch* and the Federal Debt Bomb.**
- **Defense Budget Predictions: A *Mismatch* Inside a *Mismatch*.**
- **Procurement Predictions (#s, Budgets, Unit Costs): *Mismatches* Inside a *Mismatch* Inside a *Mismatch***

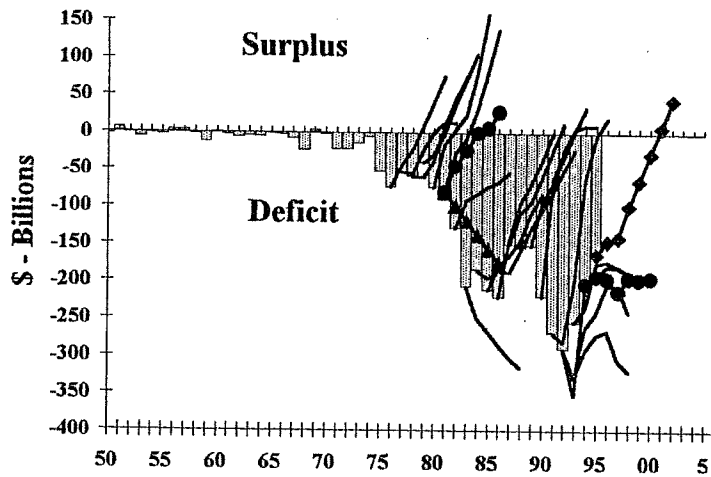
FEDERAL DEFICIT: PLANS vs. REALITY



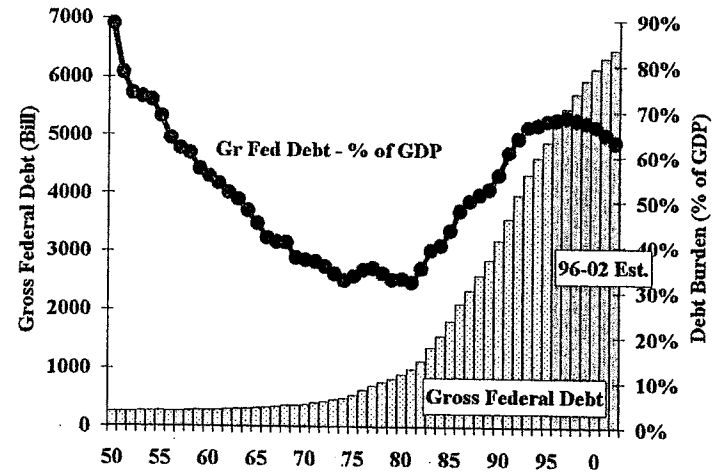
FY 1997-2002 FEDERAL BUDGET

The Plans/Reality Mismatch and the Federal Debt Bomb

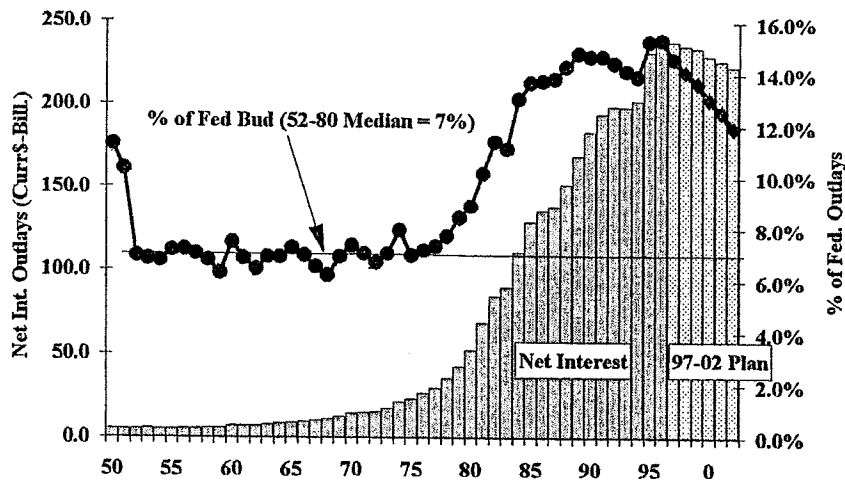
FEDERAL DEFICIT



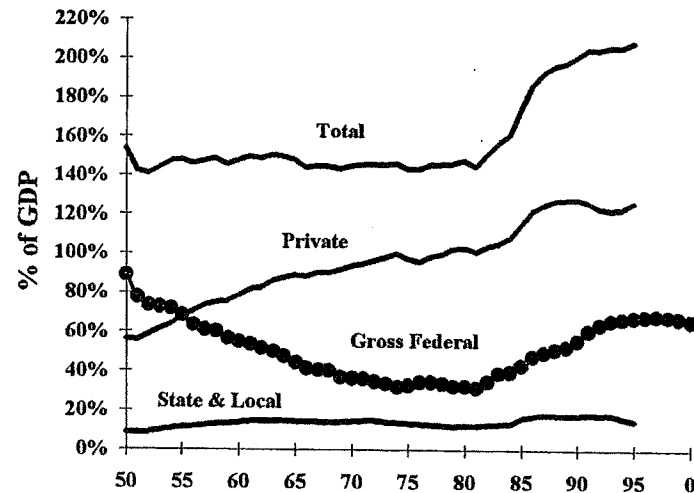
FEDERAL DEBT BOMB



NET INTEREST BOMB

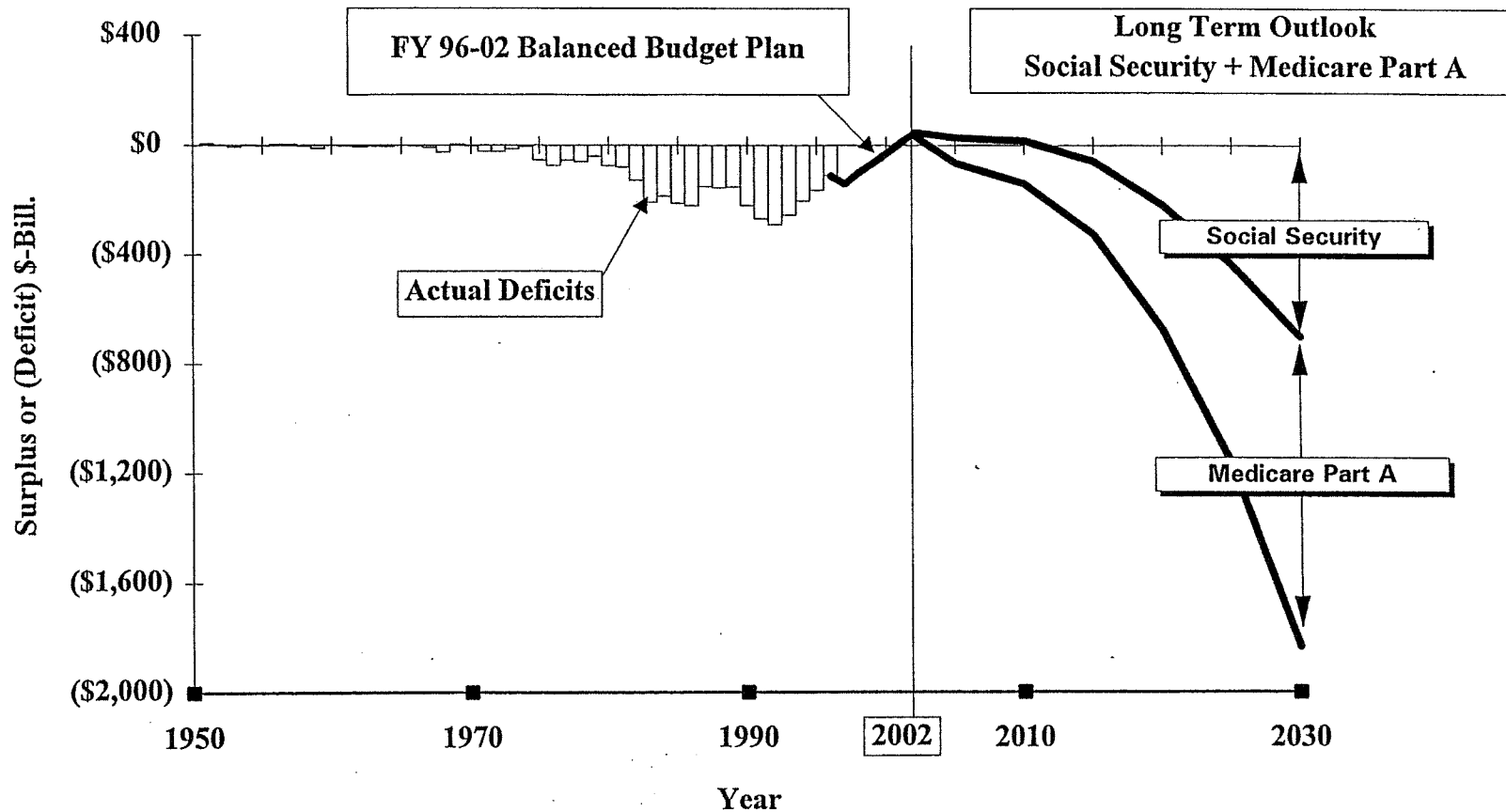


U.S. DEBT BURDEN (% of GDP)



DoD Faces a Near-Term Planning Problem!

DoD *Must* Put Its House in Order Before Negative Cash Flows of Social Security and Medicare Explode (Beginning in 2005)



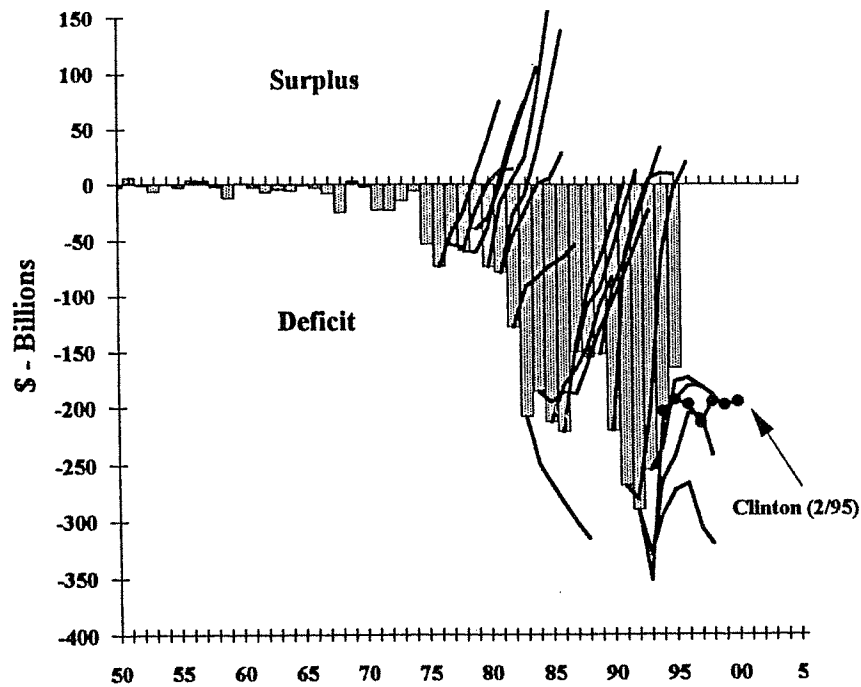
Sources: OMB Budget Projections
Economic Report of the President,
February 1996, Table B-74

Source: 1996 OASDI Trustees Report, Table III.B4.
OASDI and HI Income Excluding Interest, Outgo, and Balance in Current Dollars
Calendar Years 1996-2070 (Intermediate Level Assumptions)

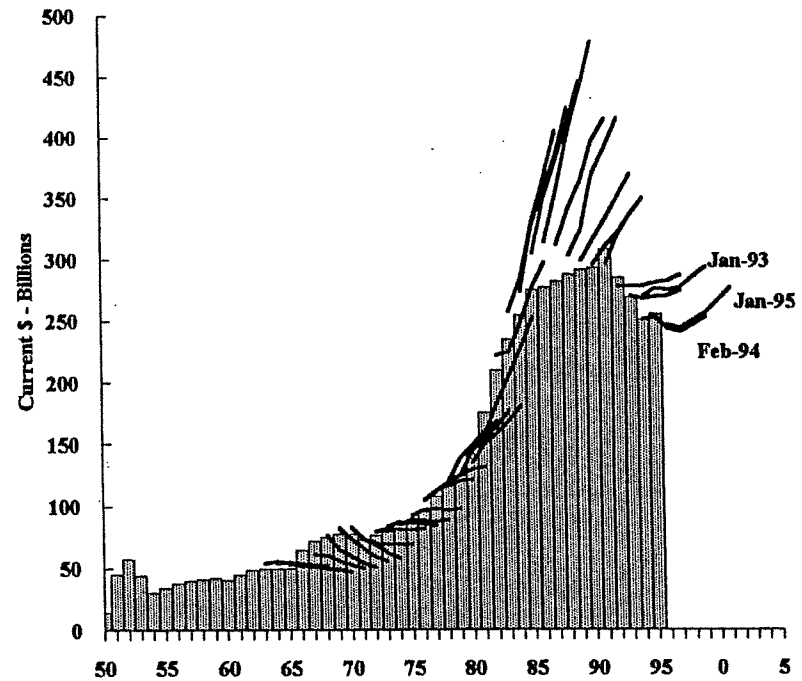
CHAOS in the DEFENSE BUDGET

A Plans/Reality Mismatch Inside a Plans/Reality Mismatch

Federal Deficit: Plans vs. Reality

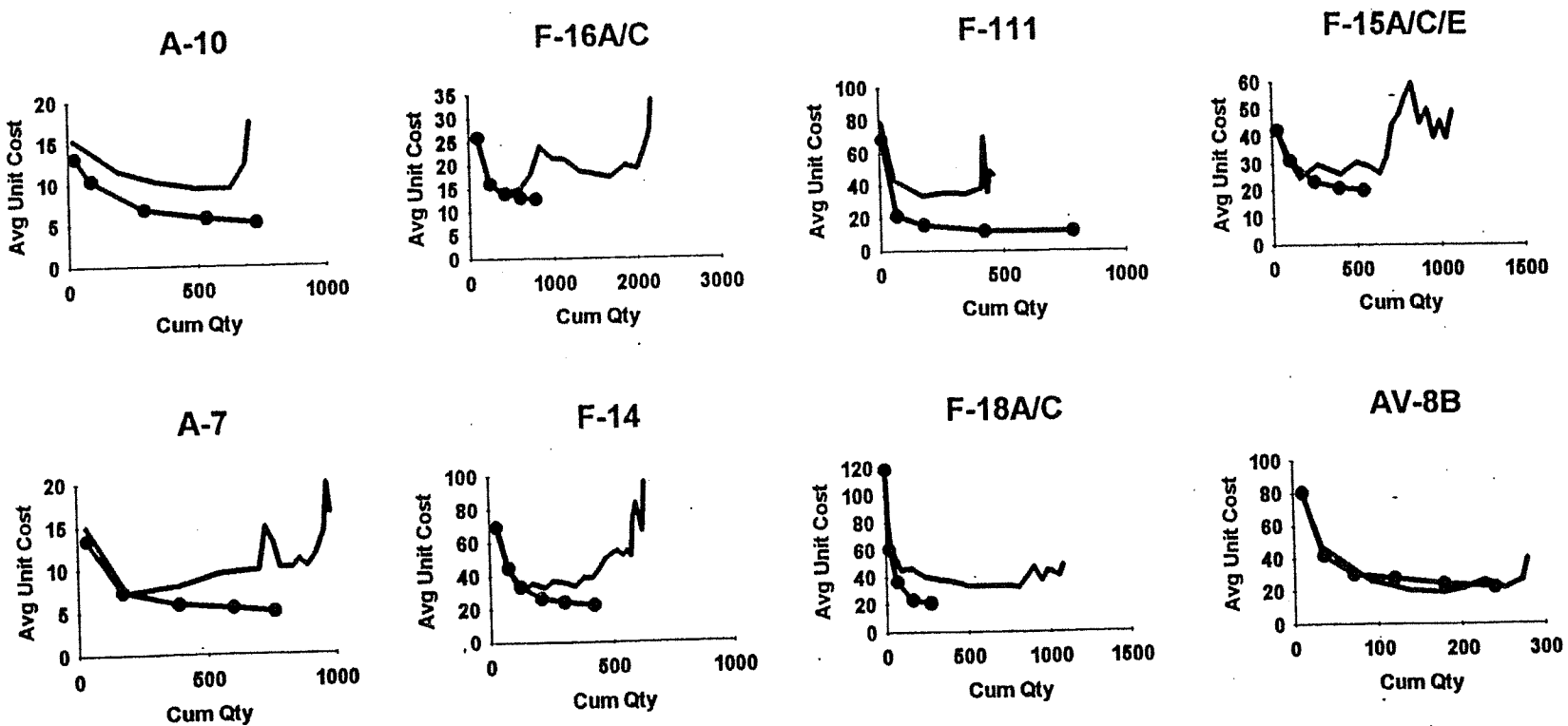
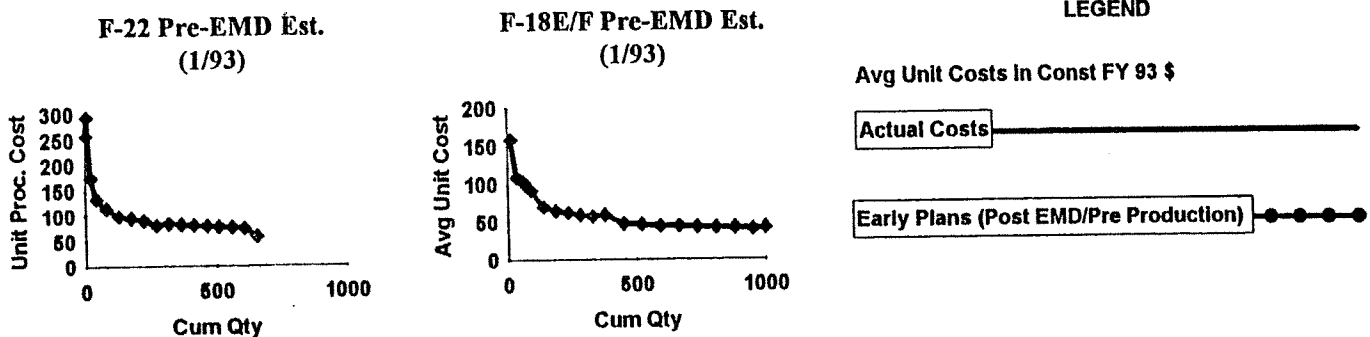


Defense Budget: Plans vs. Reality



Microscopic Mismatches Inside the Plans/Reality Mismatch

AF & Navy/MC Ftr/Atk Aircraft (Learning Curve Predictions vs. Actual Costs)



OBSERVATION:

The Mismatches Between Plans and Reality Usually Become Larger as One Looks Further into the Future.

This Phenomenon is Evident in

Deficit Projections
Budget Projections
Cost Projections

Impression:

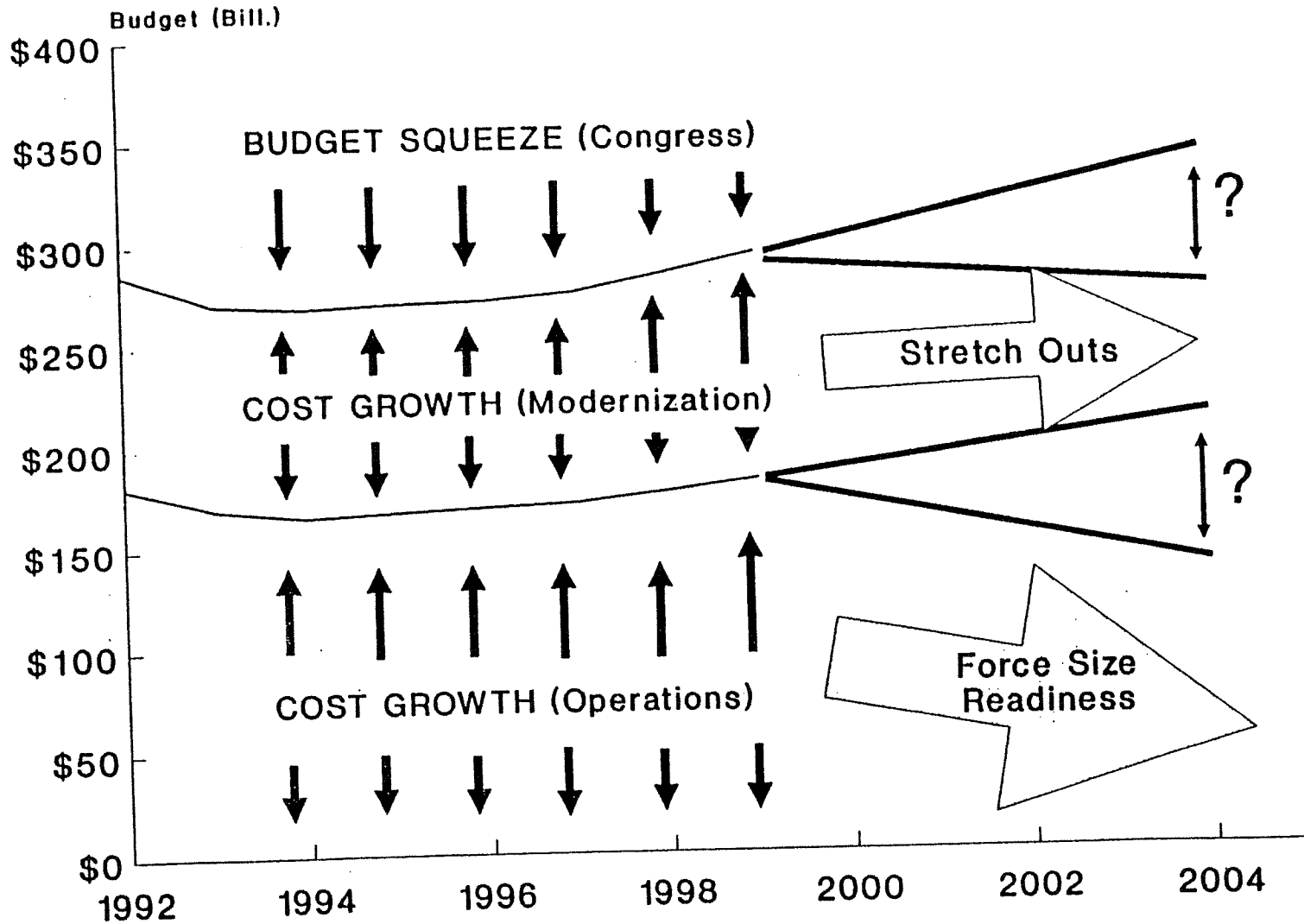
Judged by their Actions, Decision Makers Seem to Attach a Higher Priority to their Short-Term Ambitions than the Long-Term Consequences of those Ambitions.

Raises Question:

What are the Consequences of Promoting the Short Term at the Expense of the Long Term?

MISMATCHES & EVOLUTION

VIEWED THROUGH LENS OF FUTURE YEARS DEFENSE PLAN (FYDP)



EVOLUTION OF PRODUCTION RATES

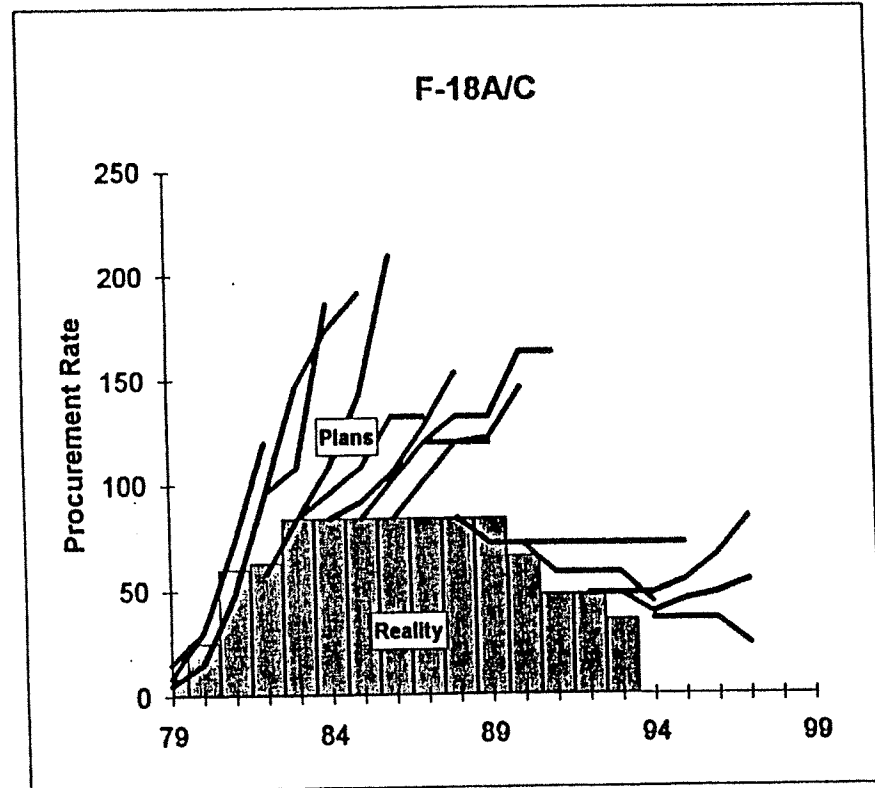
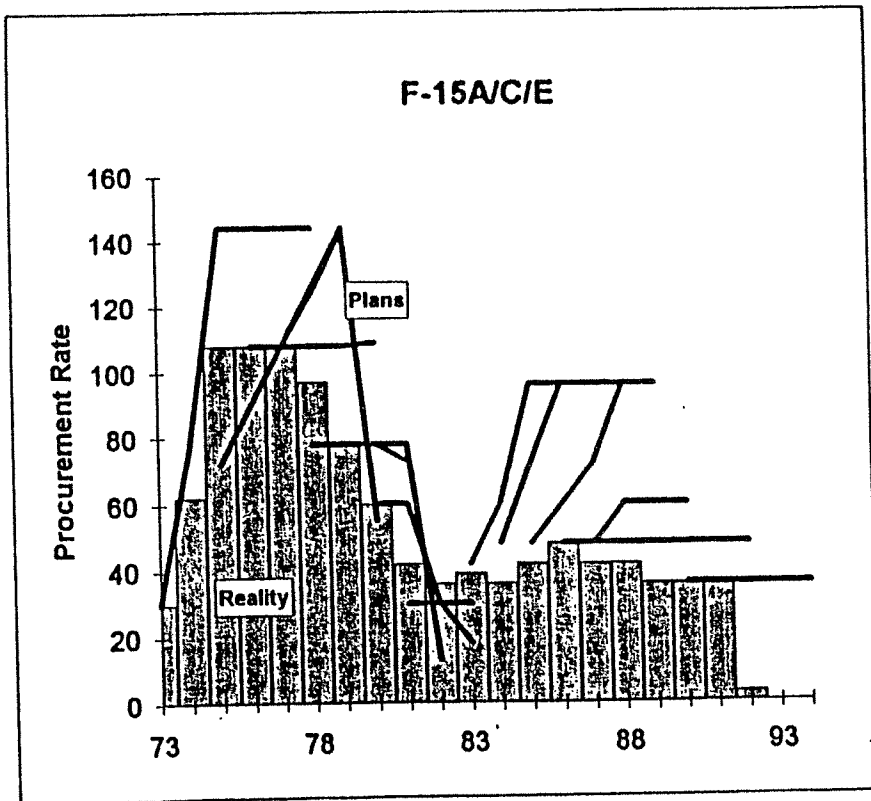
(The Dynamics of Mismatch & Meltdown in Procurement -- 2 Typical Examples)

CONVENTIONAL WISDOM

Cutbacks in the Modernization Budget Imposed by Congress =>

Production Stretchouts => Increased Overcapacity => More Cost Growth =>

Which Magnifies the Mismatch => Etc. => Etc. => ...



LET'S EXAMINE THE CONVENTIONAL WISDOM IN MORE DETAIL

Aim:

**Illustrate the Coupled Pattern of Mismatches & Instabilities for
Production Rates - Program Budgets - Unit Costs**

Selected Examples

- 1. F-16 Case Study (Illumination & Explanation)**
- 2. Other Examples & Appendix (Generalization)**

Assume the Following Tentative Categorization to Focus Our Observations:

The Acquisition Life Cycle Can Be Broken Down Into 3 Phases:

Phase I: The Buy In

- **Definition:** Adv. Dev. + Engr & Mfr Dev. + First 3-to-5 (sometimes 7) Years of Production.
- **Dominant Characteristics:**
 - Gross Mismatches Between Predicted & Actual Costs.
 - Wildly Fluctuating Predictions.
 - Congressional Generosity (Actual > Predicted Budgets or Relatively Small Cutbacks From Planned Budgets).

Phase II: Post-Buy In

- **Definition:** Sustaining Production After Buy In.
- **Dominant Characteristics:**
 - Budget Cutbacks & Production Stretch Outs.
 - More Accurate, Albeit Much Higher, Cost Predictions.
 - Bizarre Cost/Quantity Reactions.

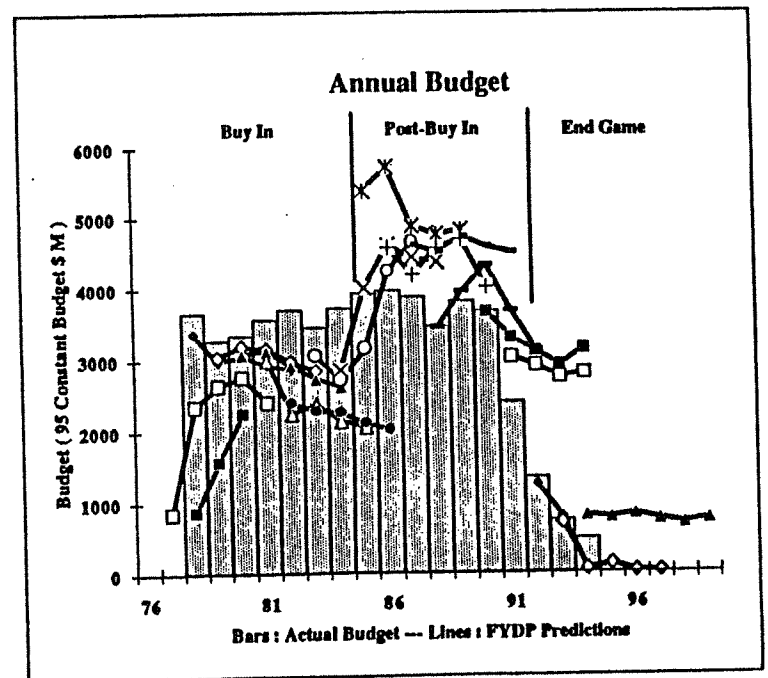
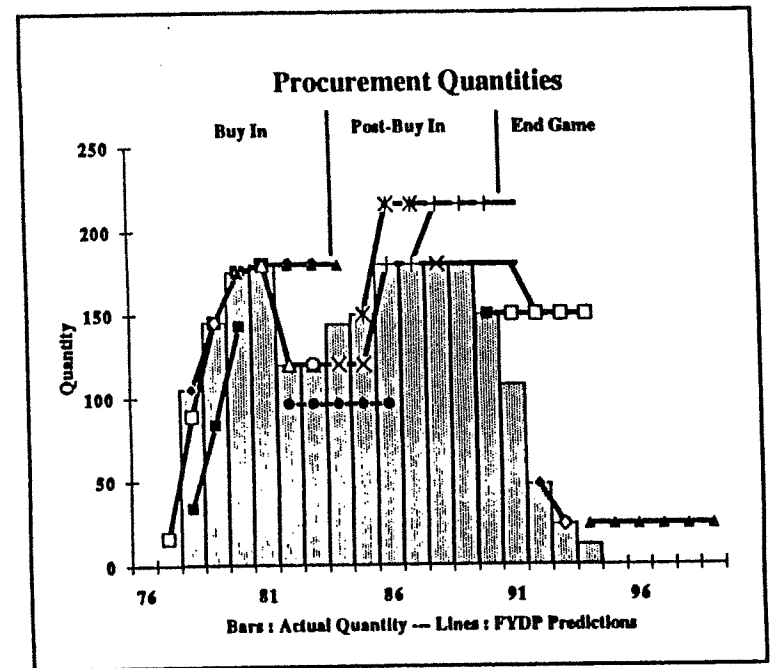
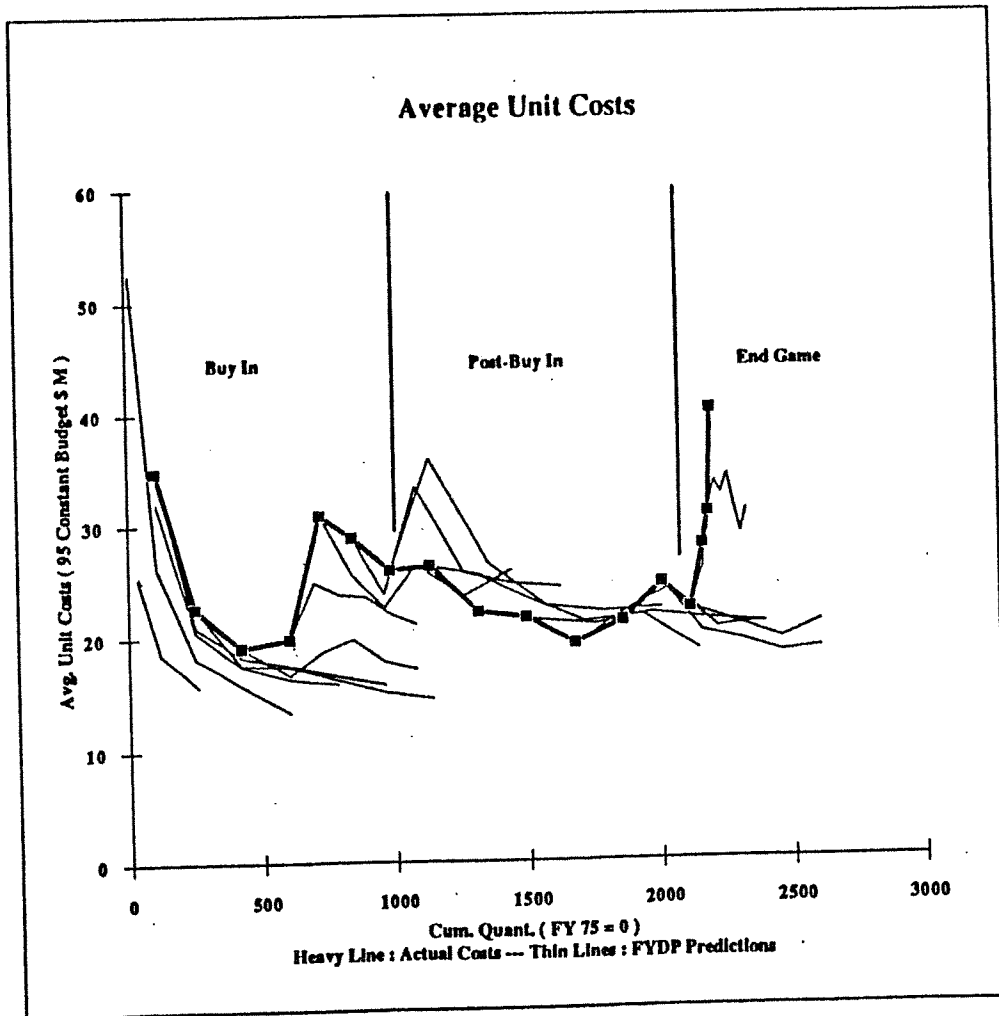
Phase III: End Game

- **Definition:** Last Few Years of Production Before Termination.
- **Dominant Characteristics:**
 - Plummeting Production Rates & Rapidly Escalating Unit Costs.

Bearing these Three Categories in Mind,
Let's Match Them to the Acquisition History of the F-16.

F-16 (AF)

(FYDP Predictions versus Reality)



PROCUREMENT ECONOMICS (BUY IN PHASE)

Example: F-16

Procurement Quantities:

- Built Up on FYDP Schedules for 1st 4 Years of Production.

Annual Budgets:

- Actual Budgets Exceeded All FYDP Predictions for 1st 7 Years of Production.

Average Annual Costs:

- By 7th Year of Production (i.e., 1984), Actual Costs Grossly Exceeded the Cost Predictions Which Were Used to Justify the Decision to Begin Production -- i.e., Those Predictions Contained in the Succession of Early FYDPs.

Key Points:

Cost Growth Can Not be Attributed to Budget Cuts or Production Stretch Outs Imposed by Congress.

Early Cost Estimates (i.e., Learning Curves) Appear Deliberately Biased to Understate the Size of Future Costs.

PROCUREMENT ECONOMICS (POST-BUY IN PHASE)

Example: F-16 Fort Worth Manufacturing Operations

(80-90% of Employment Dedicated to F-16 Between 1984 & 1989)

Between 1984 & 1989:

The F-16 Became MORE COMPLEX (MSIP)

Actual Budgets were LESS than Predicted Budgets

Actual Production Increases were LESS than Predicted

Direct Labor Hours Per Aircraft INCREASED BY 55%

Total Factory Employment INCREASED by 74%

Nevertheless

UNIT COSTS DECREASED!

... and ...

ACTUAL COSTS < PREDICTED COSTS!

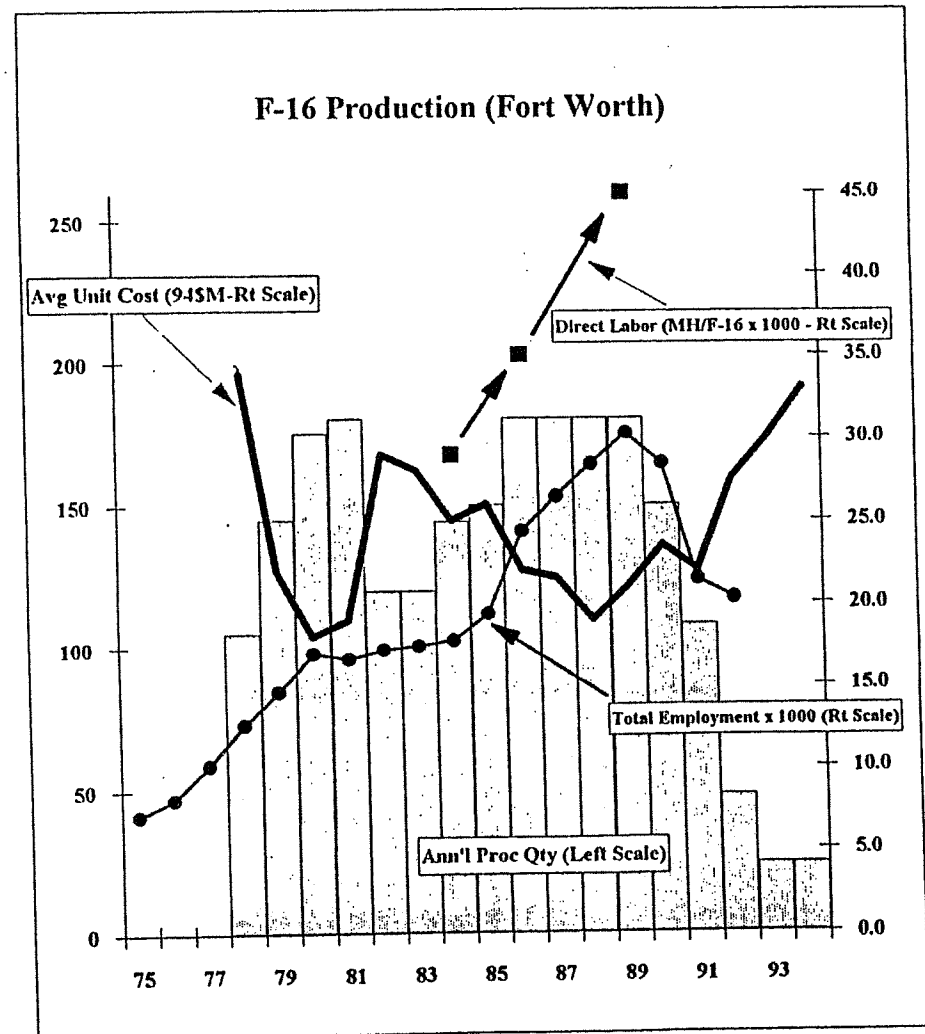
Vignette:

Hours Per Engineering Drawing:

Pre-CAD/CAM (F-16) = 160 hrs/drawing

CAD/CAM (F-16) = 400 hrs/drawing

CAD/CAM (F-22) = 900 hrs/drawing



**The Pattern of Mismatches Between Plans and Reality Portrayed by the Succession of the F-16's Plans is
An Image of Unfolding Microscopic Adaptations Made by Individual Bureaucrats as
They Adjusted this Program to Fit An Ever-Changing Environment.**

... and yet we should remember that ...

The F-16 has a Well-Deserved Reputation for Being a Relatively Well-Run Program:

- Program Grew Out of Extremely Successful Prototyping & Fly-Before-You-Buy Competition.
- No Horror Stories in Full-Scale Engineering Development or Procurement.
- Achieved Highest Production Rates for any Post-Vietnam Fighter.

Raises Question:

How Widespread is the Behavior Which Brought About the Unfolding Adaptations Seen in the F-16 Mismatch Diagram?

Note:

The next group of slides shows that the pattern is widespread.
The Appendix contains additional mismatch diagrams for interested readers.¹

¹ Readers may be interested to know that we now have an automated capability to produce equivalent mismatch diagrams for any line item in the FYDP Procurement Annex. Moreover, as new FYDPs are produced, their data can be downloaded electronically into our data base, and the charts can be automatically updated. This management information tool is available to all DoD personnel, who have a legitimate need for this information.

Other Examples:

The "Classic" Pattern of Unfolding Adaptations Over the Weapon's Life Cycle

F-18

M-1

M-2

Stinger

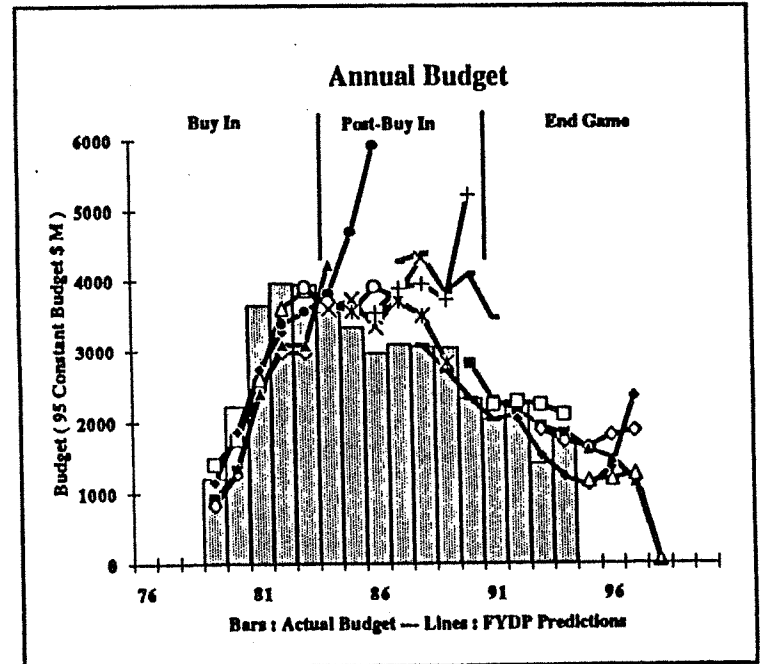
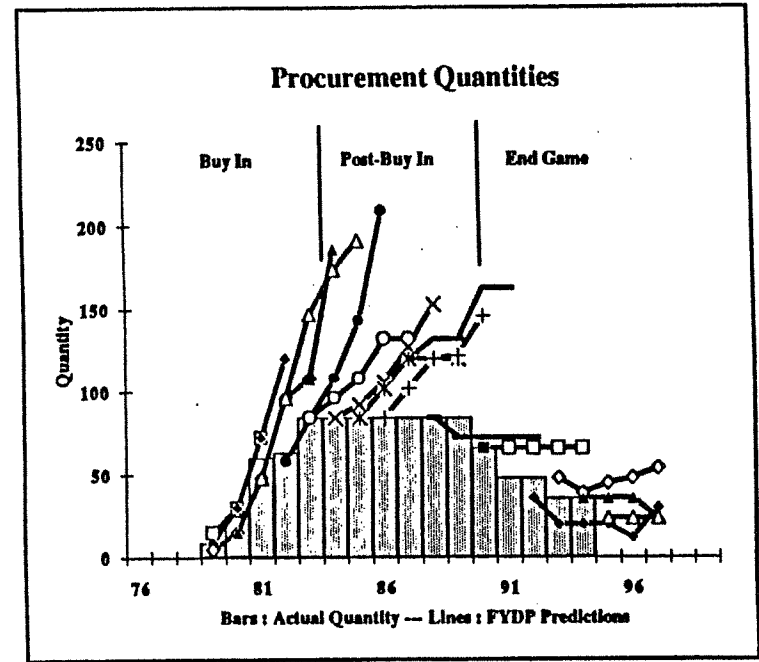
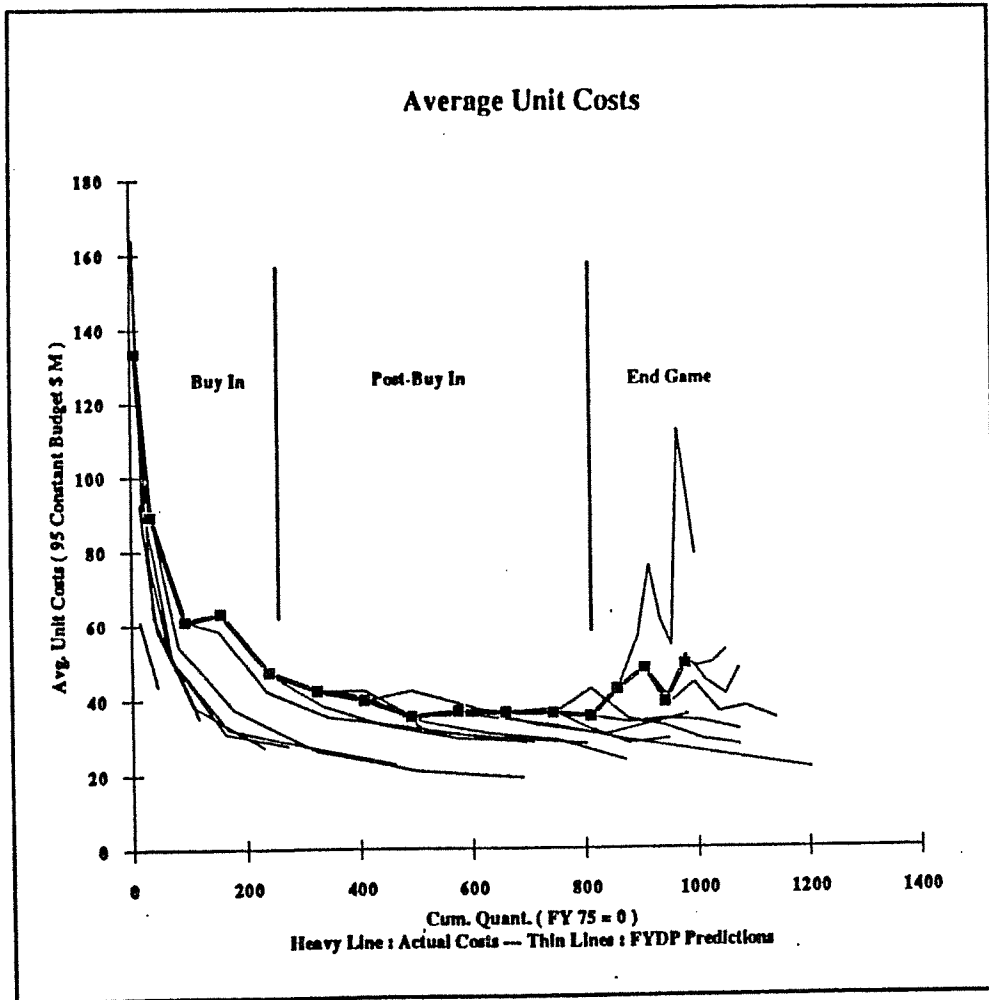
Harpoon

Note:

**Although these Programs Were Produced in the 1980s,
They All Entered Engineering Development or Production in the 1970s.**

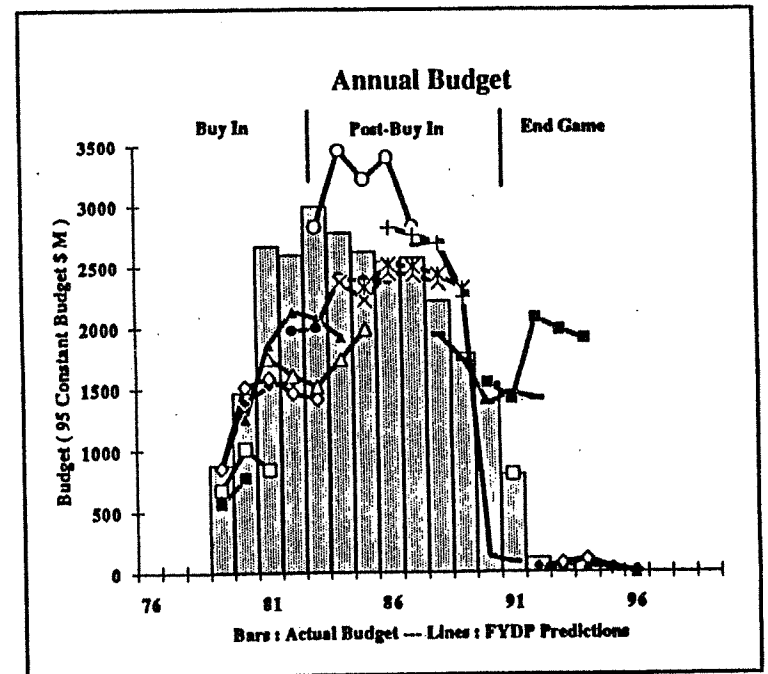
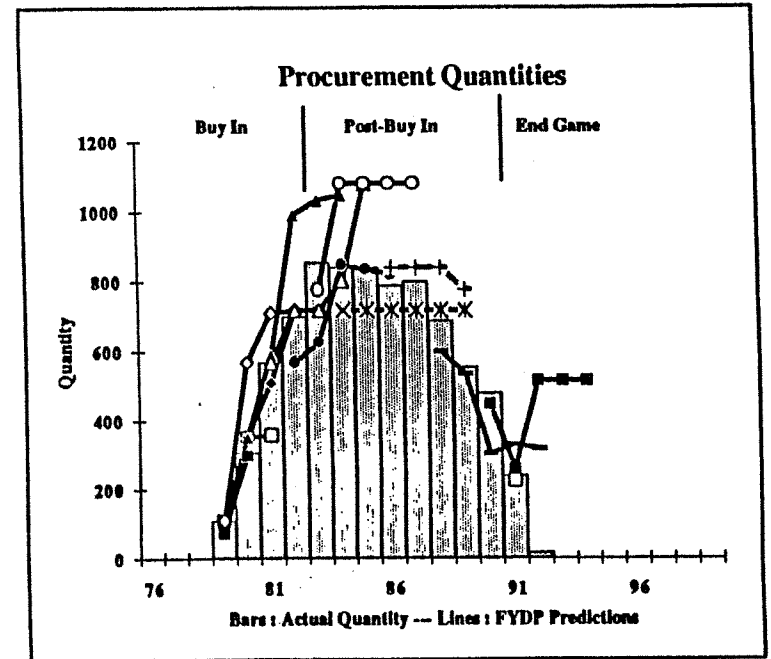
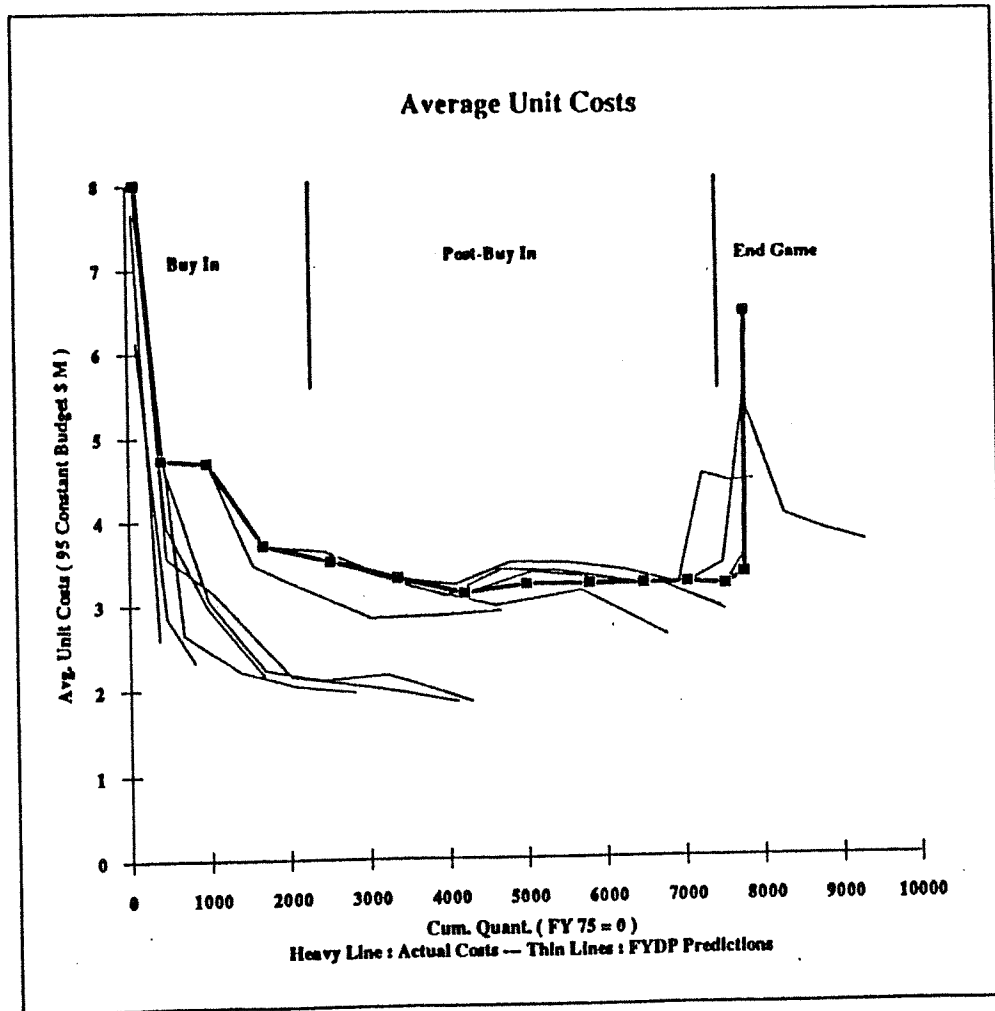
F/A-18A/B/C/D HORNET

(FYDP Predictions versus Reality)



M-1 TANK

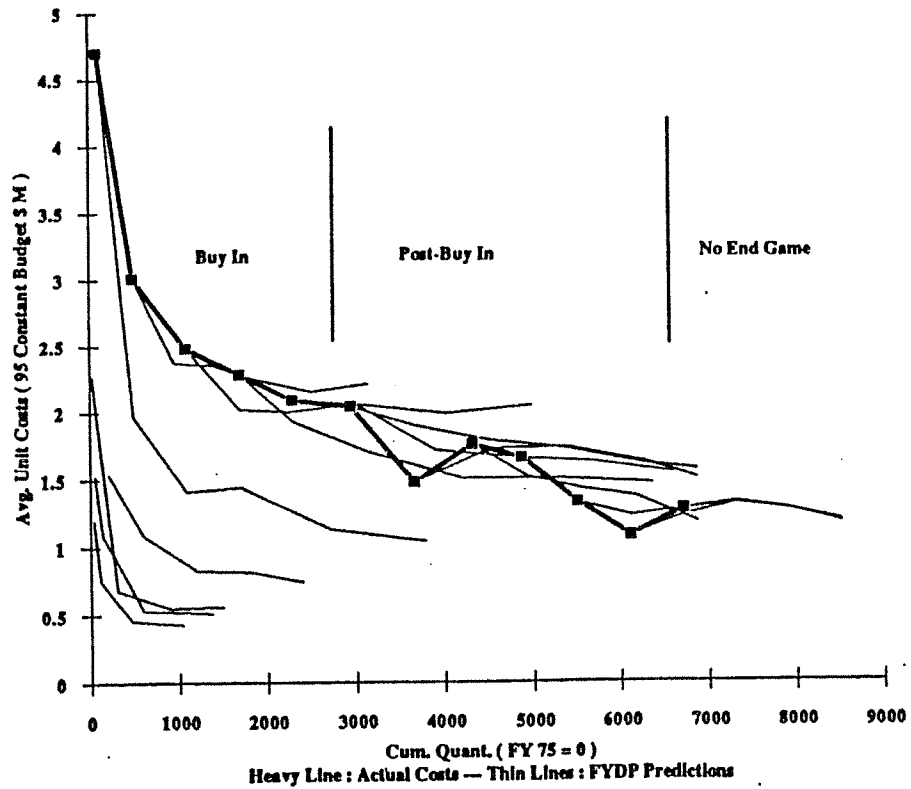
(FYDP Predictions versus Reality)



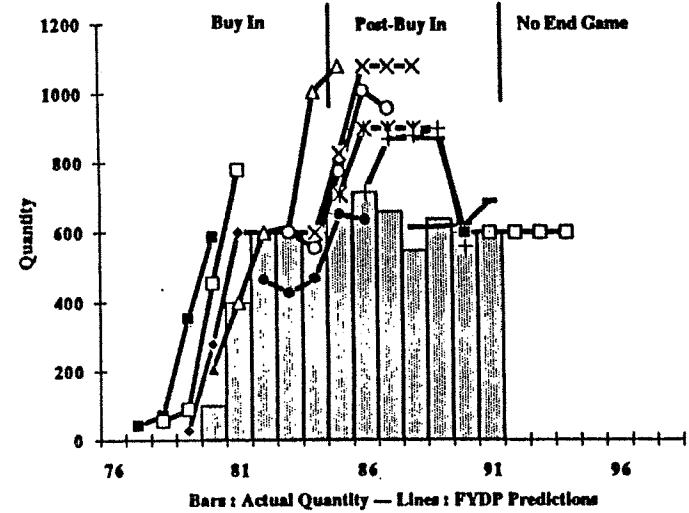
BRADLEY M-2

(FYDP Predictions versus Reality)

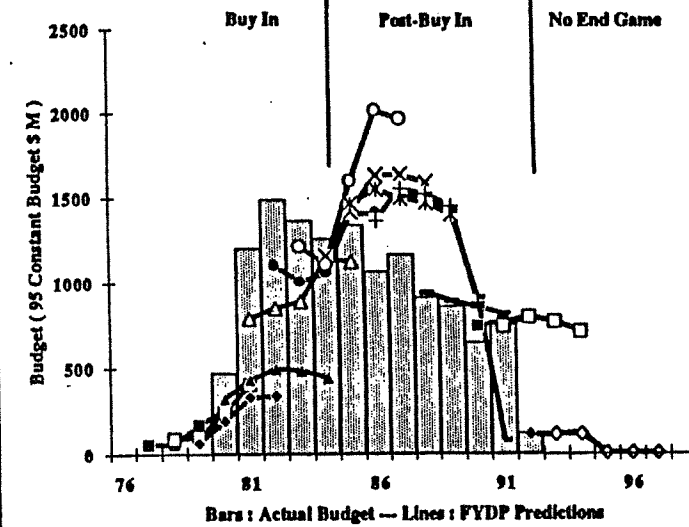
Average Unit Costs



Procurement Quantities

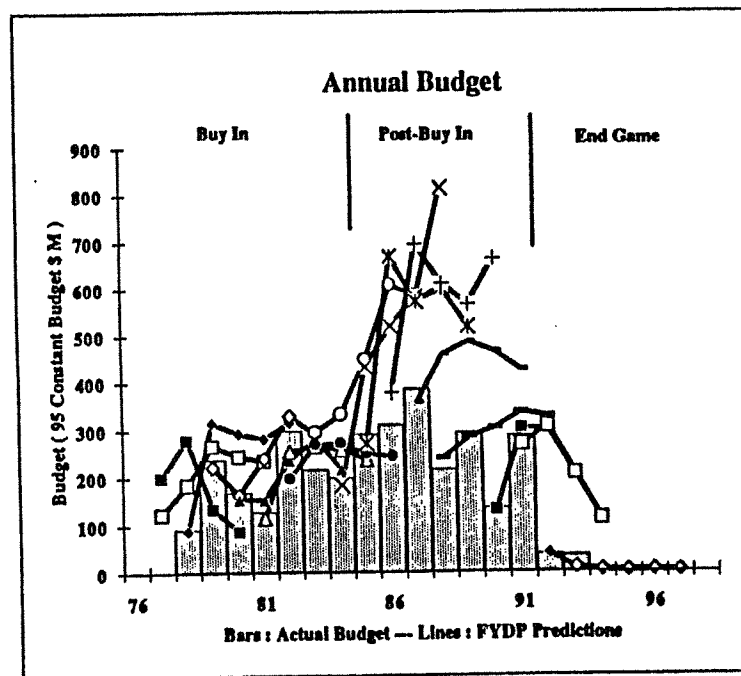
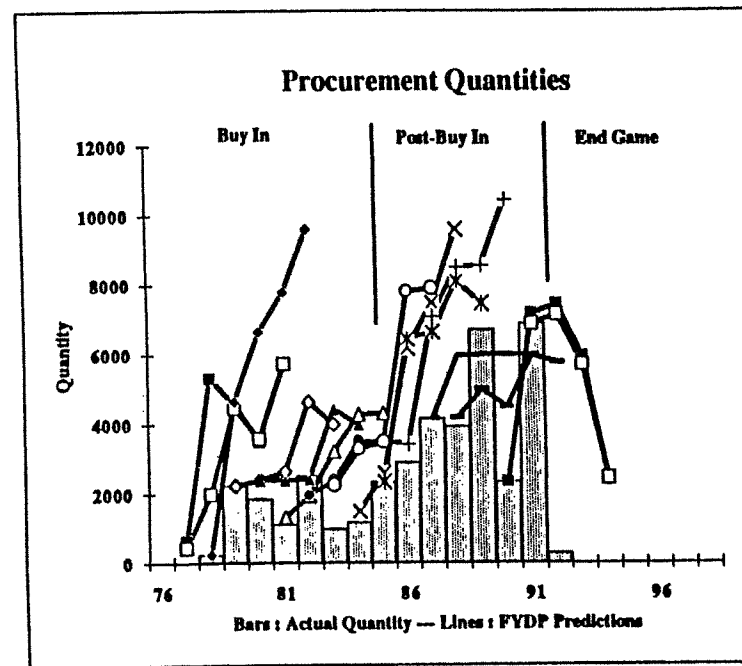
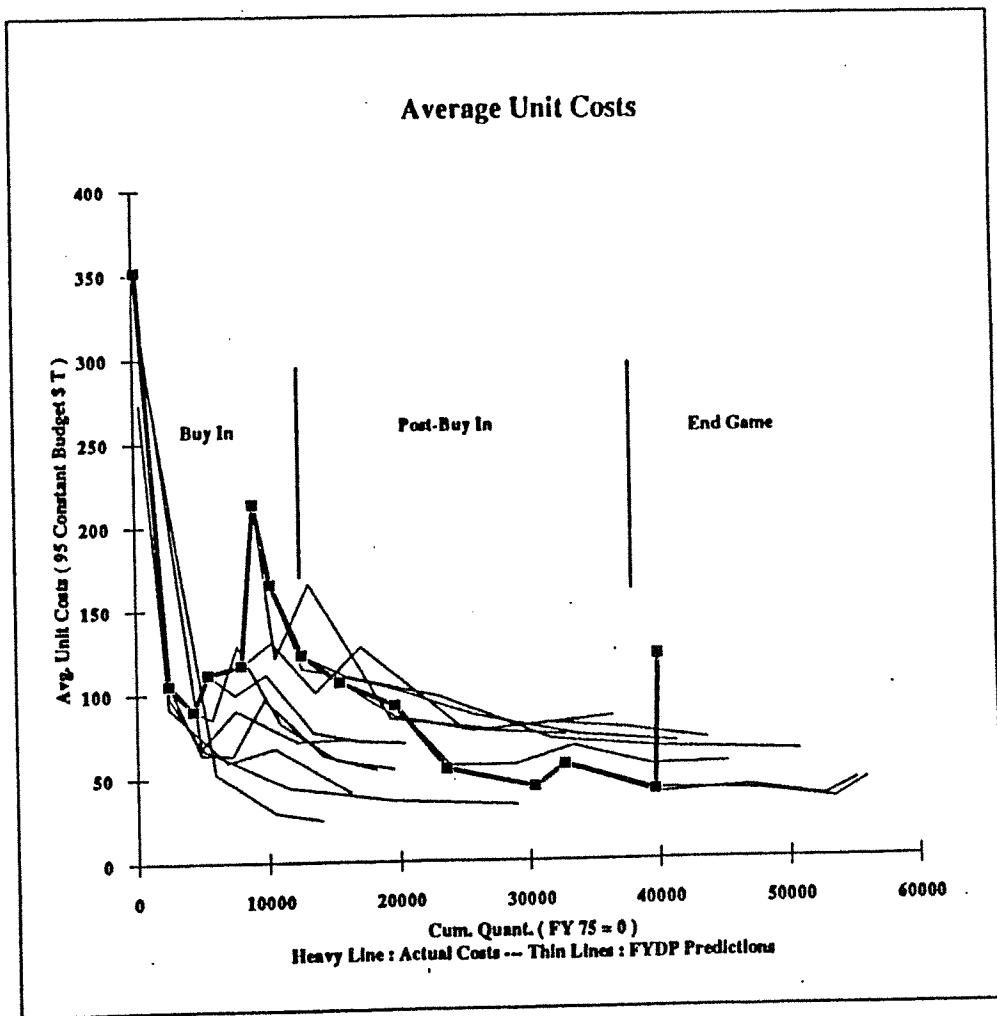


Annual Budget



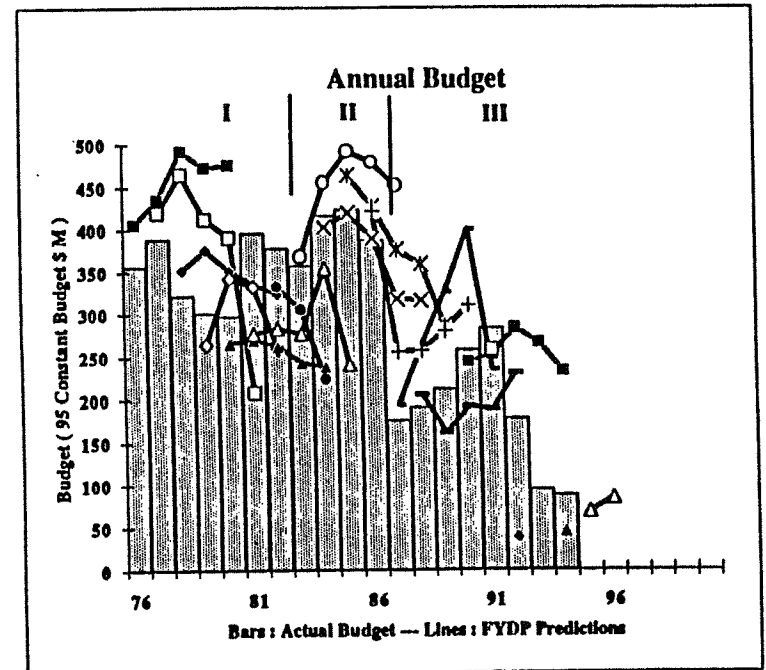
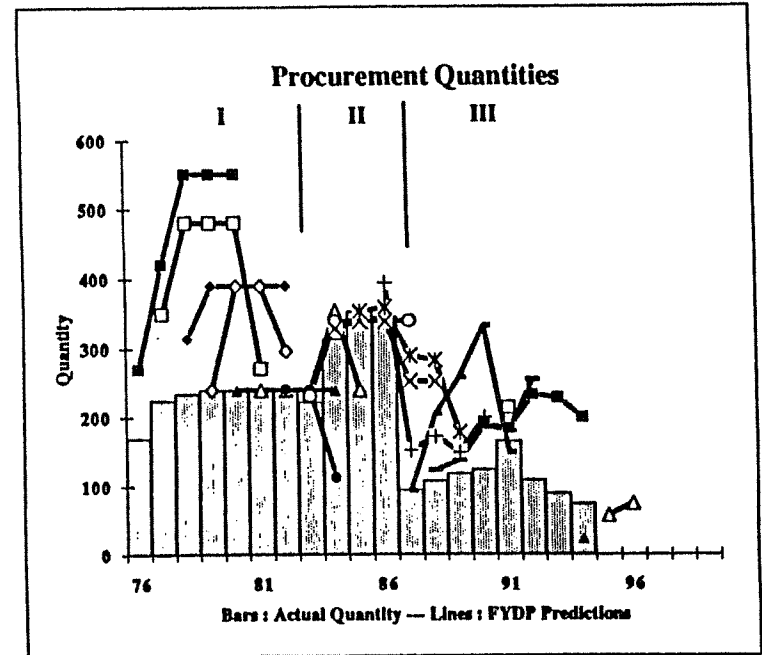
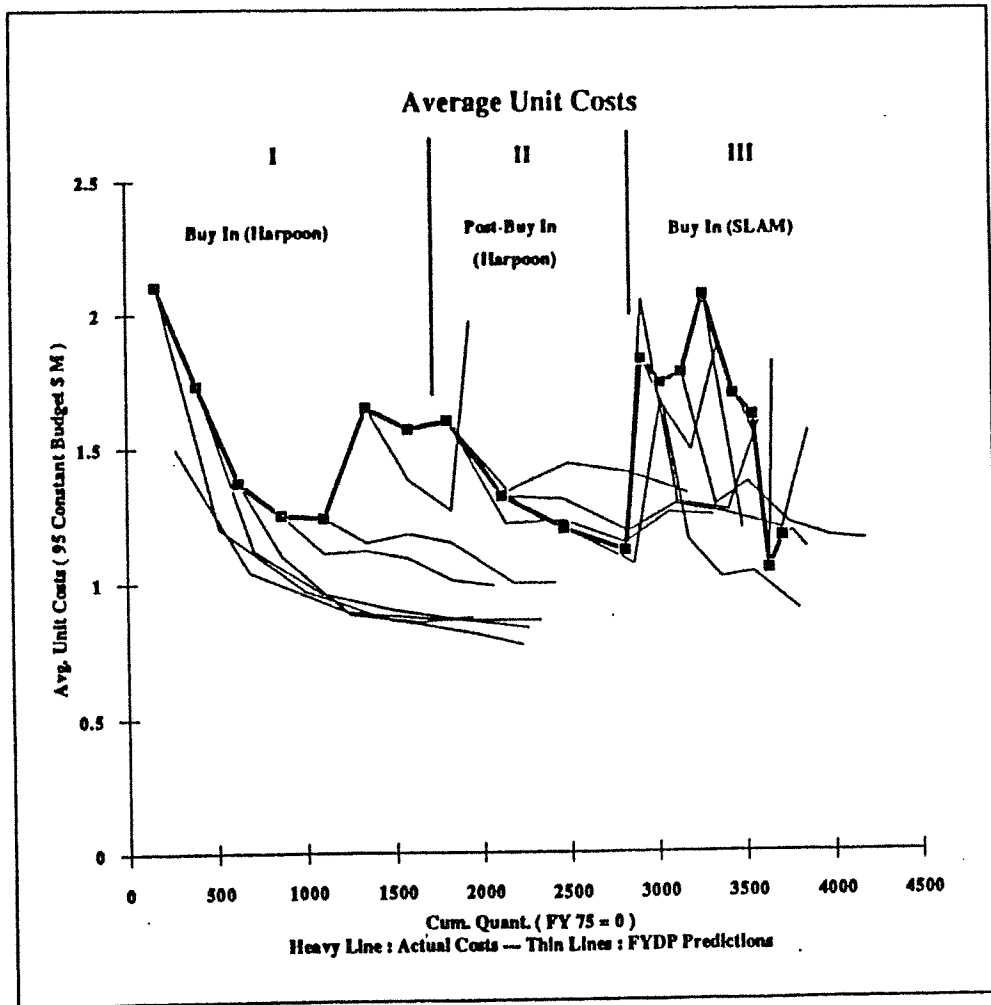
STINGER (A)

(FYDP Predictions versus Reality)



HARPOON/SLAM (N)

(FYDP Predictions versus Reality)



Question:

Did the "Classic" Pattern Persist for Those Programs Introduced After 1980?

Examples:

Programs Entering Engineering Development and Production in the 1980s & 1990s

C-17

T-45

Advanced Cruise Missile

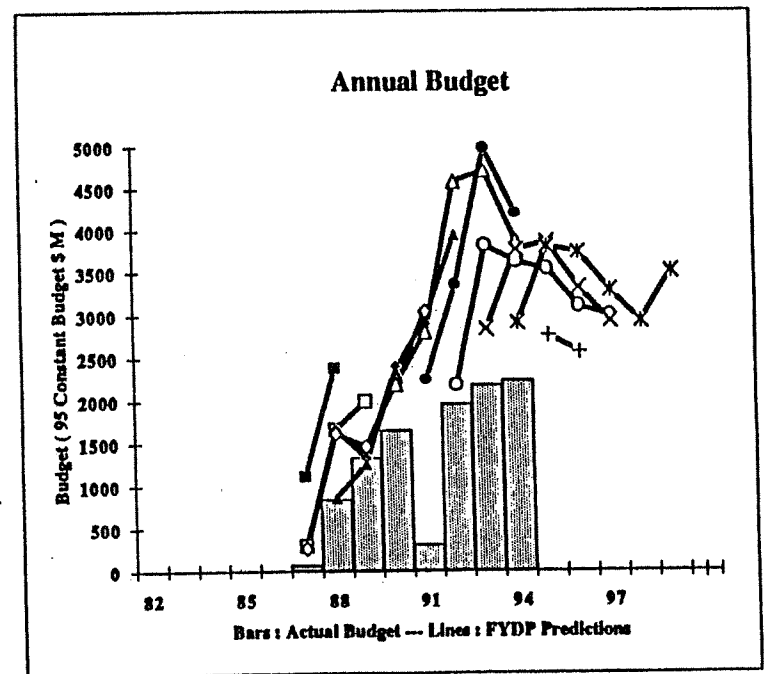
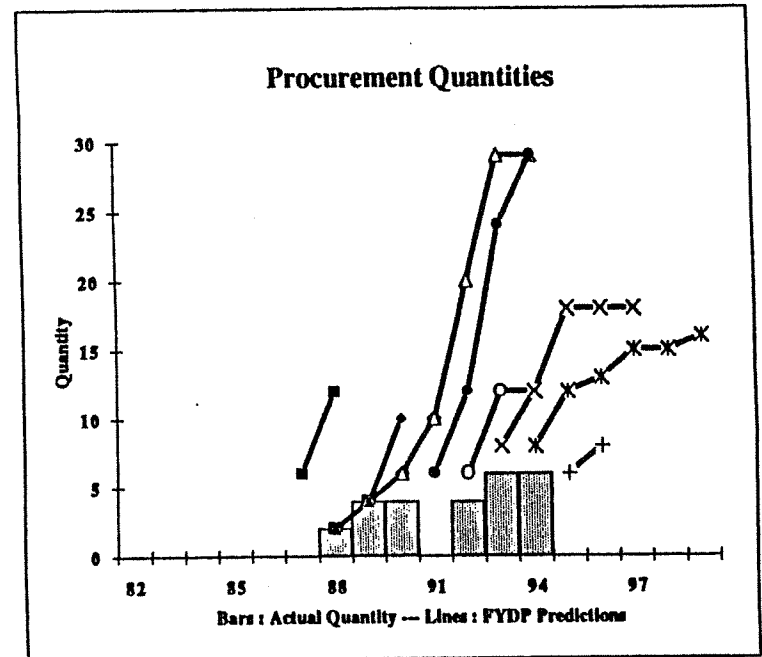
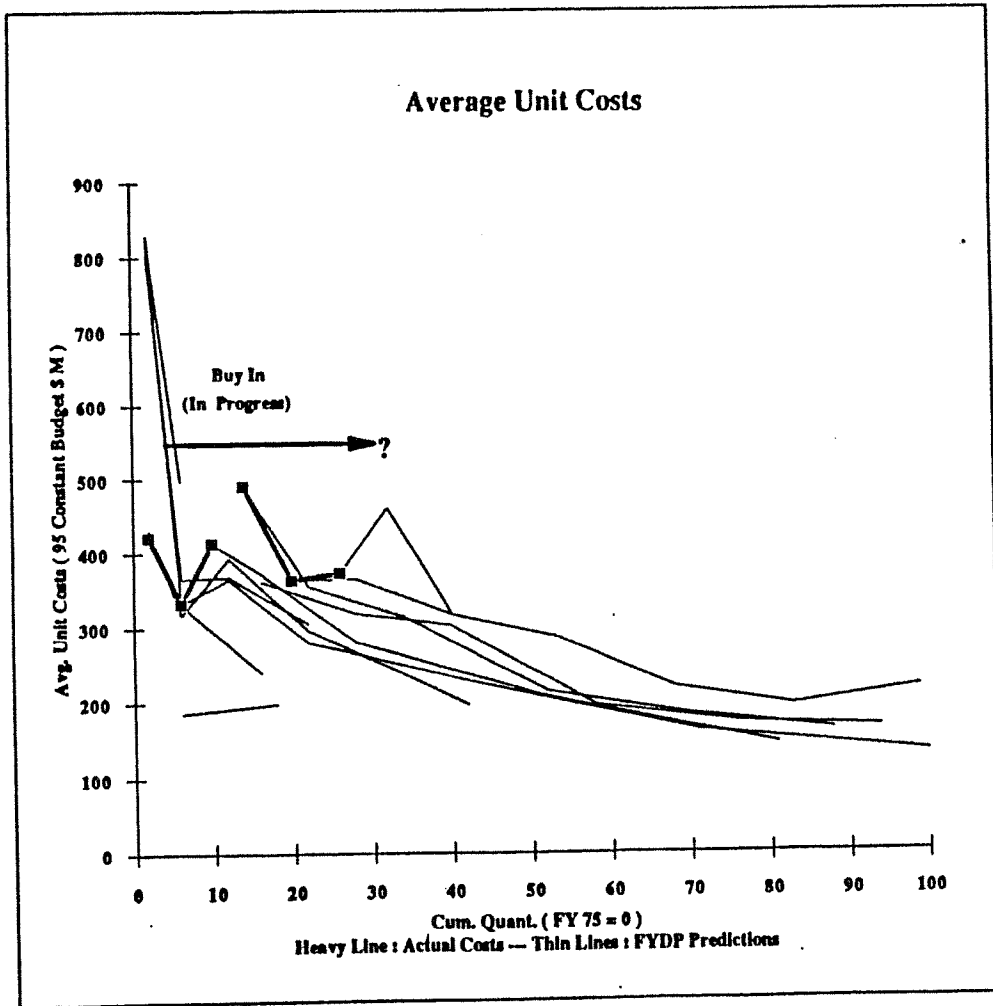
AMRAAM

DDG-51

L-X

C-17

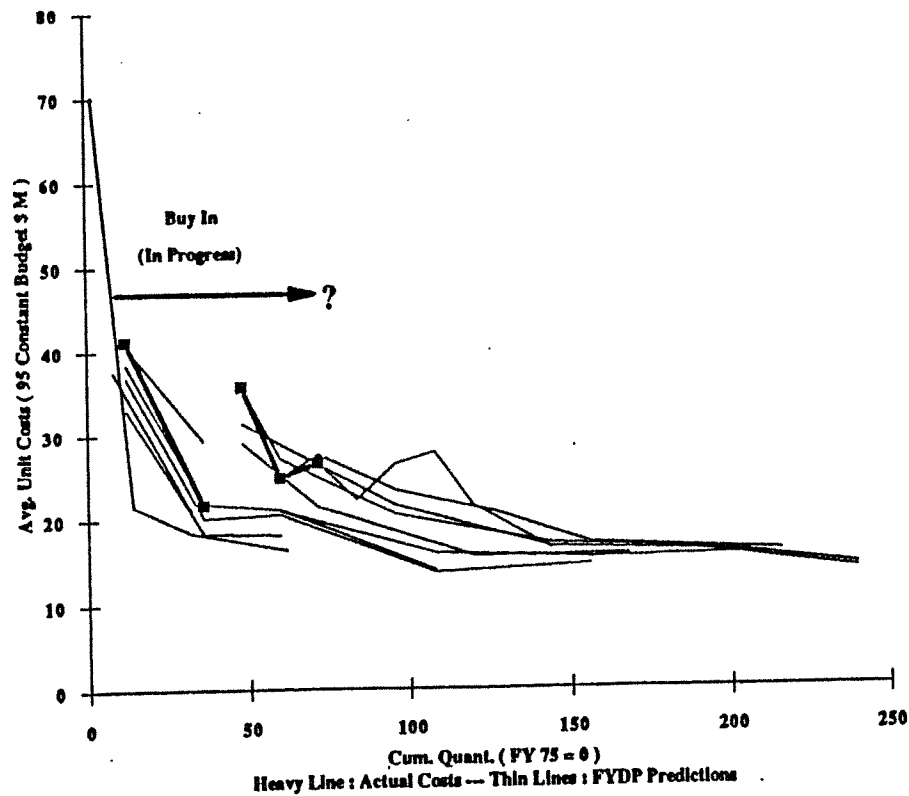
(FYDP Predictions versus Reality)



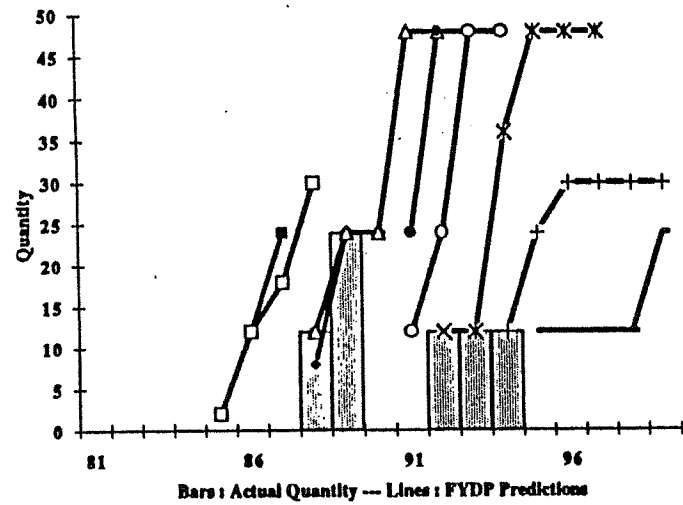
T-45TS GOSHAWK

(FYDP Predictions versus Reality)

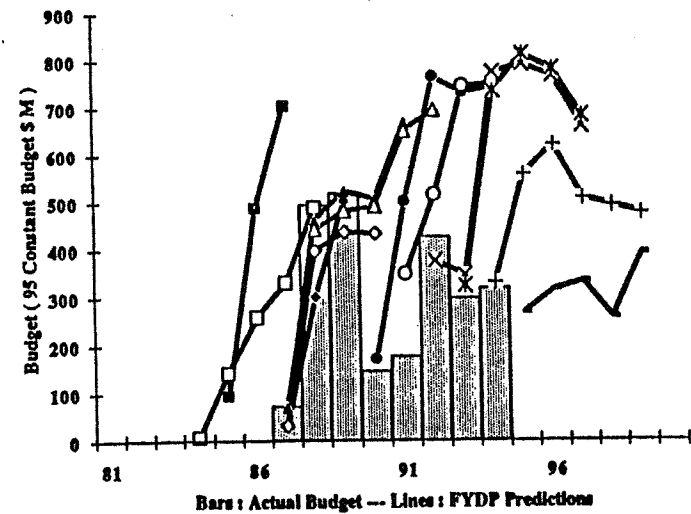
Average Unit Costs



Procurement Quantities

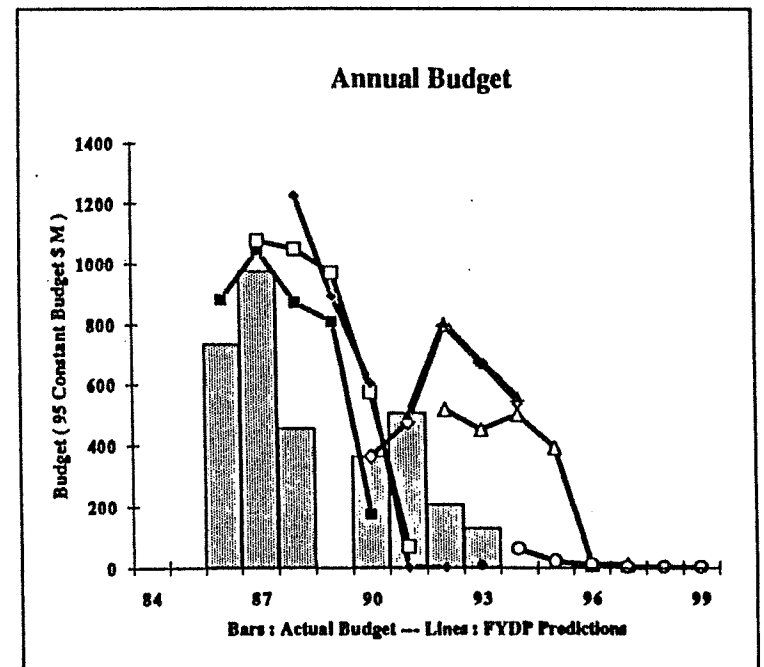
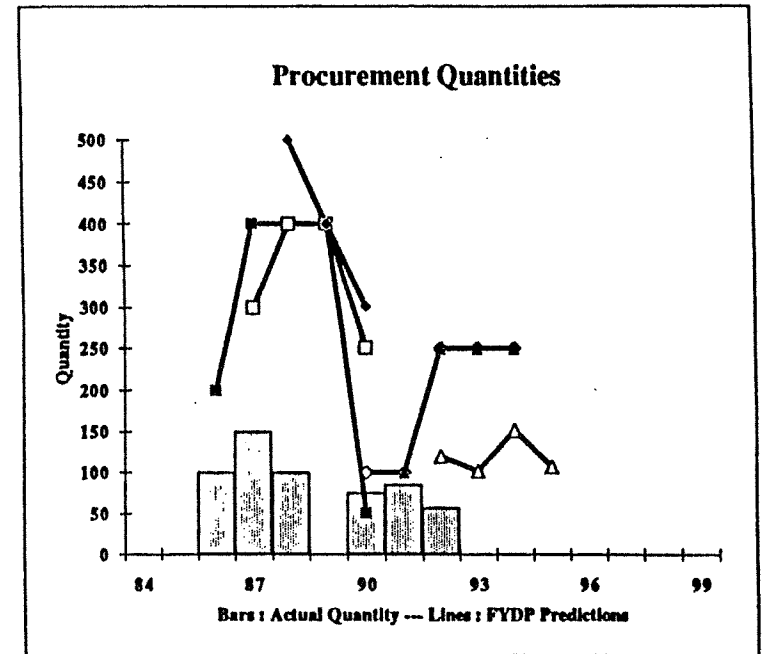
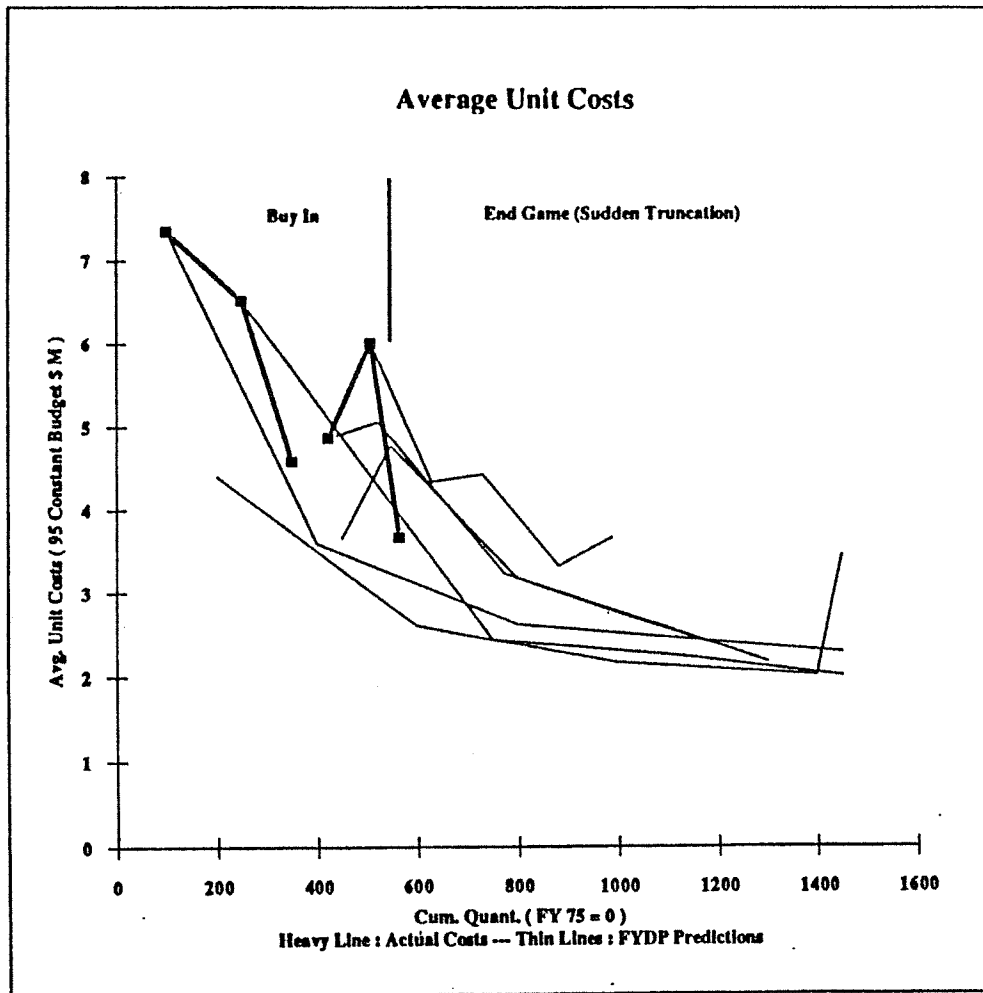


Annual Budget



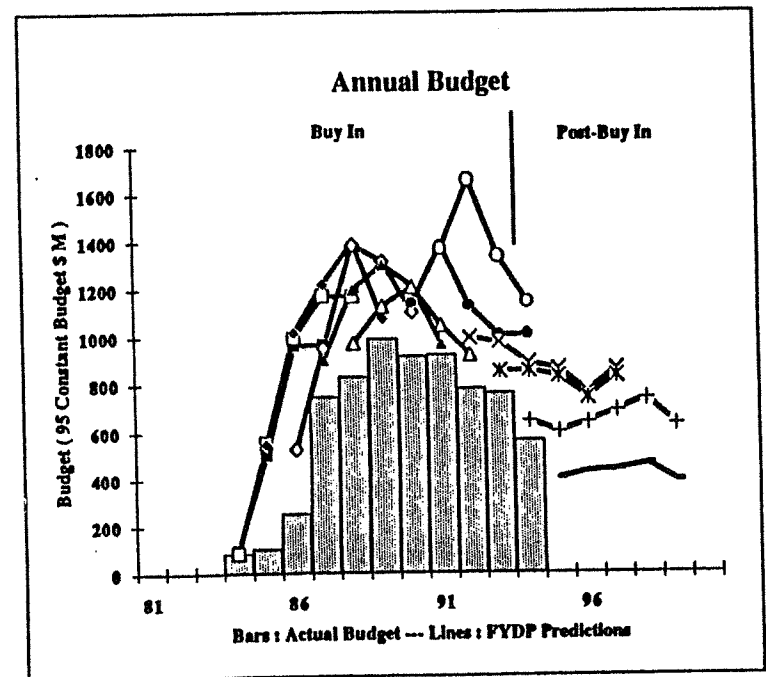
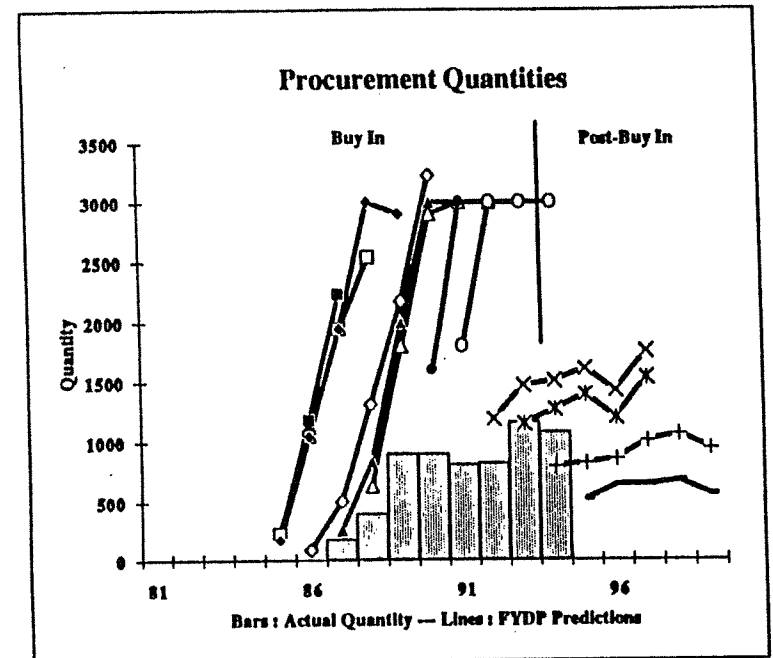
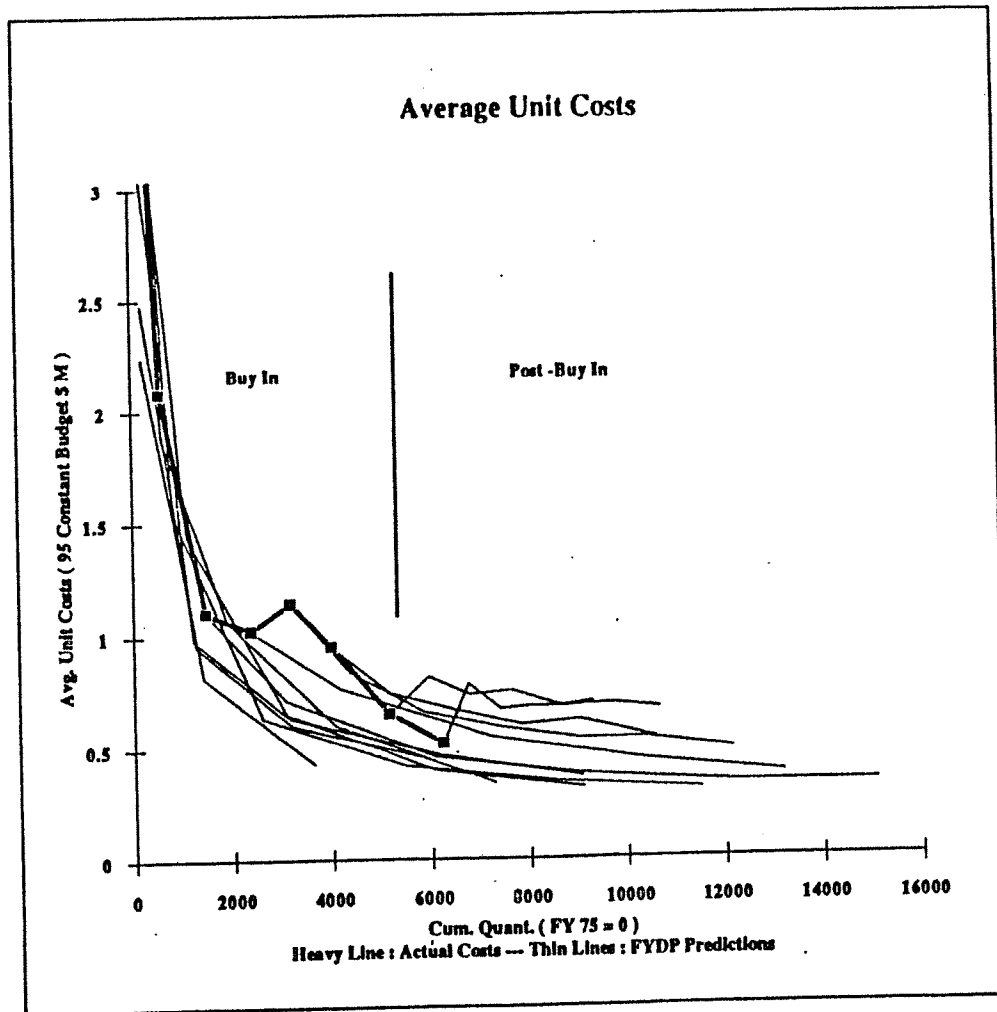
ADVANCED CRUISE MISSILE

(FYDP Predictions versus Reality)



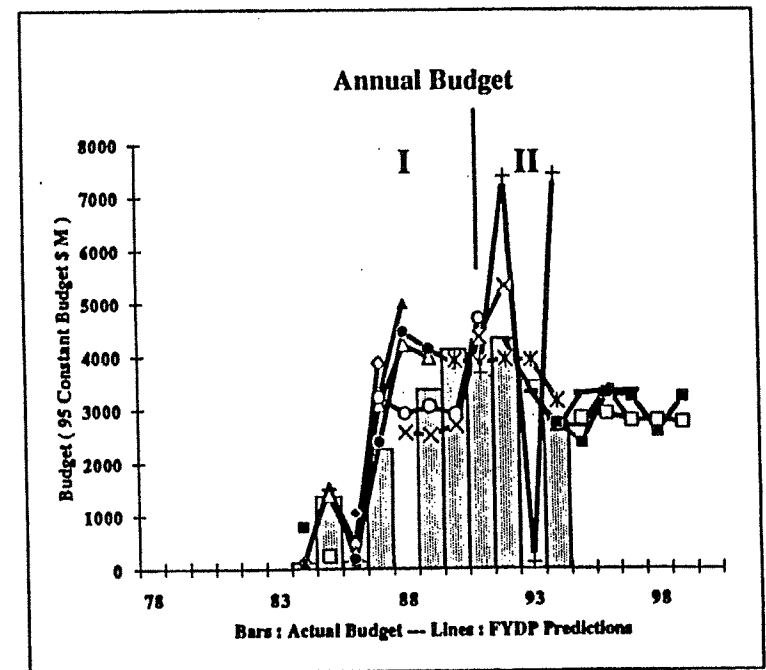
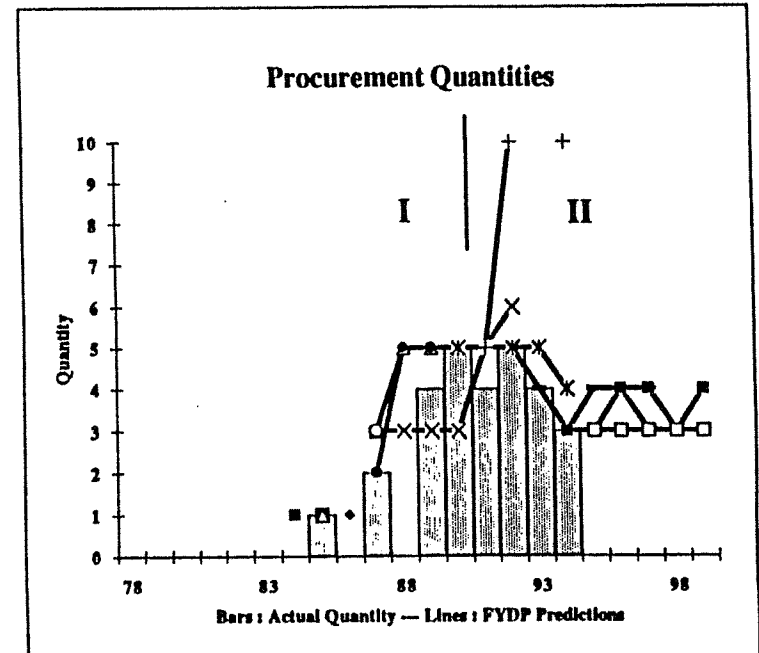
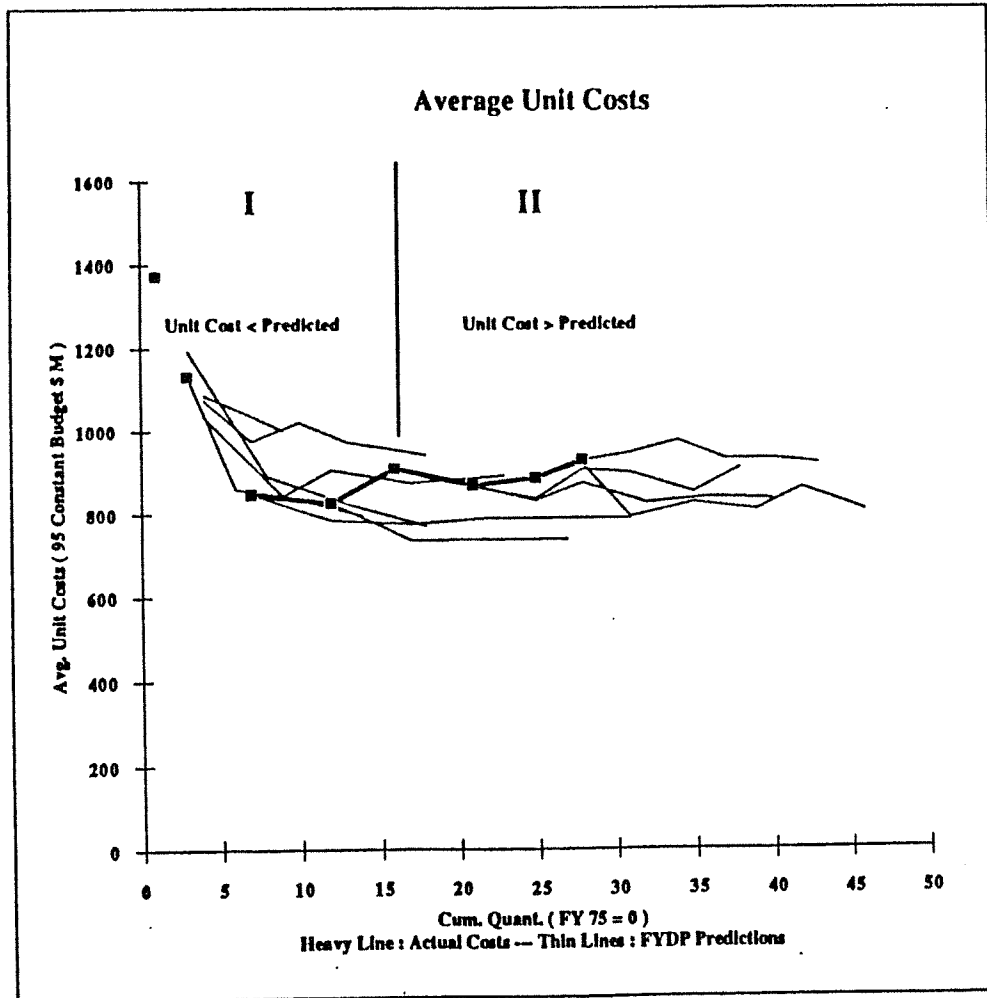
AMRAAM (AF&N)

(FYDP Predictions versus Reality)



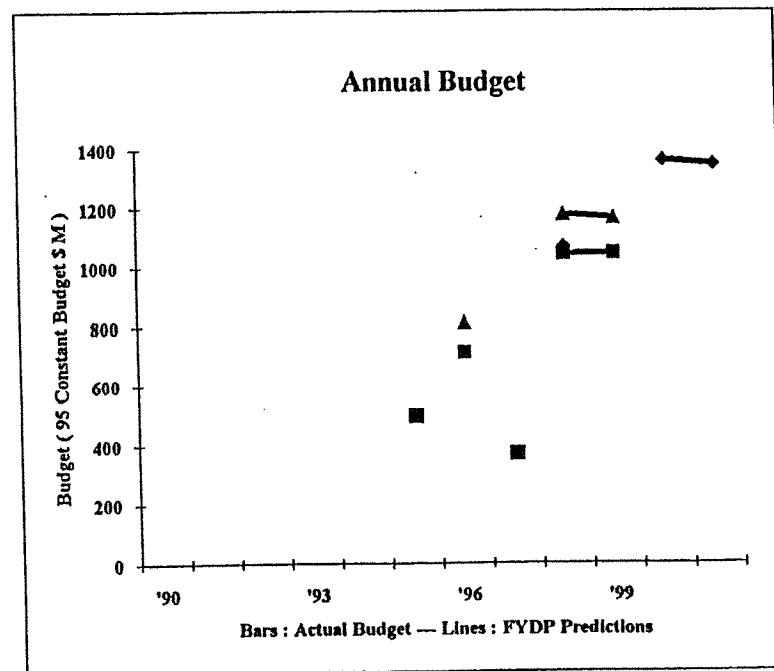
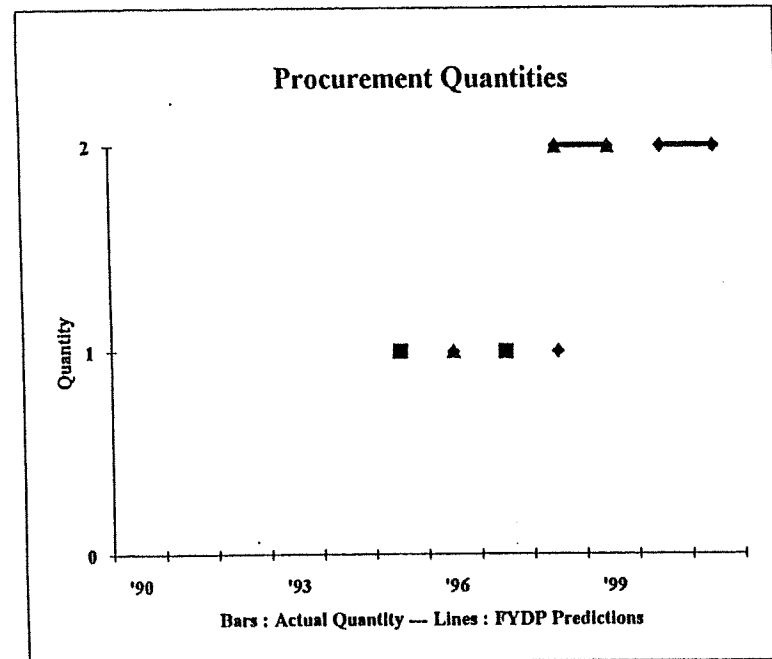
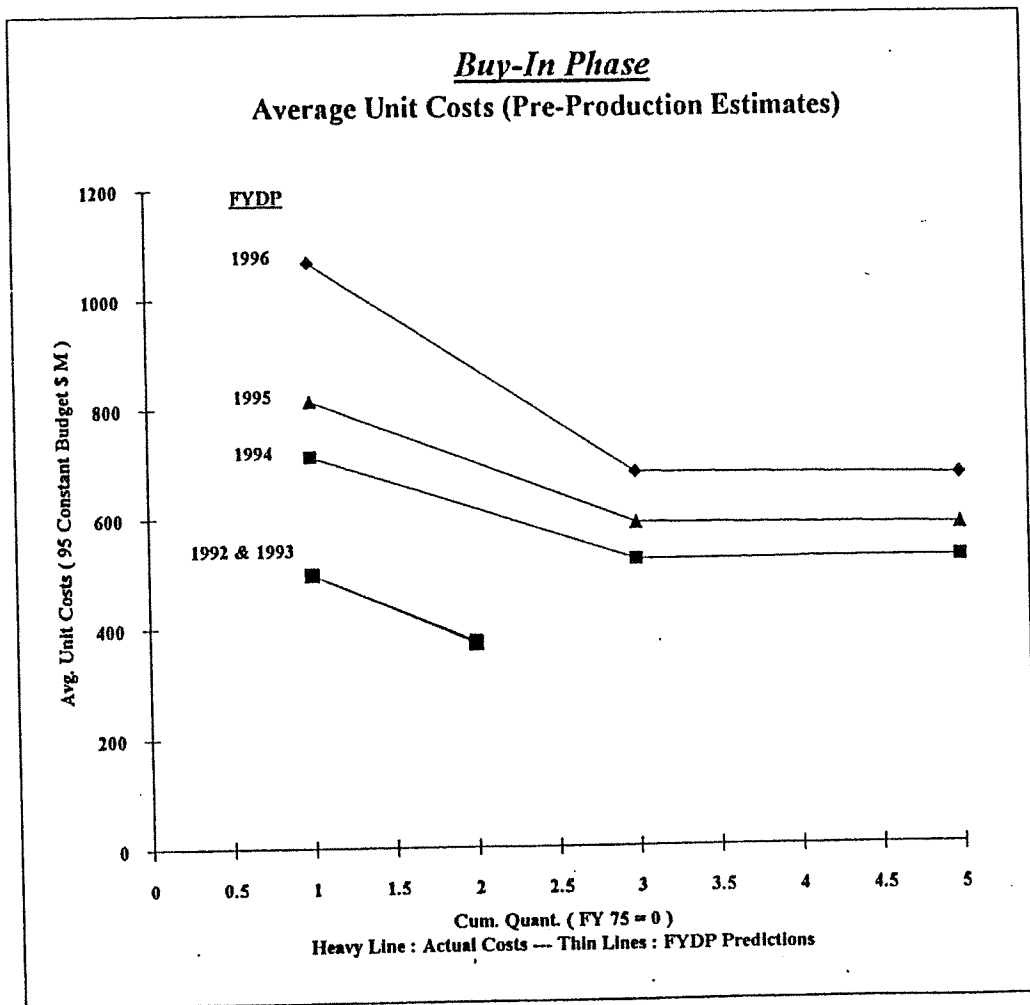
DDG-51 ARLEIGH BURKE

(FYDP Predictions versus Reality)



LX

(FYDP Predictions)



Up to this Point, We Have Examined the *Unfolding Adaptations* in the Acquisition
of Major Weapon Systems.

To Complete this Brief Survey of Decision-Making Behavior,
Let's Examine the Adaptations for the -

Acquisition of Minor Systems.

(Many of Which are Purchased in the Commercial Market.)

Street/Runway Cleaner (Air Force)

Earth Moving Equipment (Navy)

Mk 84 Bombs (Air Force)

Trucks (Navy)

... and ...

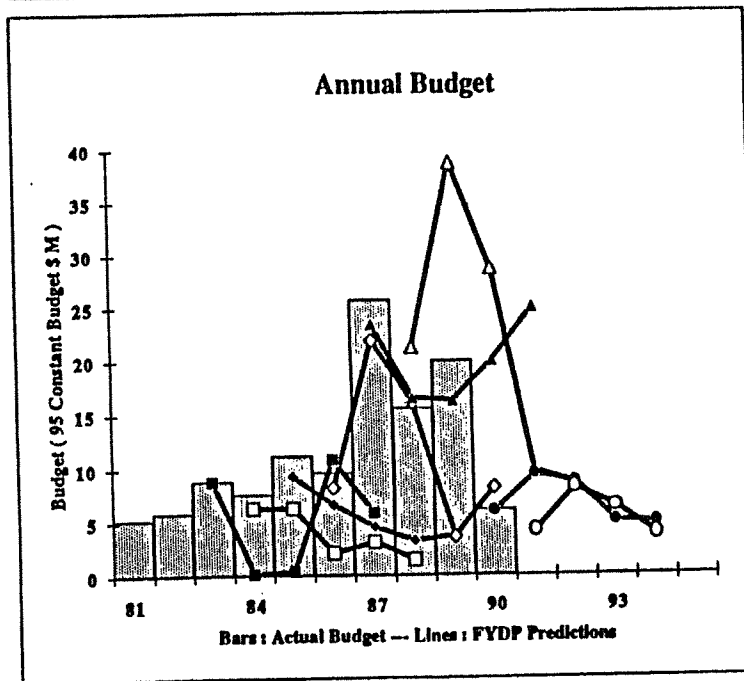
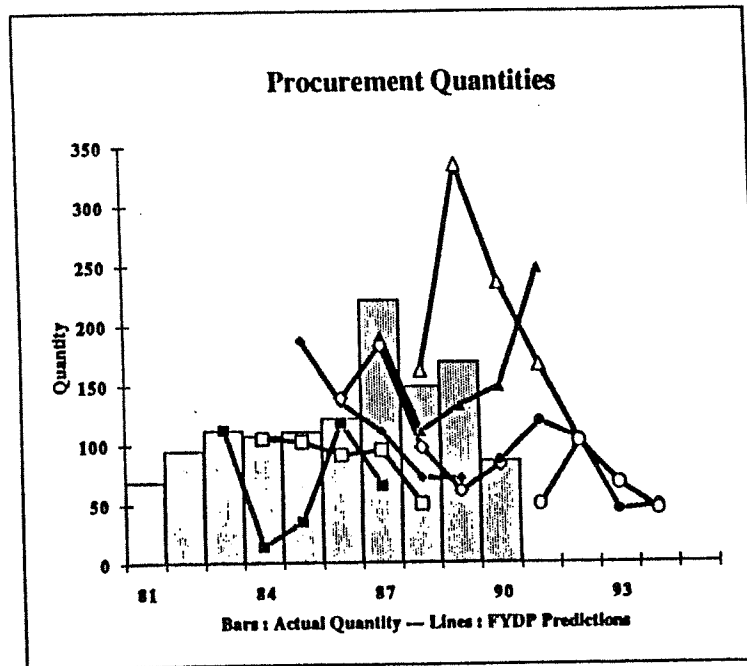
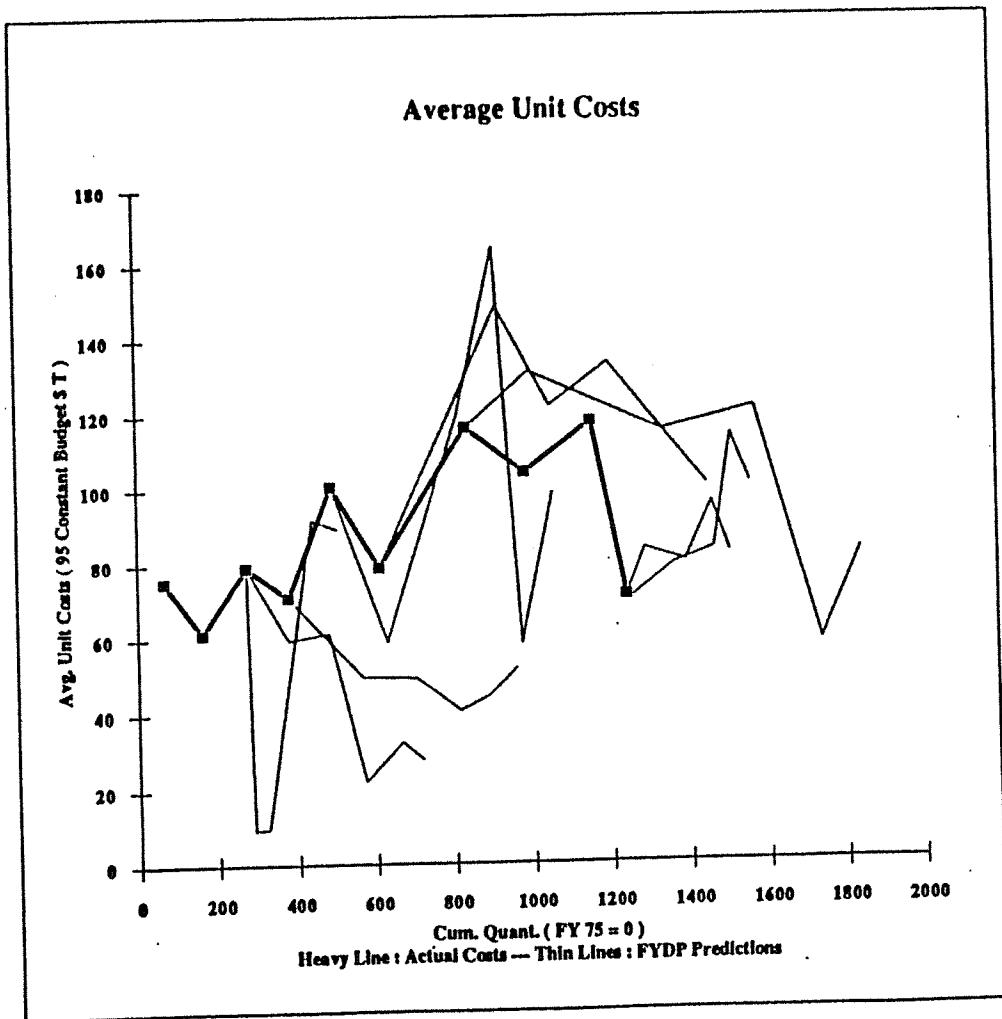
Programs Which are Budgeted by Level of Effort

Modifications of Fighter/Attack Aircraft

Aircraft Replenishment Spare Parts (AF & N/MC)

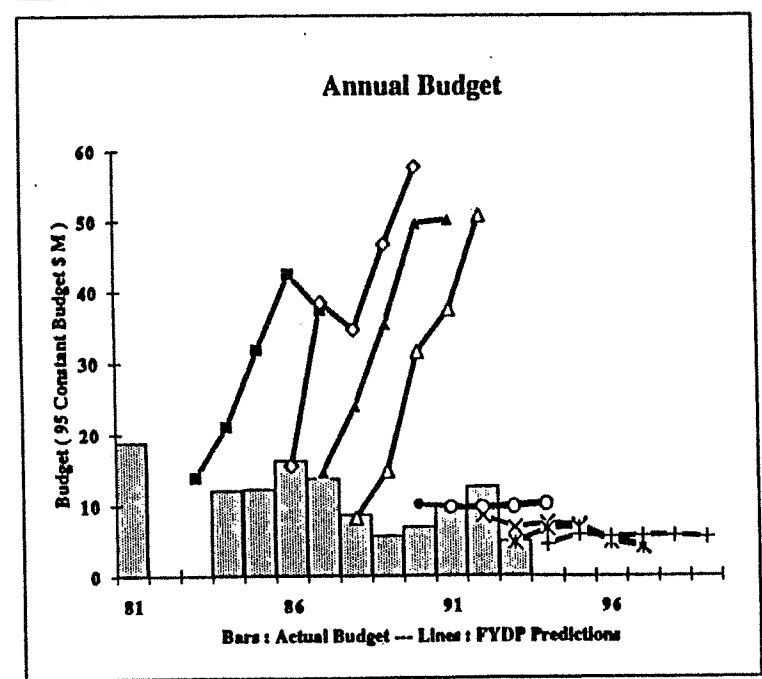
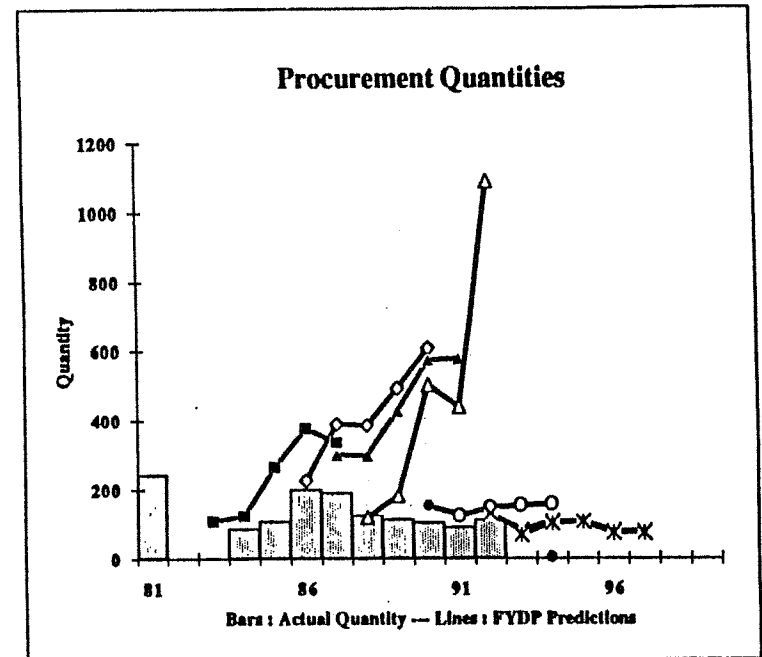
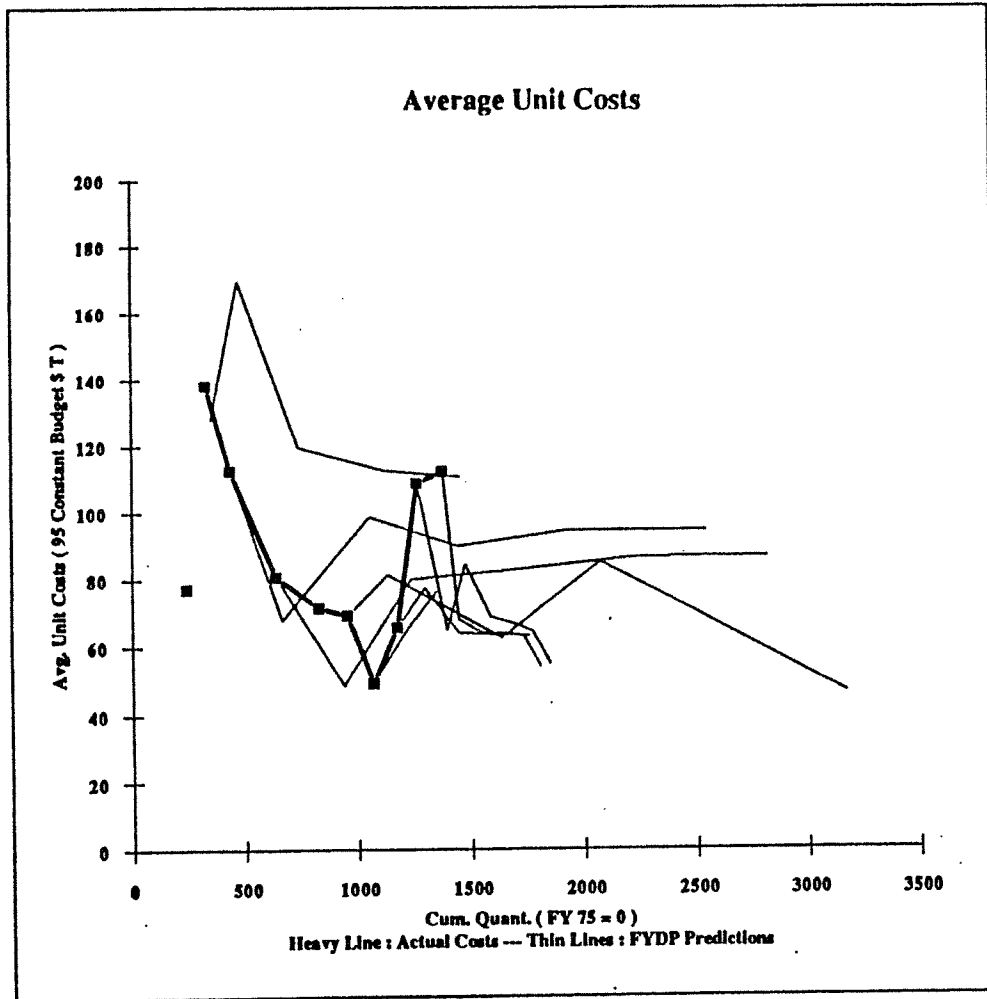
STREET/RUNWAY CLEANER (AF)

(FYDP Predictions versus Reality)



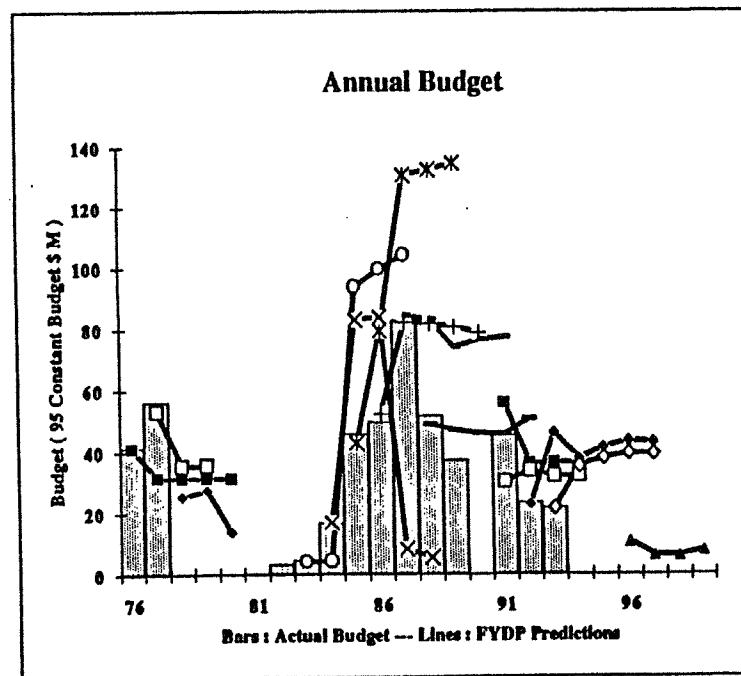
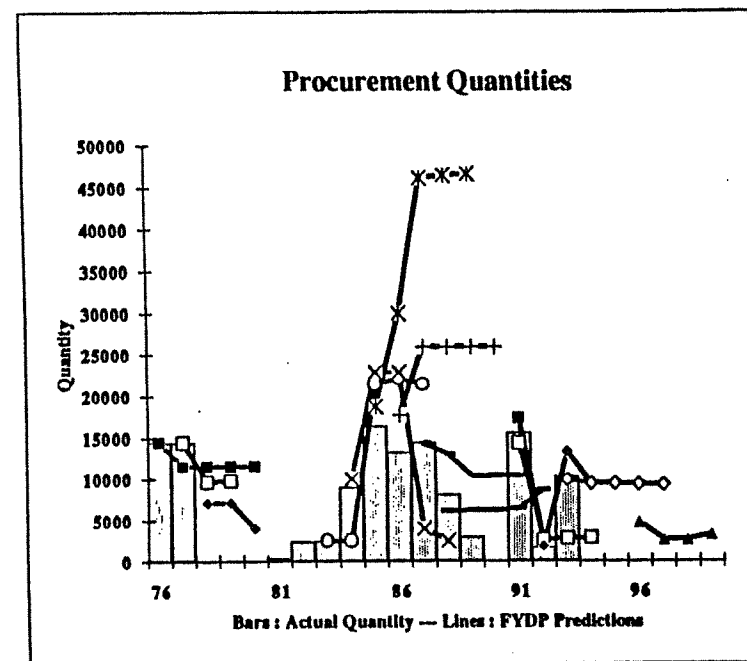
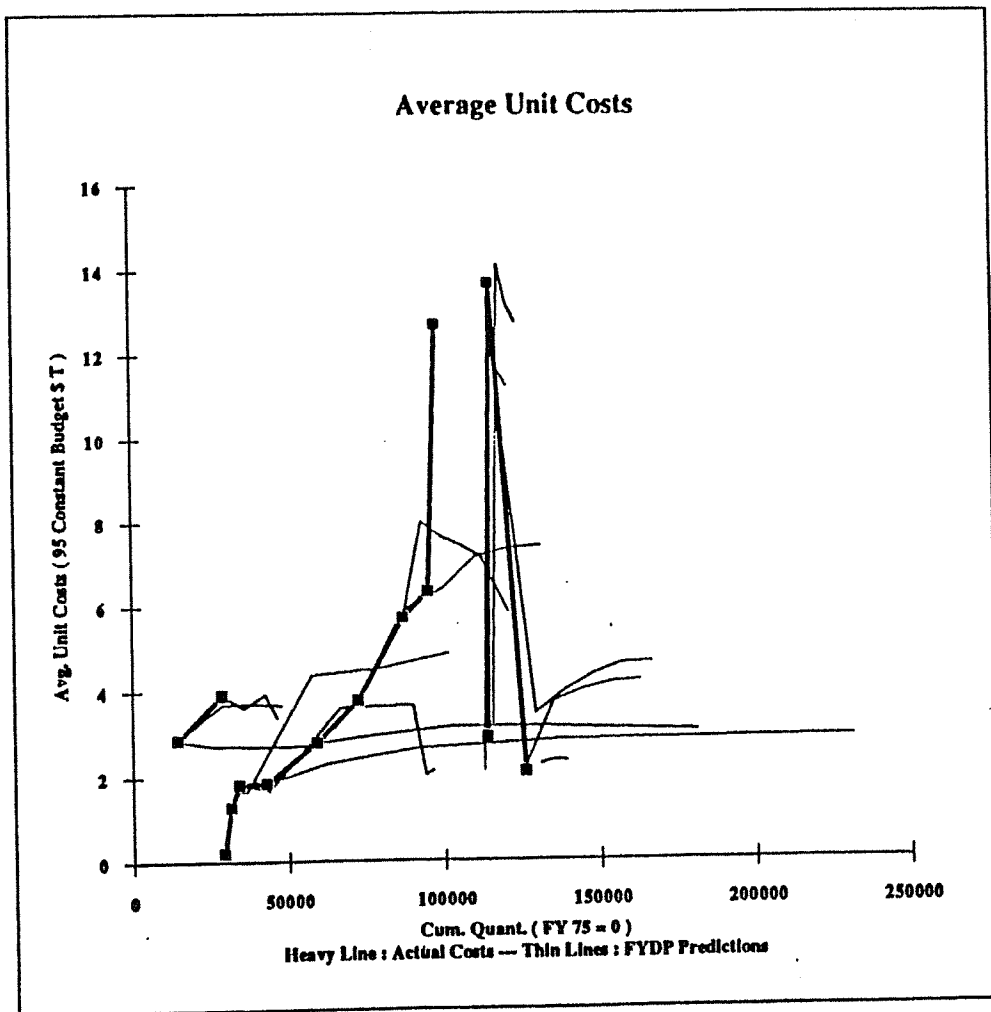
EARTH MOVING EQUIP (N)

(FYDP Predictions versus Reality)



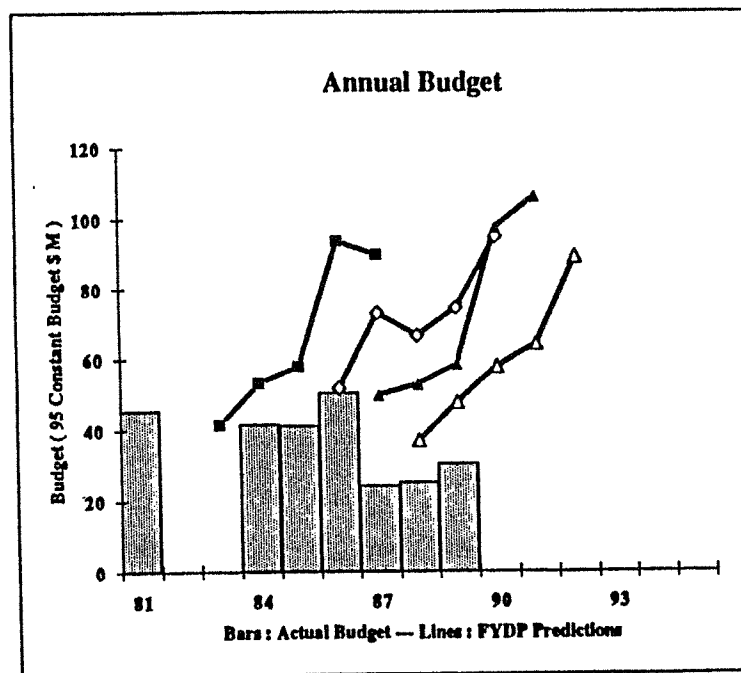
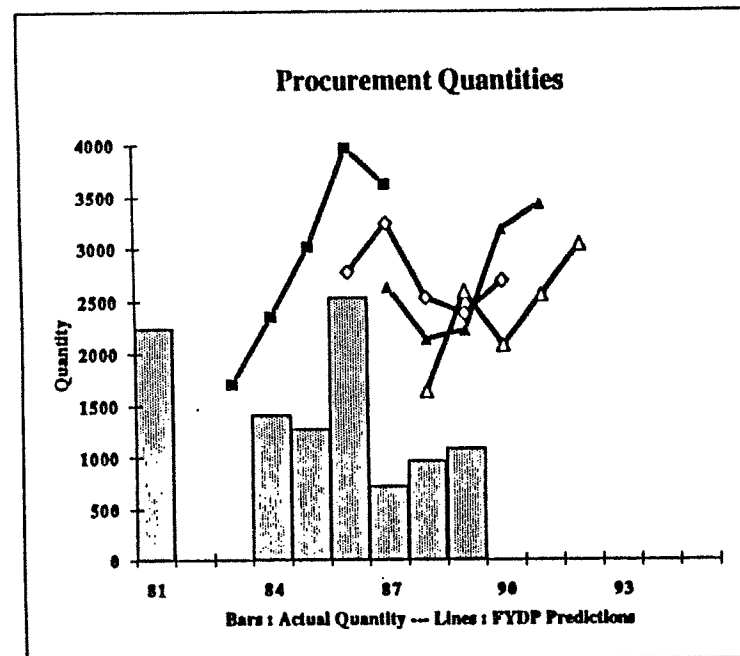
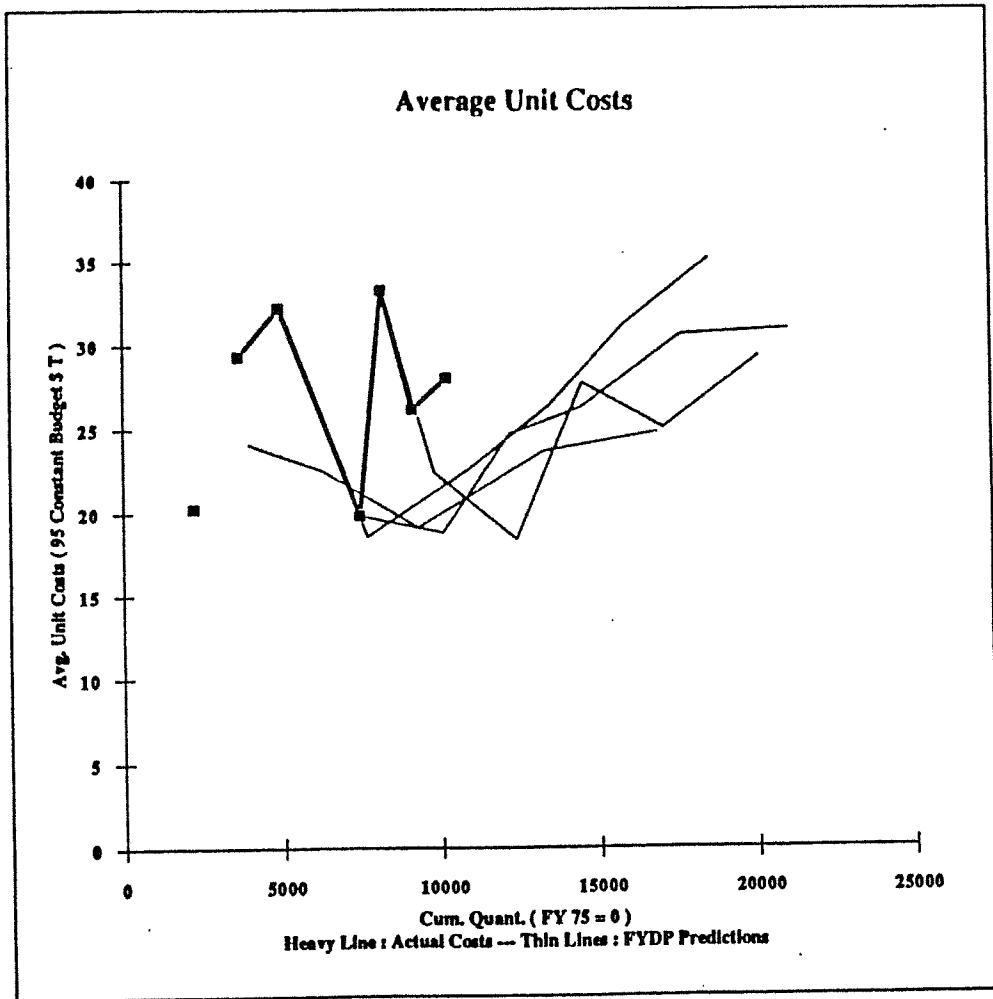
MK-84 BOMBS (AF)

(FYDP Predictions versus Reality)



TRUCKS (N)

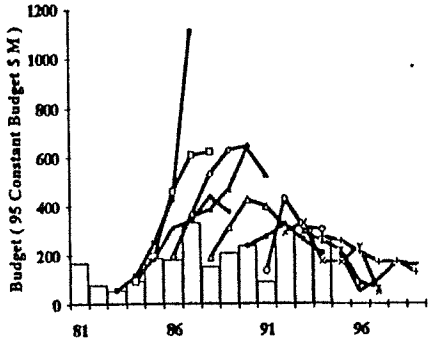
(FYDP Predictions versus Reality)



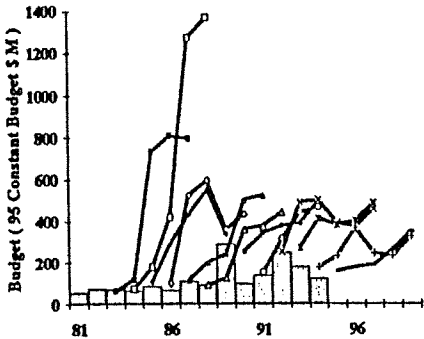
Fighter/Attack Modification Programs Budget Plans vs. Reality

(Bars = Actual Budget - Lines = FYDP Predictions)

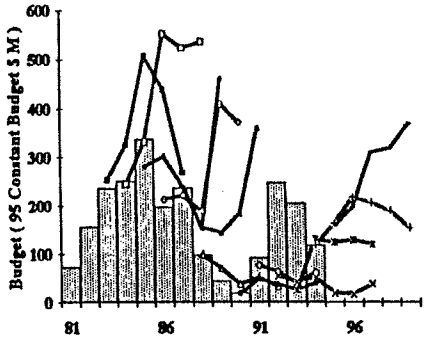
F-15



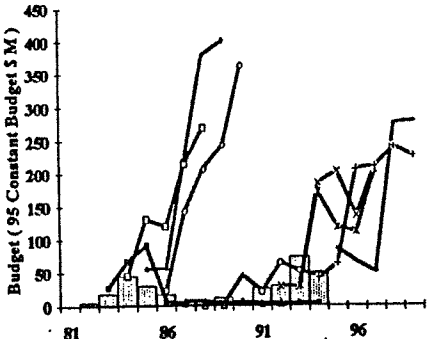
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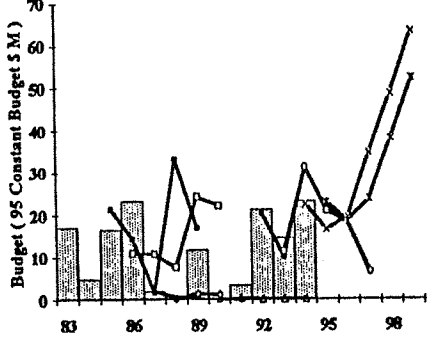
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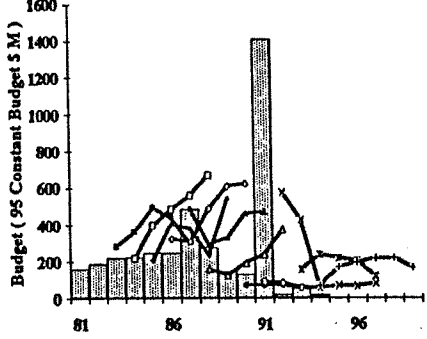
F/A-18



AV-8



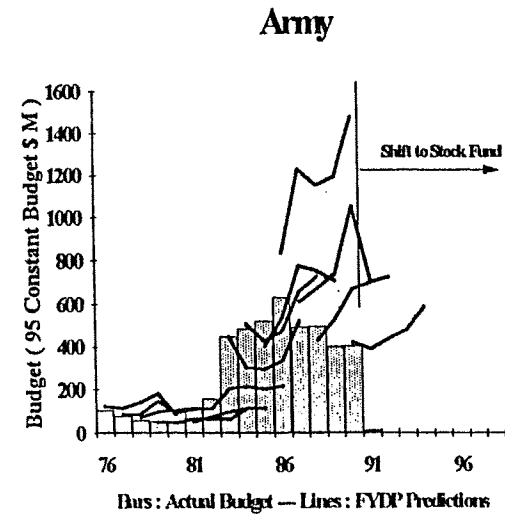
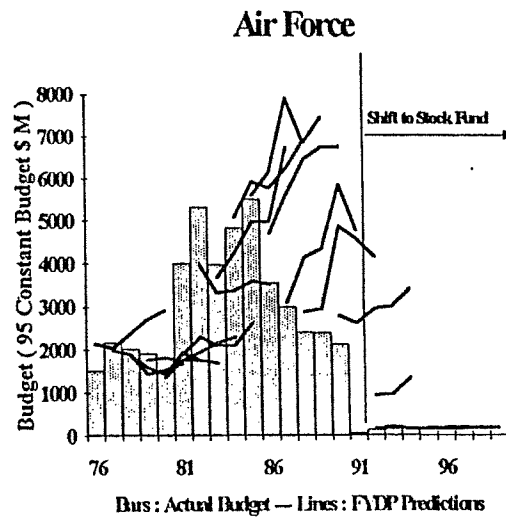
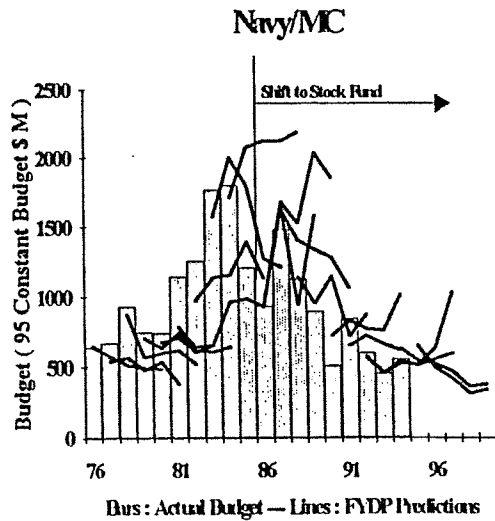
A-6E



Replenishment Spare Parts (Aircraft)

Plans vs. Reality

(Note difference in vertical scales)



The Pattern of Microscopic Fluctuations

Buy In (Adv. Dev., EMD, and First 3 to 5 Years of Production)

Production Instabilities:

- Early production rates often come close to matching the schedules predicted by early FYDPs, ... or
- When reductions in rates occur, cutbacks tend to be associated with *schedule slippage* (implying technical problems) rather than reductions in annual budgets.

Budget Instabilities:

- Annual budgets often *exceed* those predicted by the succession of early FYDPs, ... or
- When cutbacks in budgets occur, cutbacks tend to be *smaller proportionally* than those made during the Post-Buy In phase.

Unit Cost Instabilities:

- With a few exceptions, actual costs *grossly exceed* predicted costs.

Post-Buy In (Phase after first 3 to 5 years of Production)

Production & Budget Instabilities:

- Outyear production rates & budgets are almost always *less* (often much less) than those predicted by the succession of FYDPs.
- Widespread evidence of bias toward stretching out programs in lieu of selectively terminating some programs in order to fund efficient production rates in others.

Unit Cost Instabilities:

- Estimates of future unit costs tend to be more accurate, albeit much *higher* than in Buy-In phase of life cycle.
- Actual costs are sometimes *less* than predicted costs, even when budgets are cut back from FYDP levels, ... or
- Costs often remain stable or decline when budgets & production rates are cutback from those in the succession of FYDPs.
- These repetitive Cost & Quantity Adaptations are *inconsistent* with price/volume behavior in a market economy.

Note on Minor Systems and Level of Effort Programs:

- Wildly fluctuating cost/quantity changes are *inconsistent* with price/volume behavior in a market economy.
- Widespread evidence of bias toward cutting back outyear budgets in lieu of terminating some programs to fund efficient effort in others.

A Macroscopic Appreciation of these Microscopic Dynamics

- Unplanned Cost Growth flows Out of *Unrealistically Low Cost Estimates* made in the Pentagon During the *Buy-In* Phase of a Program's Life Cycle, **NOT** Out of Budget Cutbacks and Production Stretchouts Mandated by Congress.
- The Widespread, Repetitive Nature of the *Buy In* Suggests that "Unplanned" Cost Growth & Production Cutbacks in the Future are *Acceptable* Microscopic *Adaptations* to Senior Decision Makers Operating at the Macroscopic Level of Organization.
- The *Toleration* of Mismatches, Cost Growth, & Production Cutbacks by Program Managers at the Microscopic Level of Organization is also Consistent with the Value System that Places the Survival of the "Part" Ahead of the Welfare of the "Whole."

... and most importantly ...

- The *Repetitive Pattern of Wildly Fluctuating Budget Numbers* (i.e., the Hydra of Mismatches Inside Mismatches) Implies that *Chaos* in the Accounting System is *Acceptable* to Decision Makers Operating at both the Microscopic and Macroscopic Levels of Organization.¹

¹ The American government can not be held accountable to the people if it is not accountable to itself. Viewed in this perspective, the DoD's tolerance of misleading accounting information suggests the presence of hidden anti-democratic agendas or incompetence or both. In this regard, it is important to recognize that degenerate accounting practices are also more consistent with the pathologies of socialism (i.e., central planning, top-down mgt., negotiated prices, cost-plus economics, game playing, bureaucratic log rolling, deal making, etc.) than with the self-correcting behavior induced by the free play of a competitive market. The slow disintegration preceding the collapse of the Soviet Union is a haunting reminder of where these pathologies naturally take an organization, if left unchecked. The remainder of Part I and all of Part II explores the ramifications of these inferences.

MISMATCHES & EVOLUTION SEEN AS A RESULT

Pattern of Mismatches:

ACTUAL OUTCOMES ARE "WORSE" THAN DESIRED OUTCOMES

- Actual Costs are *HIGHER* than Predicted Costs
- Actual Production Rates are *LOWER* than Predicted Production Rates
- Actual Budgets are *LOWER* than Predicted Budgets
- Actual Deficits are *LARGER* than Predicted Deficits

Implication:

When Actual Outcomes are Consistently Different from Planned Outcomes,
The Internal Decision Process Shaping these Plans is being Overridden by the "External Forces" of its Environment

... or put another way ...

Decisions are Not Adapting to Change & the Environment is "Selecting"

Evolutionary Result:

Smaller & Older Forces, Continual Pressure to Reduce Readiness, and a Delusory Accounting System

KEY POINTS:

- There is a Sense of Order & Decay in the Interactive Patterns of Mismatches & Evolution.
- The Repetitive Character of the Mismatches Unveils a History of Habitual Behavior by DoD Decision Makers.
 1. Biases in Short-Term Behavior Repeatedly Understate the "Long-Term Pain" of Decisions.
 2. Biases in Behavior Place Welfare of the "Part" Ahead of that of the "Whole."
 3. Decision Makers Tolerate Behavior that Undermines the Constitutional Principle of Accountability.
- This "Order" is Not the Desired Outcome.

SECOND REORIENTATION:

Anatomy of Decline - A Summary of its External Manifestations

Pattern of Mismatches

- Actual Costs > Predicted Costs.
- Actual Production Rates < Predicted Rates.
- Actual Budgets < Predicted Budgets.
- Actual Deficits > Predicted Deficits.

Evolution of Forces

- Modernization Costs Grow Faster than Budget.
- Forces Shrink.
- Modernization Rates Decline, Forces Get Older.
- Operating Costs Increase (Accountability Problems.)

Crucial Insights (From DoD's Collective Point of View):

1. The Anatomy of Decline is an *Ordered Pattern of Decay* Shaped by *Habitual Modes of Conduct*.
 - Each Pattern Conveys a Sense of Consistency and Repetition Over the Long Term.
 - The Habitual Pattern of Mismatches is Clearly a Major Influence Shaping the Pattern of Evolution.
2. The Anatomy of Decline is an *Undesired Order*.

Observation:

Collective Behavior is Made Up of the Behavior of Individuals.

Raises Question:

Why Would Individual Decision Makers Tolerate Undesirable Outcomes Year After Year?

Comment:

Up to this Point, We Used a Macroscopic Point of View as a Lens for Examining Selected Outputs of an Ever-Changing, Socio-Political-Economic Interaction Operating in its Whole Setting.

In this Sense, Our 2nd Orientation is that of an Outside Observer Who Made a First Approximation by Taking a Variety of Still-Life Snapshots of the Unfolding Dynamics of a Living Social System.

... But ...

The Question of Why Individuals Tolerate these Unwelcome Outcomes, Shifts Our Point of View to that of an Observer Inside this System & Begins to Explore the Sources of Individual Behavior.

Let's Go Inside the System to Examine -

How the Decisions & Actions of Individuals Relate to the Process of Mismatch and Evolution;

... or more abstractly ...

How the Microscopic Dynamics Relate to the Pattern of Global Change.

HABITUAL MODES OF CONDUCT:

How Repetitive Patterns of Behavior Evolved by Individuals in a Bureaucratic Competition for Money
Shape the Pattern of Mismatches and the Evolution of Forces

Point of Departure:

"Ambition, avarice, self-love, vanity, friendship, generosity, public spirit;
these passions, mixed in various degrees, and distributed through society,
have been, from the beginning of the world, and still are, the source of all the actions and enterprises,
which have ever been observed among mankind."

David Hume

An Enquiry Concerning Human Understanding

DEFINITIONS (II):

1. Adaptation

An alteration or adjustment in structure or habits by which a group (any organization of individuals) improves its condition in relationship to its environment

2. Behavior

All action directed by organisms toward the outside world in order to change conditions therein or to change their own situation in relation to those surroundings [Piaget 1978].

- In terms of group dynamics, a selection of *behavior modes* brings about an *adaptation* which embodies either an *initiative* that attempts to shape the environment to fit the needs of the group, or a *reaction* that adjusts the group's internal organization to fit the external constraints of the environment, or as is usually the case, some combination of initiative and reaction.

3. Habitual Modes of Conduct

Repetitive patterns of *behavior* wherein individuals conform voluntarily to the norms of a group. (informal or formal codes of conduct, systems of rules and constraints, traditions, etc.)

[Phrase borrowed from Hayek 1988]

A Competition for Money Necessarily Introduces the Motives of Self Interest & Ambition:

Introductory Example:

Its " ... too late ... " to stop the build up to a 600 ship navy.
"We've already accomplished it, because we front loaded the budget."

John Lehman , Secretary of the Navy, December 1982¹

Observation:

The 600 Ship Navy did NOT Exist in 1982!

Raises Question:

What Gave Lehman the Audacity to Claim he Achieved his Ambition Before the Fact?

Related Considerations:

- In 1982 Lehman's Aim was to Open the Navy's Money Spigot by Winning a Competition for Scarce Resources.
- That Money Spigot is "Controlled" by a Federal System of Overlapping Power Centers and Checks & Balances.
- The Reference to "Front Loading" Suggests Lehman Believed he had Neutralized the Major Institutional Checks to the Navy's Money Flow.

Message:

With his own Words, Lehman Implicitly Claimed he had Achieved his Ambition by Gaming the System –
i.e., by Deliberately Insinuating Political Constraints into the Budget Via the Mutually-Reinforcing Stratagems of
Front Loading & Political Engineering.

¹ Source: *National Journal*, January 22, 1983, p. 157 [Emphasis added]. Lehman made this statement at the Brookings Institution in rebuttal to criticism, made by William Kaufmann, that the Navy's plan for a 600 ship navy was too expensive.

Did Lehman Win the Game?

WASHINGTON POST 8 FEBRUARY 88 Pg. 2

Budget Shoals Stranding Reagan's 600-Ship Navy

By George C. Wilson
Washington Post Staff Writer

The 600-ship Navy has run aground on budget shoals.

Navy officials said yesterday that they have run into such a spending crunch that President Reagan's goal of leaving behind a 600-ship Navy will not be realized until the next decade, if then.

A Navy budget proposal now being considered by top Defense Department officials calls for retiring 16 frigates, leaving 589 ships available for deployment in 1990 rather than the projected 605.

The Navy's recommendation calls for eight to be taken from the Atlantic Fleet and eight from the Pacific Fleet, with half of them go-

ing out of service in the current fiscal 1988 and the rest in fiscal 1989, which begins Oct. 1.

Besides saving unspecified billions of dollars, the ship retirements would ease a Navy manpower shortage, which skippers say is becoming severe. Overall, the Navy is not short on sailors but the skippers say it is running critically short of such skilled petty officers as boiler tenders and machinist mates, who are needed to man ships at sea.

The proposed ship retirements represent fresh evidence of how the military is restructuring itself to accommodate the big cuts Congress has made in the defense budget over the last three years. Three years ago, then-Navy Secretary John F. Lehman Jr. said the 600-

ship Navy was too far along for Congress to stop. The numbers at the time bore him out.

Navy Secretary James H. Webb Jr. has said that the Navy should receive a bigger portion of the Pentagon's funding than other services because of its worldwide deployments. However, Army, Air Force and Marine leaders, also strapped for funds, will fight any Navy campaign to reapportion the budget.

Webb has said that if more money is not forthcoming, U.S. policymakers should reassess military commitments around the world with an eye to withdrawing from some of them. This proposal, in the absence of increased military spending by NATO partners, is not expected to get far, Pentagon officials said.

If the 16 frigates are retired early, Navy leaders said the warships left will have to stay at sea longer on escort duty. The Navy goal has been to limit sea deployments to six months and allow crews to stay at home for 12 months before returning to sea.

With fewer ships, deployments will be longer than six months, Navy leaders said, unless the service is relieved of some of its obligations in the Persian Gulf and elsewhere. A return to long deployments will probably discourage reenlistments, aggravating the manpower problem, they said.

Not if a 600 Ship Navy Was His Goal.

... But Perhaps ...

The Slender of a 600 Ship Navy Was a Means for Achieving Some Other Ambition.

GAMING THE SYSTEM:

FRONT LOADING

**The Art of Planting Seed Money for New Programs
While Downplaying the Future Consequences of Today's Decisions**

POLITICAL ENGINEERING

**The Art of Spreading Dollars, Jobs, and Profits
to as Many Crucial Congressional Districts as Possible**

AIM:

Open the Money Spigot & Lock It Open

How Does Front Loading Relate to the Hydra of Mismatches Inside Mismatches and the Evolution of Forces?

Hydra of Mismatches:

- Since Front Loading Aims to Obtain Budget Dollars by Downplaying the Future Consequences of Current Decisions, this Mode of Conduct Naturally Creates Mismatches via the Tactics of Delusion and Deception.

Evolution of Forces--Engine of Change = Cost Growth > Budget Growth (even when budgets increase):

- Front Loading Feeds the Pattern of Cost Growth > Budget Growth by Embodying a Subtle Political Motive to Buy Ever-More Complex, Higher-Cost Weapons -
 - Complex Hardware Embodies More Uncertainties than Simple Hardware.
 - Larger Number of Parts and Greater Variety of Connections
 - More Things Can Go Wrong & More Problems are Impossible to Discern Beforehand.
 - Easier to Hide Future Consequences of Decisions in a Fog of Optimistic Predictions & "Scientific" Authority.

Evidence of Widespread, Habitual Behavior:

- Repetitive Biases Throughout the Pattern of Mismatches Prove "Buy In" is Business As Usual in Military-Industrial Complex.

Point:

Front Loading Creates the Hydra of Mismatches Inside Mismatches and Sets the Stage for the "Unexpected" Cost Growth that Feeds the Evolution of Forces.

Strategy:

Use Tactics of Ambiguity, Deception, "Buy In," and "Bait & Switch" to Infiltrate Past Points of Strong Resistance.

Game is Easily Discerned at Microscopic and Macroscopic Levels of Organization:

- Individual Weapons
- Entire Defense Budget

FRONT LOADER'S TOOLBOX

(Examples of Available Options)

Rubber Baselines (e.g., C-17's Range/Payload Reductions)

Estimates of Future Life Cycle Cost "Savings"

"Validated" Requirements

Pseudo-Scientific Studies (COEAs)

Success-Oriented Tech Demos

Concurrency

"Black" Clearances

Accounting Tricks

Threat Inflation

INDIVIDUAL WEAPON

Early Elimination of Alternatives

Complex Technologies & Faith that
Technology "Revolutionizes" War

Learning Curves
(E.g., F-18E)

**Create a "Rosy" Image to Mentally Infiltrate, Co-opt, and Neutralize
Potential Resistance in DoD, OMB, & Congress:**

Mask/Distort/Downplay Future Commitments.

Exaggerate Needs and "Certainty" of Performance Predictions

Overload Layman's Mind with Complex Information Having the Appearance of Scientific Authority

FRONT LOADING

The Learning Curve in Action

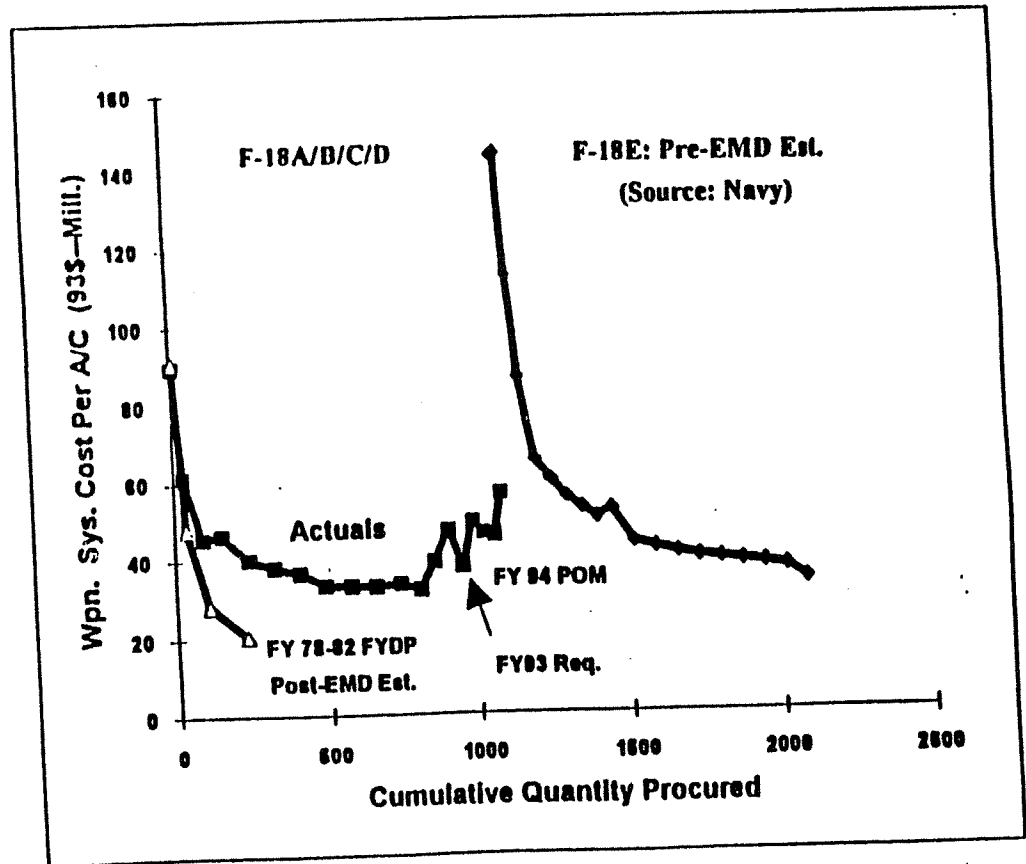
F-18E Has Been Sold to OSD & Congress as a Low-Risk Modification to F-18C,
But Navy's Own Estimates of Future Production Costs Assume F-18E is a New Airplane.

F-18E vs. F-18C

Physical Differences:
 New Wing Design (Different Aerodynamics)
 Radically Different Air Inlets
 New Engine
 Different Structure (92% by Wt.)
 Different Subsystems (65% by Wt.)

Physical Similarities
 Avionics (90% Common)
 Similar Load Paths in Much of Structure

Economic Differences
 Pre-EMD Est. More Uncertain than FYDP est.
 Max Prod. Rate = 40% of 78 FYDP Prediction
 Much Lower Plant Utilization
 More Uncertain Fiscal Outlook



GAME:

... Distort & Downplay Differences to Bypass the Prototype Phase, Obtain a Premature

FRONT LOADING THE DEFENSE BUDGET

Case In Point: The 1980s

DoD Repeatedly Produced--and Congress Repeatedly "*Bought In*" to--Plans That -

- Grossly *Overestimated* Long-Term Budgets.
- Assumed the Operating Budget Would Grow More *Slowly* Than the Total Budget.
- Assumed the Modernization Budget Would Grow More *Rapidly* Than the Total Budget.
- Assumed Future Procurement Costs Would *Decline Sharply* Via Learning Curves.
- *Rarely Canceled* Major R&D or Procurement Programs.
- Routinely *Added "New Starts,"* Even When Outyear Expectations Were Reduced.
(e.g., Star Wars, C-17, SSN-21, DDG-51, ATF, A-12, Midgetman, Comanche, etc.)

RESULT:

*Habitual Behavior, Embodying Massive Doses of Delusion & Deception, that --
Made it Easier to Infiltrate High-Cost Weapons into the Budget in the Short Term,
... but also ...*

Set the Stage for Being "Selected Out" When Congress Gagged on the Bill Over the Long Term.¹

¹ The defense meltdown actually began in February 1988, well before (and independent of) the end of the cold war. In *Defense Power Games* (pages 11-33), a pamphlet published by the Fund for Constitutional Government (FCG) in November 1990, I described how the front loading operation of the early 1980s set the stage for the inevitable meltdown. Interested readers can obtain this pamphlet by calling the FCG at 202-546-3732.

Political Engineering

Definition:

The Art of Spreading Dollars, Jobs, and Profits
to as Many Important Congressional Districts as Possible.

Strategic Aim:

Lock Money Spigot Open by Hooking Congress on the Narcotic of Defense Spending.

Action:

Paralyze Decision Makers at all Levels by Carpet Bombing Congress with
JOBS! JOBS! JOBS! JOBS! JOBS!

How Does Political Engineering Relate to the Hydra of Mismatches Inside Mismatches and the Evolution of Forces?

Mismatches:

- While their Tactics are Crudely Blatant, the Political Engineers Need the Widespread Confusion, Ambiguity, & Deception Created by the Hydra of Mismatches to Distract Attention at the Beginning Their Spreading Operation.

Evolution of Forces--Engine of Change = Cost Growth > Budget Growth (even when budgets increase):

- Political Engineers Have Direct Motive to Buy Ever-More Complex, Higher Cost Weapons, because
Complex Hardware => More Subsystems => More Opportunities for Spreading Dollars Around the Nation.

Evidence of Extortionary Pressure Triggered by Political Engineering is Overwhelming and Beyond Dispute:

- DoD Spendup Added 1.4 Million Jobs to Contractor Payrolls Between 1980 and 1989.
- President Bush's Obsession with Defense Jobs During 1992 Election.
- Sec Weinberger's Claims that Defense Spending is a Better Way to Stimulate Economy (\$1 Bill Creates 35,000 Jobs), 3/83.
- President Reagan's Claims that a Nuclear Freeze (i.e., Killing the B-1) Will Hurt Ohio Economy, 10/82.
- B-2 -- 383 Congressional Districts, 46 States, 3,000 contractors & 53,000 Jobs (1989/1995).
- SSN-21 -- 44 States (*Wash Post*, 10/13/95, p. A4), Hundreds of Thousands of Jobs (Direct & Indirect, Estimate Made in 1992).
- C-17 -- 2000 Vendors, 44 states, 20,000 Vendor Jobs, Economic Impact of \$4.5B on Local Communities (McAir Briefing 7/93)
- F-15E -- Suppliers in 46 States (McAir Advertisement Describing F-15E's "Virtues," *Wash. Post*, 9/13/94, p. A18)
- F-22 -- 160,000 Jobs (6,000 direct, 33,000 vendors, 121,000 in local economies) Would be at Risk if F-22 is Delayed by 4 yrs, according to SECAF Memo to DepSecDef, 9/8/94 (reprinted in *Defense Week*, 9/19/94, pp. 1, 14-20).
- F-16 -- 3216 Vendors in 390 Congressional Districts & 47 States (GD Letter to Congressmen, 9/8/1992).
- Etc.

Points:

The Ubiquitous Effects of Political Engineering are also Consistent With and Feed the Hydra of Mismatches and Evolution of Forces.

CARPET BOMBING CONGRESS

(Example)

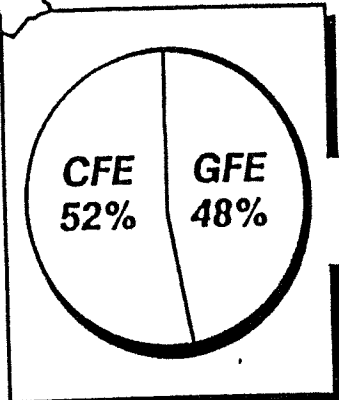
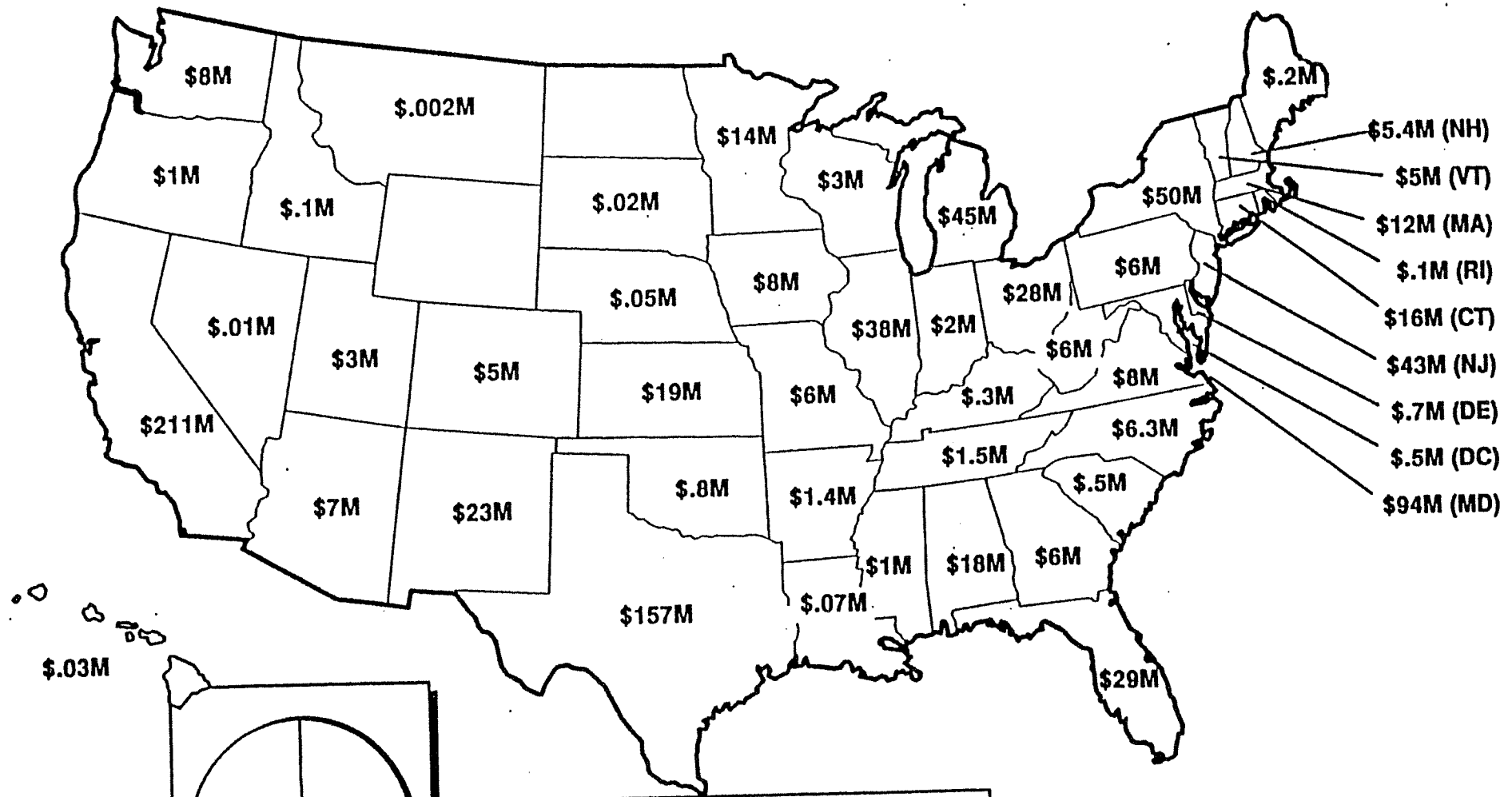
F-16: Summer 1992 Budget Debate

- **Senate Armed Services Committee: Terminate Production in FY 1993**
- **House Armed Services Committee: Purchase 24 F-16's in FY 1993**

September 1992:

**GD Lobbyists Distribute Political Atlas of F-16 Vendors to
Build Support for House Position Among Members of Congress**

1991 GD/FW Purchases by Dollars (CFE) \$892M from 47 States



TODAY'S F16

**Contractor Furnished Equipment
Is Only Half the Story**

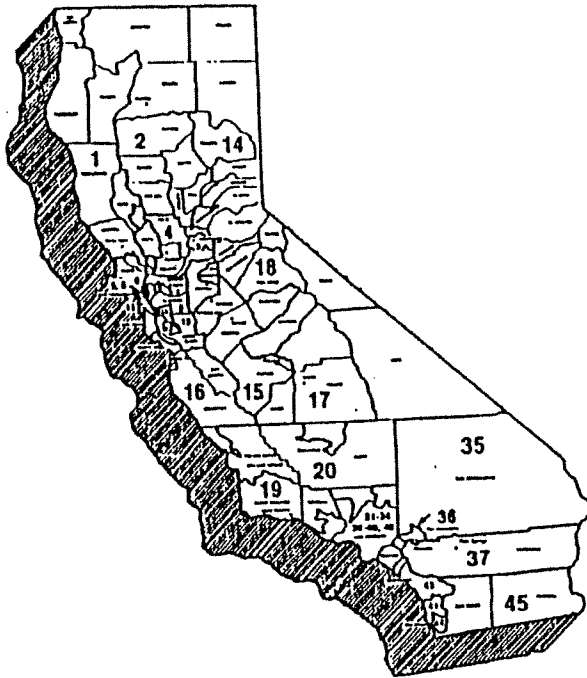
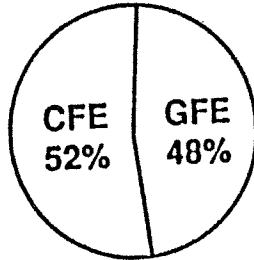
The F-16 Program Has a National Impact

AC35338A

GD/FW 1991 Economic Impact – California

Senators: Alan Cranston (D)
John Seymour (R)

\$ 211,293,829

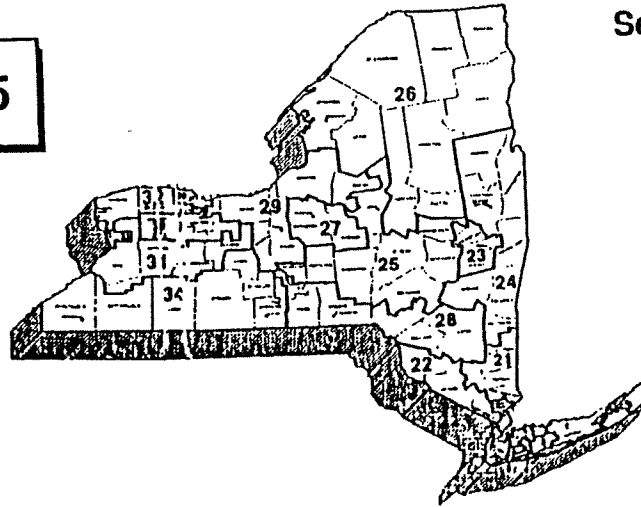


DISTRICT	CONGRESSMAN	NUMBER OF VENDORS	DOLLARS
1	Frank D. Riggs (R)	2	62,622
2	Wally Herger (R)	1	5,790
3	Robert T. Matsui (D)	1	7,231
4	Vic Fazio (D)	5	732,671
5	Nancy Pelosi (D)	1	47,338
6	Barbara Boxer (D)	4	36,416
7	George Miller (D)	1	1,095,738
8	Ronald V. Dellums (D)	4	325,147
9	Fortney Pete Stark (D)	6	897,542
10	Don Edwards (D)	15	475,417
11	Tom Lantos (D)	16	14,013,400
12	Tom Campbell (D)	27	677,752
13	Norman Y. Mineta (D)	15	834,392
14	John Doolittle (R)	4	26,754
15	Gary Condit (D)	-	-

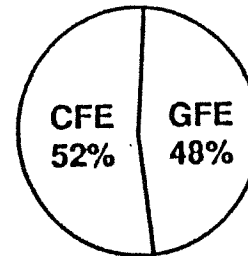
DISTRICT	CONGRESSMAN	NUMBER OF VENDORS	DOLLARS
16	Leon E. Panetta (D)	2	13,121
17	Calvin Dooley (D)	1	6,588
18	Richard H. Lehman (D)	-	-
19	Robert J. Lagomarsino (D)	15	22,813,524
20	William M. Thomas (R)	7	2,285,248
21	Elton Gallegly (R)	55	44,964,984
22	Carlos J. Moorhead (R)	27	6,317,661
23	Anthony C. Bellenson (D)	18	4,131,444
24	Henry A. Waxman (D)	11	5,855,845
25	Edward R. Roybal (D)	6	478,964
26	Howard L. Berman (D)	15	9,324,179
27	Mel Levine (D)	24	7,122,307
28	Jullan C. Dixon (D)	11	895,055
29	Maxine Waters (D)	4	714,892
30	Mattew G. Martinez (D)	24	7,196,716
31	Mervyn M. Dymally (D)	39	14,896,983
32	Glenn M. Anderson (D)	7	1,580,953
33	David Dreler (D)	18	989,605
34	Esteban Edward Torres (D)	17	2,271,997
35	Jerry Lewis (D)	13	1,099,524
36	George E. Brown Jr. (D)	7	841,964
37	Alfred (Al) A. McCandless (R)	4	2,910,590
38	Robert K. Dornan (R)	42	9,216,633
39	William E. Dannemeyer (R)	26	4,735,681
40	C. Christopher Cox (R)	33	6,923,624
41	Bill Lowery (R)	30	1,968,843
42	Dana Rohrabacher (R)	16	27,953,276
43	Ron Packard (R)	15	257,364
44	Randy Cunningham (R)	10	3,690,588
45	Duncan Hunter (R)	6	597,461
TOTAL		605	211,293,829

GD/FW 1991 Economic Impact – New York

\$ 49,792,835

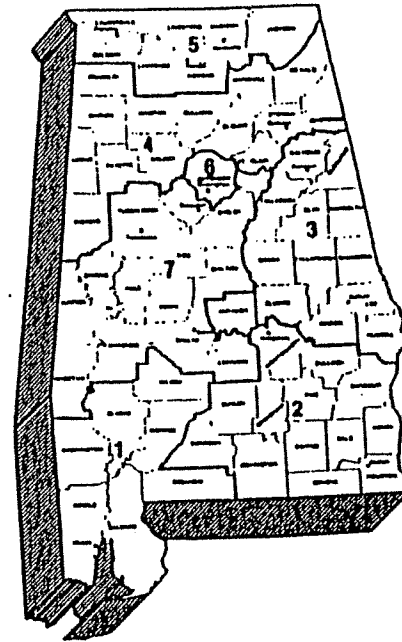
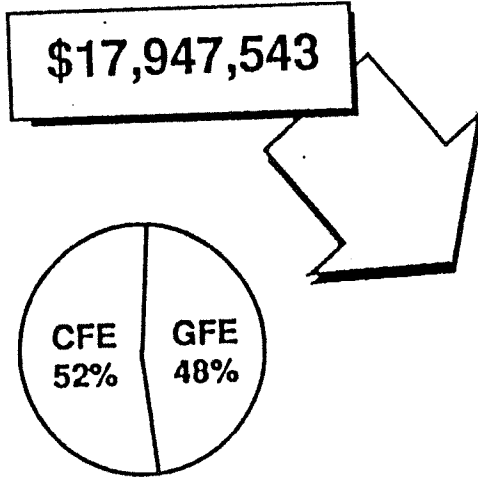


Senators: Daniel Patrick Moynihan (D)
Alfonse M. D'Amato (R)



DISTRICT	CONGRESSMAN	NUMBER OF VENDORS	DOLLARS	DISTRICT	CONGRESSMAN	NUMBER OF VENDORS	DOLLARS
1	George J. Hochbrueckner (D)	11	1,793,734	18	Jose Serrano (D)	—	—
2	Thomas J. Downey (D)	25	12,2903,880	19	Ellot Engel (D)	—	—
3	Robert J. Mrazek (D)	10	4,506,618	20	Nita M. Lowey (D)	10	1,119,621
4	Norman F. Lent (R)	17	5,471,575	21	Hamilton Fish Jr. (R)	4	907,121
5	Raymond J. McGrath (R)	3	905,344	22	Benjamin A. Gilman (R)	2	47,475
6	Floyd H. Flake (D)	—	—	23	Michael R. McNulty (D)	1	15,382
7	Gary L. Ackerman (D)	—	—	24	Gerald B.H. Solomon (R)	2	116,400
8	James H. Scheuer (D)	3	29,302	25	Sherwood L. Boehlert (R)	5	2,425,201
9	Thomas J. Manton (D)	4	434,598	26	David O'B. Martin (R)	3	12,016
10	Charles E. Schumer (D)	1	783	27	James T. Walsh (R)	5	266,166
11	Edolphus Towns (D)	1	444	28	Matthew F. McHugh	10	902,343
12	Major R. Owens (D)	—	—	29	Frank Horton (R)	2	4,749
13	Stephen J. Solarz (D)	1	3,024	30	Louise McIntosh Slaughter (D)	2	15,111
14	Susan V. Mollinari (R)	—	—	31	Bill Paxon (R)	7	1,293,304
15	Bill Green (R)	1	803,184	32	John J. LaFalce (D)	7	439,102
16	Charles B. Rangel (D)	—	—	33	Henry J. Nowak (D)	5	2,800,714
17	Ted Weiss (D)	3	13,054,566	34	Amo Houghton (R)	3	131,078
TOTAL						148	49,792,835

GD/FW 1991 Economic Impact – Alabama



Senators: Howell Heflin (D)
Richard C. Shelby (D)

DISTRICT	CONGRESSMAN	NUMBER OF VENDORS	DOLLARS
1	Sonny Callahan (R)	1	10,549
2	William L. Dickinson (R)	—	—
3	Glen Browder (D)	1	17,041
4	Tom Bevill (D)	—	—
5	Robert E. (Bud) Cramer, Jr. (D)	5	17,452,537
6	Ben Erdreich (D)	2	466,938
7	Claude Harris (D)	1	478
	TOTAL	10	17,947,543

Summary: Habitual Modes of Conduct

(Gaming Strategies Evolved by *Individuals* and *Factions* in the Struggle for Budget Dollars)

GOAL:

Turn on the Money Spigot & Lock It Open.

GRAND STRATEGY:

Evolve a Majority Faction¹ that Isolates Opponents Within DoD & OMB and Neutralizes Congress's Power of the Purse by *Insensibly* Assembling a Coalition of Allied Interests via a Nation-Wide Web of *Dependency* Relationships.

STRATEGIES:

Front Loading
Political Engineering

GRAND TACTICS:

Use Ambiguity, Deception, & Infiltration to Slip Past Resistance.
Paralyze Opposition with Brutal Frontal Assault (Carpet Bomb Congress)

TACTICS:

Use Variety of Devices to Mask/Distort/Downplay Future Commitments
Spread Dollars, Jobs, and Profits to as Many Congressional Districts as Possible.

QUESTION:

What do these Power Games Produce in the Real World?

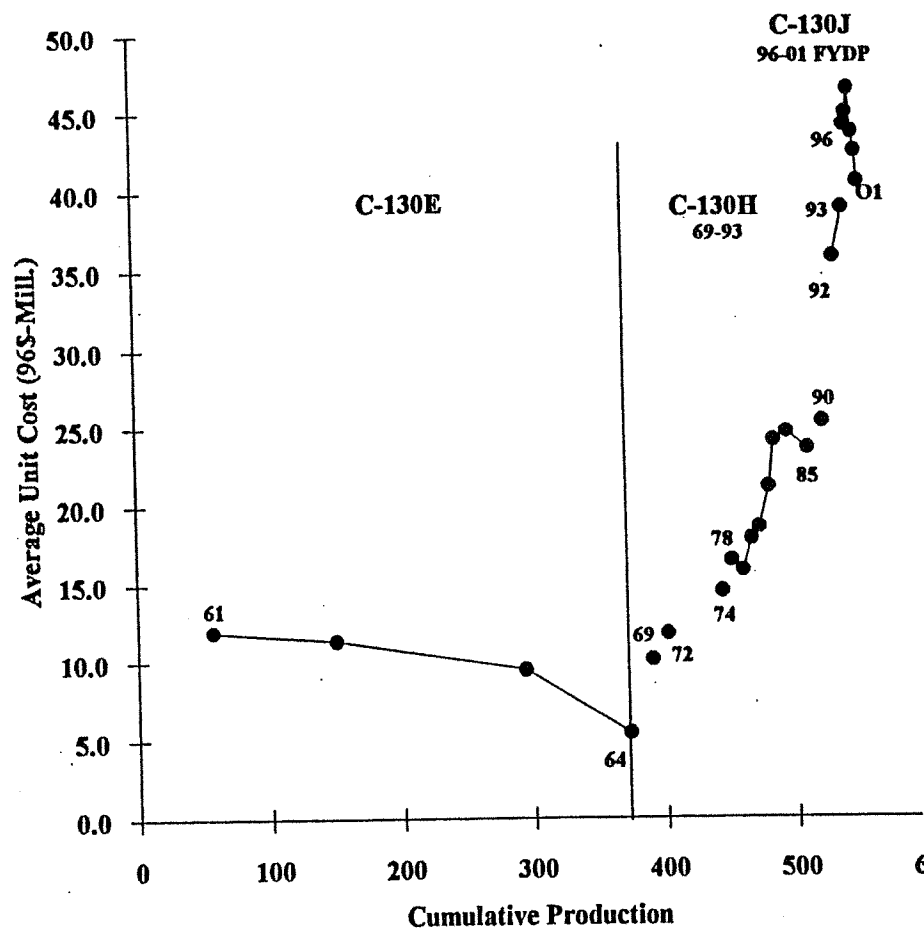
¹ Madison described the perils of a Majority Faction in *Federalist #10*, "When a majority is included in a faction, the form of popular government ... enables it to sacrifice to its ruling passion or interest, both the public good and the rights of other citizens. To secure the public good, and private rights, against the danger of such a faction, and at the same time to preserve the spirit and form of popular government, is then the *great object* [emphasis added] to which our enquiries are directed" [Bialyn 1: 407-408]. The concept of a Majority Faction posed the central difficulty for authors of the *Federalist* and the Framers of the Constitution. They deliberately designed the system of checks and balances and the compound Federalist structure to provide protection against the threat of tyranny by the majority [Ostrom: 88-107]. We will see that the mutually-reinforcing effects of Front Loading and Political Engineering are the bureaucratic equivalent of a combined-arms strategy aimed at neutralizing the checks and balances of our Constitutional design.

Protecting the Defense Industrial Base

Example: The C-130 & the Economic Effects of Political Patronage

Performance Changes			
	C-130E	C-130H	C-130J
Cruise Speed @ Alt (KTAS)	287	302	313
<u>Payload</u>			
Max Payload, 2.5g (lbs)	43349	40805	41585
Range w/max Payload (nm)	1224	1317	1685
Range w/25K Payload (nm)	2505	2472	2509
Ferry Range (nm)	3615	3782	3200
<u>Airfield Performance</u>			
T.O. w/60K, CBR 6 Grnd Run (ft)	2691	2560	1940
T.O. w/60K, CBR 6, 50 ft Obs (ft)	4049	3727	2760
Land w/40K+300nm+res, CBR 6 (ft)	2079	2123	1880
<u>Alt/Climb Performance</u>			
Ceiling (Max Cruise @ 155K)	19200	24000	27700
Max Rate of Climb @ SL @ 155K ft/	1481	1885	2550
Time to Climb to 18000 ft (min)	23	15.5	10.3
<u>Maintenance</u>			
MMH/FH	23.8	16	13.72
MTBmi	1.41	2.2	2.66
Manpower		23%<E	44%<E

(Source: Lockheed, 5 Feb 1990)



Observations:

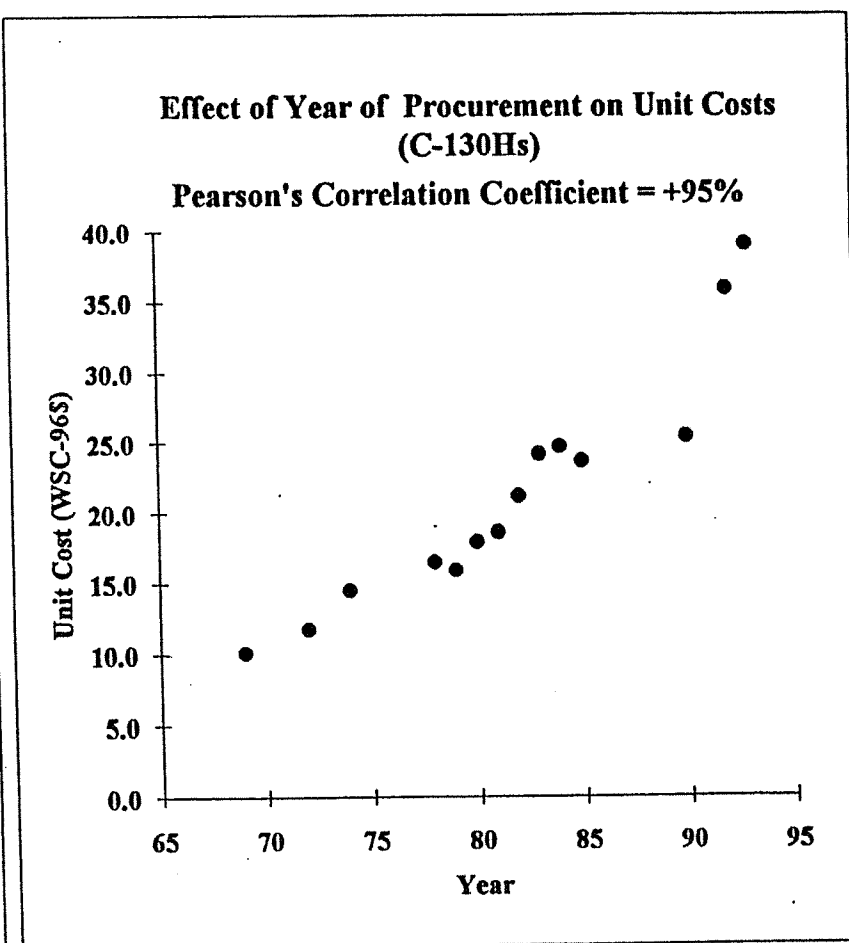
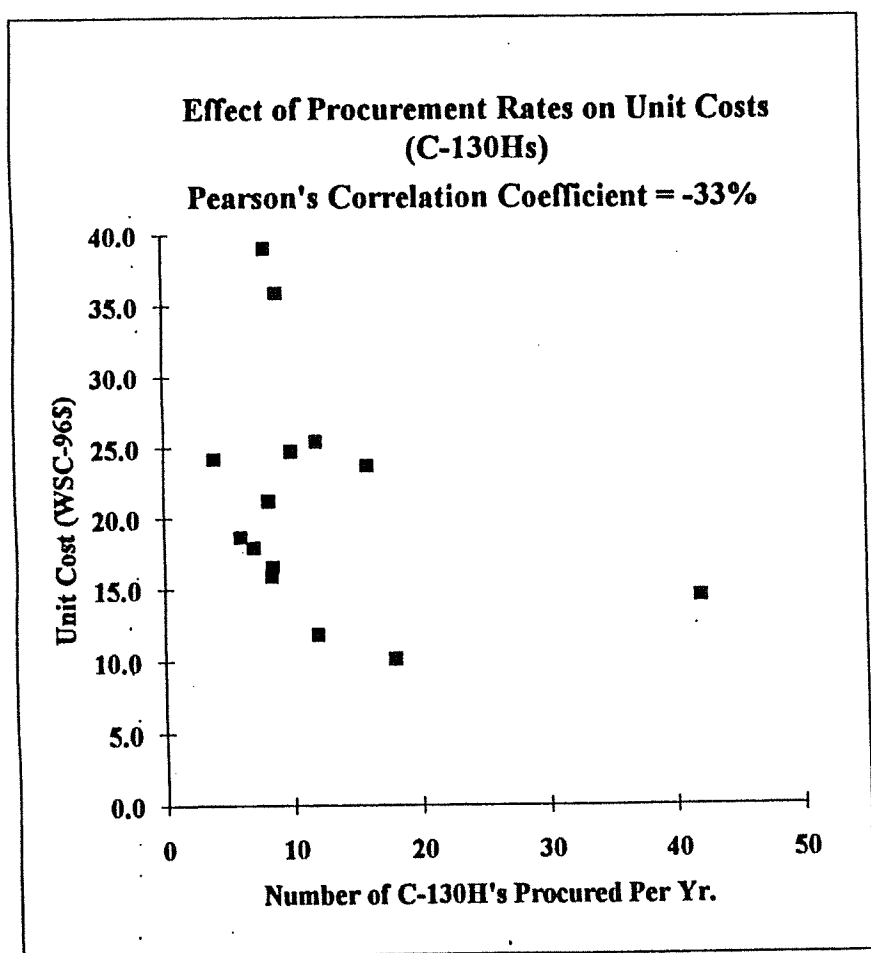
In 1993, 1 C-130H Cost as Much as 7 C-130E's Cost in 1964
 In 1996, 1 C-130J Will Cost as Much as 8 C-130Es Cost in 1964

Raises Effectiveness Questions?

Is 1 C-130H Worth 7 C-130Es? ...or... Is 1 C-130J Worth 8 C-130Es?

CONSEQUENCES OF PROTECTING THE C-130H INDUSTRIAL BASE

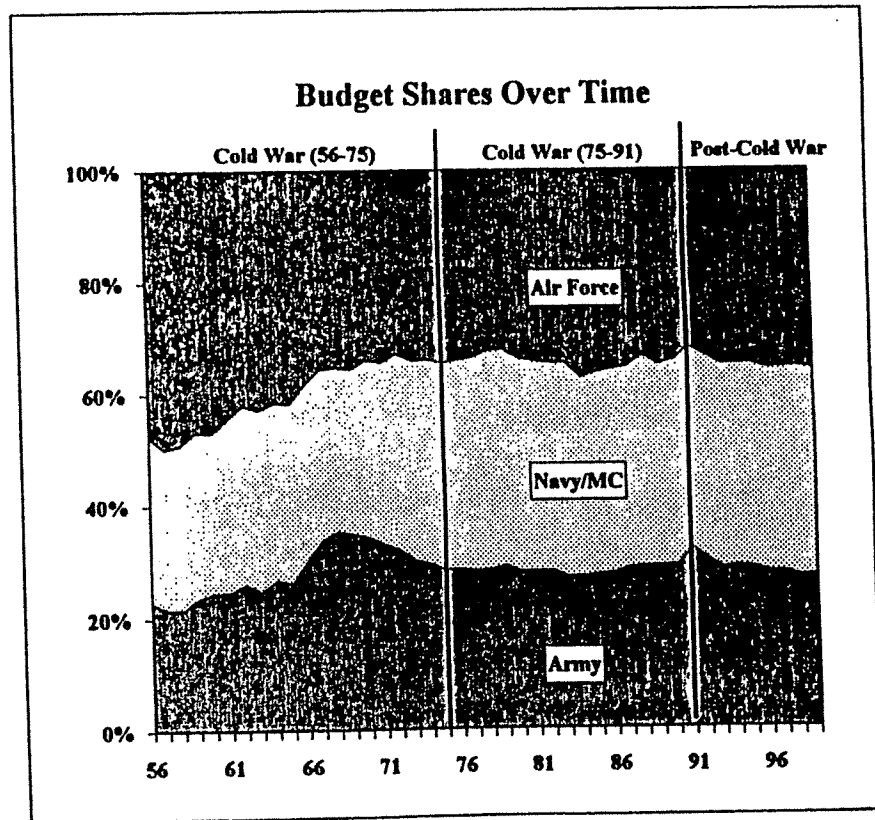
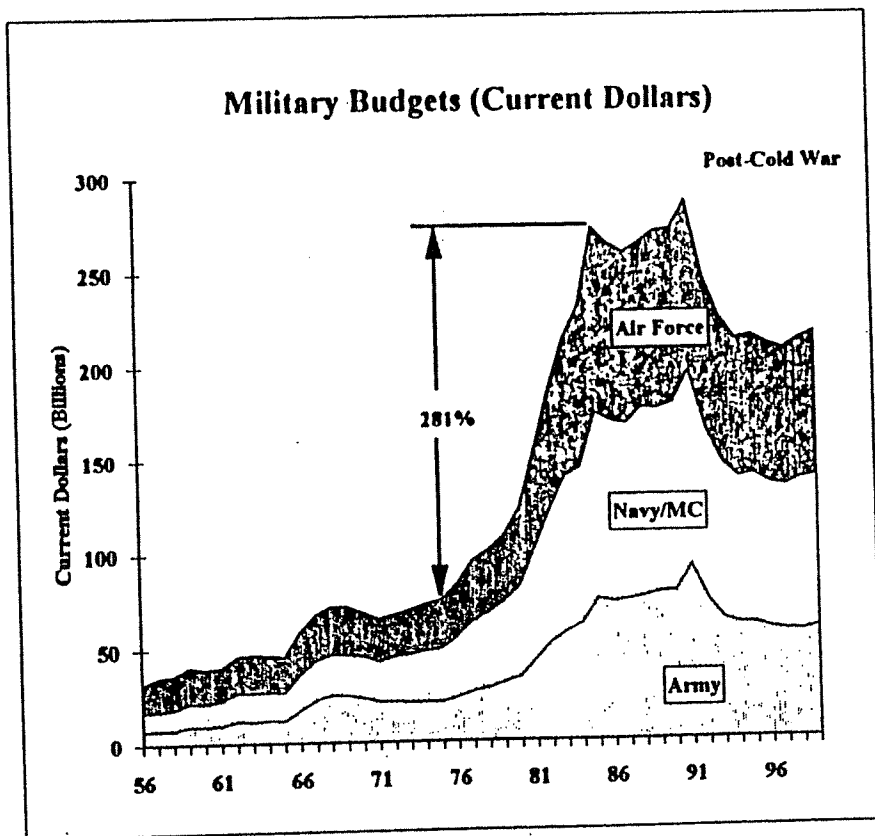
WHAT IS THE REAL DRIVER OF DEFENSE COSTS?



OBSERVATION:

Despite the Chaos of Mismatches, a 281% Increase in the Budget Between 1975 & 1985, & the End of the Cold War, Budget Shares Remained Relatively Stable Between 1975 & 1994, and are Projected to Remain So Until 1999.

Exception: Steady Long-Term Growth in Defense Agencies (not shown)



Impression:

This Outcome is Consistent with the Compensatory Behavior One Would Expect From a Policy-Making Process That is Paralyzed by a Horde of Special Interests.

End Game - Example

The 1995 Defense Porkfest: A Portrait of Defense "Industrial Planning" in Action

**Notwithstanding the Disappearance of the Soviet Threat,
and Policies to Cut Taxes While Balancing Budget by 2002,
the House-Senate Appropriations Conference Proposed to Add \$6.7 Billion to the FY 1996 Defense Budget.**

This Bill Would Have Added Money to Following R&D and Procurement Programs (Among Others):

- \$400+ Million for BMD (Star Wars--Spent \$36 Billion between 1984 and 1995 with NO Operational Hardware in Field)
- \$493 Million for B-2 (Designed to Penetrate Soviet Air Defenses and Deliver Nuclear Weapons--Now Rationalized as Conventional Bomber to Strike Iraq, Iran, or N. Korea, But is Not Cleared to Carry Most Conventional Ordnance)
- \$700 Million for 3rd Seawolf Which Navy Says is Not Needed (Tacitly Approved Navy Plan Not to Refuel 10 Front-Line SSN-688 Los Angeles Class Submarines--Even Though Several SSN-688s are Still in Production. Bill Also Included \$800 Million for New Attack Submarine)
- \$974 Million for LPD-17 Which Navy Did Not Want Until 1998.
- \$1.3 Billion for LHD-7 Helicopter Aircraft Carrier/Troop Landing Ship

The Bill Was Defeated Overwhelmingly in the House Because it Permitted Abortion In Military Hospitals.

Impression of Defense Industrial Policy in Action:

This Combustible Mix of *Hi-Tech Pork & Passion* is Looks More Like the Activity of an "Athenian Mob" (see James Madison, *Federalist* #55) than a Deliberation of Rational Industrial Planners Picking of "Winners" and "Losers" in the Context of Checks & Balances.

ENDGAME

Front Loading & Political Engineering Work in the Short Term

... But ...

They Create a Closely-Coupled Interplay of Mismatches & Cost Growth that Makes It Difficult, If Not Impossible, for the DoD to Adapt to Change Over the Long Term.

1. *Front-Loading "Succeeds" in Starting Individual Programs, But Sets the Stage for Mismatches & Cost Growth by -*

- Habitually Overestimating Future Defense Budgets & Underestimating Future Unit Costs.
- Packing Modernization Plans with Bow Waves of Ever More Expensive Weapons.
- Embedding Optimistic Plans inside a Federal Budget that is Contaminated With Even More Outrageous Assumptions.

2. *Political Engineering Creates Support for Individual Programs, But Not the Total Defense Budget Because -*

- Political Engineering Operations Depend on the Delusions & Deceptions of Front Loading to Get Started.
- Moreover, When Congress Approves Higher Budgets, DoD Reciprocates With Even More Front-Loading, Thereby Guaranteeing Congress Will Eventually Gag on the Bill, as Happened During the 1980s.

Inevitable Result:

**When Congress Chokes on the Price Tag, Decision-Making Flexibility Breaks Down,
Because the Political Engineers Have Unleashed a Horde of Special Interests
Which Overwhelm Congress and Subvert the Needs of DoD and the Nation.**

Third Reorientation

(Viewpoint: How Individual Behavior Paralyzes Collective Decisions):

Habitual Modes of Conduct Promote the Survival of the "Parts" by Diminishing the Adaptive Capacity of the "Whole."

- What has "Survival Value" for an Individual Procurement Program Undermines the Entire Defense Program.
- What "Works" in the Short Term is Addictive and Paralyzing Over the Long Term.
- What has "Survival" for the "Part" Corrupts the Principle of Accountability and thereby Subverts the Checks & Balances in the Constitution.

DEFINITIONS (III):

1. Adaptation

An alteration or adjustment in structure or habits by which a group (any organization of individuals) improves its condition in relationship to its environment

2. Behavior

All action directed by organisms toward the outside world in order to change conditions therein or to change their own situation in relation to those surroundings [Piaget 1978].

3. Habitual Modes of Conduct

Repetitive patterns of *behavior* wherein individuals conform voluntarily to the norms of a group. (informal or formal codes of conduct, systems of rules and constraints, traditions, etc.) [Phrase borrowed from Hayek 1988]

4. Pathological

Refers to *behavior* that causes a departure or deviation from a healthy relationship between the group and its environment.

5. Pathological Adaptation

An *adaptation* wherein *habitual modes of conduct* practiced at the microscopic level by the individuals or factions making up the larger group improve their well-being at the expense of the macroscopic relationship between the larger group and its environment.

**Given the Pathological Nature of the Habitual Conduct Described in this Briefing,
What Can We Say About Current Decisions & Plans?**

Two Questions Come to Mind:

- **Is DoD Repeating the Mistakes of the Early 1970s?**
- **Will the Current Reform Agenda Prevent a Recurrence of the Pathological Behavior Described Herein?**

IS DoD REPEATING THE MISTAKES OF THE EARLY 70s?

OBSERVATION:

**DoD Faces Same Near-Term Decision-Making Problem
As That Faced in Early 1970s:**

**HOW SHOULD WE RESPOND TO A BUDGET CRUNCH
BROUGHT ABOUT BY THE END OF A WAR?**

Early 70s
Vietnam (Hot War)

Early 90s:
Cold War

Raises Questions:
DO OTHER SIMILARITIES EXIST?
HOW IS TODAY'S PROBLEM DIFFERENT?

SIMILAR PATTERN OF DECISIONS IS EMERGING:

Near Term Consequences of Current Decisions:

- Shrink Force Size to Cut Cost of Operations (i.e., Reduce O&M and Personnel Budgets by "Build Down").
- Terminate/Truncate Existing Production Lines to Cut the Procurement Budget.
- Pacify Defense Industry (and its Allies in Congress) in by Exporting Part of Procurement Budget (i.e., sell front-line weapons over seas).

Long Term Consequences of Current Decisions:

- Build a *Bow Wave* of Long-Term Budget Requirements by Planting Seed Money for a New Generation Of Higher-Cost Weapons in R&D Budget.
- Make Long-Term Costs of this Bow Wave Look "*Affordable*" by Using "*Learning Curves*" to Predict Sharp Declines in the Procurement Costs of the New Programs.

BUSINESS AS USUAL

**Except for "Cutting Optempos"--This is Same Decision-Making Strategy
that Created the "*Cost Spiral*" & "*Hollow Military*" by Late 1970s!**

CRUCIAL DIFFERENCES: EARLY 70s vs. EARLY 90s

1. In Contrast to 70s, Stated Policy in 90s is to Protect Readiness (Optempos & Sustainability) -- But

- We Came Out of Vietnam with a Much Larger Cushion to Live off of.
- Modern Hardware is Much More Expensive to Operate. Moreover, Support Costs are More Uncertain. Therefore, the Future Cost of a High Readiness Policy Could Be Much Higher than Predicted.
- Given our History of Increasing O&M Inefficiency, Recent Changes in AF's Organizational and Basing Infrastructure Suggest that the FYDP's Assumption of Increasing Efficiency (on a Per Unit or Flying Hour Basis) May Be Illusory.
- We are Already Seeing Early Warning Indicators of Increasing Pressure to Reduce Readiness (e.g., 4th Qtr FY94 \$ Shortfall in Navy Caused Grounding of 3 Carrier Air Wings, 6 P-3 Squadrons, and part of the 2nd Marine Air Wing; 1 Army Division of "10 Division" BUR Force Rated C-3 in Nov 94).

2. End of Cold War Implies a More Fundamental Change in Defense Politics.

- Weaker Justification for Higher Defense Budgets Because "*Global Threat to Existence*" is Replaced by More Ambiguous "*Regional Threats to Interests.*"

3. Federal Deficit Spun Out of Control in 1980s & Created Dangerous Rise in National Debt.

- Need to Control Deficit and Reduce Debt Will Increase Pressure to Reduce Defense Budget Over the Long Term (10 to 20 years or more!).

4. Stagnant Economy & Loss of Jobs Requires Massive Infusion of Public and Private Investment.

- Requirement to Fund Domestic Investments Will Increase Pressure to Reduce DoD's Budget.
- But the Politics of Protecting High-Wage Defense Jobs Will Increase the Pressure on the White House, the Pentagon, and Congress to Increase Procurement at the Expense of Readiness during the Budget Planning as well as the Appropriations Activities.

IMPLICATION:

Similarities & Differences Reinforce Each Other to Magnify the Budget Squeeze.
Policy to Protect Readiness Could be Impossible to Sustain w/o *Higher Budgets* or *More Force Reductions.*

The Possibility of a Hollow Military Raises a Question:

**Will the Management Changes of the Current "*Reform*" Agenda
Protect Decision Makers From the Emergence of a "*Hollow Military*" in the
Mid-to-Late 1990s?**

... More Specifically ...

**Will this "*Reform*" Agenda Prevent a Recurrence of the
Habitual Modes of Conduct Described Herein?**

"REFORM" AGENDA

(Current Impression of Proposals Floating Around Congress and the Pentagon)

Operational Testing

- **Proposal:** Reduce Scope, Permit More Waivers, and Substitute More Computer Simulations for Testing.
- **Impact on Habitual Modes of Conduct:**
 - Makes front loading *easier* by reducing visibility of cost & performance consequences of engineering decisions.
 - Makes political engineering *easier* by encouraging concurrency and premature transition into production.

Prototyping

- **Proposal:** Repeal the Requirement for Competitive Prototyping (Section 2438 of Title 10).
- **Impact on Habitual Modes of Conduct:**
 - Reduces competition and makes government *more vulnerable* to the pathologies of bureaucratic gaming.
 - Makes front loading *easier* by hiding the consequences of early design decisions.
 - Make political engineering *easier* by endorsing concurrency and encouraging premature transition into production.

Independent Cost Analysis:

- **Proposal:** Weaken Legal Requirement by Substituting DoD Regulations for Law.
- **Impact on Habitual Modes of Conduct:**
 - Weaker constraint *increases potential for abuse* by front loaders & political engineers.

Streamline Contractor - Government Interface:

- **Proposal:** Reduce Overhead Costs by Reducing the # of Auditors & Relaxing Reporting Requirements:
- **Impact on Habitual Modes of Conduct:**
 - Less information & oversight makes *FRONT LOADING easier!*
 - Given the overwhelming evidence of *BUY INS* and *BIZARRE COST/QUANTITY FLUCTUATIONS*, the number of auditors and the burden of reporting requirements are clearly unrelated to the problem of cost growth!

CONCLUSION:

**By Making it Easier to Front Load and Politically Engineer the Budget,
These "Reforms" Will Exacerbate the Recurrence of the Pathological Behavior Described in this Briefing**

... and thereby ...

Increase the Possibilities for a Hollow Military in the Mid-to-Late 1990s.

RECAPITULATION

AIM:

**To Understand Why It Is Difficult for DoD to Adapt to
Changing Conditions in the Real World**

**"From enthusiasm to imposture the step is perilous and slippery;
The demon of Socrates affords a memorable instance how a wise man may deceive himself;
How a good man may deceive others,
How the conscience may slumber in a mixed and middle state between self-illusion and voluntary fraud."**

Edward Gibbon, The Decline and Fall of the Roman Empire

The Interplay of Microscopic and Macroscopic Adaptations
(A Simple Linear Point of View)

Individual Behavior Feeds the Process of Mismatch & Evolution:

(Inverting the Order of Observations & Description)

Pathological Modes of Conduct (Cynical & Deceptive Stratagems Employed Repeatedly by Individuals & Subgroups)

... Create ...

The Interactive Hydra of Mismatches Inside Mismatches as well as the Pattern of Cost Growth > Budget Growth

... Which Shape ...

The "Unplanned" Evolution of Forces (An Ordered Pattern of Decay in the Larger Group).

**There is Truth in this View,
But it *Does Not* Seem to Be the Whole Story**

At the Microscopic Level of Organization, We Have Seen How -

Mismatches in the Level of Effort Programs (e.g. A/C Modifications) Generally Imply Programmatic Cutbacks.

Mismatches in the Minor Programs (e.g., Earth Moving Equipment) Generally Imply Programmatic Cutbacks.

Mismatches in Major Programs in the *Post-Buy In Phase* (F-18 in mid-1980s) Generally Imply Programmatic Cutbacks.

...And ...

At the Macroscopic Level of Organization, We have Seen How -

Force Structure and/or Readiness Reductions Also Permit Programmatic Cutbacks.

Taken Together, This Interplay of Mismatches Permits -

Decision Makers to Free Up Enough Outyear Dollars to Reduce Projections of the Total Defense Budget
(Thereby Adapting to the *Macroscopic* Mismatches Created by Front Loading the Entire Defense Budget)

... While ...

Increasing or Sustaining the Money Flow to those Major Programs Still In the Buy In Phase of their Procurement Life Cycle.

(Thereby Adapting to the Microscopic Mismatches Created by Front Loading the Individual Weapons)

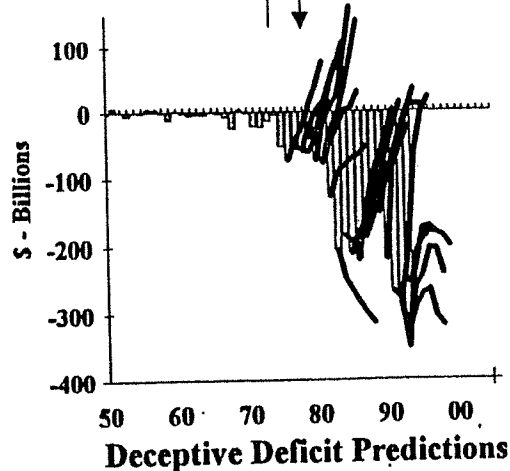
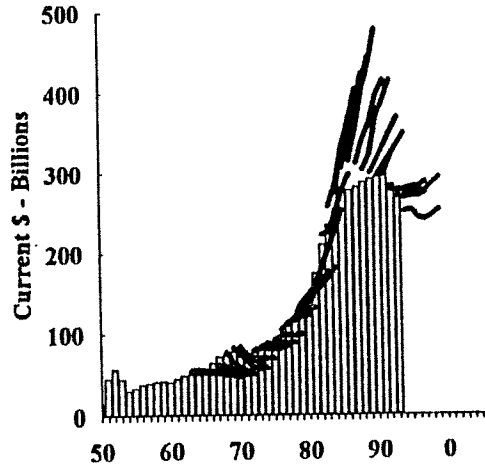
Impression:

There is a Sense of Coupling, Feedback, & Iteration as well as Irregularity & Process and Decay & Dissipation¹ as the
Unfolding Microscopic and Macroscopic Mismatches Work Together to Shape the Money Flow and Hence the Evolution of Forces.

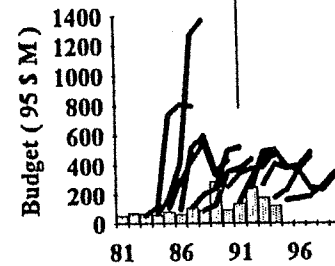
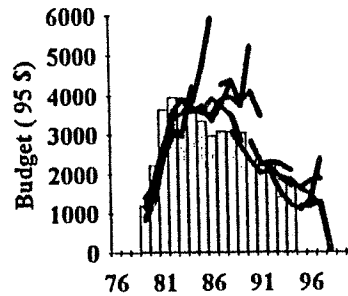
¹ Dissipation means a wasteful expenditure or use of resources. More generally, a dissipative process is an open disequilibrium system that sucks in energy, matter, or information and expels waste or entropy (i.e., disorder) *irreversibly*. In Part II, we will see, paradoxically, that the concept of dissipation is also implicit in the onset of self-organizing processes with dynamically stable behavior.

The Hydra of Mismatches Portrayed as a Dynamically-Stable, Loosely-Coupled Dissipative Process

Deceptive Defense Budget Predictions

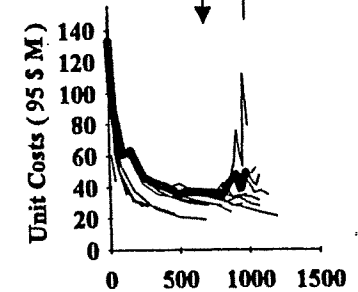
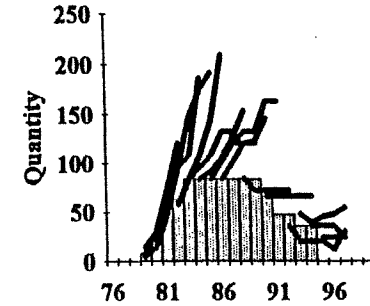


Major Programs (Buy In & Post-Buy In):
Deceptive Budget Predictions



"Minor" & "Level of Effort" Programs:
Deceptive Budget Predictions

Major Programs (Buy In & Post-Buy In):
Deceptive Production Predictions



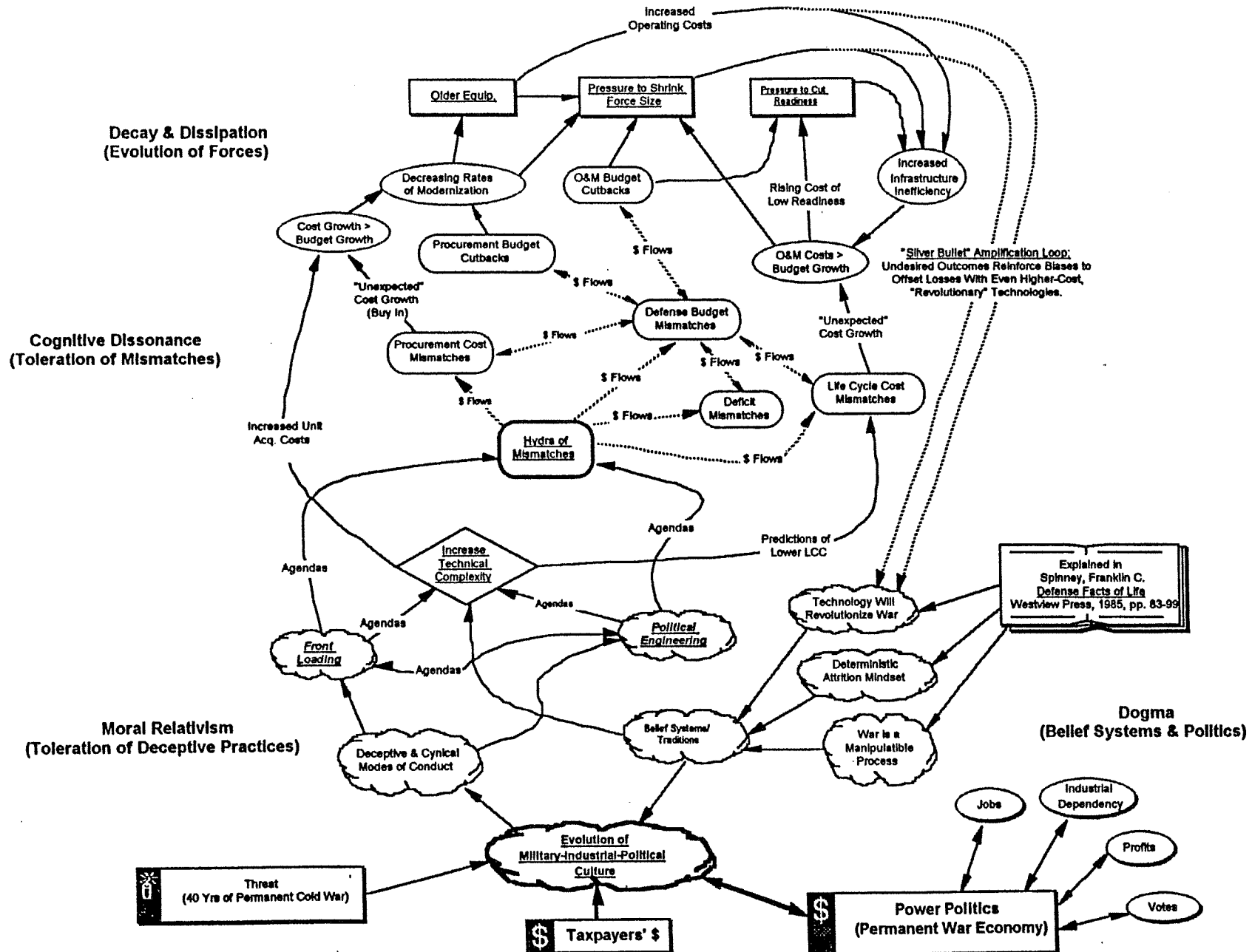
Major Programs:
Deceptive Cost Predictions

"Steady-State" Outputs:
 Cost Growth > Budget Growth
 Shrinking Forces
 Older Equipment
 Pressure to Cut Readiness
 Cognitive Dissonance & Moral Relativism

While there is Truth in this View, these Mismatches are Embodied in a Larger Process Linking Inputs to Outputs

The Anatomy of Decline Portrayed as a Complex Adaptive Network With Emergent Properties

How a Mixed and Middle State Between Self Illusion and Voluntary Fraud Evolves Out of a Coupled Interplay of Dogma, Moral Relativism, Cognitive Dissonance, and Dissipation & Decay



Conclusion:

More Money Spent the Same Way

Will Reward the Corrupt Behavior that Nourishes the Anatomy of Decline

... and thereby ...

Accelerate the Dissipation and Decay of our Military Forces.

Raises Question:

How Can We Restore Coherence and Integrity to our Nation's Defense Decision Process?

Insights:

The Influence of *Mismatches* on *Money Flows* is Evident at all Levels of Organization, and the Ubiquity of these Mismatches Attests to a Pervasive Presence of Disequilibrium Processes.

Viewed Systemically, the Anatomy of Decline Clearly Embodies *Disequilibrium* Processes that are *Open* to *Flows*.

Moreover,

These *Open Disequilibrium Processes* are Clearly *Iterative* Phenomena Embedded in an Dynamic *Nonlinear* Structure of Tightly and Loosely Coupled *Feedback Loops* Among Microscopic and Macroscopic Levels of Organization.

... So ...

While the Anatomy of Decline Clearly Embodies Cause and Effect Relationships, It *Is Not* Produced by a *Predictable, Linear, Deterministic* Process, Nor is it Purely *Statistical* in Nature.

... and ...

Even if it Were Possible to Identify All the Reasons for All the Fluctuations, It is Clear that New Fluctuations Would Emerge and Conditions Would Change *Before* a Remedy Could be Put into Effect.

Boiled Down to Its Essence:

The Anatomy of Decline *Evolves* Out of *Open Nonlinear Disequilibrium* Social Processes Embodying Stochastic Fluctuations Coupled Together by the *Amplifying & Regulating* Effects of Positive & Negative Feedback Loops.

Raises Question:

How Can We Design a *Reform Agenda* that Copes Effectively With this kind of Behavior?

We Should Understand its General Nature, then We Should Tie this Understanding to the Specifics of the Anatomy of Decline.

Let us Now Frame Some General Questions to Guide Our Probe in this Direction.

I. A Question of Origin

How Could this Mutually-Reinforcing Pattern of Conduct Come Into Being, and Become so Well Ordered and Widespread?

II. A Question of Dynamic Stability

Why does this Pattern of Habitual Behavior Repeat Itself in the Face of Obvious Pathological Consequences?

III. Questions of Intellectual & Moral Consequences

Is this Behavior a Product of Incompetence, Corruption, or Both?

Since the U.S. Constitution is Based on the Principle of Accountability of Government to the People,
What are the Moral Implications of Official Conduct that Betrays this Principle as a Means to Achieve its Ambitions?

Point:

Without Understanding the Origins & Stability of this Pathological Interaction,
There Can Be No Basis for Evolving Corrective Policies.

... and ...

Without an Appreciation of its Intellectual & Moral Consequences,
There Can Be No Basis for Marshaling the Energy Needed to Achieve Real Reforms.

Part II Aims to Answer Each of these Questions.

Part III Lays Out a Comprehensive Program of Reform.

Part II

SYNTHESIS - EXPLANATION - EVALUATION:

Frame of Reference:

I - The Questions of Origin and Dynamic Stability

II - The Questions of Intellect and Morality

Conceptual Framework - I

Origins of Order & Dynamic Stable Pathological Orders:

- Spontaneous Organization in Mathematical and Physical/Chemical Processes
- Evolution by Natural Selection
- Self-Ordering Cultural Processes
- Ecological Feedback
- Coevolution
- Coevolution of Pathological Adaptations

Synthesis of Observations & Ideas

Origins of Order

How could this mutually reinforcing pattern of conduct come into being and become so well-ordered and widespread?

Point of Departure:

Any Inquiry into the Origin of an Existing Organizational or Cultural Order, like the *Anatomy of Decline*,
Can be Launched from One of Two Very Different Metaphysical Points of View:

Design:

- Premise: A Mastermind designed this Order for a specific purpose, much like an engineer designs a watch to keep time.¹
- Implicit Assumption: Top-Down/Mechanical/Analytical--since the actions of the parts are constrained by a specific overall purpose, the "*whole*" dominates the "*parts*." In theory, once a system is designed, its dynamics can be analyzed, understood, and reconstructed.
- Predictability: Deterministic -- the microscopic activities of the parts passively serve a macroscopic goal set by the designer, and since a complete description of the system's future dynamics is theoretically possible, any uncertainties are the result of ignorance.

Self-Organization & Evolution:

- Premise: This Order emerged spontaneously out of an interactive process embodying blind variation and replication at the microscopic level of organization (like genetic mutations and gene shuffling in biological organisms) coupled to a deterministic scheme of selective retention (like Darwinian or natural selection) at the macroscopic level.
- Implicit Assumption: Bottom-Up/Organic/Synthetic--the microscopic interactions among individuals, which produce the collective behavior (the macroscopic pattern), emerge out their need to *survive & grow* (a microscopic purpose) within the environmental constraints of an ever-changing selective retention process.
- Unpredictability: Collective behavior cannot, in general, be assumed to dominate individual behavior. Since the activities of the "*parts*" vary blindly, they will, on occasion, evade control by the "*whole*" and propagate novelty throughout the system, thereby producing unanticipated *global* changes. Therefore, while it is possible to specify the structure of an evolutionary process, it is Impossible to predict the future dynamics or migration of that process.

¹ It is important to avoid confusion over the word *design*. A Design (noun), viewed as an existing, organized *entity* (the sense used here), is a deliberate arrangement produced by an outside intelligence. The *activity* of designing (verb) that arrangement (a machine, a scientific theory, or a novel, for example), on the other hand, is itself an evolutionary process embodying trial and error (or more formally, blind variation and selective retention).

Can the Anatomy of Decline be the Product of a Deliberate Design?

Comment:

If this Was the Case,

Then a Designing Mind *Must* Have Deliberately Manipulated the Mismatches In Order to Produce the Evolution.

Moreover,

To Work in our Government of Checks & Balances and Shared Power,

This Mastermind Would Have to Orchestrate a Large Number of Ever-Changing Political Interactions

Among a Variety of Individuals in the Pentagon, Congress, and the White House, as well as the Defense Contractors.

This Would Require Conscious Collusion by a Large Number of Individuals in a Variety Organizations with Differing Objectives.

Does Anyone Believe a Clique of Military & Civilian Bureaucrats in the Pentagon, the White House, and on Capital Hill Has the Collective Omniscience to Mastermind such a Vast *Conspiracy* Year After Year?

To Ask this Question is to Answer It.

Therefore:

Since it is Reasonably Safe to Assume the *Anatomy of Decline* is NOT the Intended Product of a Conspiracy, It is More Likely that the Modes of Conduct Producing the Hydra of Mismatches & Evolution of Forces Evolved Spontaneously out of a Complex Socio-Political-Economic Interaction.

**A Spontaneous Order Evolving Out of an Uncontrollable Military-Industrial-Congressional Interaction
Should Come as No Surprise.**

In fact,

**Scholars Have Discerned Unpredictable, Self-Organizing Phenomena
in Many Diverse Domains of Science and Culture,**

For Example:

Self-Organizing Processes:

First Order Non-Linear Difference (i.e., Self-Referencing) Equations [May: 1, 2, and 3; Briggs and Peat: 51-65]:

- Parametric variation of a *replication* equation (exponential growth where population size is determined by its previous value but is checked by limits of environment) leads to successive bifurcations transforming into sequences of chaos and intermittent order.

Dissipative Mechanical Structures in Far-From-Equilibrium Thermodynamic Conditions [Prigogine: 140-145]:

- Transition from laminar to turbulent flow & Benard Instability (i.e., transition from heat conduction to convection at macroscopic level brought about by a self-organization of coherent motion of molecules at the microscopic level).

Dissipative Chemical Structures in From Far-From-Equilibrium, Auto-Catalytic Reactions [Prigogine: 146-153; Scott:109-113]:

- Belousov-Zabotinskii Reaction, as well as the related *nonlinear* Brusselator and Oregonator reaction schemes, where the changing concentrations of reactants (i.e., the chemical kinetics) oscillate in time and space with a well-defined periodicity (i.e., act as chemical clocks) and undergo successive bifurcations instead of approaching stationary equilibrium as predicted by the law of mass action.

Molecular Biology [Prigogine: 153-159; Dawkins]:

- Feedback effects of *non-linear* chemical reactions (i.e., of autocatalysis, autoinhibition, and crosscatalysis) maintain dynamically stable, coherent metabolic functions, like the autocatalytic mechanism controlling DNA replication.

Theory of Evolution by Natural Selection [Darwin, Wallace, and successors, described especially well in Mayr, Dawkins, and Sober]:

- Biological order emerging out *self-replicating* process embodying *blind variation* at the microscopic level coupled to a mechanism of *selective* retention at the macroscopic level in a competition for survival.

Evolution of Language [Hayek: 23-4; Dawkins: 189-201]:

- Cultural order emerging continuously over time that is not a product of an *a priori* design.
 - In 1787, Sir William Jones discovered the common origin of Greek and Sanskrit (i.e., of Indo-European Languages).
 - Paraphrasing George Bernard Shaw, 'The English and Americans are a common people separated by the same language.'

Evolution of Anglo-Saxon Common Law:

- *A posteriori* macroscopic cultural order synthesized over time by *selectively* retaining precedents which arise *unpredictably* out of unfolding microscopic legal conflicts.

The Evolution of Scientific Knowledge [Boyd, Popper, Kuhn, et al]:

- Intellectual order emerging out of a *selection* procedure that couples a continual *variation* of ideas (via an interaction of observations, analyses, and synthesis) with a tentative retention of those hypotheses which survive tests designed *explicitly* to refute them.

Evolution of Culture, Economics, & the Rules Governing Human Conduct [Hayek, Hall, Dawkins, Mayr, Boyd]: (Developed Below).

Evolutionary Epistemology [Campbell, Lorenz, Boyd, Popper]: (Developed in Part III).

Idea:

Since the Phenomenon of Spontaneous Self-Organization is so Widespread, Perhaps Some of its General Features
(Gleaned from Examples in Mathematics, Mechanical Systems, Chemical Reactions, and Evolutionary Biology)
Can be Used to Evolve a Frame of Reference for Understanding the Origin and Stability of the Process of Mismatches & Evolution
... or put another way ...
For Understanding the Evolution of Culture and Epistemology in a Complex Military-Political-Economic Interaction.¹

Point of Departure:

Self-Organization in Physical/Chemical Processes

Let us start with some of the Ideas Developed by Ilya Prigogine, who won the Nobel Prize for Chemistry in 1977,
for Contributions to Non-Equilibrium Thermodynamics, especially his Theory of Self-Organizing, Dissipative Structures.

¹ A word of caution is appropriate. We are going to build this frame of reference by drawing specific ideas out of a variety of real-world phenomena, reasoning by analogy, and combing them into a general theory, before testing that theory against our observations. Reasoning by analogy can be a very creative form of thinking, because it opens new perspectives by combining different intellectual disciplines. But, analogies are also very dangerous; they can capture the imagination and imprison the mind in an erroneous world view.

Note to Reader:

The following slides are

~~This section is~~ undergoing a major revision & reorganization.

While the ideas of cultural evolution and the federalism will still form the core of this section, I intend to make it less abstract by linking the specific ideas more closely to the data contained in Part I.

① Most of the ideas in the following slides will be in final version, but they need to be reworded to remove duplication & to tighten logic

② Furthermore, additional information needs to be added.

Recapitulation Abstracted:

(An Introduction to the Ideas of Non-Linear Dynamics and Self-Organizing Processes)

- The Preceding Discussion Described the Anatomy of Decline as a Historical Evolution of a Social Order in its Whole Setting.
- We Found that Biases Inserted by Habitual Modes of Conduct Promote Microscopic Agendas by Sacrificing Macroscopic Welfare. Obviously, these Biases Introduce Predictable Causes (Necessity) into the Process of Mismatch & Evolution.
- But it is Equally Clear that the Feedback Dynamics Generated by the Interaction of the Microscopic & Macroscopic Mismatches also Create a Bewildering Variety of Unpredictable Events (Chance) that Shapes the Output of this Process:
 - In Order Out of Chaos, Nobel Laureate Ilya Prigogine described how Iterative Feedback Dynamics among Microscopic and Macroscopic levels of organization shape the evolution of dissipative structures (i.e., of open systems that evolve and maintain their shape by taking in energy and producing entropy which is then dissipated into the surrounding environment, including, for example, far-from-equilibrium thermodynamic processes and autocatalytic chemical reactions, biological organisms, and ecological and cultural systems). For dissipative systems, operating far-from-equilibrium, Prigogine showed how each Microscopic Fluctuation has a Collective aspect that can produce Unexpected Macroscopic Changes. Macroscopic Structures emerging from these Microscopic Events in turn induce an Unpredictable modification of the Microscopic mechanisms. This Positive, Non-Linear Feedback Loop, in turn, sets the stage for further Unpredictable Macroscopic fluctuations, and so on.
 - Prigogine noted that such Iterative, Non-Linear Feedback Loops linking Macroscopic structures and Microscopic events are among the most important problems in Evolutionary Theory and that the Better Understood cases Concern Social Situations [p. 191].
- Prigogine's Work Suggests that the Repetitive Hydra of Mismatches Inside Mismatches Can Be Thought of as Iterations of Self-Amplifying, Non-Linear Feedback Loops Among the Microscopic & Macroscopic Levels of Social Organization. This is an interesting conclusion, because it permits us to Focus our Probe on the Theoretical Aspects of our Problem:

Condensation & Initial Focusing Hypothesis:

An Unpredictable, Non-Linear Interaction of Microscopic Events with Macroscopic Structures Produces the Anatomy of Decline, Which Reflects an Ordered Evolution of a Complex Dissipative Social System.

Logical Implication of Hypothesis:

Any Ordered Structure Emerging from an Unpredictable Process
Necessarily Embodies Some Kind of Capacity for Spontaneous Self-Organization.

With these abstract ideas in mind,
Let's begin our probe of self-organizing processes with a general discussion of the theory of evolution by natural selection

EVOLUTION BY NATURAL SELECTION (Neo-Darwinian Synthesis)

Aim:

To Understand How an Undesired Order Can be the Natural Product of a Self-Ordering or Spontaneous Interaction.

Central Ideas & Definitions:

- **Struggle for Existence:** Competition for survival or reproductive advantage in an environment of limited resources [Darwin].
- **Variability:** Potential for fortuitous changes in an *individual's* capacity to succeed or fail in its struggle for existence [Darwin].
- **Inheritable Variations:** Individual changes that can be transmitted to the group or general population.
 - Biological characteristics (physical & mental endowments) transmitted by genes [Mendel et al].
- **Adaptation:** Process by which purposive variation and competitive advantage is conferred on groups & populations [Darwin].
- **Structural Stability:** Potential for stable arrangements at some (not all) higher levels of complexity [Bonowski/Prigogine].

Natural Selection

During the Ever-Changing Struggle for Existence,
Some *Individuals*, in a Population having Varying & Inheritable Characteristics,
Undergo *Fortuitous* Changes that Favor or Handicap their Ability to Cope with Changes in their Environment.
Those so Favored Adapt, Survive, and Reproduce; Those Handicapped Fail to Adapt, Die, and Disappear.

Consequence: Order Without Design:

While Natural Selection Works Blindly and Opportunistically, and Variations are Matters of Accident or Chance,
Its Working Conditions Produce an of Unpredictable, Yet Ordered Stream of Ever More Complex, Purposive Adaptations.

Criterion for a Salutary Evolution:

Increased Fitness for Change: Adaptability Today to Cope with Unpredictable Changes in the Environment Tomorrow.

Comments:

The Neo-Darwinian Synthesis is a Statistical Population Theory that Couples
Self-Perpetuating Variations of the Genetic "Bits and Pieces" Making Up the Microscopic Level of Organization
to
A Deterministic Selective-Retention Process Governing the Macroscopic Level of Organization

This Interplay of *Chance* and *Necessity* Assumes that Genetic Variations are Purely Accidental,
And that an Individual's *Acquired* (i.e., Learned) Pattern of Behavior Can Not be Transmitted to the Population
(as was assumed by Lamarck).

In this Sense, the Unplanned Biological "Order" is Synthesized Accidentally, *A Posteriori*.¹

With this Background in Mind, Let Us Now Transition to the Idea of *Cultural Evolution*.

¹ Research into the open-ended nature of microscopic-macroscopic feedback loops suggests that this view may be an oversimplification. Kaufman [16-26] argues that non-random, *Self-Organizing* processes at the microscopic level of organization may also influence evolutionary outcomes within the Darwinian mechanism of natural selection (although in a non-Lamarckian way). Moreover, Prigogine, found similar feedback loops in the physical world (e.g., in the Brusselator Reaction, where the autocatalytic reaction loops generate a spontaneous order). We will see that these changes, if eventually integrated into the neo-Darwinian theory, will actually bring it closer to the theory of cultural evolution developed in the next few slides.

THEORY OF CULTURAL EVOLUTION

Aim:

To Understand How an Undesired Cultural Order Can be the Natural Product of a Self-Ordering or Spontaneous Interaction.

Central Ideas & Definitions:

- **Struggle for Existence:** Competition for survival or reproductive advantage in an environment of limited resources [from Darwin].
- **Variability in the Microscopic Level of Organization:** Potential for fortuitous changes in the internal arrangements shaping a *group's* macroscopic capacity to succeed or fail in its struggle for existence [from Darwin & successors].
- **Inheritable Variations:** *Modes of Conduct and Rules of Behavior* coordinating the mutual relations among individuals (morals, traditions, informal codes of conduct, habits, law, knowledge, etc.) that can be transmitted to outsiders as well as succeeding generations by tradition, imitation, and teaching and learning [Hayek: 11-28].
- **Adaptation:** Process by which purposive variation and competitive advantage is conferred on groups & populations [from Darwin].
- **Structural Stability:** Potential for stable arrangements at some, but not all, higher levels of complexity [Bonowski/Prigogene].

CULTURAL EVOLUTION:

Natural Selection and Growth of an Extended Order of Cultural Relations:

During the Ever-Changing Struggle for Existence, the Culture of
Morals, Traditions, Rules, and Institutions Coordinating an Extended Human Interaction
Evolves Gradually and Insensibly as Variations of *Habitual Modes of Conduct* are Selected,
Because They Enable Those Groups Practicing Them to Survive, Grow, Procreate, and Include Outsiders.

Comment:

The Theory of Evolution by Natural Selection Explains How a Productive Order
Can Emerge Spontaneously Out of a Statistical Process.

... On the Other Hand ...

We Have Seen that the Anatomy of Decline is a Counter-Productive Order.

Raises Question:

Can We Use the *Blind Variation-Selective Retention* Model of Evolutionary Change to Explain
the Rise of and Undesirable, Counter-Productive, or Lethal Order?

Observation:

We *Can Not* Examine the Rise of an Undesirable Order Without Introducing the Concept of Ecological Feedback.

... Because ...

The Idea of an "Order" Embodies the Idea of the *Totality of Relationships* Among the "Parts" and the "Whole"

And Ecology is Defined as -

The Totality of All the Relations of Living Organisms to One Another and to the Outer World.

The Idea of Ecology Introduces the Uncertainties of Coevolution & the Possibilities for Pathological Growth

"Organisms do not merely evolve,
they *Coevolve* both with other organisms and a changing abiotic environment."
(Source: Stuart Kaufman, *The Origins of Order*)

Illustrative Example:

A "Simple" 3-Body Coevolutionary Interaction

Imagine a universe of evolutionary change consisting of only three species (or interacting cultural subgroups) A & B & C.
B&C are the environment to A, and A&C are the environment to B, and A&B are the environment to C.

Random changes in A set the stage for the natural selection of future random changes in B and/or C,

... which, in turn, set the stage for the ...

Selection of subsequent random changes in (A and/or C) or (A and/or B)

... which sets the stage for ...

The selective reinforcement of further changes in A, B, and/or C, ... and so on ...

Ramification:

If we multiply the number of interacting species or subgroups subject to a process of random change & selective reinforcement,
Coevolution creates an expanding labyrinth of feedback loops shaping an Unpredictable path of evolutionary change.

Implication for the Ecosystem:

The Increasing Number of Unpredictable Interactions Among Individual Species or Cultural Subgroups Multiplies the Possibilities
for an Unplanned, Undesirable, or Pathological Evolution of the Ecosystem or Culture of the Larger Group.

Co-Evolution and Possibilities for Pathological Growth (cont.)

Examples of Possible Patterns:

(Source: Gregory Bateson, *Mind and Nature*)

- A change so favors some species or subgroup that it "overgrazes" in some form and destroys its ecological niche.
- Interaction with other individuals or subgroups will lead to a change in context, so that further change of the same kind becomes necessary, and the system then goes into escalation or runaway.
- A change "hooks" the individual or subgroup into attempting to maintain its rate of change (addiction).
- A change diminishes the flexibility in the remainder of the system.
- A change in the subgroup sets up other changes within the system, making it necessary to forego other adaptations.
- Other subgroups in a system will change to crowd in on the individual's change and make it irreversible.
- A change permits the individual or subgroup to act as if it no longer depends on neighboring individuals or subgroups.
- A change that confers advantage on a subgroup over the short term becomes Disastrous over the long term.

Generalization:

What has Survival Value for the Individual or Subgroup May Diminish the Vitality of the Larger Group or Ecosystem.
What is Good in the Short Term May Be Addictive or Lethal Over the Long Term.

Application to the DoD and the Anatomy of Decline:

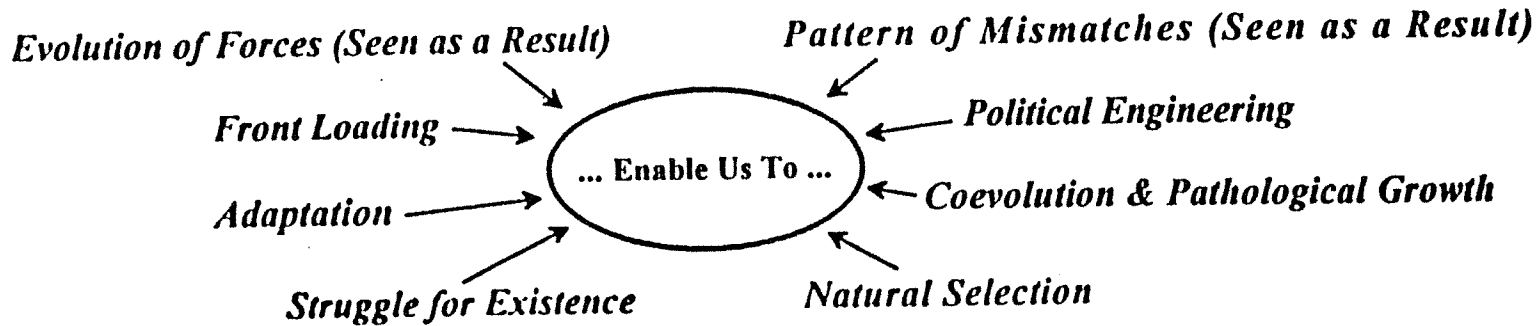
The Possibility of Pathological Growth (i.e., Positive or Negative Change) in a Co-Evolutionary Process Means that the Adaptations of the Factions within the DoD Can Corrupt the Organic Integrity of the DoD.

... This possibility suggests that ...

Undesired Orders -- Like the Anatomy of Decline -- are the Outward Ecological Signals of a

Coevolution of Pathological Adaptations.

Synthesis of Observations & Ideas



Appreciate Why Front Loading & Political Engineering Evolved into *Ubiquitous* Modes of Conduct.
Understand How These Modes of Conduct Corrupt DoD & Undermine the Federal System of Government.

POINT OF DEPARTURE:

The Struggle for Existence is an Ever-Changing, Kaleidoscopic Competition for Budget Dollars.

- Groups Within DoD Vie Continuously With Each Other for Limited Resources (PPBS/DAB Battles).
- Within the Executive Department, DoD Competes With Other Departments for Limited Resources (OMB Battles).
- DoD Struggles to Extract Money From Congress--A Cacophony of 535 Fiefs & Ever-Shifting Alliances.
- Outsiders (Contractors, Lobbyists, Reporters, etc.) Struggle to Lubricate, Impede, & Shape the Flow of Funds to DoD.
- Groups w/i DoD, Struggling Overtly & Surreptitiously; Form & Dissolve Alliances At All Levels of this Competition.

This is the Environment in Which Habitual Modes of Conduct are Selected.

Natural Selection (Warp II):

Competitive Strategies Evolve *Spontaneously* at All Levels, Through *Trial & Error*.
Strategies that Work--Survive, Grow More Sophisticated, and Spread via Imitation & Learning.
Those that do Not Work--Wither and Disappear.

Synthetic Reconstruction:

1. Since the Struggle for Existence is About Obtaining Money -

- The Theory of Cultural Evolution Predicts that *Selection Pressure* would Favor Modes of Conduct that Succeed in Turning On the Money Spigot & Locking it Open. The Widespread Applications of Front Loading & Political Engineering Fit this Prediction.

2. But, the Habitual Pattern of "Mismatches Inside Mismatches" is Evidence of Widespread, Pathological Behavior, Because Front Loading & Political Engineering -

- Promote *Short-Term Ambitions* at the Expense of *Long-Term Health*.
- Promote the Individual Program, or "Part" at the Expense of the Total Program, or "Whole."
- Embody a *Compulsive or Addictive Need for Delusion and Deception*.

3. And ... the Pattern of *Cost Growth > Budget Growth* is More Evidence of Widespread, Pathological Conduct, Because -

- Politically-Inspired Agendas which Lock the Money Spigot Open by Spreading Subcontracts to as Many Congressional Districts as Possible also Encourage Technical Agendas that are *Unrelated* to Operational Needs and Reward *Growth in Technical Complexity and Unit Costs* at the Expense of Force Structure, Modernization Rates, and Readiness.

4. Moreover, there is Overwhelming Evidence that a Coevolution of Mutual Adaptations Among the Players within the Military-Industrial-Congressional Complex Caused Pathological Conduct to become Widely-Accepted as *Normal Behavior*:

- The Practice of "Buying In" (or Front Loading) Has Been Widely-Acknowledged by Members of Congress, the Defense Department, and Industry for at Least 30 Years. Since Front Loading Continues Unabated, Misleading Others about the Size of Future Commitments is, de facto, *Morally Acceptable* Behavior within these Groups.
- Similarly, the Cynical Use of Procurement (i.e., Taxpayer) Dollars to Buy Congressional Votes is Widely Regarded as Business-As-Usual by Members of Congress as well as the Defense Department & Industry.

Conclusion:

The Widespread, Well-Ordered Pattern of Cynical & Deceptive Modes of Conduct is Part of a Coevolving Ecology of Pathological Adaptations.

Frame of Reference - II

Questions of Intellect and Morality

Condensation & Generalization:

- Specification of Testable (i.e., Falsifiable) Hypotheses

Relation to Design of Federal Government:

- Political Theory Underpinning the Design of the Federal Government (*Federalist Papers*)
- Evolution of Pathological Adaptations Interpreted in the Context of the Federalist Theory

Intellectual Appreciation and Moral Evaluation:

- How Evolved Standards of Behavior Influence Collective Decision Making
- How Evolved Standards of Behavior Relate to the Ideals of the Constitution and Our Sacred Oath to Uphold those Ideals

Wrap Up

Condensation:

The Anatomy of Decline is a Self-Inflicted Wound Produced by Evolved Modes of Conduct that are Part of a Co-Evolution of Pathological Adaptations.

This Synthesis, which is an Induction Made by Arranging Previously Unrelated Observations & Ideas in a New Combination, Embodies At Least Three Hypotheses that can be Tested by the Scientific Method.

These are -

The Pattern of Mismatches & the Evolution of Forces are the Products of Habitual Conduct that -

1. Repeatedly Sacrifices the General Welfare to Promote Narrow Agendas.
2. Repeatedly Sacrifices Long-Term Health to Achieve Near-Term Goals.
3. Employs Delusional, Deceptive, and Cynical Stratagems to Achieve these Ambitions.

A Test for Falsehood Must Assemble Enough
Counter Examples and/or Contradictions to Decisively Demonstrate -

- ♦ An Error of Logic: i.e., that these Hypotheses Contradict the Information used to Construct the Synthesis.
- ♦ An Error of Evidence: i.e., that these Hypotheses Do Not Correspond to Observed Modes of Conduct.
- ♦ That Deceptive & Cynical Stratagems (i.e., the "Buy In" & "Political Engineering") Do Not Exist or are Insignificant.

Raises Question:

In the Absence of such a Test,
What are the Implications of a Conditional Affirmation of this Synthesis?

Comment:

**We are Examining Modes of Conduct Within the U.S. Government, And We Have Concluded that,
From the Perspective of DoD's General Welfare, these Modes are Part of a Coevolving Ecology of Pathological Adaptations.**

... So ...

**If We Want to Judge Whether or Not Their Consequences are Healthy for DoD and the Nation,
We Should Interpret their Ecology in the Context of the Theory Describing
How the U.S. Government is Intended to Operate.**

**The Most Authoritative Descriptions of this Theory are Spread Throughout the Federalist Papers
Authored by James Madison, Alexander Hamilton , and John Jay.**

Idea:

Return to Basics:

**Let's Examine What Happens If We Relate
The Central Ideas Underpinning the Design of the U.S. Constitution
To the Theory of Cultural Evolution and the Concept of a Co-Evolution of Pathological Adaptations**

Design of the Federal Government

(Selections from the Federalist Papers)

Separation of Powers, Shared Power, and Theory of Checks & Balances

- The Framers of the Constitution separated power among three branches of government, But assigned each branch (especially Executive & Legislative) Limited Powers in the domains of the other branches.
 - ♦ The Constitution explicitly provides for *duplication and overlap* at the boundaries of power. Madison (*Federalist #48*) explained why the principle of separation of power required that the several departments of power be " ... connected and blended as to give to each a constitutional control over the others . . ." [emphasis added]
 - ♦ Theory: Create multiple veto points on the power of one branch by assigning limited prerogatives in its domain to other branches (Examples power of President to veto legislation, power of 'advice and consent' in the Senate, prerogative to initiate spending legislation assigned to House, powers of impeachment and conviction in the House and Senate, etc.)
 - ♦ Madison (*Federalist #51*) tied this theory of checks and balances to the passions and interests of the individual, when he said, " ... the great security against the gradual concentration of the several powers in the same department consists in giving those who administer each department the necessary constitutional means and personal motives to resist encroachment of the others." ... "Ambition must be made to counteract ambition " [emphasis added]

Consent of the Governed, Accountability, & Theory of Checks & Balances

- "A dependence on the people is, no doubt, the primary control on the government, but experience has taught mankind the necessity of auxiliary precautions." (Madison, *Federalist #51*) [emphasis added]
 - ♦ Periodic Elections and Checks & Balances are needed to ensure accountability, because " ... in every political institution, a power to advance the public happiness involves a discretion which may be misapplied and abused ... " (Madison, *Federalist #41*)
 - ♦ Theory: "The policy of supplying, by opposite and rival interests, the defect of better motives ... is to divide and arrange the several offices in such a manner that each may be a check on the other--that the private interest of every individual may be a sentinel over the public rights." (Madison, *Federalist #51*) [emphasis added]

Rule of Law and Accountability (the Supreme Check on the Abuse of Power)

- No member of government is above the law, and all members swear allegiance to the Constitution (i.e. the supreme law).
- The right to change the Constitution is reserved for the people.

Why Were the Framers of the Constitution Obsessed with Checks & Balances?

Answer:

They Mistrusted Those Entrusted With Power.

The Framers Grounded their Design on the Following Basic Assumptions about the Nature of Human Conduct:
(Synthesized out of *Federalist Papers* by Vincent Ostrom in *The Political Theory of a Compound Republic*)

- Government coordinates the conduct of individuals. The actions of each individual will be guided by an appreciation of his/her own self interest, and self interest is the source of energy, ambition, passion, and productivity.
- Individuals compete for limited resources, and since choices are necessary, they will cooperate with others to further their self interest. [Note: The assumptions of scarcity, self interest, competition, cooperation are embodied in Theory of Cultural Evolution.]
- Individuals, when cooperating or competing to obtain scarce resources, must choose from imperfect options, but fallible human beings may not understand the nature of unfolding circumstances, their true preferences, or both.

Consequences of this Reasoning:

The Existence of Imperfect--and Imperfectly Understood--Alternatives in a Competition for Scarce Resources Implies that -

1. Self-interested, Cooperative Actions of Individuals May Confer Benefits on One Group But Injure Other Groups, ... and
2. That Short-Term Interest and Passion can take Precedence Over the Remote Considerations of Policy, Utility, and Justice.

... so, According to Madison ...

The Framers Designed a Political System to " ... Break and Control the Violence of Faction. "

Madison defined a faction as " ... a number of citizens ... who are united and actuated by some common impulse of passion, or of interest, adverse to the rights of other citizens, or to the permanent and aggregate existence of the community." Madison also said, the " ... latent causes of faction are ... sown in the nature of man" and since these causes " ... cannot be removed," the only relief available is to "...control its effects." (*Federalist # 10*) [emphasis added]

Thus, the Rationale for Checks & Balances:

"No man is allowed to be the judge in his own cause, because his interest would certainly bias his judgment, and, not improbably, corrupt his integrity . With equal, nay greater reason, a body of men are unfit to be both parties and judges at the same time." (Madison , *Federalist #10*) [emphasis added]

Let's Incorporate the Ideas of Madison & Hamilton into Our Synthesis:

We can See that a Co-Evolution of Pathological Adaptations which Habitually Promotes -

- Narrow Agendas at the Expense of the General Welfare.
- Short-Term Interests at the Expense of Long-Term Health.
... and employs ...
- Delusional, Deceptive, & Cynical Stratagems to Achieve these Ends.

Suggests a Madisonian Appreciation of our Synthesis:

The Immediate Interests and Passions of Individuals & Factions are Shaping the Real Decisions.

Returning to the Theory of Cultural Evolution -

We can Combine this Madisonian Orientation with the Results of F. A. Hayek's Research into the Relationship Among

Evolved Constraints, Self-Ordering Codes of Conduct, and the Growth of Social Order --

"What are chiefly responsible for having generated this extraordinary order ... are the rules of human conduct that gradually evolved. These rules ... consist largely of prohibitions ('shalt not's') that designate adjustable [i.e., acceptable] domains for individual decisions. ... these constraints selected us ..." because "... they enabled [the groups practicing them] to survive." Building on this line of reasoning, Hayek defined "morality" as those "... non-instinctive rules that enabled mankind to expand into an extended order ..."
(F.A. Hayek, *The Fatal Conceit: The Errors of Socialism* [emphasis added])

Madisonian-Hayekian Expansion

The Pervasive Influence of Unchecked Factions (in the Madisonian sense of checks and balances), Whose Members Promote their *Immediate Interests & Passions* by the Repeated Use of Deceptive & Cynical Stratagems,

... Suggests that these ...

Individual Members are Acting Within the "Adjustable Domains" (i.e. Constraints, Prohibitions, or Standards) of an Evolved Code of Conduct that Induces the Growth of Factionalism by Condoning Deceptive & Cynical Behavior.

What Can We Say About the Intellectual Character of this Code of Conduct?

Since We are Trying to Understand How Standards of a Behavior Influence a Collective Decision-Making Process,
We Should Begin by Asking Why that Process Exists in the First Place:

DoD's Decision-Making Process Exists to
Maintain & Increase the Internal Coherence & Initiative of the Department During its Struggle for Existence
By Enabling its Members to Interact with (i.e., Comprehend, Shape, and Adapt to) the World in a Focused Way.

... on the other hand, we have seen how the ...

Unchecked Ambitions of the Individuals & Factions making up the Larger Group Produce a Hydra of "Mismatches" that
Makes it Impossible to Focus the Individual Efforts Needed to Interact Constructively with the External Economic Environment.

... which opens the door for ...

Outside Players -- Contractors, Politicians, "Defense Intellectuals," Pundits, etc. --
To Manipulate Debate and Make the Real Economic Decisions in What Appears to Some as a Chaotic Free for All,
While We Create an Atmosphere of "Make Believe" & Blame Outsiders (especially Congress) for Our Problems!
(Evidence: current pressure to trash forces in order to save jobs in the industrial base producing the "bow wave" we front loaded)

Intellectual Evaluation (Appreciation in an Co-Evolutionary-Madisonian-Hayekian Context):

The Deceptive Stratagems of Individuals & Factions Isolate the Larger Group from the Constraints of its External Environment,
... and by Focusing the DoD's Decisions Inward on the Power Games of Internecine Conflict ...

The Activities of the Factions "Close" the Decision-Making System and Set the Conditions for a Steady Accumulation of Errors.
(Evidence: the Confusion & Disorder of the Ubiquitous Hydra of Mismatches).

... which reveals that ...

Accepted Standards of Behavior Condone Individual Activities that
Diminish the Larger Group's (i.e., DoD's) Fitness to Evolve in a Salutary Direction During its Struggle for Existence.

... and because these activities undermine the survival mechanisms of the larger group, we must conclude ...

The Co-Evolution of Pathological Adaptations is Inspired by an Intellectually Corrupt Code of Conduct.

What "Moral Effects" Flow Out of this Intellectually Corrupt Code of Conduct?

- **Thought 1:** Since the Pathological Adaptations arise out of a factional competition that isolates the larger group from the economic constraints of its environment, our conception of Moral Effects should relate in some way to this Competition (pursuit of self interest in the struggle to obtain scarce resources) and Isolation (of the larger group from its environment).
- **Thought 2:** Since we are trying to comprehend the Moral Effects of a Code of Conduct, our conception should also include the ideas of Rules, Prohibitions, or Standards of Behavior in a way that can be linked to Isolation & Competition. Why?
 - ♦ There is a long history of such a linkage--18th Century moral philosophers, particularly David Hume & Adam Smith, linked the idea of morals to "non-rationalist" rules, the pursuit of self-interest, scarcity, and the concept of the general welfare (see D.D. Raphael, "Moral Sense," *Dictionary of the History of Ideas*, Volume 3, p.232).
 - ♦ F. A. Hayek (who was strongly influenced by Hume & Smith) used the theory of Cultural Evolution (which also embodies the ideas of self-interest and competition) to confine the idea of Morality to the " ... noninstinctive rules that enabled mankind to expand into [the] extended order ... " we call civilization. [emphasis added]
 - ♦ Madison & Hamilton (who were influenced by Hume & Smith) justified the ideals of the Constitution (i.e., checks & balances, separation of powers, consent of the governed, accountability, & the rule of law) on the assumption (inter alia) that individuals will pursue their self-interest in a competition & cooperation to obtain scarce resources. Since (1) the Constitution is the Supreme Set of Rules governing the actions of, and interactions among, all federal officials and (2) the Constitution is a Unanimously Accepted Set of Rules (all elected and appointed federal officials swear unconditional allegiance to it), adherence to the ideals of the Constitution sets a minimum necessary condition for determining the moral effects of official conduct.
- **Thought 3:** In his study of conflict (synthesized out of a many of sources, but not Hayek or Hume), John R. Boyd tied the idea of Moral Effects to the ideas of Competition, Isolation, and Standards of Conduct.
 - ♦ After evolving the notion (similar to those of Hume, Smith, & Hayek) that "moral represents the cultural codes of conduct or standards of behavior that constrain, as well as sustain and focus, our emotional/intellectual responses" to changing conditions in our the external environment; Boyd conceived a "Moral Design for Grand Strategy," based on an idea that "Moral Isolation occurs when we fail to abide by codes of conduct or standards of behavior in a manner deemed acceptable or essential by others outside ourselves." [emphasis in original] (see John R. Boyd, "The Strategic Game," *A Discourse on Winning and Losing*, pp.35-36.)

Let Us Now Put These Thoughts into an Operational Framework for Answering the Question of "Moral Effects"

**A Conceptual Framework for Evaluating the Moral Effects of an
Evolved Code of Conduct which Induces Factionalism by Condoning Deceptive & Cynical Behavior**

Ingredients:

- **Environment:** the People, Political Structure, and Scarce Economic Resources of the United States.
- **Competition:** The Stratagems Employed by Members of Factions within the DoD as they Struggle to Obtain Scarce Resources.
- **Minimum Acceptable Standard of Behavior:** Whether these Stratagems Promote or Subvert the Ideals of the U.S. Constitution.

Moral Corruption:

Occurs when an Evolved Code of Conduct (Formal or Informal, Written or Unwritten) Inspires Habitual Behavior that Permits Individuals & Factions to Obtain Scarce Resources and hence Improve their Well-being at the Expense of the People By Violating the Minimum Acceptable Standard of Behavior They Have Sworn to Uphold and U.S. People Expect them to Uphold.¹

¹ While this conception of moral corruption is narrowly focused for the purpose of this inquiry, it is derived from a more general theme developed by John R. Boyd in his 'Moral Design for Grand Strategy,' see John R. Boyd, "The Strategic Game," *A Discourse on Winning and Losing*, p.47.

Evaluation:

Our Constitutional Design for a Representative Republic, in which the People are Sovereign Rests on Five Interrelated Ideals:

1. Checks & Balances

The evolving Ecology of Pathological Adaptations (i.e., the interactive effects of front loading & political engineering) reveals that Unchecked Factions are pursuing their narrow interests at the expense of the general interest.

2. Separation of Powers

Deceptive and Cynical Stratagems aimed at undermining the power of Congressional Oversight and neutralizing the Power of the Purse subvert the Constitution's grant of power to Congress under Article 1, Section 8, "To raise and support armies ... provide and maintain a navy ... [and] make rules for the government and regulation of the land and naval forces ..." .

3. Consent of the Governed

Deceptive and Cynical stratagems aimed at neutralizing Congress's power of the purse undermine what James Madison called (in *Federalist 58*) the "most complete and effectual weapon with which any constitution can arm the immediate representatives of the people" to redress grievances or effect salutary measures.

4. Accountability

If factions within the government produce deceptive or false information, neither the people nor their representatives will understand what their government is doing, and they will have no basis for judging the soundness of their government's policies.

5. Rule of Law (continued on next slide)

5. Rule of Law (cont.)

Any Evolved Code of Conduct that condones deceptive and cynical stratagems (e.g., Front loading and Political Engineering) to promote the narrow interests of factions makes a mockery of the rule of law because -

- 18 U.S.C. 1001 makes it a felony to "knowingly & willfully falsify, conceal, or cover up by any trick, scheme, or device a material fact" within the jurisdiction of any department or agency of the United States.
- 18 U.S.C. 1505 makes it a felony to "corruptly ... obstruct or impede or endeavor to influence, obstruct, or impede the ... administration of the law under which any pending proceeding is being had before any department or agency of the United States."
- 18 U.S.C. 4 makes it a felony to conceal a felony; 18 U.S.C. 2 makes it a felony to aid another in the commission of a felony; 18 U.S.C. 3 makes it a felony to aid or assist an offender in order to hinder his apprehension; & 18 U.S.C. 371 makes it a felony to conspire to commit a felony.
- Article II of the Constitution makes it the President's affirmative duty to "take Care that the Laws be faithfully executed,"
- 5 U.S.C. 7301 makes it an affirmative duty for any person in government service to uphold the laws and regulations of the United States, never be a party to their evasion, and expose corruption wherever discovered.
- All employees of the federal government take an oath of loyalty to uphold the Constitution and all duly enacted laws.

Moral Appreciation:

An Evolved Code of Conduct that Inspires a Pattern of Intellectual Corruption which Systematically Subverts the Spirit and Letter of the Constitution's Ideals in order to Obtain Budget Dollars Undermines our Moral Authority and Runs the Risk of Morally Isolating the DoD from the Society it Purports to Serve.

II-B11

CONCLUSION

We Have Seen That The Process of Corruption >> Mismatch >> Evolution is --

- 1. Produced by the Unchecked Ambitions of Individuals and Factions Seeking Advantage In the Competition for Scarce Resources (i.e., Money).**
- 2. Bound Up With the Centrally-Planned, "Cost-Plus" Economy of the Military-Industrial Complex. (i.e., A Result of the Tendencies & Contradictions Implicit in Authoritarianism & Socialism?)**
- 3. A Natural Occurrence When Costs Grow Faster than Budgets.**
- 4. Partly a Consequence of Patronage in the Congressional-Contractor Complex and the Pattern of Shared Power Embodied in the Design of the Constitution.**
- 5. Part of the Compelling Need to Reduce the Federal Deficit.**
- 6. Undermining the Checks & Balances of the Constitution, Poisoning our Politics, Damaging our Military, and is Now Threatening to Impoverish our Nation.**

Observation:

This Pattern of Decay is an Accumulating Product of Accepted Modes of Individual Behavior.

... which implies ...

Corrective Action Must Induce Changes in the Behavior of Each Individual Over the Long Term.

Raises Question:

**How does One Induce Constructive Changes in the Behavior of Individuals,
When They Exist in an Authoritarian, Bureaucratic Culture that Embodies
An Evolved Code of Conduct that Condone Cynical & Deceptive Behavior?**

II-B12

Part III

RECOMMENDATIONS

in process --

only

R1 = Shock Therapy is included

J. Sperry

Design Criteria

(Tentative Thoughts as of 02/24/94)

Boiled Down to Essentials, Recommendations for Salutory Changes Must Account for the Following Problems:

- The FYDP is a *Fantasy*, and Consequently, the President, the Congress, and the American People Can Not Hold DoD Accountable for its Actions.
 - *Deliberate Biases* in the Projections of Future Budgets, Costs, and Quantities *Grossly Misrepresent* the Long-Term Consequences of Today's Decisions
 - *Wildly Erratic* Behavior of "Actual" Costs for Off-the-Shelf Items Bought in the Commercial Market Suggests that the FYDP Data Base May Not Even Account Accurately for Money Expended.
 - The Ubiquity of the Biased Predictions and Erratic Behavior is Incontrovertible Evidence of Pervasive *Cynical* and *Deceptive* Behavior, Unless One is Willing to Accept the Premise that these Biases are the Product of Widespread *Incompetence*.
- The Problems of the FYDP Result from the Pathological Adaptations of a Cultural Evolution that Undermines the Intellectual Integrity and Moral Authority of the DoD, as Well as the Spirit and the Letter of the Constitution.
 - An Informal Code of Conduct that Condones Cynical, Deceptive, and Illegal Behavior Has Evolved to *Override* the Minimum Standard of Acceptable Behavior (i.e., the Formal Code of Conduct Set Forth by the Constitution) that *Every* Member of the U.S. Government has *Sworn* on his Sacred Honor to Uphold.
 - Informal Codes of Conduct Will Always Have the Power to Override Formal Codes, Because they Embody *Rewards* as well as Sanctions, and have *No Due Process*, Whereas Formal Codes (Legal Systems) are limited to Sanctions which are Imposed only after the Cumbersome Constraints of Due Process have been Satisfied.
 - Evolution is, by Definition, an *Unpredictable* Process. Changes are Generated From the Bottom-Up and Selection Pressure is Applied to that Menu of Options. This Means that We Can Not "Design" a Solution to a Problem of Cultural Evolution and Impose it on that Culture From the Top Down. On the Other Hand, We Could Borrow From the Ideas of the Founding Fathers and Design Institutional Checks and Balances to Create Selection Pressures that Induce the Evolution of Salutory Changes as they Bubble Up from the Bottom.

III-A1

RESTORING COHERENCE & INTEGRITY TO DECISION MAKING:

(Recommendations)

Policy Standdown for Reality Check

- R1 - Shock Therapy (Department of Defense).
- R2 - Declassify the Future Years Defense Plan (Department of Defense).
- R3 - Swear In All Witnesses at All Congressional Hearings (Congress).
- R4 - National Threat Assessment - Joint Resolution Passed by Congress Every Two Years, Sponsored by Foreign Relations/Affairs Committees (Congress).
- R5 - Replace the PPBS With a Strategic Planning Process Designed to Evolve Priorities by Examining the Tradeoffs Among the Macroscopic and Microscopic Possibilities, Constraints, and Uncertainties that Decision Makers Must Contend With (Department of Defense).
- R6 - Shift to Sequential Prototyping Practices In Accordance With Classical Engineering Principles (Department of Defense).
- R7 - Shift to Standard Commercial Industrial Engineering Cost Estimating and Work Measurement Practices (Department of Defense).
- R8 - Tie Operational Testing to the Sequential Prototyping Strategy (Department of Defense).
- R9 - Establish Independent Defense Evaluation Board (Department of Defense - Congress Interface).

Aims:

Improve the DoD's Fitness to Cope with an Ever-Changing Environment while Restoring Accountability to Congress and the American People by -

- Improving the Integrity of Information used at Both Macroscopic and Microscopic Levels of Decision-Making.
- Reducing Technical, Economic, and Long-Term Programmatic Risks Prior to Making Commitments.
- Strengthening Checks & Balances at Microscopic and Macroscopic Levels of Decision Making.
- Evolving Coherent Priorities Among the Incommensurable Programs Competing for Scarce Resources via a Natural Selection (or Evolutionary) Epistemology Intended to "Commensurate the Incommensurable."

Policy Statement
R-1 Shock Therapy - Introduction

**In a Speech to the American Defense Preparedness Association On 16 February 1995,
The Secretary of Defense Predicted that a Constitutional Amendment to Balance the Budget by 2002
Would Result in a 20% to 30% Drop in Defense Spending.**

Idea:

**Let's Use Mr. Perry's Prediction as a Vehicle to -
Clean Up the Books,
Sharpen the Defense Debate,
Break the Cost Spiral and Explore the Possibility of Lower Cost Options,
...and ...
Produce a More Relevant Adaptation to the Emerging Uncertainties of the Real World.**

R-1: Shock Therapy

Step 1: Put DoD on Autopilot for 6 Months to 1 Year:

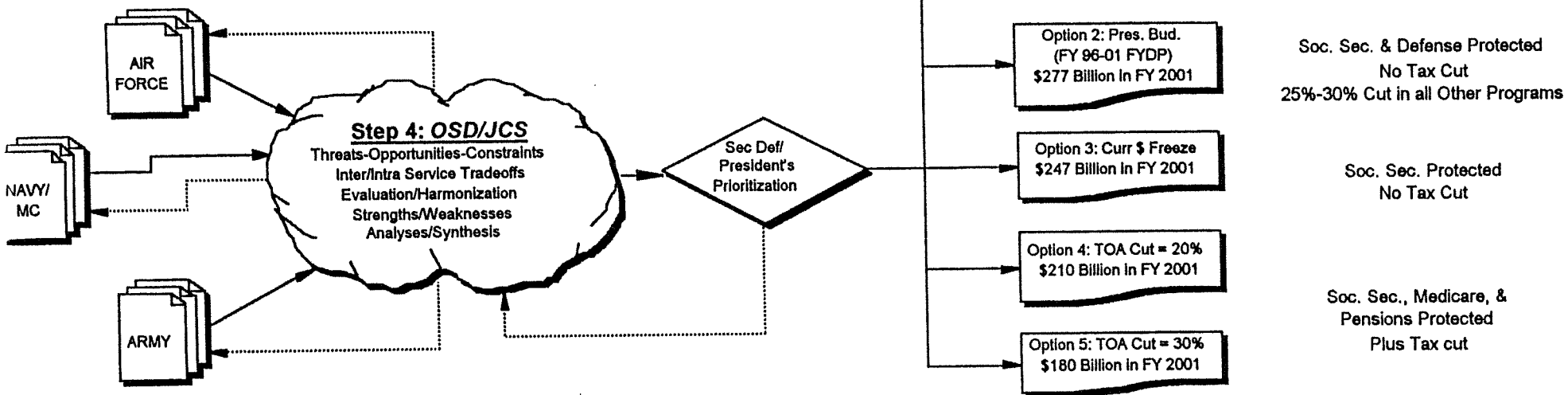
- + Theme: Maximize Decision-Making Flexibility in Near-Term.
- No New Long-Term Commitments – Maintain Level of Effort in Existing Programs.
- Proceed With All Planned Terminations, Cutbacks, Base Closings, etc.

Step 2: Direct Military Services to Clean Up Books & Open Books to Debate:

- + Remove Special Access Clearances From All Programs Except Intell Programs.
- + Establish Current Baseline by Physical Audit of Readiness (Stockpiles, Training Tempos, etc.).
- + Reprice Procurement and O&M Budgets With More Realistic Outyear Costs, Assuming Constant OPTEMPO.

Step 3: Each Service Constructs Best "Force Package" for 5 Fiscal Scenarios

- + Services to Provide OSD/JCS with Their Assessment of Strengths & Weaknesses of Each "Force Package."



AIM: Generate More Reliable Information in Short Term:

I.D. Options, Explore Lower-Cost Alternatives, & Evolve Appropriate Priorities To Break Cost Spiral & Produce a More Relevant Adaptation to the Uncertainties of the Emerging World.

III-B3

3/28/95

R1: Shock Therapy

Background

We have shown how the hydra of mismatches shapes the pattern of money flows at all levels of the organization. This influence is an iterative phenomena embodying complex nonlinear relations with feedback loops among the microscopic and macroscopic levels of organization. It is well established in mathematics, physics, chemistry, as well as in biology, that these kinds of interactions can produce an evolutionary process embodying unpredictable irregularities leading to chaotic fluctuations. Moreover, even if it were possible to analyze all the reasons for all the mismatches, the amplifying effects of front loading and political engineering mean that new mismatches would emerge and conditions would change before a remedy could be put into effect.

Obviously, a linear, deterministic, analytical procedure, like the PPBS, can not possibly cope with the nonlinear, nondeterministic, synthetic complexity produced by the interactive hydra of mismatches. A long track record of failure, unblemished by even a hint of success, decisively proves this conclusion. Cleaning up the bookkeeping system is the necessary first step for any real reform program. A second necessary step is to purge the corrupting effects of front loading and political engineering from budgeting process.

Although Shock Therapy is not in itself a long-term solution, it is a step in the right direction. It acknowledges the problem by forthrightly attacking the cynical and deceptive

behavior that creates the mismatches. This microscopic behavior lies at the root of the Anatomy of Decline: it corrupts the accounting system and powers the pattern of cost growth greater than budget growth, which in turn shapes the evolution of forces and makes it impossible to adapt effectively to changing conditions at the macroscopic level of organization.

Paraphrasing Dean Acheson, this idea is to bludgeon the mind of the bureaucracy by laying on a set of simple but realistic macroscopic budget constraints while delegating authority and responsibility for evolving the hard microscopic adjustments to the lowest possible level.

Arguments Against:

- Argument: This proposal will not work, because there are no incentives to preclude the military services from doing a *Washington Monument Drill*--i.e., manipulating the budget numbers to show that *all* lower-cost alternatives to their current program are totally unacceptable.
- Rebuttal: This is, by far, the most frequently raised objection, and unfortunately there is some merit in it. Nevertheless, the argument should be rejected for two reasons. First, the services should be given an opportunity to clean up the books--they can produce a better product than OSD or JCS, because they have greater resources and more detailed knowledge. On the other hand, if they placed their parochial interests ahead of the nation's and failed to carry out their trust, the President and the Secretary of

R1: Shock Therapy (Continued)

Defense could simply extend the freeze and reassign the task to OSD or JCS, and even go public with speeches explaining the reasons for their actions. In this event, the military services would be in no position to complain about excessive micro management. Second, the logical implication of the *Washington Monument Drill* argument is that the military services can not be trusted to do what is best for the nation. To be ~~X~~ decisive, this argument is tantamount to admitting that the corruption that produced the hydra of mismatches is out of control, and therefore must be accepted as inevitable.

- Argument: Threats should drive strategy, but this proposal would permit budgets to drive strategy.
- Rebuttal: Strategy is a mental scheme for focusing efforts as a basis to realize some aim in an unfolding reality of bewildering events, threats, opportunities, and constraints. In this sense, strategy is the art of evolving "possible options" in the real world of limited resources. We know that the "*threat-driven*" PPBS produces the hydra of mismatches that *disconnects* plans (and therefore strategy) from reality. By cleaning up the books and examining the impact of uncertain budget constraints, this proposal embodies *necessary conditions* for surfacing a strategy that will work, precisely because it is connected to the reality of limited resources.
- Argument: This proposal would be disruptive and result in chaos, while the Pentagon is on "autopilot."

- Rebuttal: The the hydra of mismatches makes it clear that the Defense Program is already in a state of chaos. Since, there is a significant possibility that current decisions are setting the stage for a hollow military in the mid-to-late 1990s, a 6-12 month delay might provide the information needed avoid a catastrophe like that experienced in the late 70s.
- Argument: Examining lower budget scenarios won't work; we tried it before (Zero-Based Budgeting or ZBB), and it failed.
- Rebuttal: The analogy to the ZBB experience is a red herring. ZBB did not delegate the initiative to the services. Since ZBB did not include a strategic assessment, it degenerated into a bean-counting drill driven by budget politics. Moreover, the cumbersome procedures of ZBB overloaded participants with a welter of marginalia. Shock Therapy is fundamentally different from ZBB: Direction to the military services would be simple: clean up the books, produce the best possible force for each budget scenario, and provide the Chairman of the JCS and the Secretary of Defense with an assessment of the strengths & weaknesses of each alternative. Moreover, it is nonsense to conclude that effective, lower-cost alternatives do not exist when one refuses to examine the options. Finally, how can one identify the opportunity costs needed to evolve priorities without cleaning up the books and examining the lower-cost possibilities that define those opportunity costs?

R1: Shock Therapy (Continued)

- Argument: Consideration of lower budget projections will hurt national security, because it will open the door to opportunistic budget cutting by an irresponsible Congress.
- Rebuttal: This argument implicitly justifies front loading and political engineering by playing to the atmosphere of gaming and mistrust now permeating relations between the Pentagon and Congress. It should be rejected for logical as well as moral reasons: To say that the Pentagon should act irresponsibly, because acting responsibly will provoke Congress into acting irresponsibly, implies the Pentagon should deliberately *exaggerate* its needs in the national interest. In other words, members of DoD are justified in committing crimes--making false or deceptive statements to Congress--because they are morally superior. By endorsing the cynical and deceptive *behavior* that created the hydra of mismatches, this argument merely serves to preserve the status quo. Moreover, an outrageous assumption of moral superiority is a self-serving delusion.

Arguments For:

- Argument: Cleaning up the books should be the highest management priority:
- Rationale: Consider the alternative: any policy-making process that continues to rely on the corrupt information contained in the FYDP is not only doomed to strategic irrelevance, it will magnify the chaos embodied in the hydra

of mismatches. Postponing hard decisions makes the inevitable adjustment more wrenching. Nevertheless, some argue for delay. Reasoning by analogy, they say we must continue business as usual for a while, because it is too disruptive to repair a bad tire on a speeding car. While it is always dangerous to base policy decisions on simple mechanical analogies, this one is absurd; it ignores the risk implicit in its own logic: *blowouts cause crashes*.

- Argument: Consideration of lower cost alternatives should be an rational economic imperative:
 - Rationale: Consider the alternative: if we refuse to examine the possibility of lower-cost alternatives, costs will continue to grow faster than budgets, forces will continue to shrink, equipment will continue to get older, pressure to reduce readiness will continue to increase, cognitive dissonance will grow, and the compulsion to rely on cynical strategies aimed at ameliorating these mounting problems will continue unabated. The end of the cold war provides the discontinuity needed to marshal the determination to break out of this death spiral.
- Argument: Cleaning up the books should be the top moral and legal imperative facing decision makers in the Pentagon:
 - Rationale: The Declaration of Independence (which establishes the moral foundation of the United States) and the Constitution (which establishes the legal foundation and to which we have all a sworn unconditional allegiance) are each premised on the belief that government exists for the people and by the consent of the people. Government,

R1: Shock Therapy (Continued)

therefore, *must be accountable to the people*. Clearly, all members of government have assumed an unconditional moral and legal obligation to remove all false, misleading, or delusional information from the government's bookkeeping system. To act otherwise subverts our political heritage, makes a mockery of our patriotic ideals, and violates our sacred oath of office.

R2:

Declassify the FYDP and Make it Available to the Public

Proposal:

Congress should declassify the Future Years Defense Plan (FYDP) and insist that it be submitted in its present form to Congress and the American public each year as part of the President's annual budget message. Congress has the power to amend the U.S. Code to make this a legal requirement. Article I, Section 8 of the Constitution grants Congress the power "To make Rules for the Government and Regulation of the land and naval Forces."

Rationale:

We have seen that the hydra of mismatches is intimately connected to the structure of the five-year plan. The Pentagon seduces Congress into approving front-loaded budgets, uses political engineering to hook a significant part of Congress and the country on the narcotic of defense spending, then blames Congress when it chokes on the final bill. Congress, desperate to save jobs and votes, discredits itself by putting the dictates of the porkbarrel ahead of the needs of national defense as it cuts back the Pentagon's budget. The Pentagon closes the trap by accusing Congress of meddling and micro management, and Congress becomes the clown in the theater of the absurd. This minuet thrives on secrecy. Declassifying the FYDP is the single largest step that can be taken to expose the destructive effects of front loading and political engineering.

Some people may argue that declassifying the FYDP will hurt national security, because it will give our adversaries too much information. So much information is now delivered piecemeal to Congress in unclassified form, however, that competent foreign intelligence agencies, with access to large analytical resources, can already synthesize accurate assessments of the FYDP. Moreover, we must assume foreign agents already have the plan--if industrial spies working for defense contractors can obtain the plan illegally, it is absurd to think that the foreign espionage agents can not. Finally, it does not matter whether foreign agents obtain the plan, because the FYDP can not be executed: its data is so corrupted that it is meaningless. Keeping the FYDP secret hurts our defenses because the only people kept in the dark are our own citizens.

Moreover, if the FYDP was declassified, the competing players in the Washington policy-making establishment, public and private, advocates and watchdogs, could all sing from the same sheet of music. Ideas would compete more freely, more alternatives would surface, and the policy debate would naturally rise to a higher intellectual plane. There are five reasons why this would occur.

First, we have seen that the hydra of mismatches is a direct assault on the *Constitutional principle of accountability*. Open books would pave the way toward real reform by exposing the accounting chicanery the Pentagon uses to neutralize the

R2 Declassify the FYDP (Continued)

power of the purse, which the Framers of the Constitution assigned to Congress. In January 1987, for example, the budget total projected in the Pentagon's five-year plan (for Fiscal Years 1988 to 1992) exceeded the total presented by the President in his budget message to Congress by about \$80 billion. Two years later, the 1990 to 1994 plan coincided with the totals in the President's budget message, but only with the inclusion of a "negative planning wedge." The Pentagon would not dare use such tricks if the FYDP was a public document.

Second, open books would reveal creeping policy changes before Congress and the American people are presented with a *fait accompli*. In the late 1970s, a policy decision to apply special access security classifications to weapons development programs (in addition to their traditional use in intelligence-related activities) led to the explosive growth in "black programs" during the 1980s. This decision greatly decreased the accountability of the Pentagon. If the FYDP had been a public document, the details of the "black programs" would not have been compromised (they are entered as code words which are routinely submitted to Congress in unclassified budget documents), but the magnitude of the intended budget shift would have been visible and open to debate before it occurred. Surely, this would have improved the quality of the defense debate in the early 1980s.

Third, open books would create a more vigorous defense debate. The competitive instincts of analysts in think tanks and government oversight agencies would drive them to uncover and force a debate over the assumptions and policy decisions

contained in the FYDP. If front loading and political engineering continued, leaders would be forced to acknowledge their policy of feeding industry at the expense of our military forces.

Fourth, open books would provide a common intellectual foundation from which policy analysts could debate the direction our military should take as we move beyond the Cold War. In the past, policy analysts in think tanks and universities have proposed major shifts in policy without access to the information which described the options. Our nation faces the most profound defense decisions since the end of World War II. We can no longer afford the luxury of a defense debate based on data-free analyses and analysis-free decision making.

Finally, open books would also have the administrative benefit of reducing the onerous reporting requirements Congress and the media place on the Pentagon. Coupled with the information contained in the Defense Secretary's annual report to Congress, an unclassified FYDP would eliminate the need for hundreds of documents the Pentagon routinely prepares to explain its position to Congress and the public.

R-3:

Swear In All Witnesses at Congressional Hearings

Proposal:

Place every witness appearing before Congress (from the Secretary of Defense down) under oath before testifying on any subject in any hearing.

Rationale:

We have seen how deceptions of front loading and political engineering create a poisonous atmosphere of cognitive dissonance and moral relativism--what Gibbon called a mixed and middle state between self-illusion and voluntary fraud--which permeates all levels of decision making. By distorting the intellectual content of the decision-making process, these modes of conduct create a political paralysis that impedes the DoD's ability to adapt effectively to changing conditions, thereby weakening our military forces.

The habitual nature of these modes of conduct is evidence of an informal code of conduct that sanctions this behavior. We have evolved a culture that condones subversion of the checks and balances of the Constitution, destruction of the principle of accountability, and multiple violations of the criminal code, 18 U.S.C. 1001 and 1505 and the conspiracy statutes, among others.

This proposal would use the constraints of the formal code of conduct to channel behavior in a more salutary direction.

Some people may argue that it is insulting to put high officials under oath. This is a red herring. By making it a requirement that everybody be placed under oath, we are merely establishing a way of doing business that emphasizes the Constitutional character of Congressional proceedings and equality before the law.

On the other hand, swearing in a witness would set a proper legal tone, in effect reminding the witness he could go to jail if he lies or willfully distorts the truth. Moreover, it would remind the members of Congress that adversarial hearings are not political circuses; they are the essence of the power-sharing arrangements set forth in the Constitution. Today, with the exception of rare public spectacles such as the Iran-Contra hearings, witnesses are almost never put under oath. When Congress does not put witnesses under oath, it makes it easier for the federal bureaucracy to control the flow of information. Psychologically, Congress gives the bureaucracy more power to pressure lower level witnesses into suppressing their differences of opinion, and it provides less cover to protect witnesses, should they choose the path of integrity and fealty to the Constitution over loyalty to their bureaucratic faction.

R4:

Biennial National Threat Assessment by Congress

Proposal:

Every two years, Congress should pass a joint resolution describing its assessment of the threats facing the United States. This resolution should be arrived at in an open, deliberately-paced, legislative process managed by the foreign relations committee of each house.

Rationale:

For the entire period of the Cold War, the executive branch had a monopoly on threat analysis. An alliance of secrecy, intellectual intimidation, and fear fed the defense power games, making it easier to exaggerate Soviet capabilities and misread their intentions in the interest of increasing the defense budget. While the bomber gap in the 1950s, the missile gap in 1960s, and the window of vulnerability in the 1970s are either outright falsehoods or absurdities in retrospect, they seemed real to the public and Congress at the time, and they generated large cash flows.¹ Although the Soviet Union bears the responsibility for starting the Cold War, it is also probable that our excesses fed their paranoia, magnified genuine differences, and heightened the tensions of the Cold War. Now that the Cold War is over, it

is especially important that Congress have a countervailing voice to offset the executive monopoly.

Some may argue that this idea is simply not practical, that Congress is incapable of making such an assessment. In fact, there is precedent for responsible Congressional threat analyses.

On March 29, 1990, Senator Nunn, then Chairman of the Senate Armed Services Committee, made a speech on the Senate floor, outlining his analysis of the threats facing the United States. His conclusions, which went so far as to specify such technicalities as warning times in Europe, were derived from information provided to him in special Congressional hearings by executive department witnesses, independent specialists, and personal contacts--sources that are open to all members of Congress. With minor dressing up, Nunn's speech could have served as a strawman for a joint resolution expressing the sense of the Congress. His counterpart in the House of Representatives, Les Aspin, broke new ground by inviting Soviet officials to appear as witnesses in open hearings before his committee. While Nunn and Aspin have taken the initiative and shown what is possible, I think that their work should be

¹ Threat inflation includes exaggerations in force size and capabilities. In 1971, for example, the Defense Intelligence Agency's 1980 projection for the Soviet naval order of battle included between 71 and 101 modern nuclear attack submarines; by 1980 however, the actual order of battle included only 44 of these submarines (source: Jan Beemer, Soviet Submarines: Design, Development, and Tactics, Jane's Information Group, page 124). In 1976, Soviet pilot Viktor Bilenko defected with a Mig-25 to Japan. The information gathered from this incident revealed that the American intelligence community had grossly exaggerated the capabilities of the Mig-25 (source: John Barron, Mig Pilot, Avon Books, pages 172-7). For a comprehensive discussion of threat inflation and the damage it causes, see Andrew Cockburn's The Threat: Inside The Soviet Military Machine (Random House, 1983).

institutionalized under the auspices of the foreign affairs committees. The Armed Services committees are responsible for authorizing defense budgets. The ideal of checks and balances suggests that we should set up power-sharing arrangements within Congress as well as between Congress and the President. Separating the threat analysis function (which generates budget requirements) from the budget approval function in Congress would be such an arrangement.

Note:

The details of and rationale for the following recommendations are not ready for distribution:

- R5: Replace PPBS with a true Strategic Planning System aimed at systematically exploring the impact of uncertainties before making long-term commitments. this will be an updated variation of the proposal I presented to the Packard Commission.
- R6: Sequential Prototyping Strategy (modeled after standard commercial practices)
- R7: Shift to Commercial Industrial Engineering Practices (will be linked to prototyping strategy)
- R8: Tie Operational Test and Evaluations to the Sequential Prototyping Strategy

R9:

Establish an Independent Defense Evaluation Board

Proposal:

The ninth corrective action would introduce a new player and a legal framework into the defense debate. Information is power in Washington. One reason front loading and political engineering thrive within the Pentagon, as well as between the Pentagon and Congress, is that the bureaucracy has the power to manipulate the content and flow of information on a vast scale. By the time information reaches the Secretary of Defense or Congress, it has been massaged by so many people, with so many different agendas, that its content often only bears a coincidental resemblance to the message the original sender intended to transmit. Bureaucratic scrubbing systematically squelches bad news and stifles dissenting arguments.¹ Today there is no offsetting mechanism for checking the bureaucracy's ability to suppress controversy and limit the terms of debate. Article II, Section 8 of the Constitution grants Congress the power to create an adversarial mechanism for providing the needed checks and balances. Congress should pass a law establishing a politically independent Defense Evaluation Board.

The Defense Evaluation Board would be an independent regulatory agency, modeled after the Federal Reserve Board. Housed in the Pentagon but separate from it, the Defense Evaluation Board would consist of five voting members, each appointed by the President for terms of ten years and confirmed by Congress--a chairman, vice-chairman, and three directors (for operational test and evaluation, program analysis, and cost analysis). The law would prohibit members from accepting any future employment, consulting, or lobbying relationships with any firm doing business, either directly or through a subsidiary, with the Defense Department. In return for this prior restraint, board members would retire on full salary after their tenure expires. The board would be supported by a professional staff of no more than 50 highly qualified, career civil servants. These men and women are going to be the skunks at the garden party, and they must be protected from political and bureaucratic harassment.

¹ Two examples illustrate the power of the bureaucracy to hide bad news. The Wall Street Journal (June 11, 1990, page 4), reported that the Under Secretary of Defense for Acquisition, John Betti, was surprised by reports that the Navy's A-12 attack aircraft had serious technical problems and a schedule slippage. Sources said he questioned why the problems hadn't surfaced during the Major Aircraft Review which was completed and delivered to Congress by Mr. Cheney only six weeks earlier. In December 1989, in press conferences immediately after the Panama invasion, Mr. Cheney repeatedly cited the pinpoint bombing accuracy of the Air Force F-117 stealth fighter. When New York Times reporter Michael Gordon brought photos to the Pentagon showing a bomb crater about 1000 feet from the target, Mr. Cheney ordered an investigation. The Air Force Times (June 18, 1990, page 4) reported that the Air Force inspector general attributed the Air Force's failure to report the bad news to poor communications and special access security rules within the Air Force. Mr. Cheney's spokesman, Pete Williams, said he did not know who was responsible or whether any disciplinary action followed.

R-9: Defense Evaluation Board (Cont.)

The board would use legal certification procedures to ensure that the current state of knowledge (what is known, what is not known, what is presumed, where the uncertainties exist, and what alternatives are available) is accurately presented to decision makers before they commit themselves to an irreversible course of action. It would perform three regulatory functions, each aimed at improving the quality of information flowing to the Secretary of Defense and Congress. The first function would be to certify whether or not the data contained in the FYDP is distorted by the pernicious effects of bureaucratic gaming and inter-service logrolling. Each year, the board would produce an unclassified report documenting the structural assumptions and policy decisions embodied in the five-year plan. It would compare the new plan to the old plan and explain why it changed. The report would also determine whether or not the FYDP provides the resources needed to execute the war plans produced by the Joint Chiefs of Staff. The board would be empowered to identify deficiencies and recommend changes to the plan. The board would submit the report to the President, the Secretary of Defense, the Governmental Affairs Committee in the Senate, and the Government Operations Committee in the House of Representatives in February of each year.

The second regulatory function would ensure that the information used to support decisions to proceed with the development and procurement of major weapon systems accurately portrays what is known and not known at the time of the decision-making milestone. Specifically, the board would be required to legally certify that independent cost estimates were arrived at independently, used the best available information, and

identified where the estimates were uncertain and what the likely impact of the uncertainties would be. It would be required to similarly certify the results of development tests used to justify the decision to proceed to the next phase of a weapon's development. And finally, prior to a decision to start production, it would certify that the weapon met or exceeded all its specifications in a realistic operational test run by uniformed military personnel randomly selected from combat units. No weapon would enter production until the board certified the operational test. The board would be empowered to subpoena information and witnesses from government agencies and private contractors, and it would be empowered to obtain testimony under oath. These certifications, along with any minority views, would be presented to the Secretary of Defense and Congress prior to each decision-making milestone. Periodically, all certifications would be transmitted to the Archives of the United States for permanent preservation and storage.

The third function would provide the Secretary of Defense and Congress with the power to obtain independent views and analyses on major policy issues. Senators, working through the Government Affairs Committee, and Congressmen, working through the Government Operations Committee, could request special studies on any defense related matter. The Secretary of Defense could make similar requests by directly communicating with the Chairman of the board. A tripartite consultative process, involving the Chairman, Secretary of Defense, and the Chairmen of the Congressional committees would deal with the problem of selecting the most important studies to pursue, should workload become an issue. The board

R-9: Defense Evaluation Board (Cont.)

would also be empowered to initiate any studies it deemed to be important.

Rationale:

No doubt, some will argue that the idea of an independent regulatory board will add another layer of review and oversight to the oppressive weight of bureaucracy, it will interfere with efficient decision making, and it will needlessly slow the process by clogging the bureaucratic arteries. It will also be argued that effective independent test and evaluation, cost analysis, and program analysis functions already exist within the Pentagon, and therefore, the Defense Evaluation Board would duplicate their efforts.

These arguments are technically correct, but they are distractions aimed at shifting the terms of debate from a political premise to an efficiency premise. The B-1 bomber and the M-X missile, two of our most important strategic programs, illustrate the relationship between decision-making efficiency and raw political power. By every standard of measure, both weapons flew through their decision-making milestones during the 1980s, production was initiated before testing was completed, and all dissenting views were either suppressed or ignored. Notwithstanding this well-greased, bureaucratic efficiency, both programs produced defective products. In the case of the B-1, the electronic jammers, sold as being essential to the bomber's ability to penetrate Soviet defenses, did not meet operational requirements. In the case of the M-X, defective guidance systems were delivered late, and there were allegations of

falsified test results. Yet both weapons passed acceptance tests and were declared operational. The internal, self-imposed, checks and balances did not work. The Founding Fathers understood this; that is why they devised the system of shared power.

Had an effective Defense Evaluation Board existed when the B-1 and M-X were being rammed through the bureaucracy, it could not have prevented the Secretary of Defense from approving these defective programs, but the independent power of the legal certification authority would have forced the Secretary and Congress to acknowledge that defects existed before they made their decisions. With the end of the Cold War upon us, the case for high-speed, "buy-before-you-fly" decision making can not be justified on military grounds. Surely, a little more time delay would be a small price to pay for ensuring that the Secretary of Defense and Congress receive the highest quality information. Who knows, perhaps they do not want to buy weapons that do not work or approve front-loaded plans that can not be executed.

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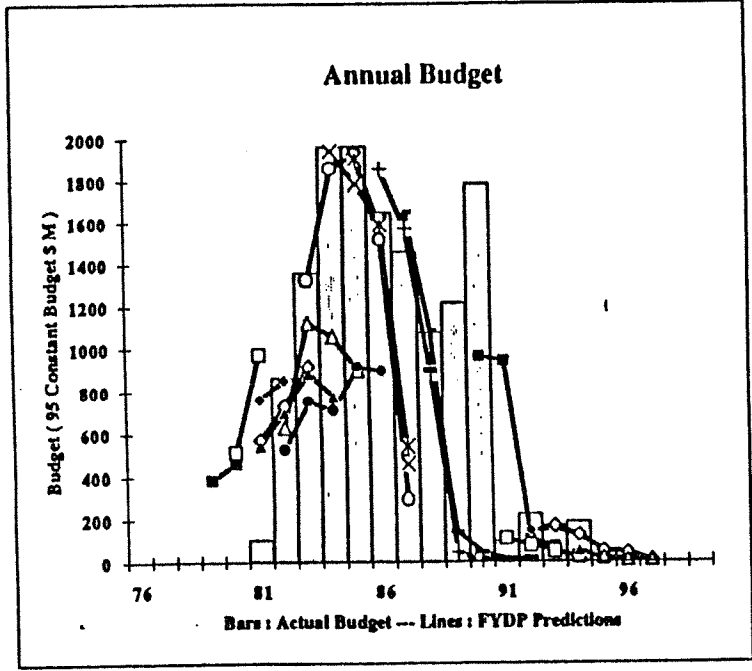
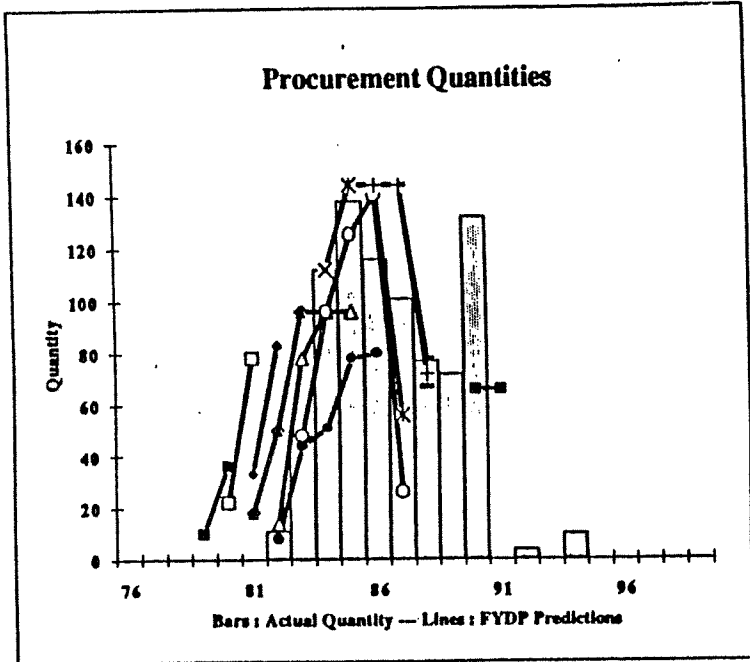
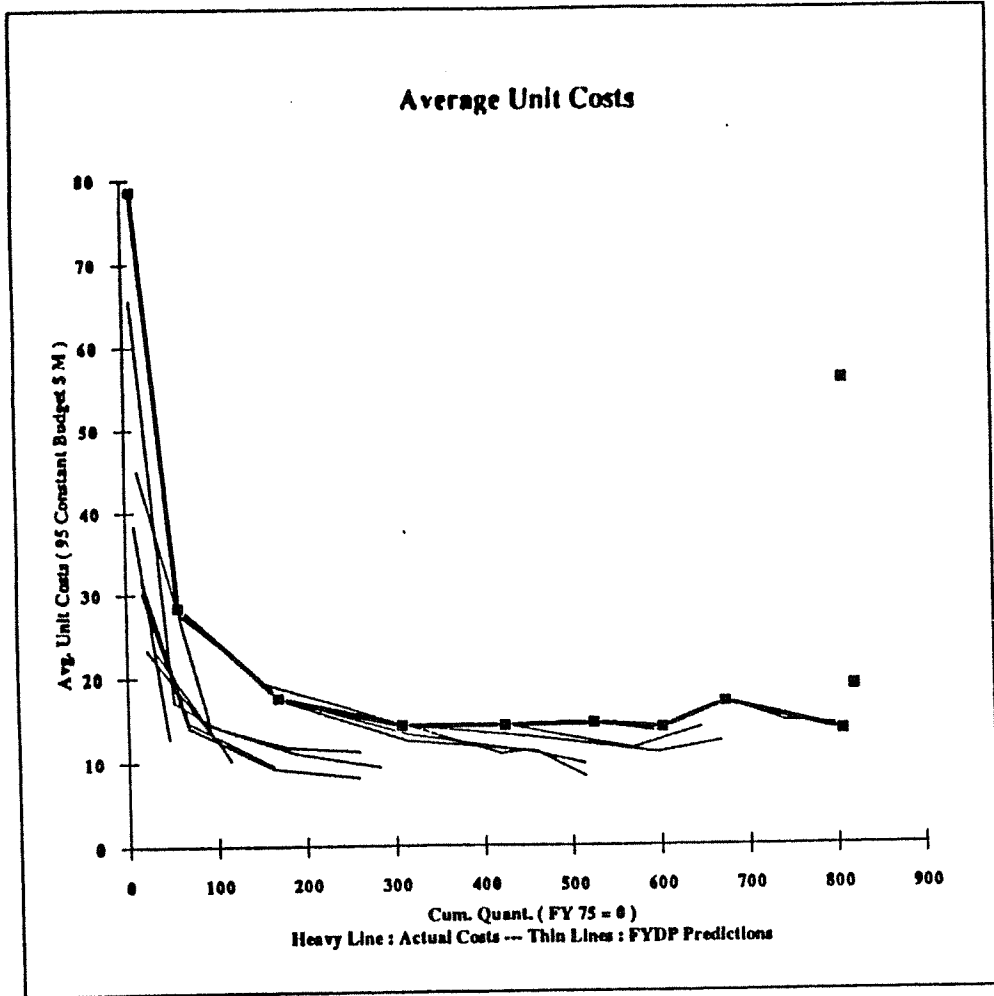
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APPENDIX

Plans/Reality Mismatch Diagrams for Weapons Systems

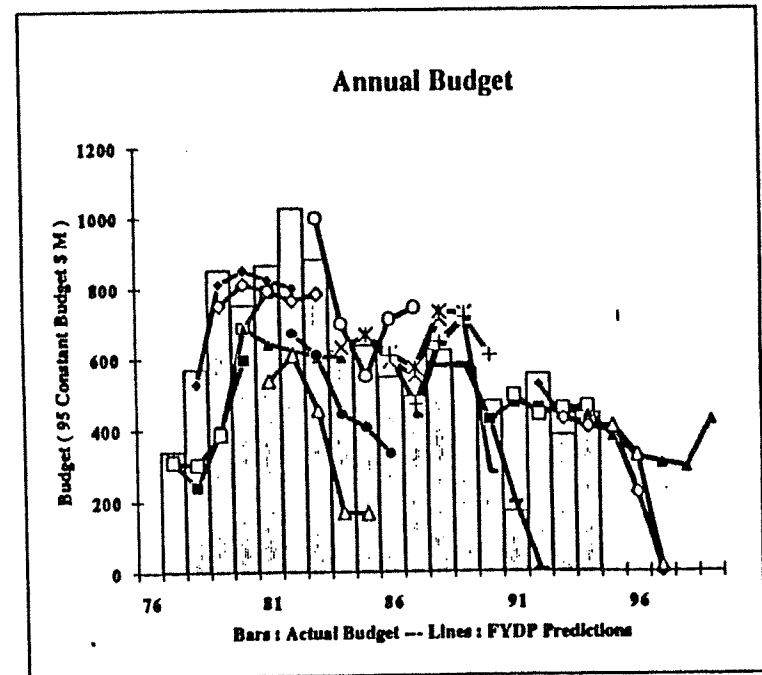
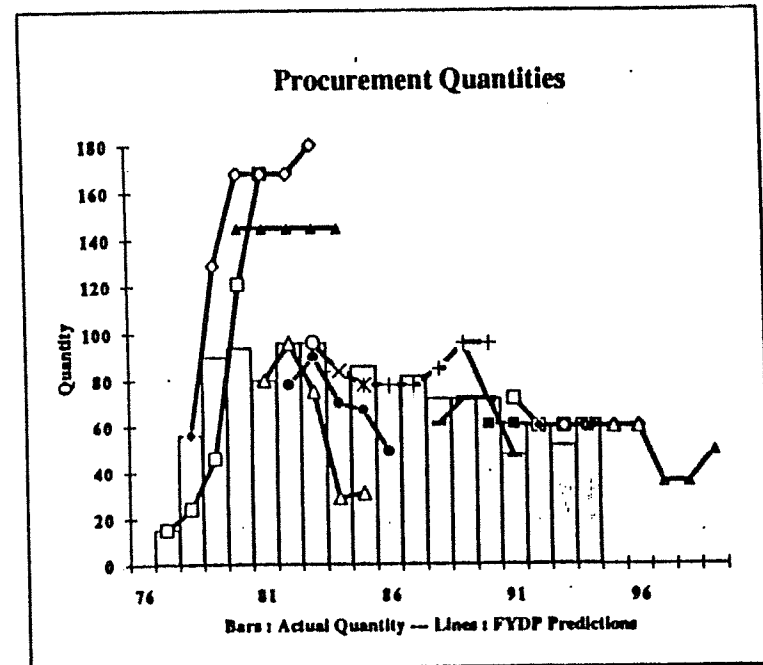
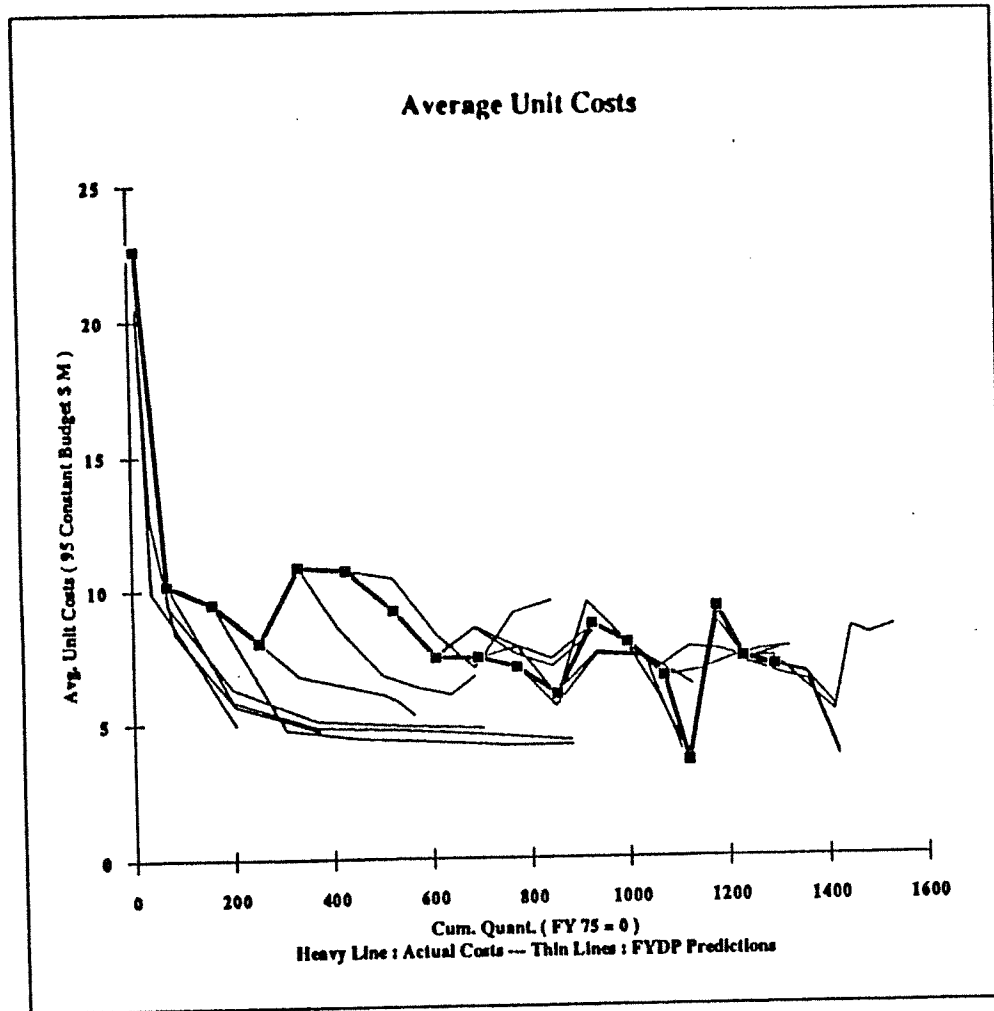
AH-64 APACHE

(FYDP Predictions versus Reality)



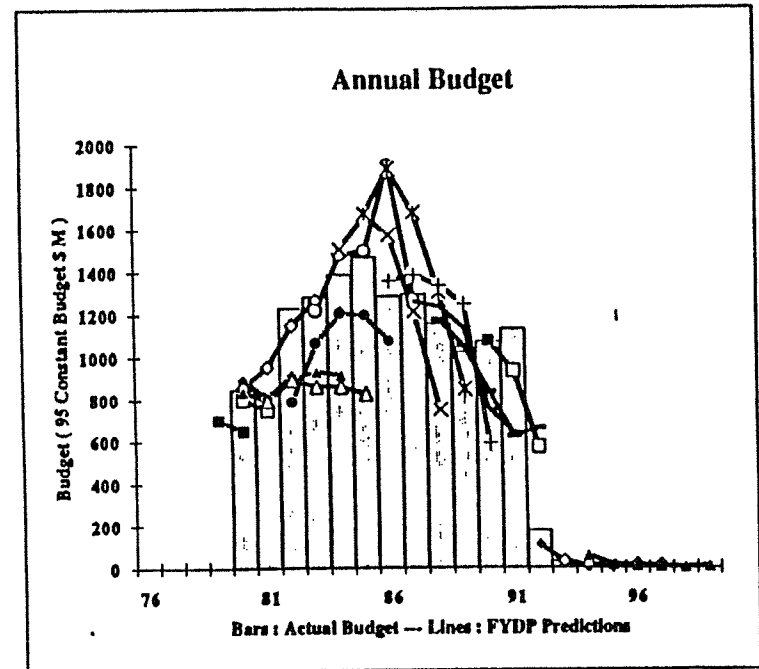
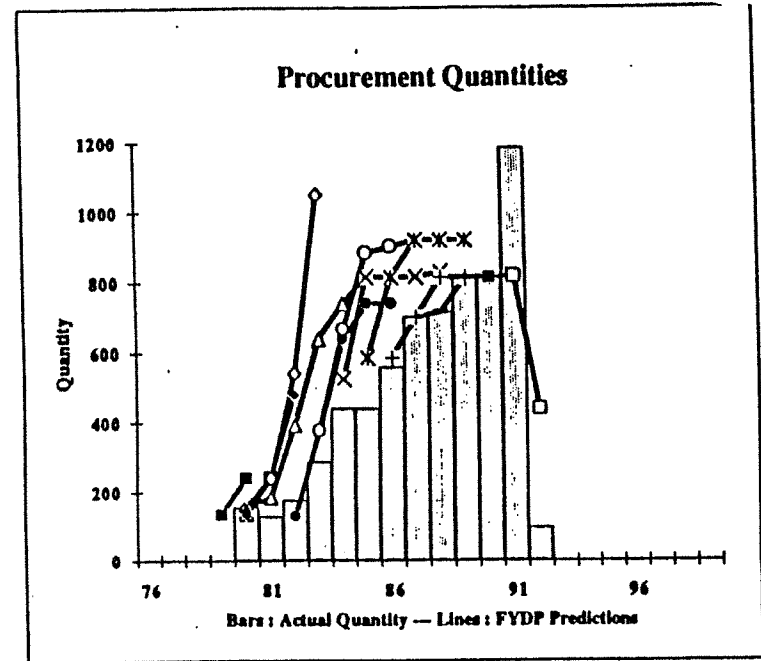
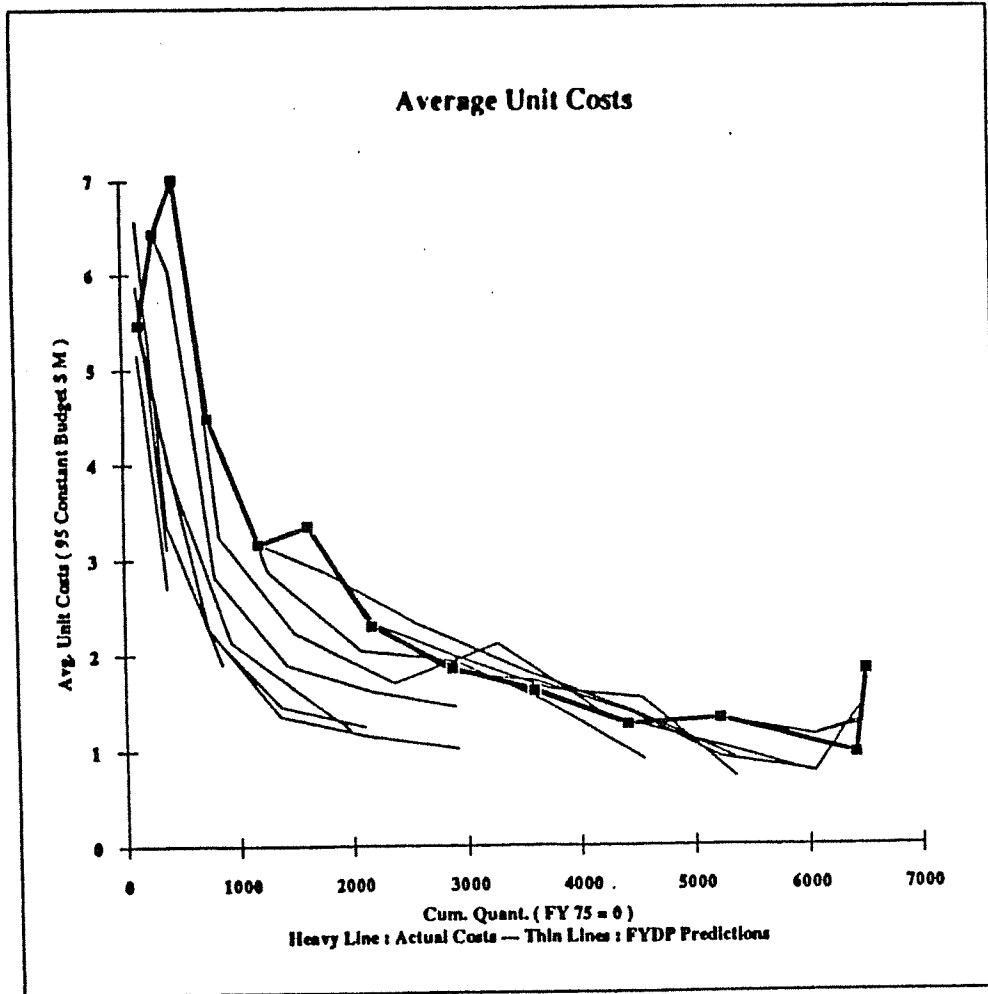
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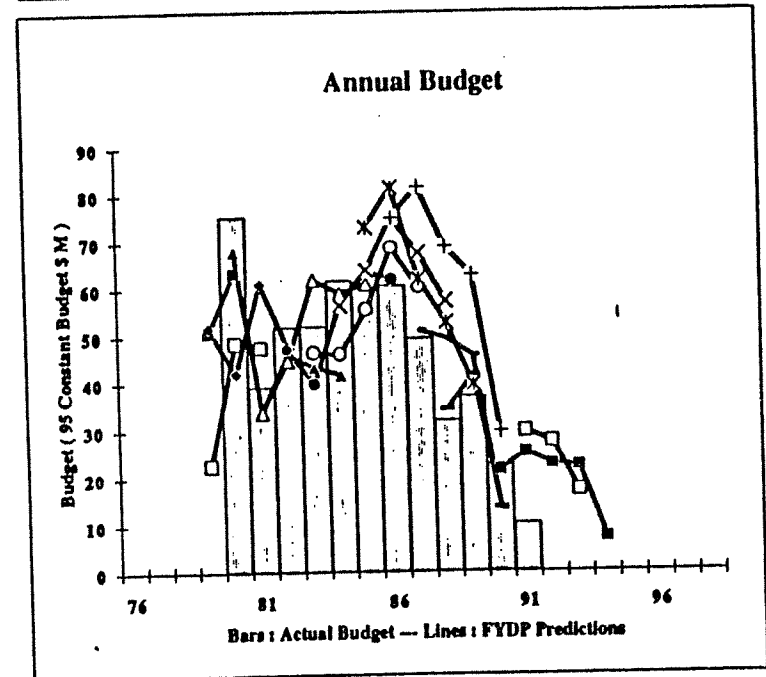
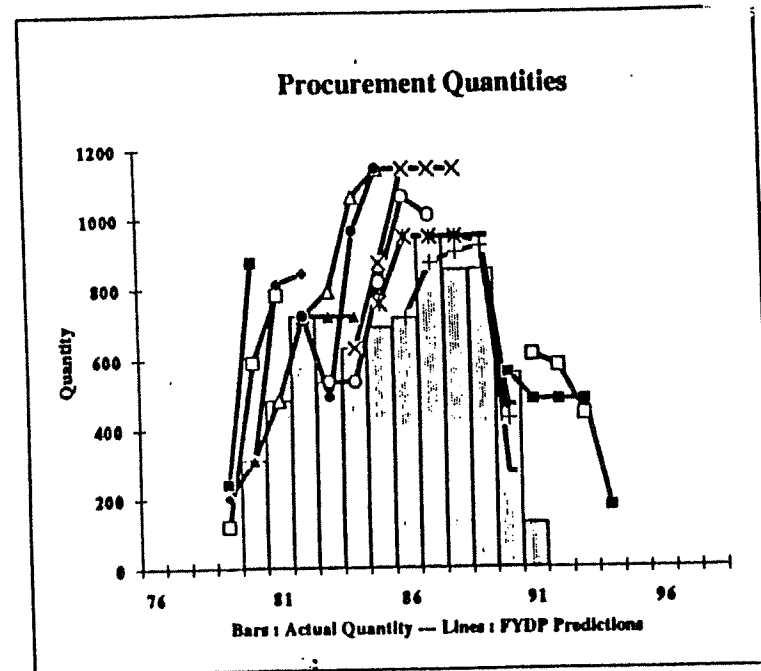
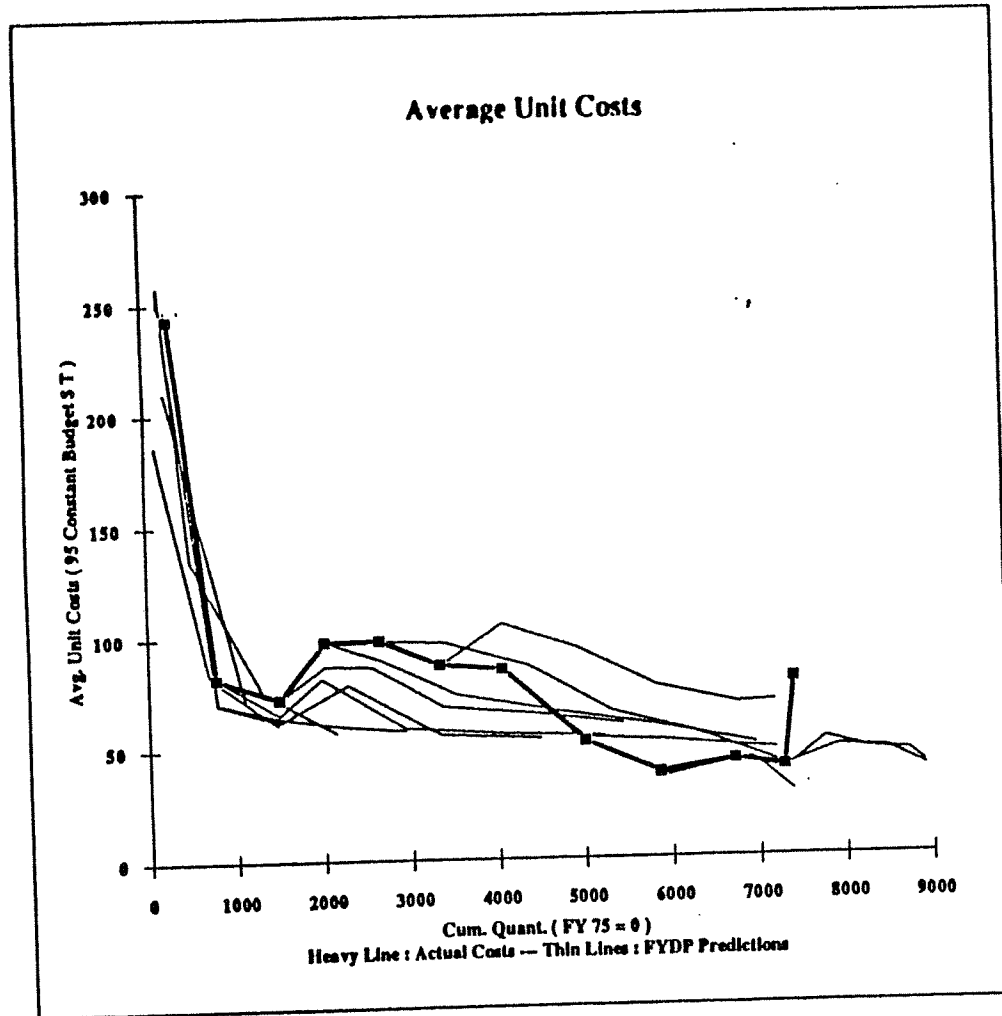
PATRIOT

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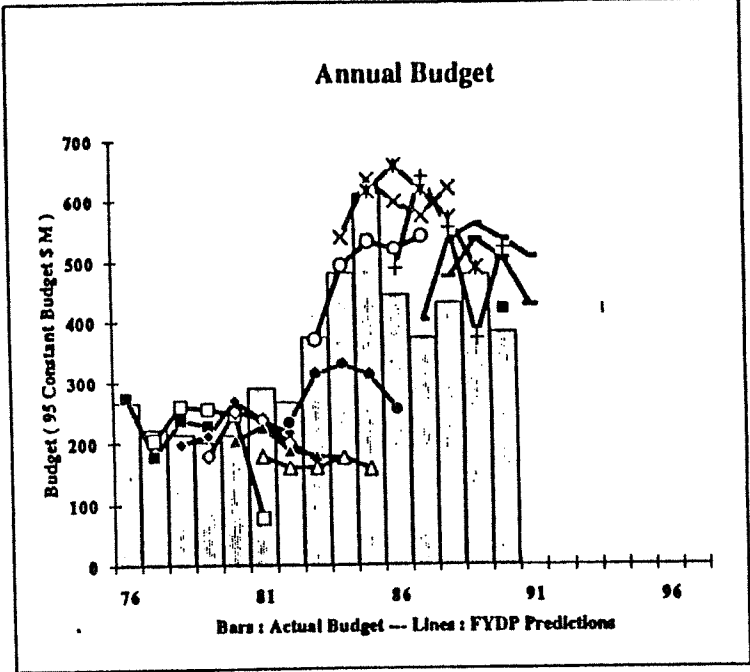
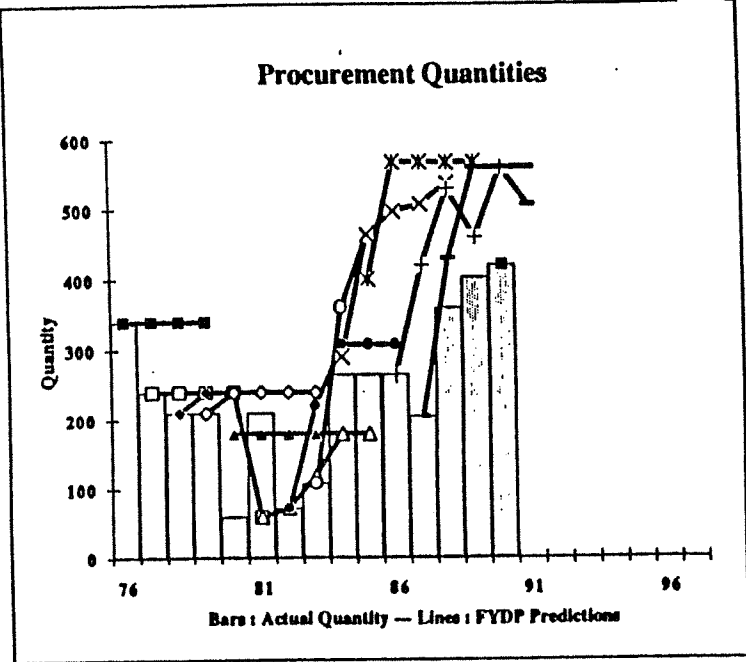
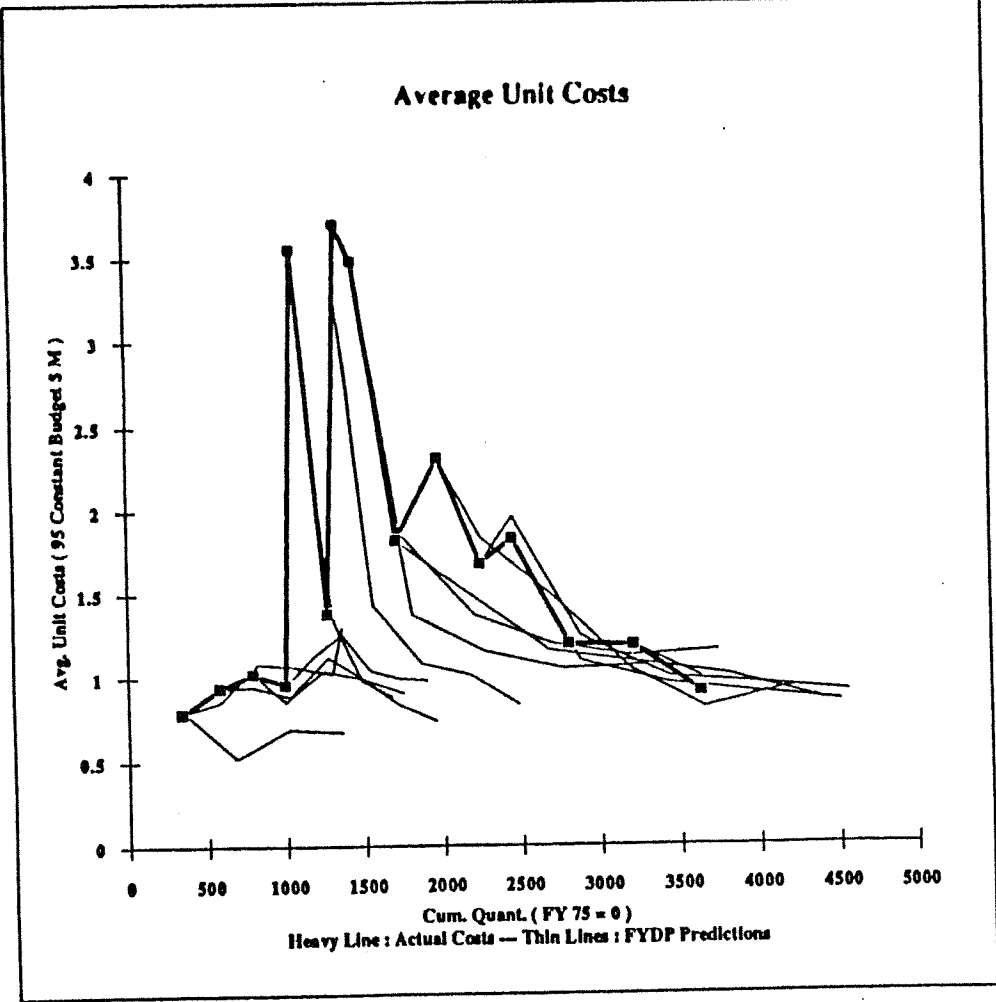
BUSHMASTER 25MM GUN

(FYDP Predictions versus Reality)



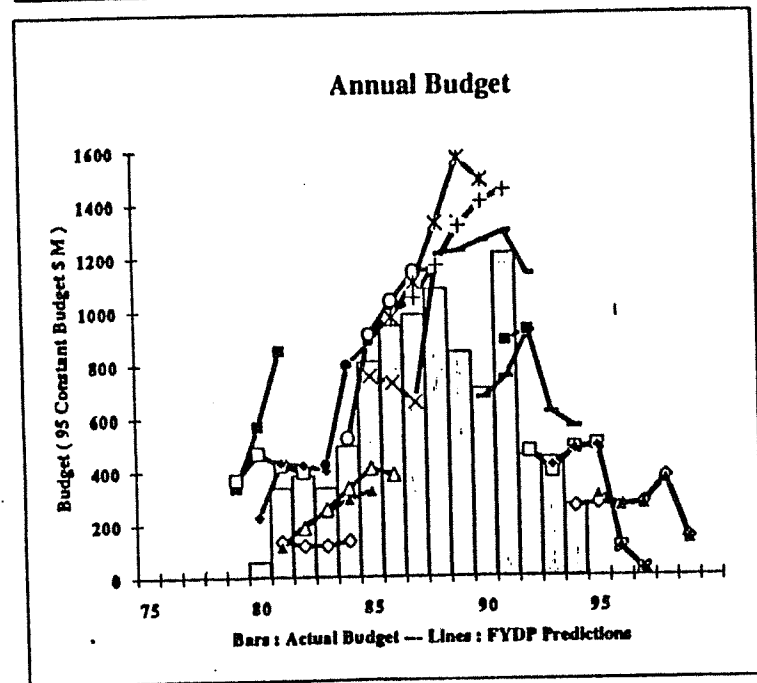
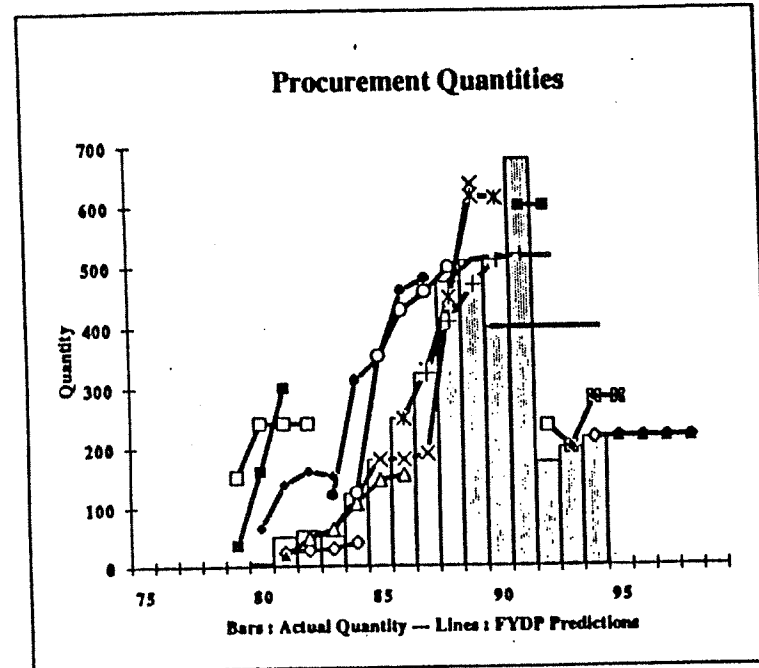
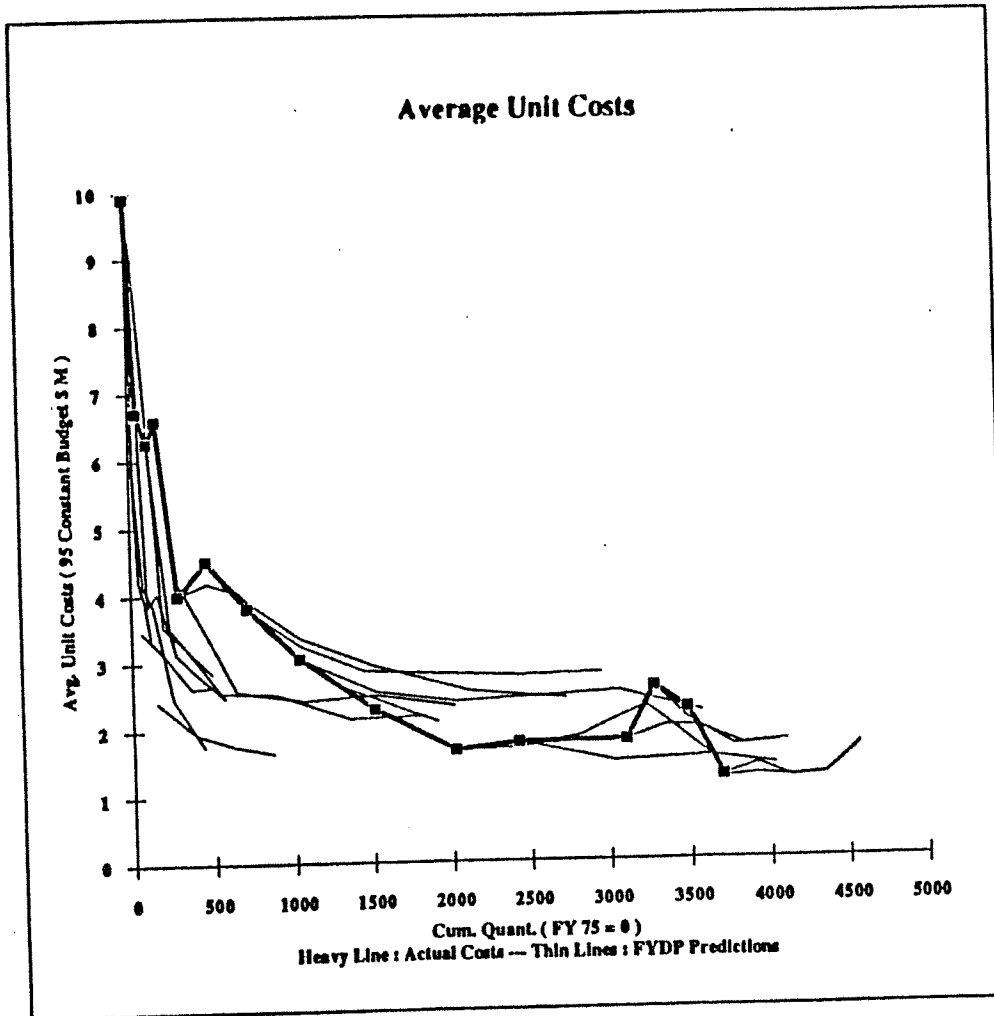
AIM-54 PHOENIX

(FYDP Predictions versus Reality)



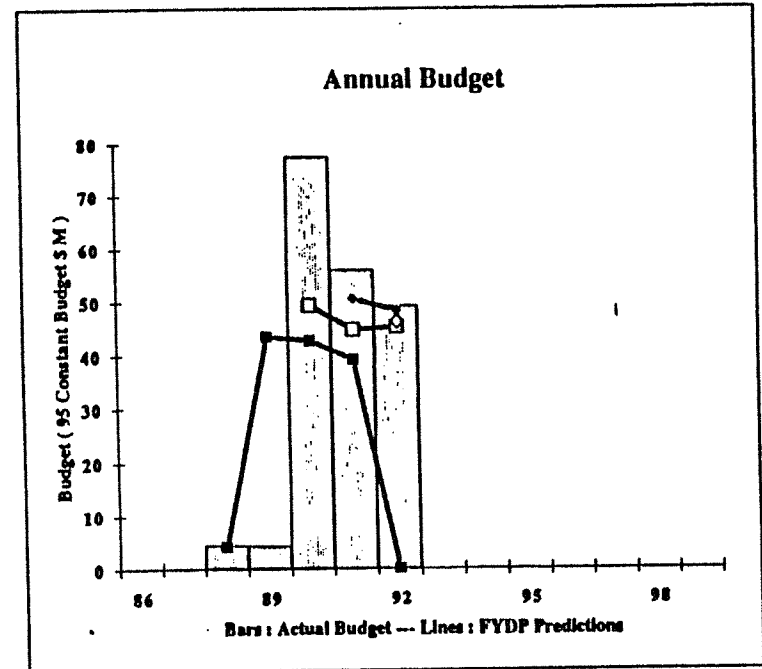
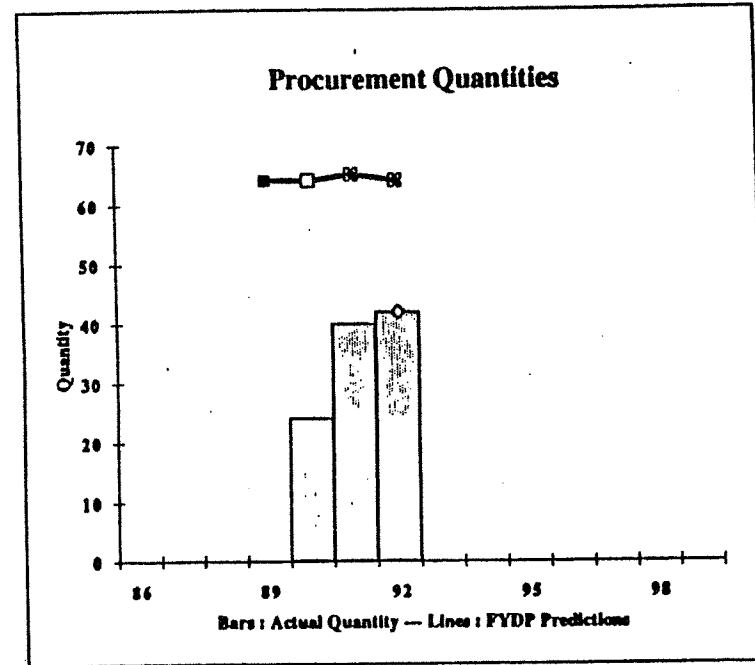
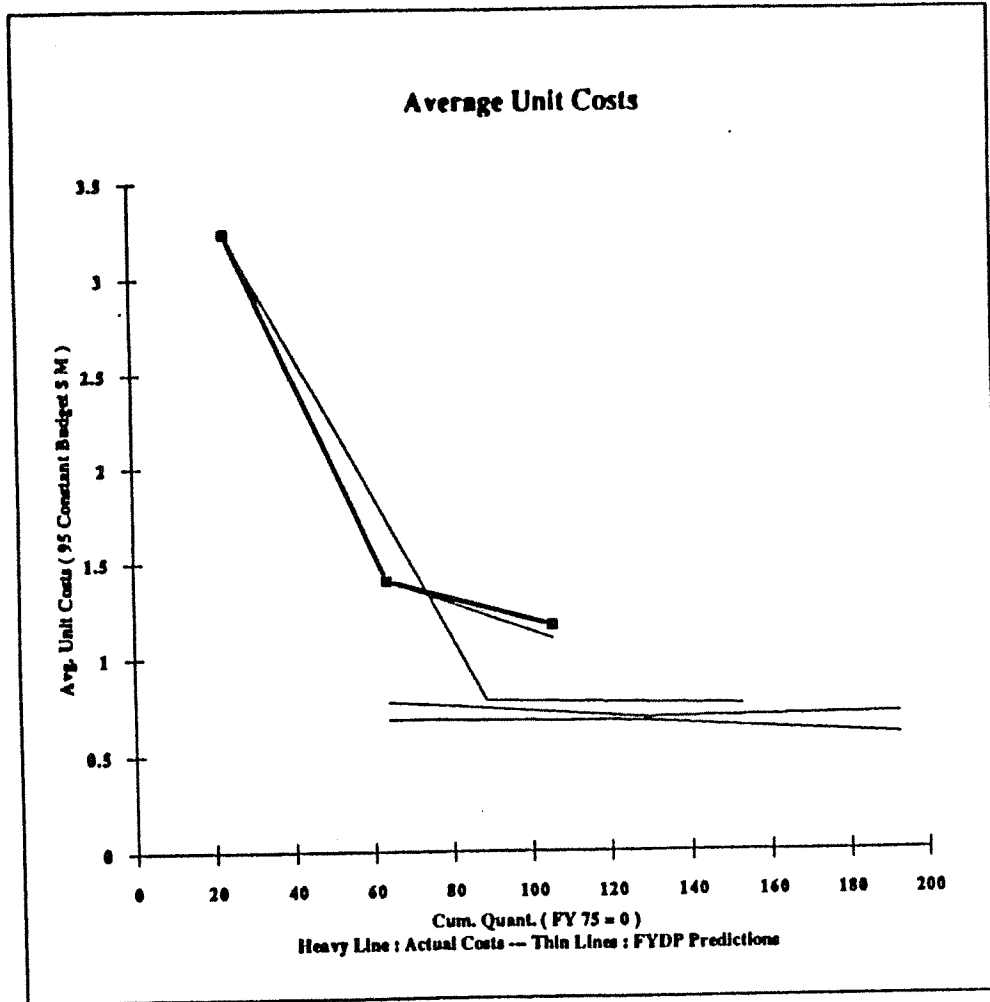
TOMAHAWK (N)

(FYDP Predictions versus Reality)



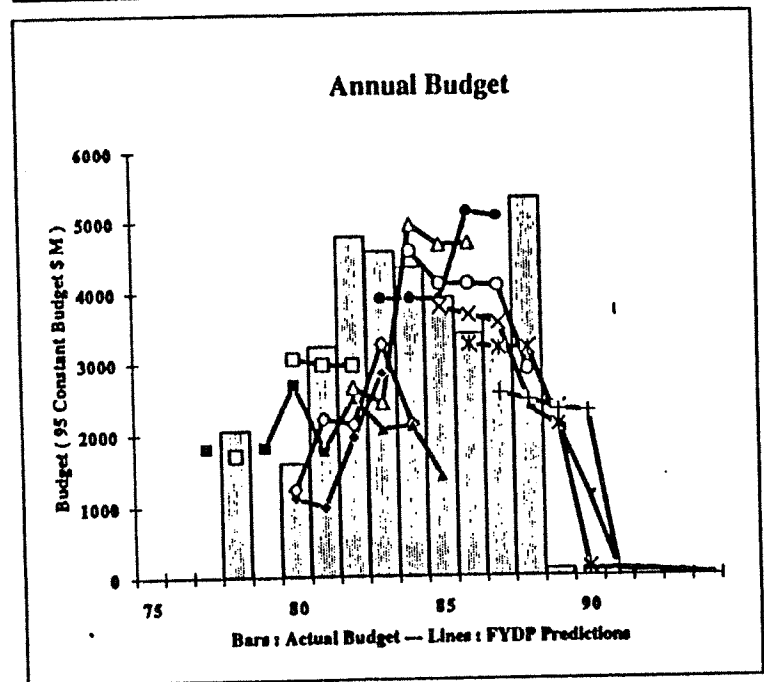
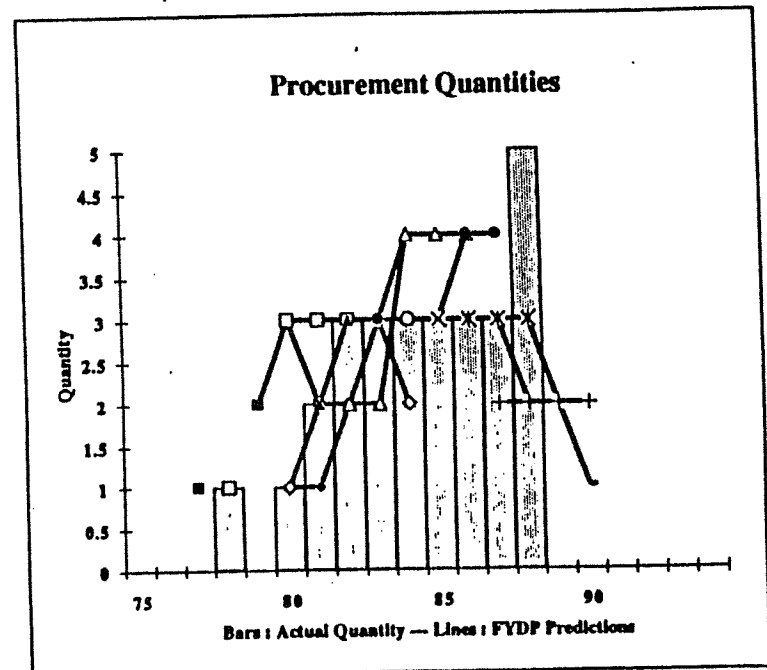
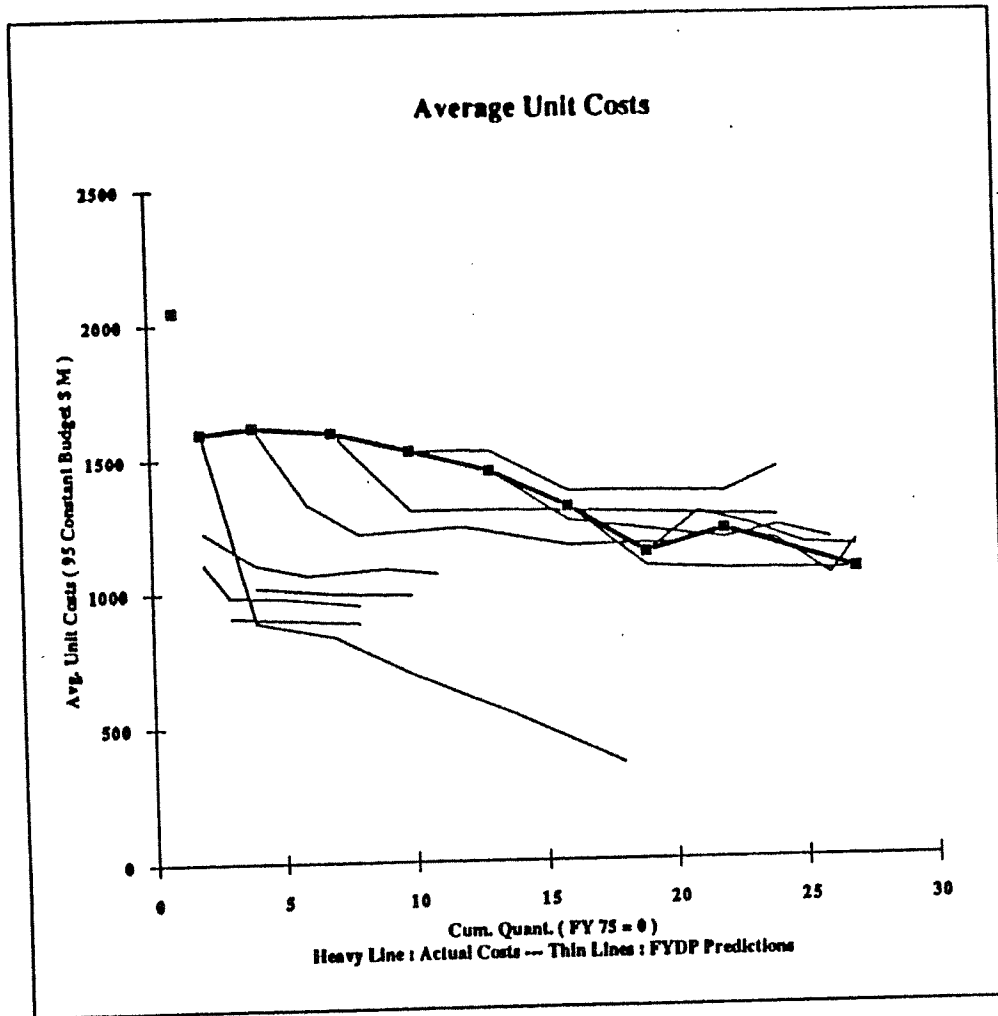
PENGUIN (N)

(FYDP Predictions versus Reality)



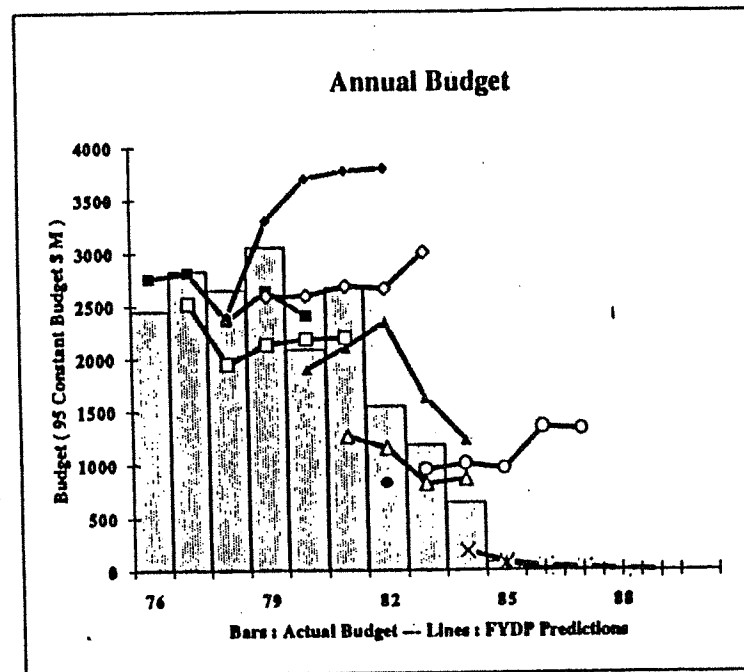
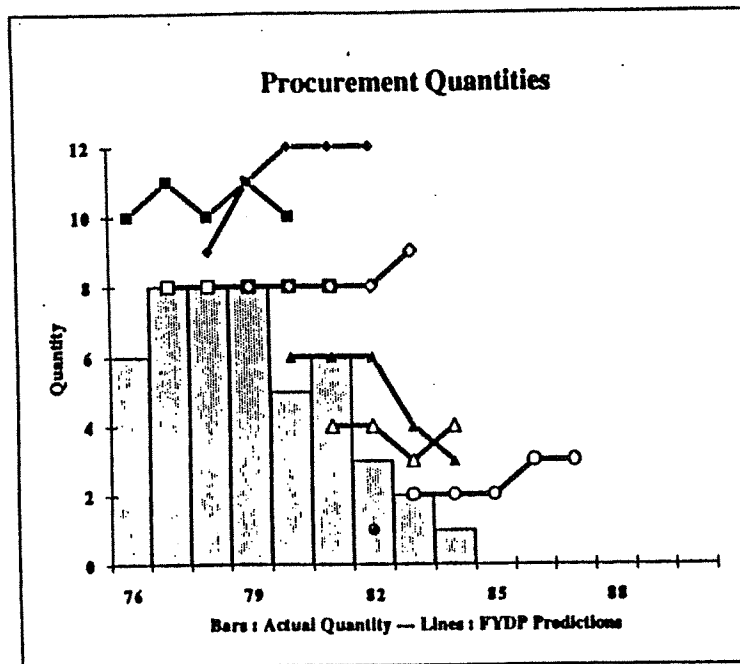
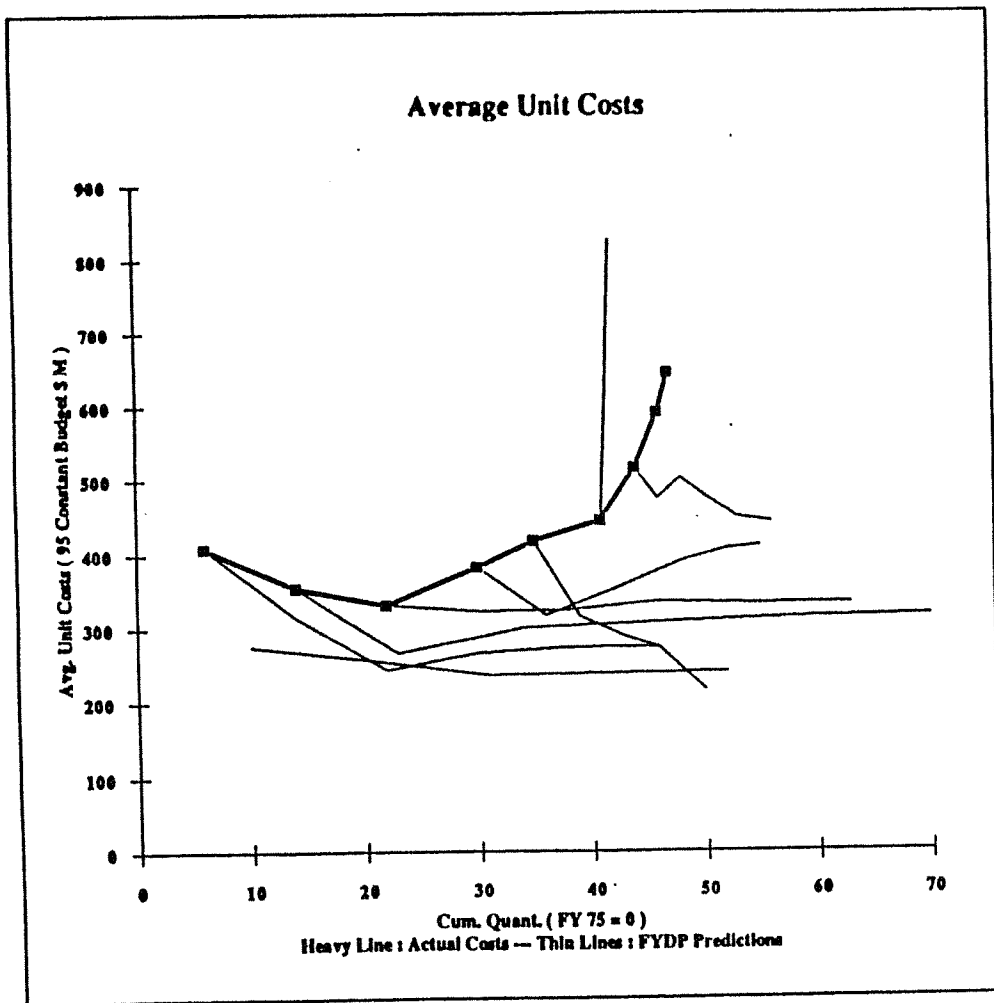
CG-47 TICONDEROGA (AEGIS)

(FYDP Predictions versus Reality)



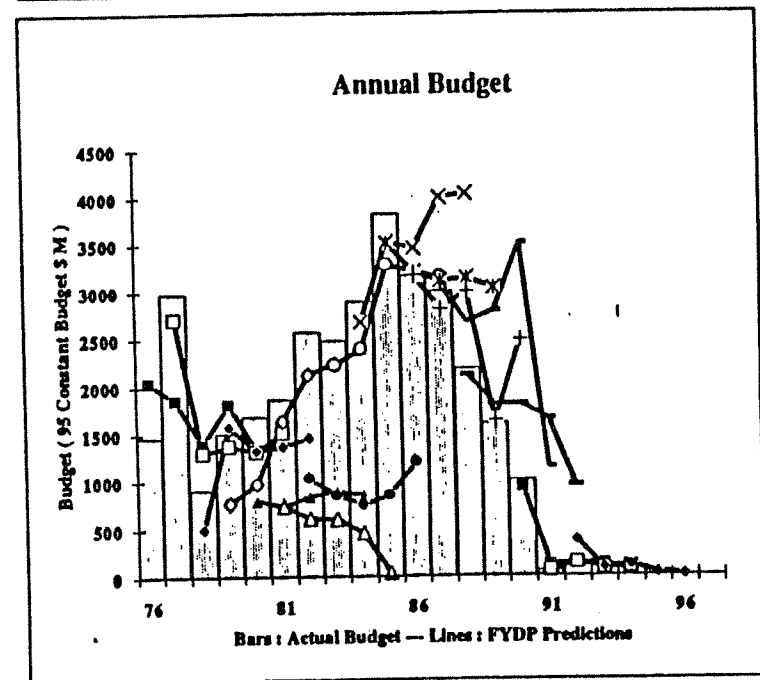
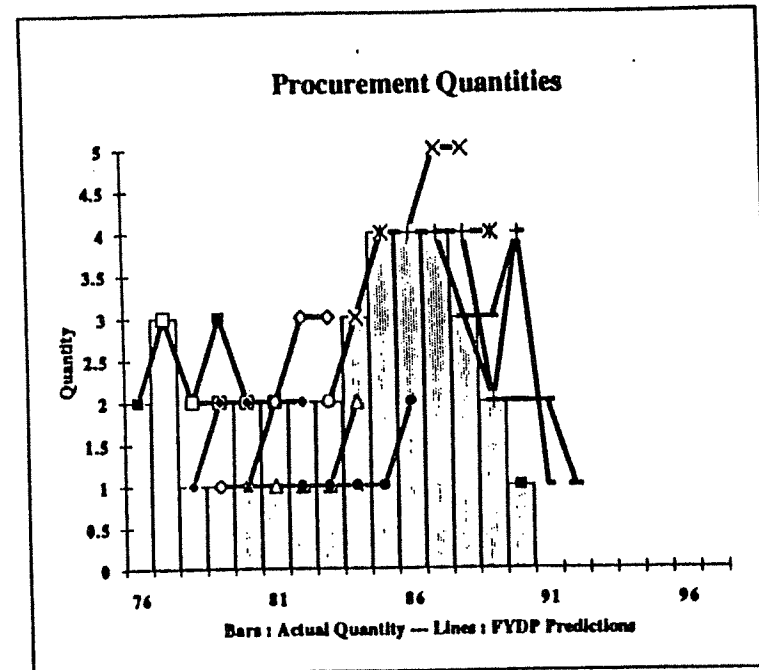
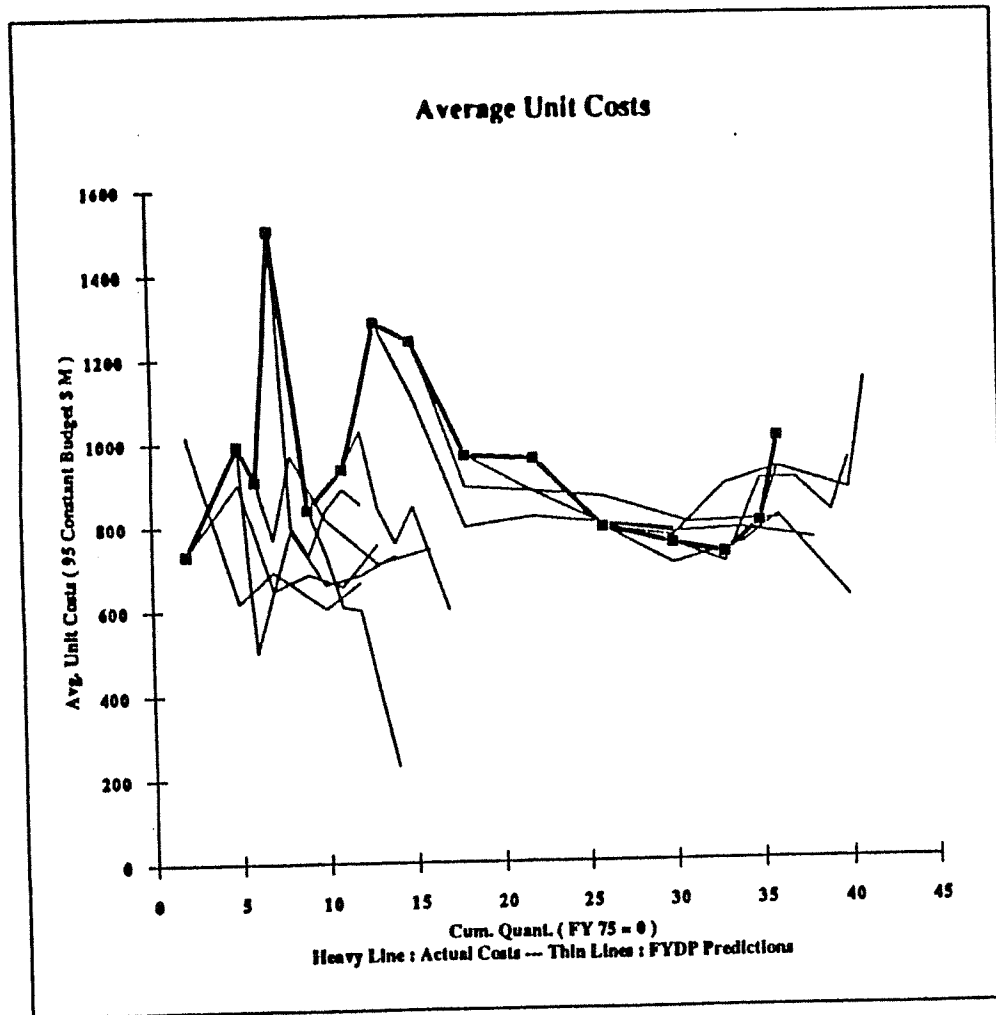
FFG-7 PERRY

(FYDP Predictions versus Reality)



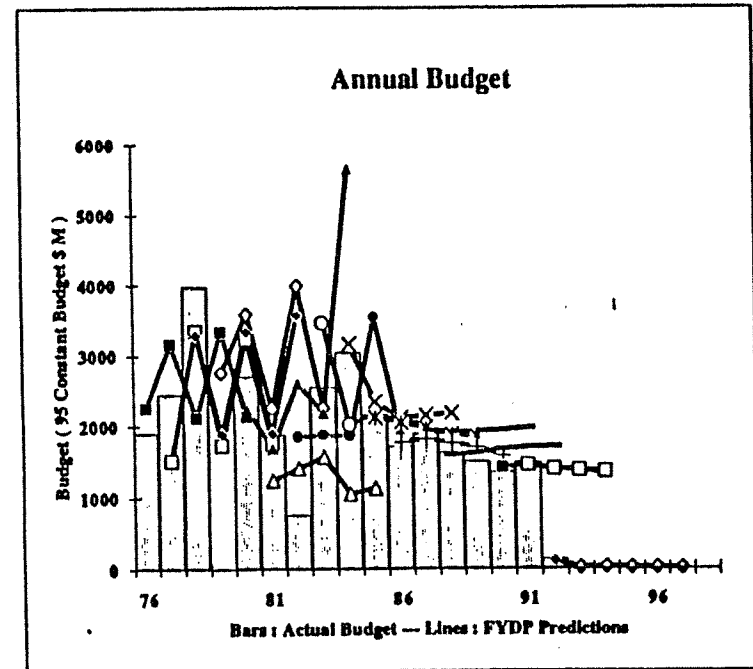
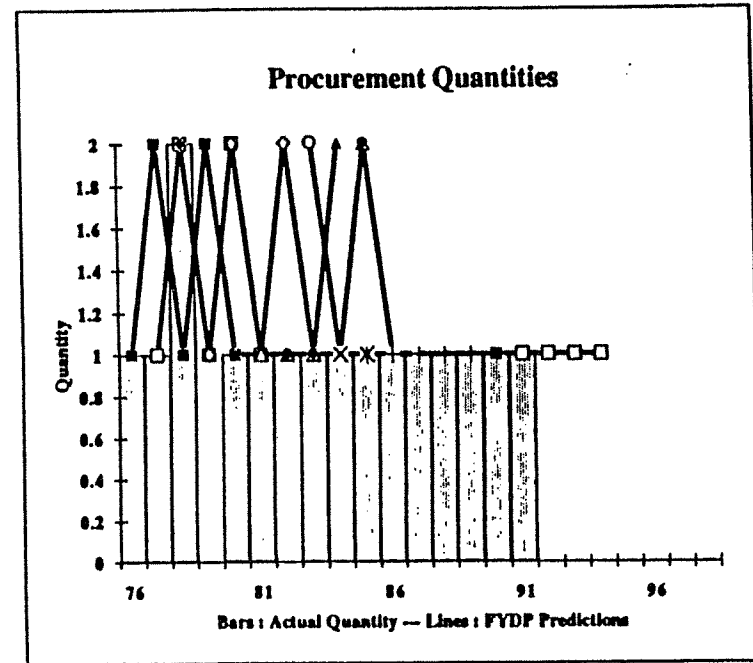
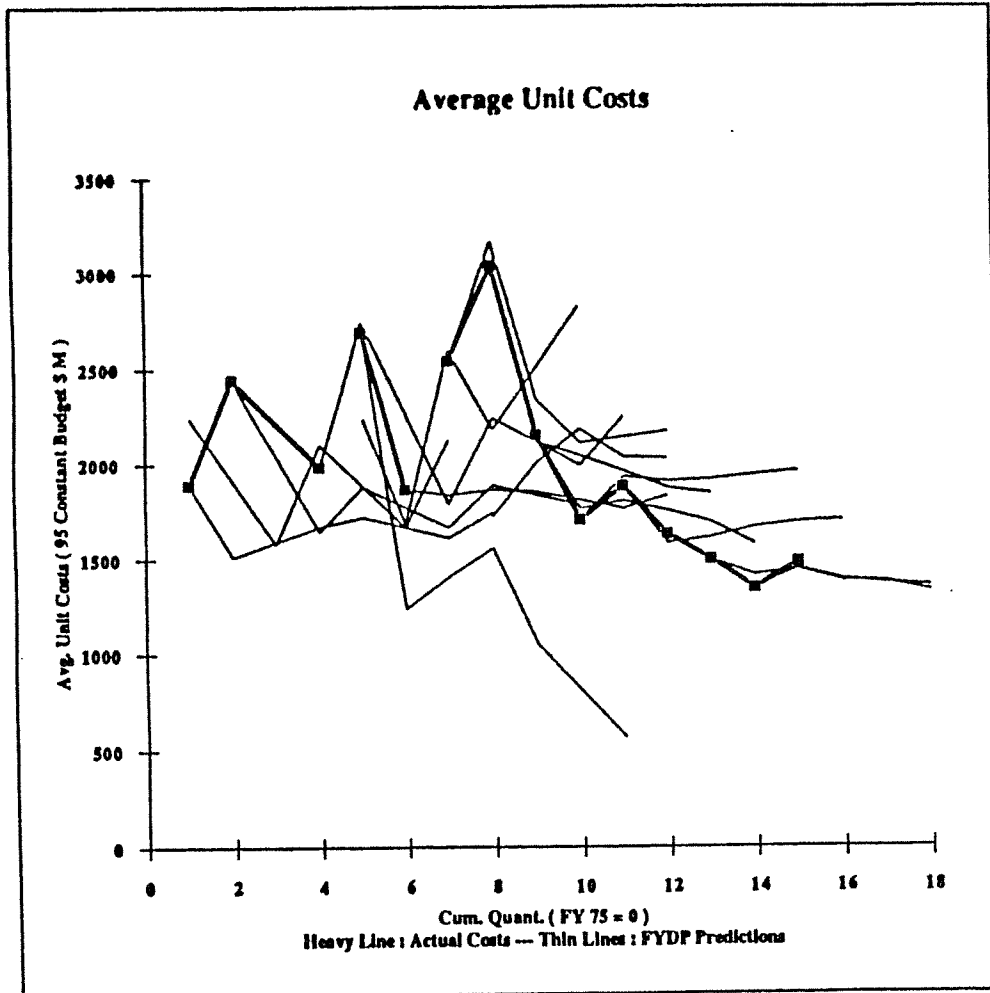
SSN-688 LOS ANGELES

(FYDP Predictions versus Reality)



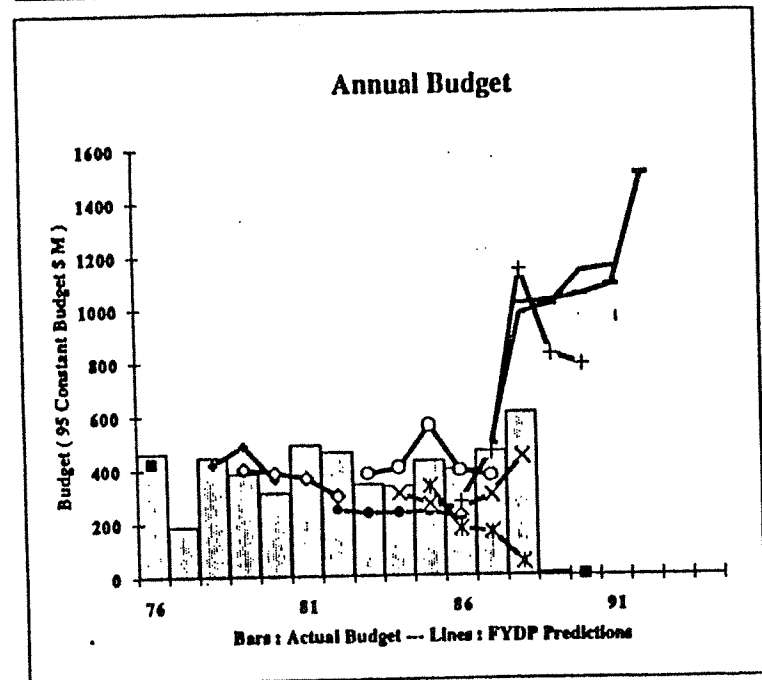
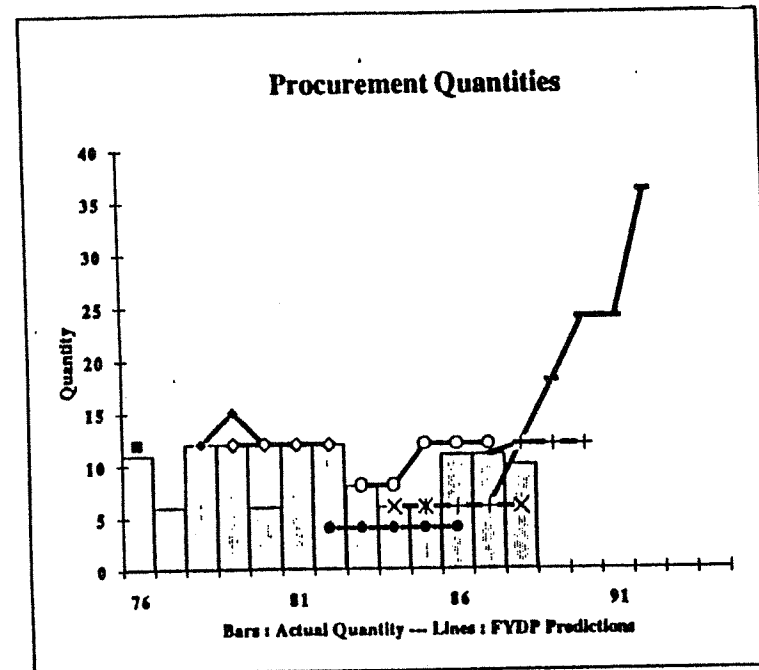
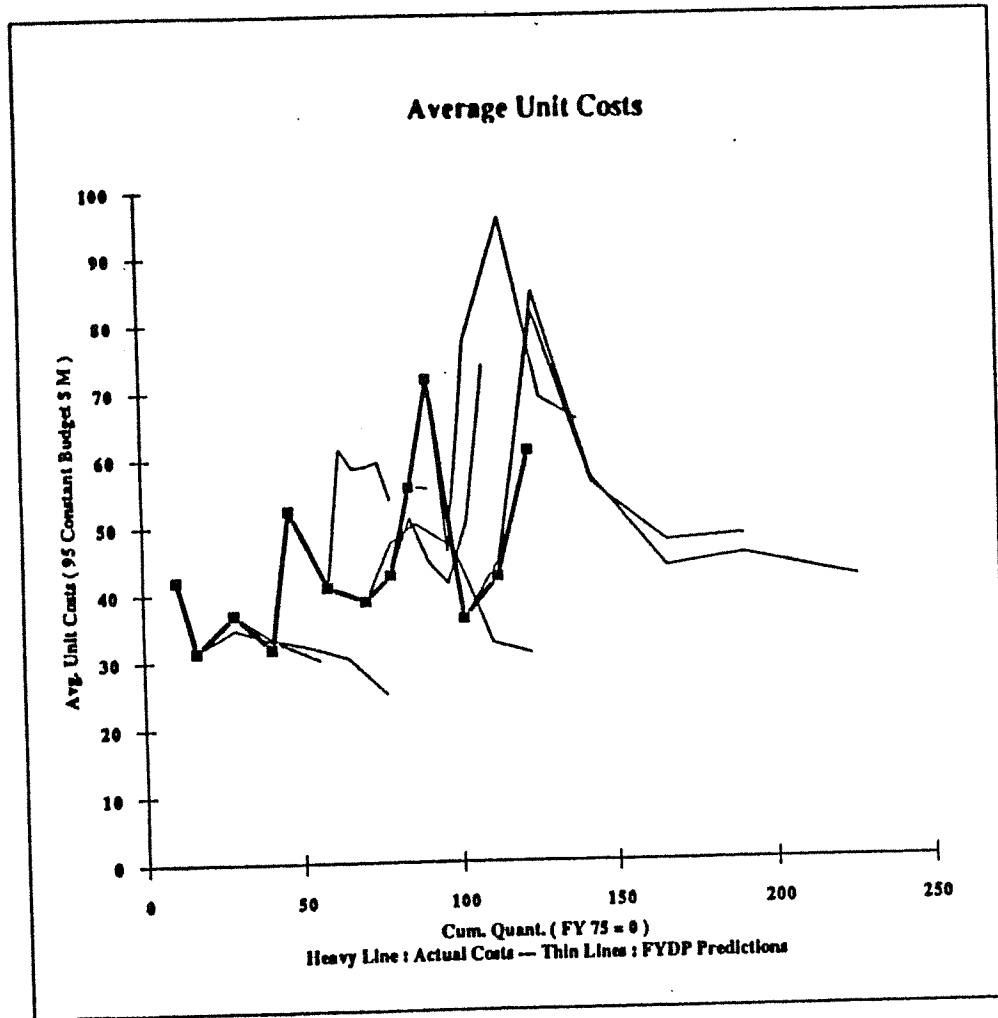
SSBN-726 TRIDENT (OHIO)

(FYDP Predictions versus Reality)



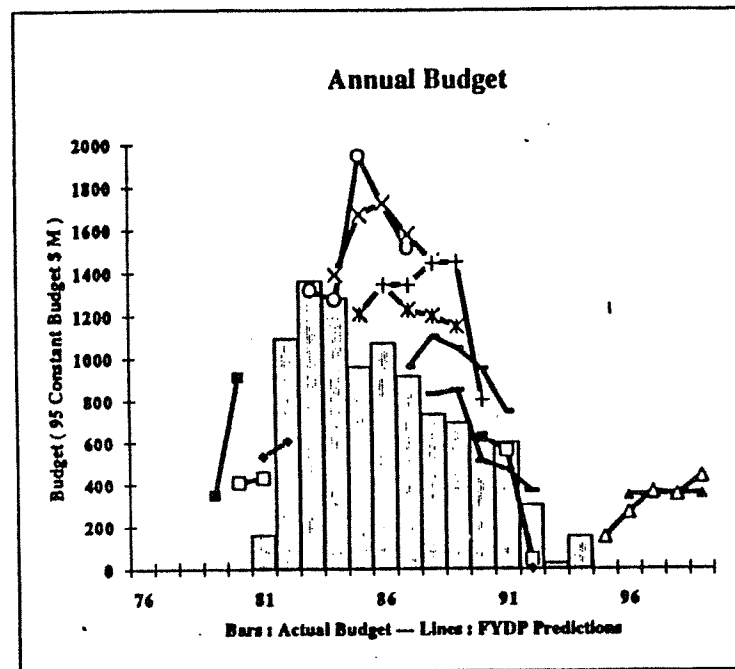
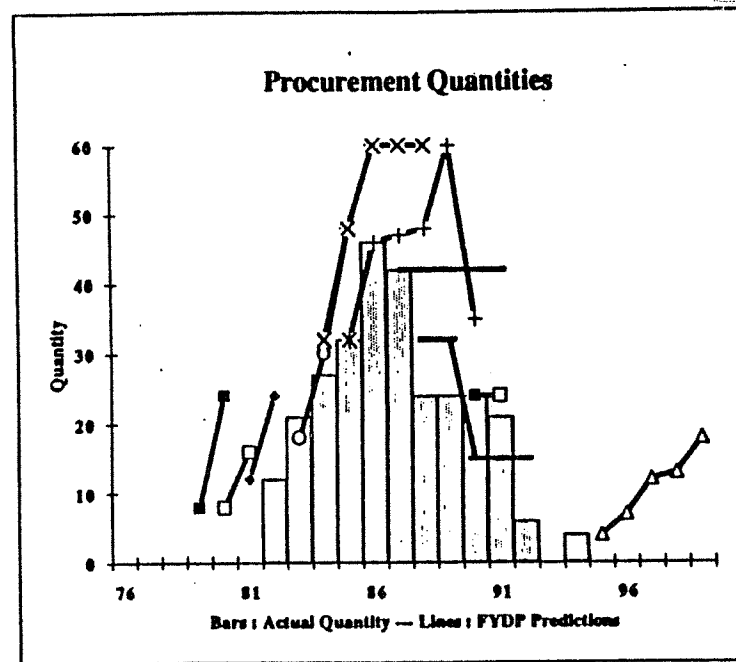
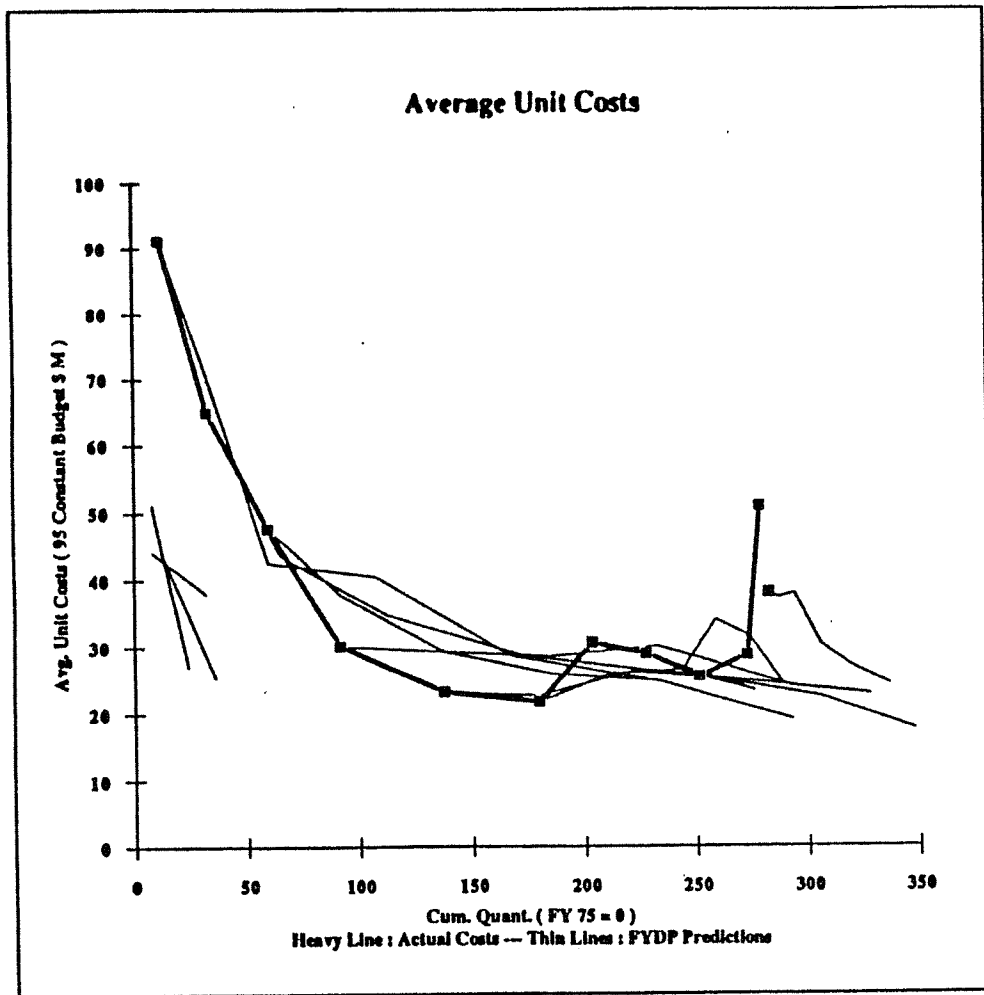
A-6 INTRUDER

(FYDP Predictions versus Reality)



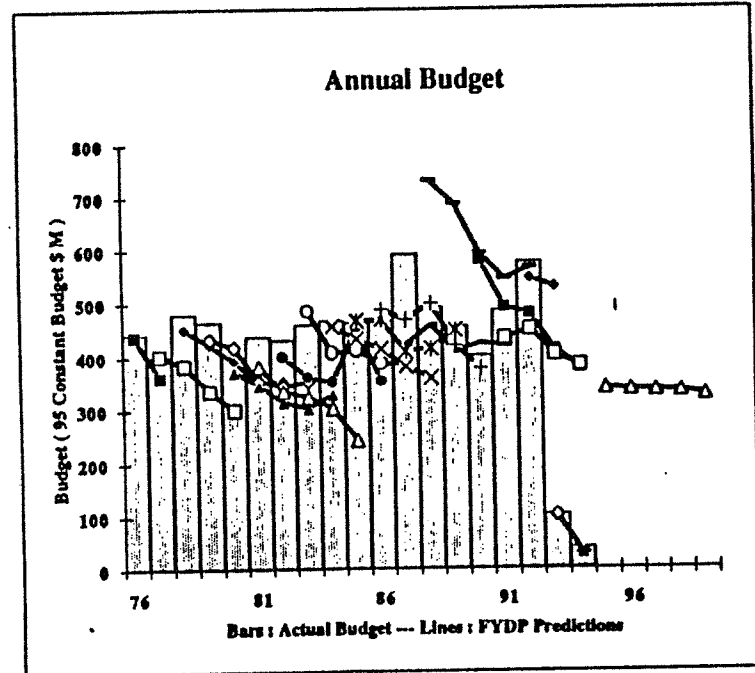
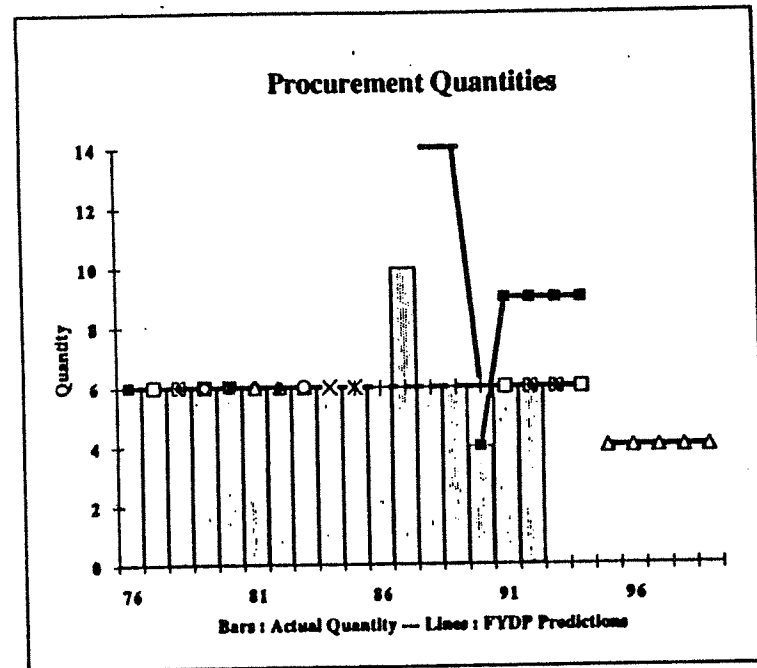
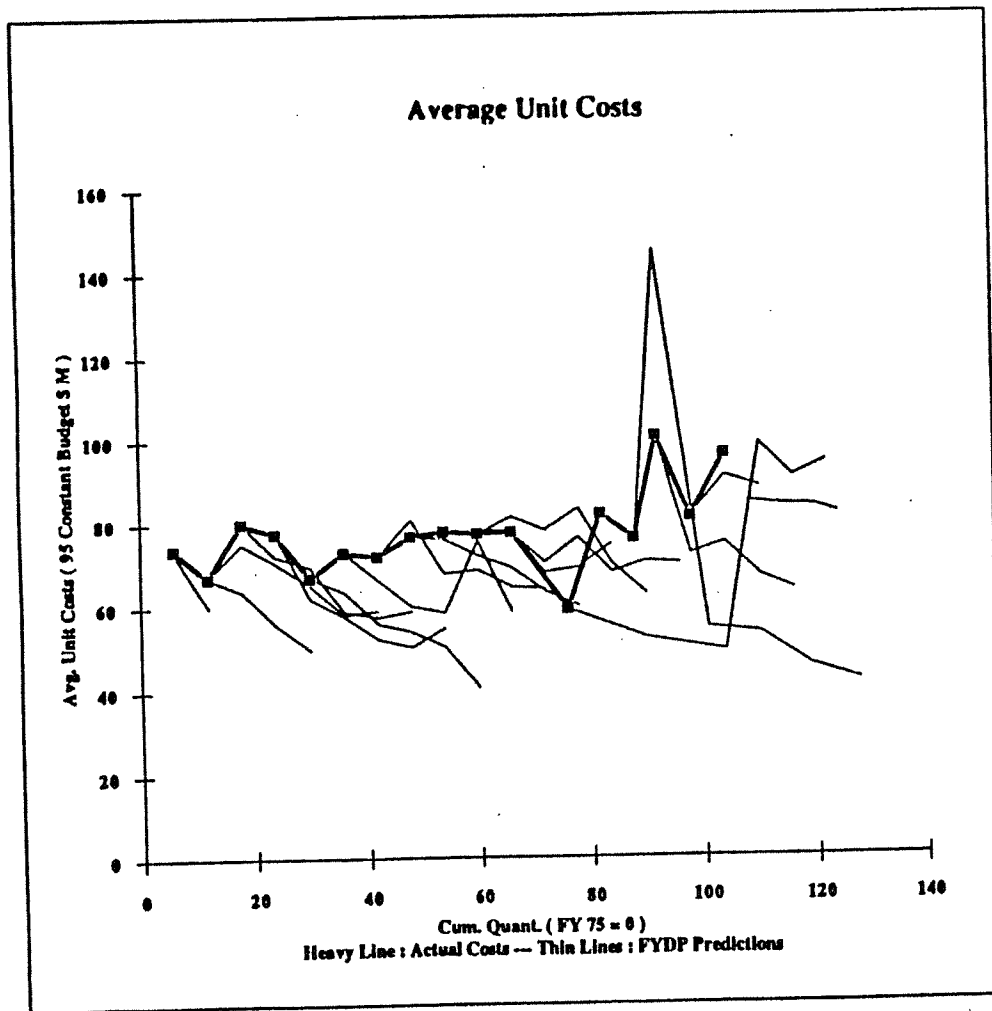
AV-8B HARRIER

(FYDP Predictions versus Reality)



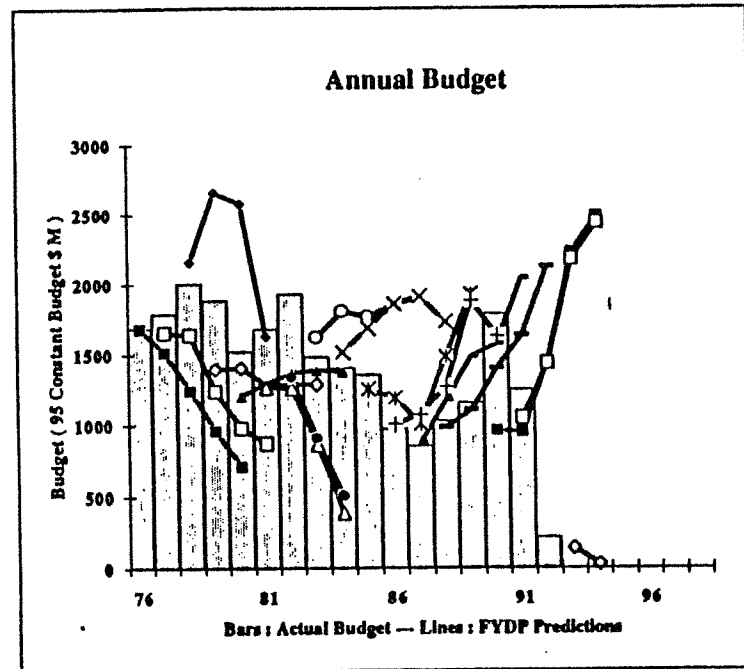
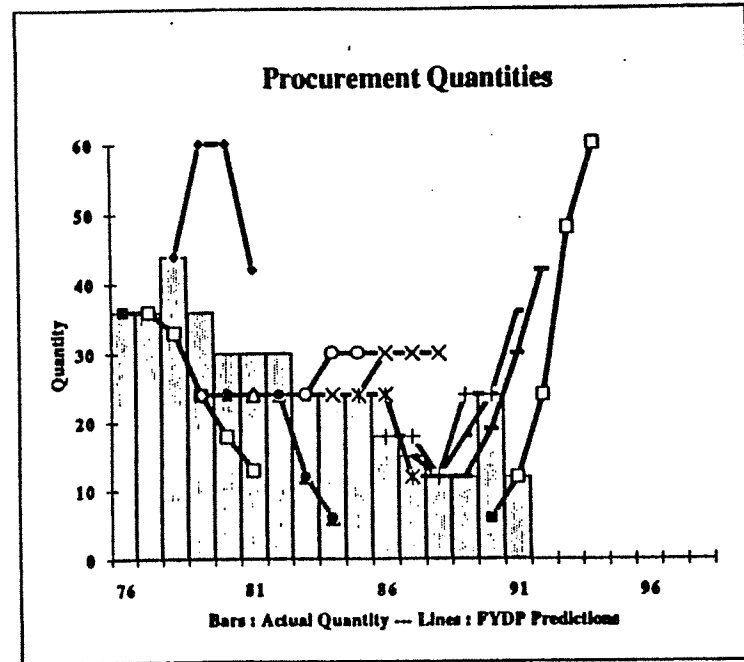
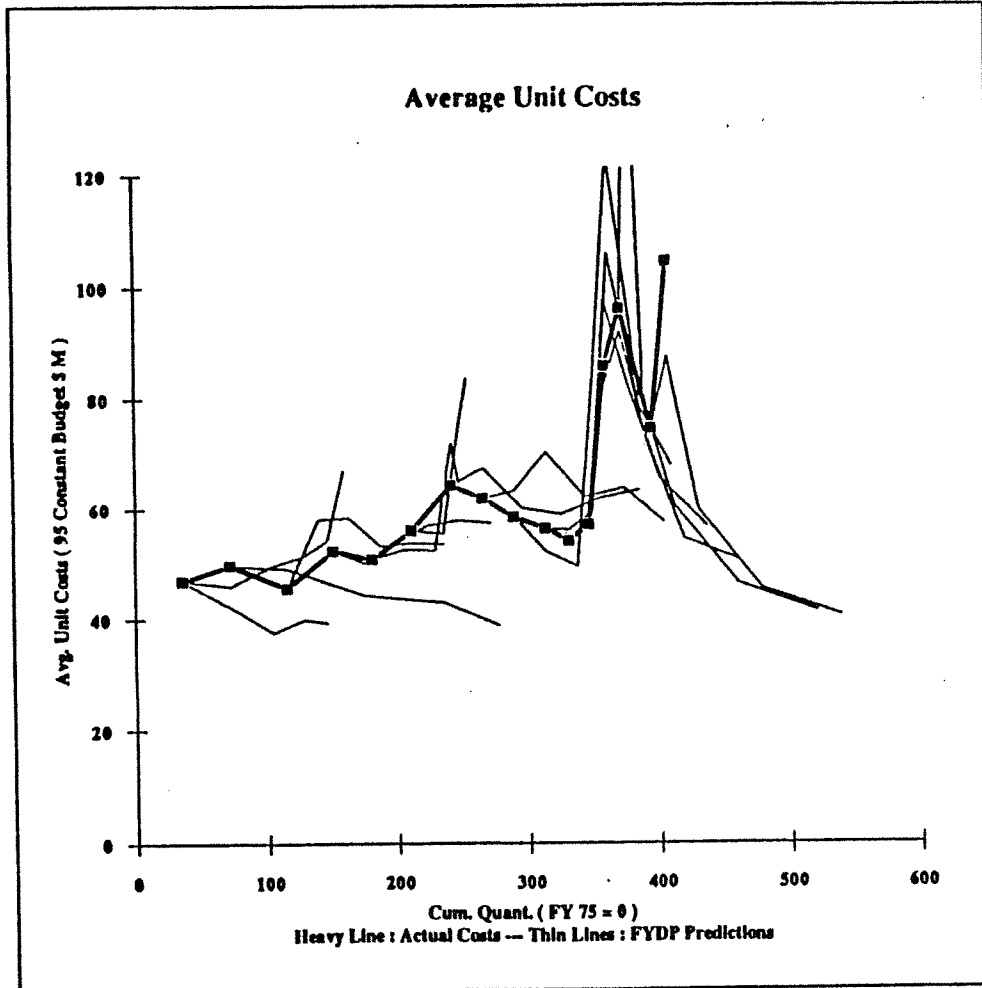
E-2C HAWKEYE

(FYDP Predictions versus Reality)



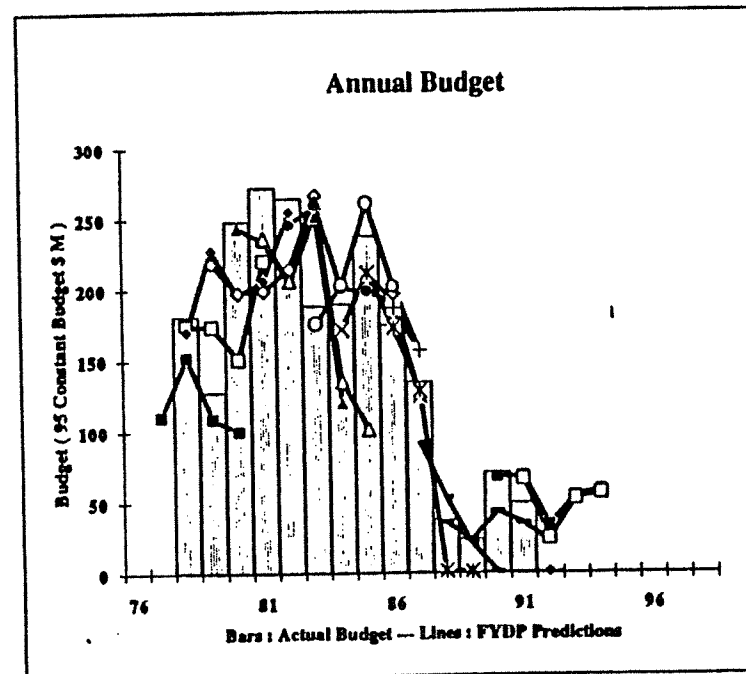
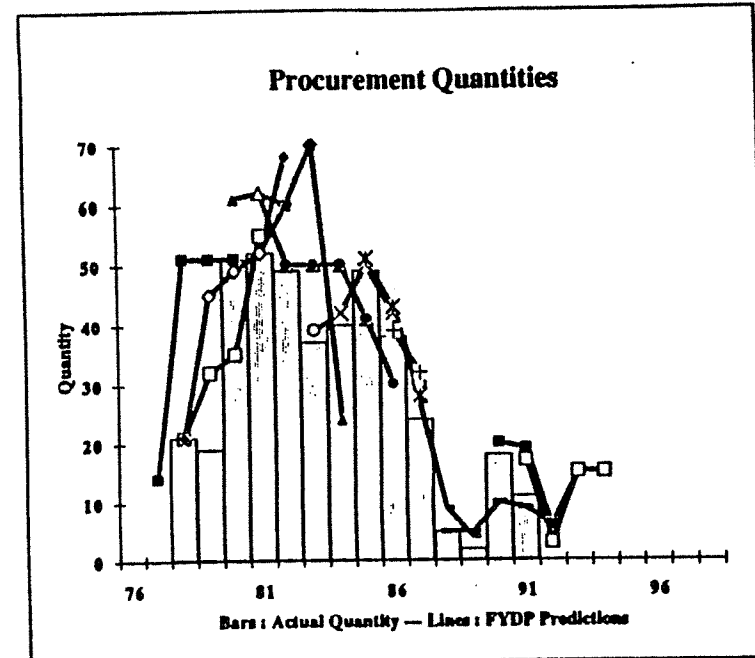
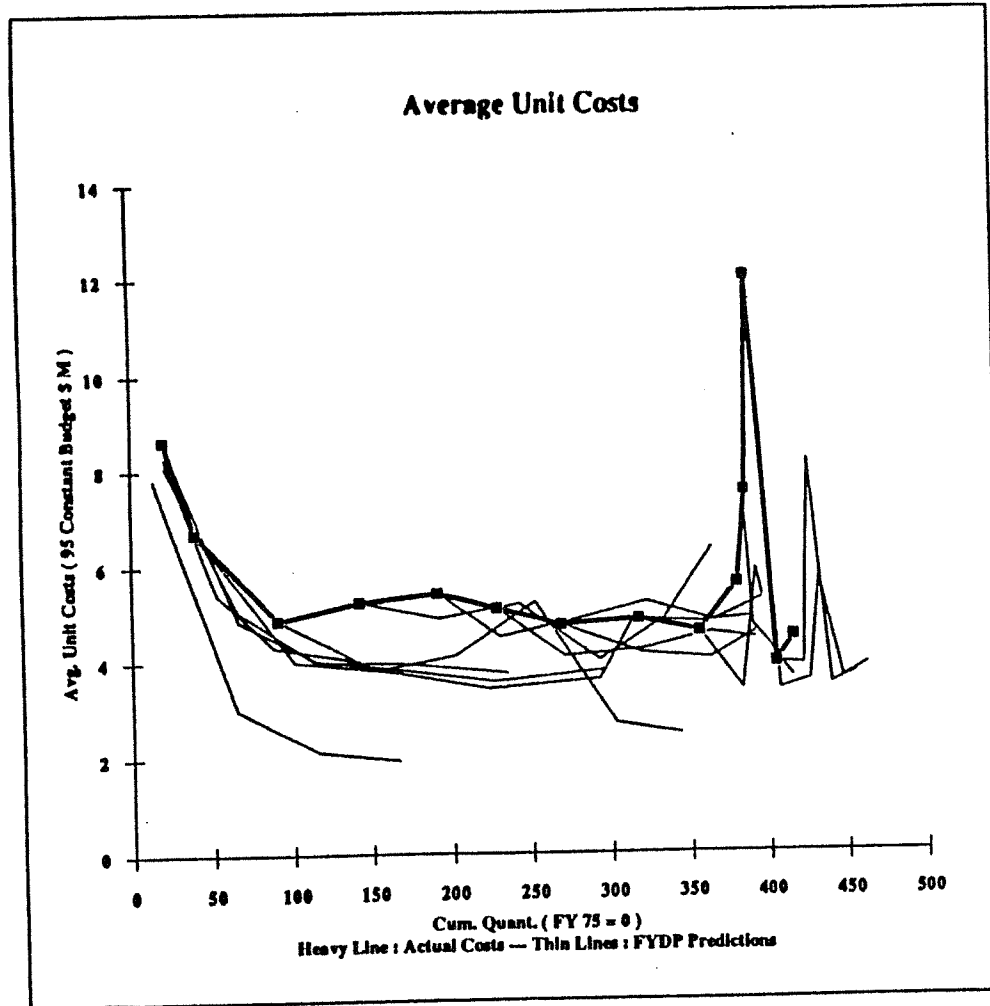
F-14A/D

(FYDP Predictions versus Reality)



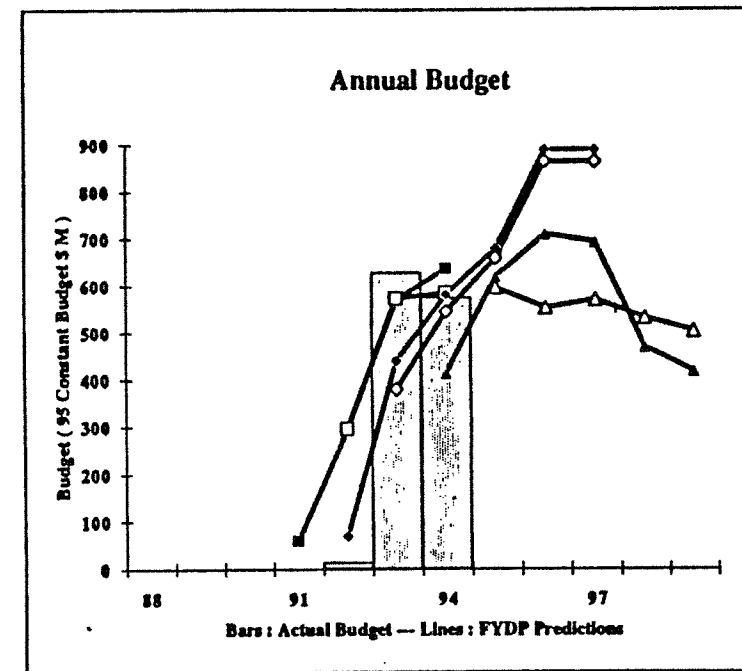
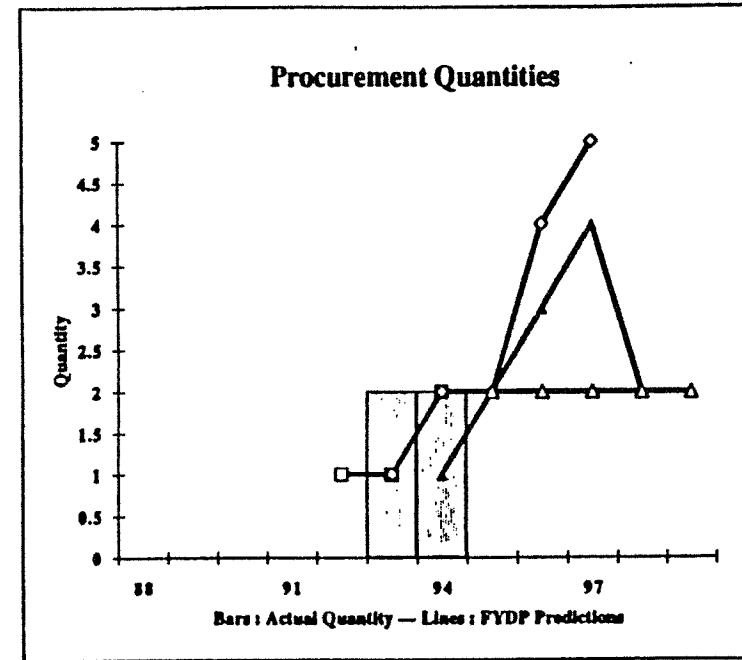
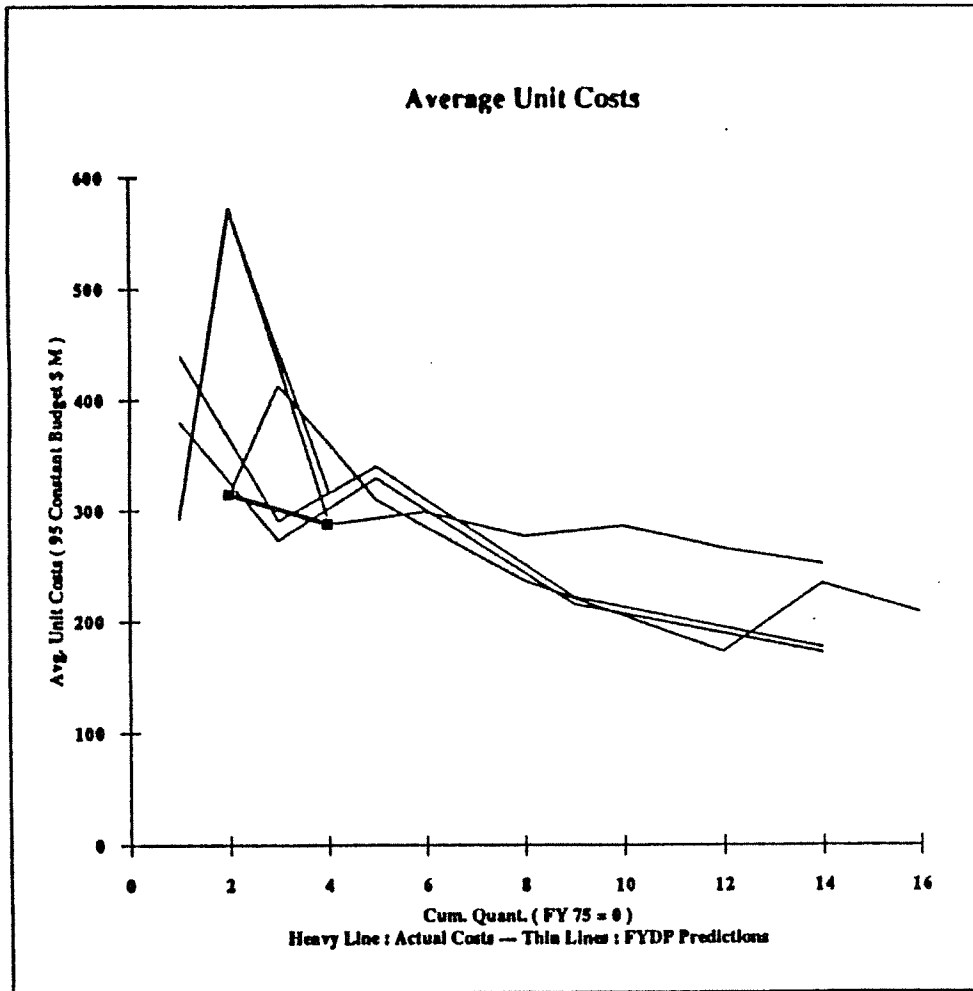
MK-15 CIWS

(FYDP Predictions versus Reality)



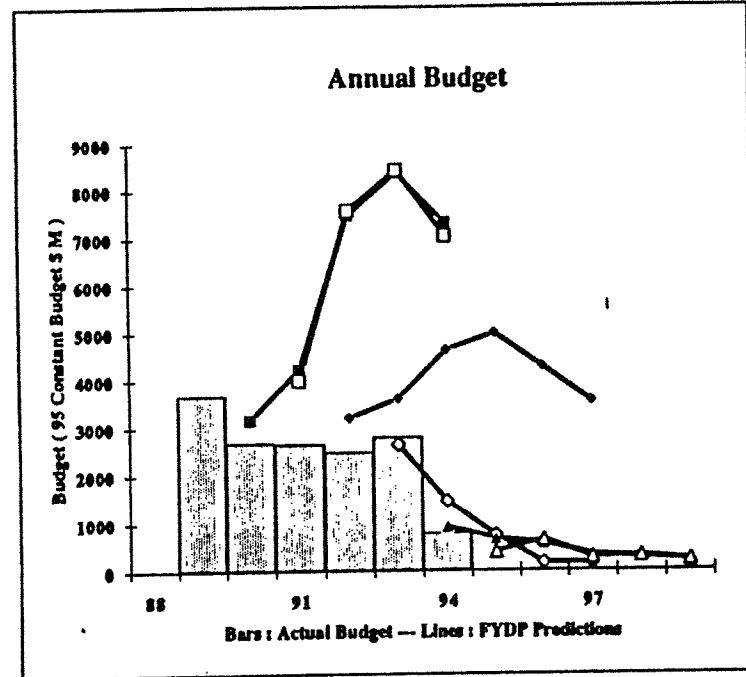
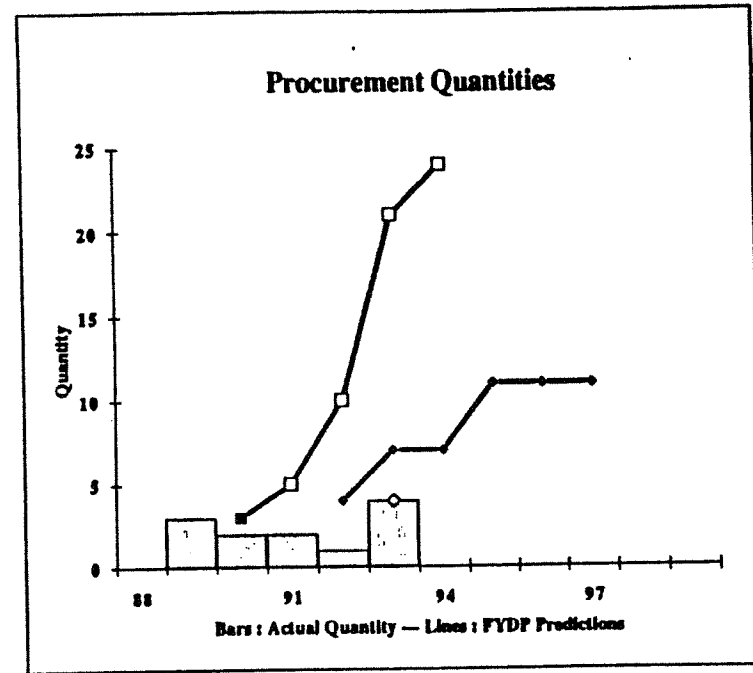
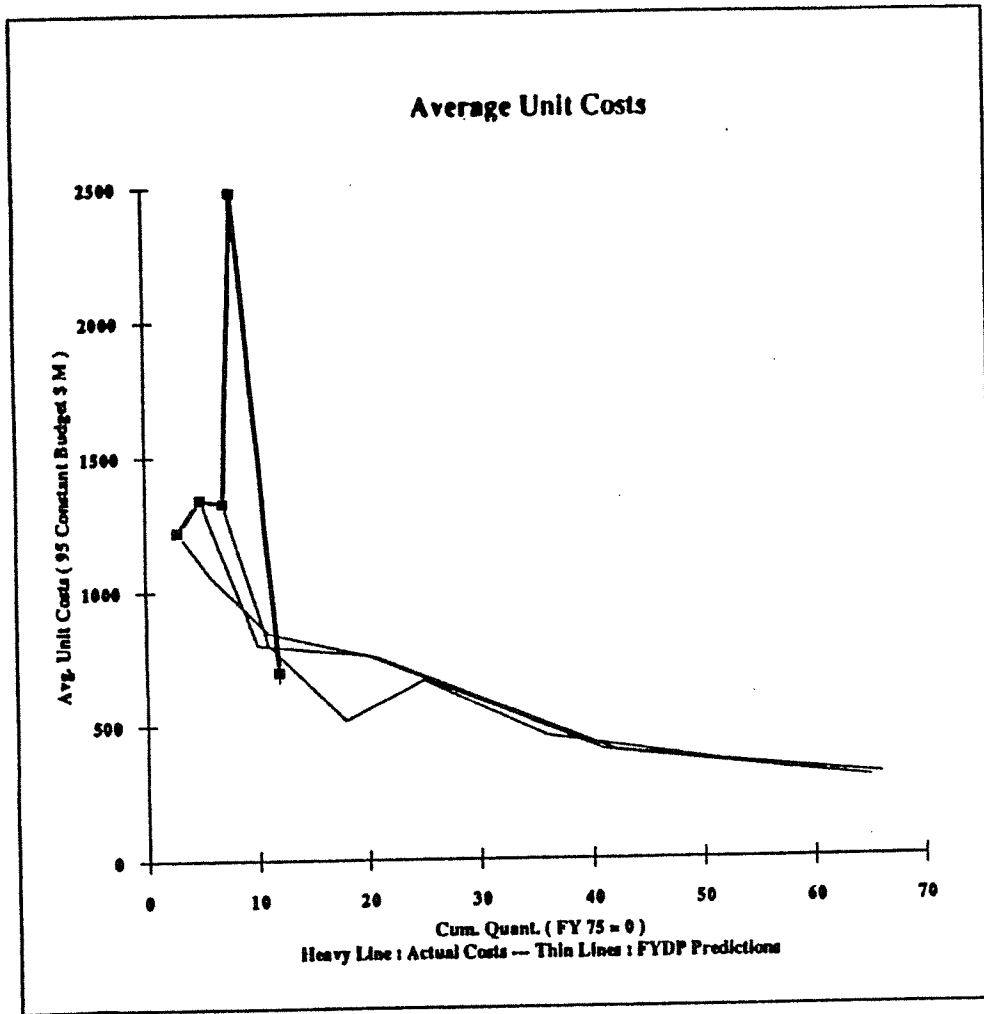
JSTARS (AF)

(FYDP Predictions versus Reality)



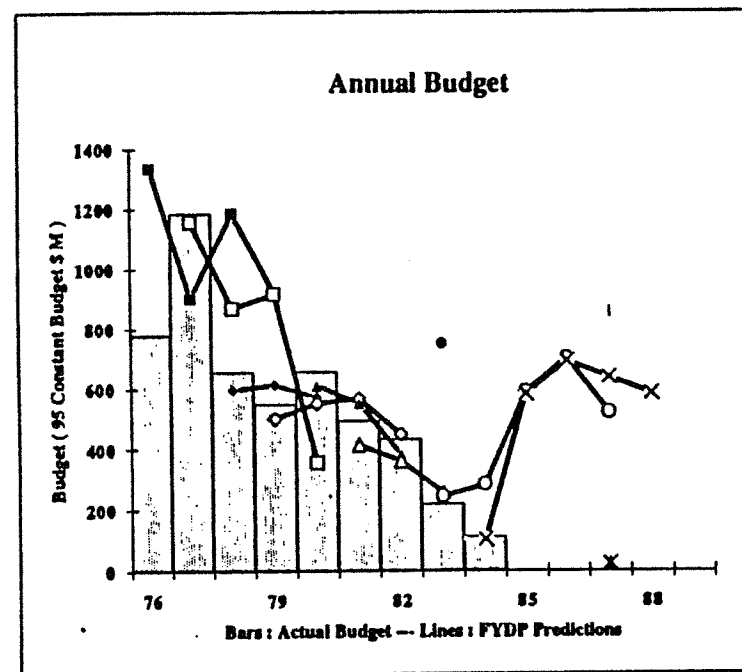
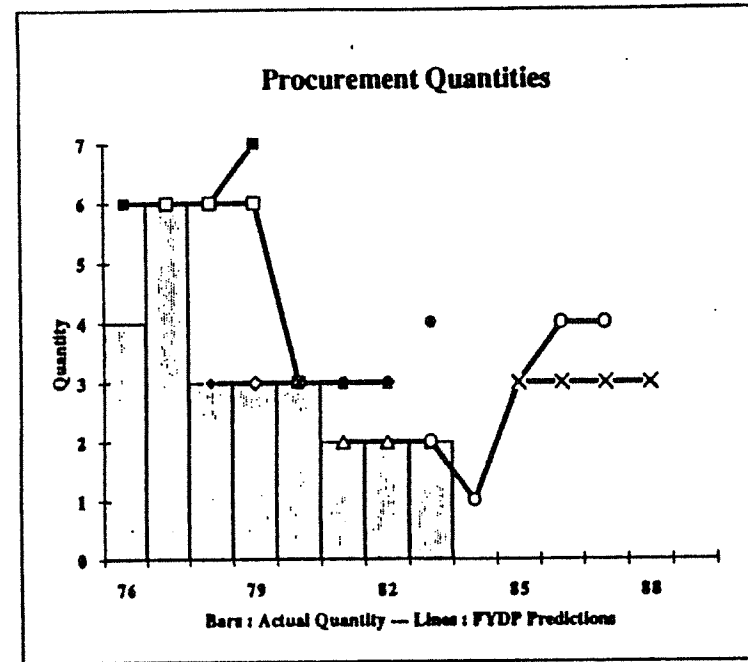
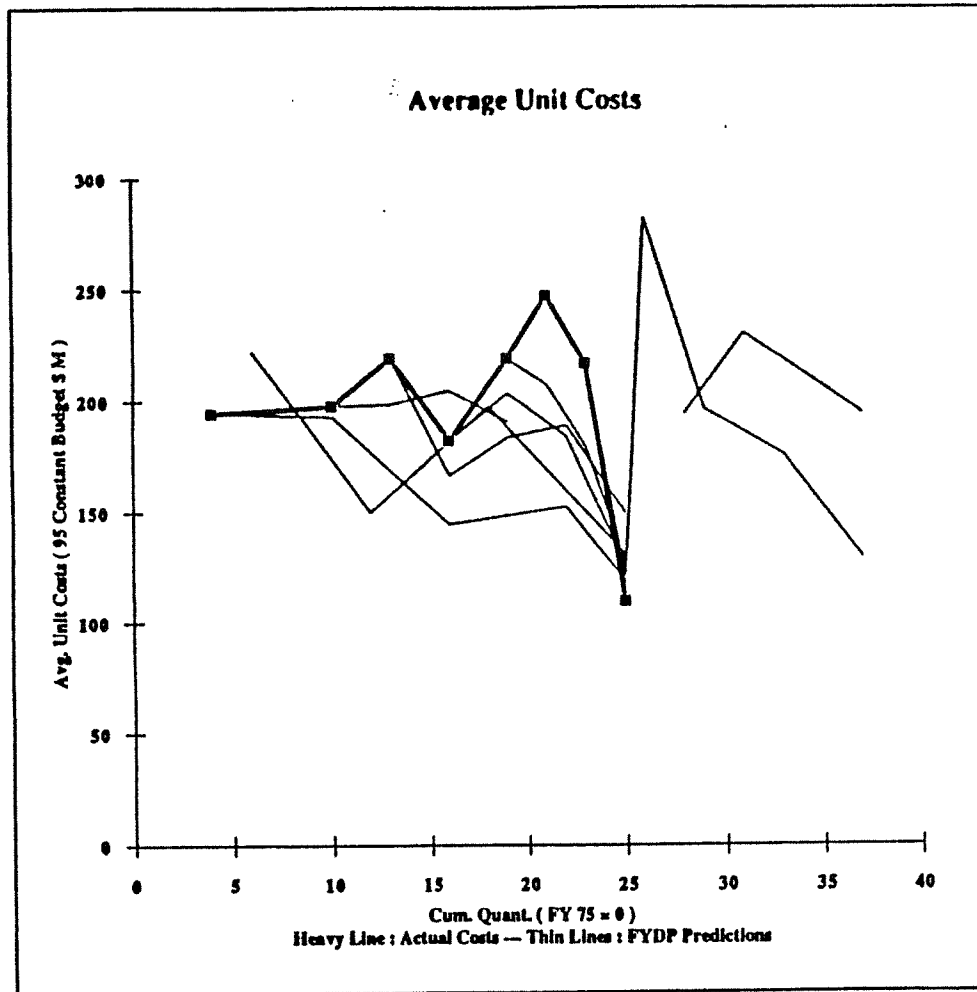
B-2 BOMBER

(FYDP Predictions versus Reality)



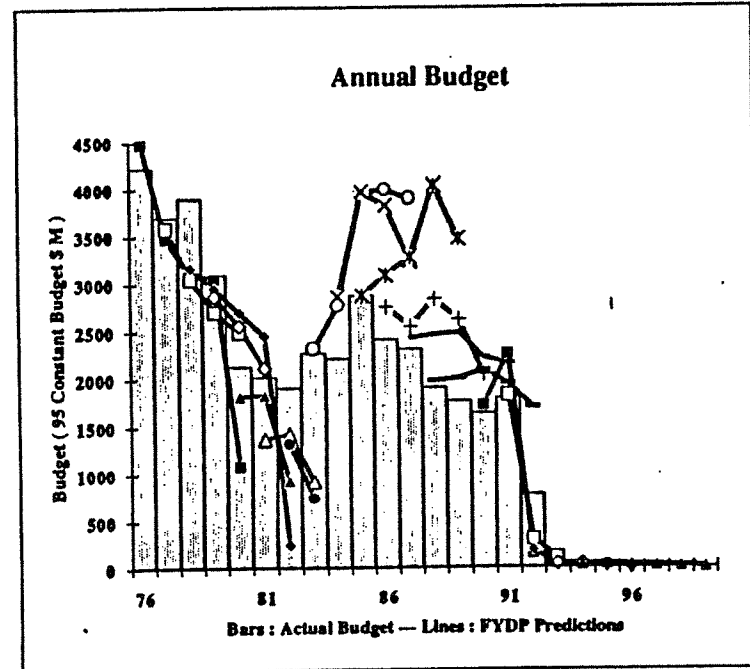
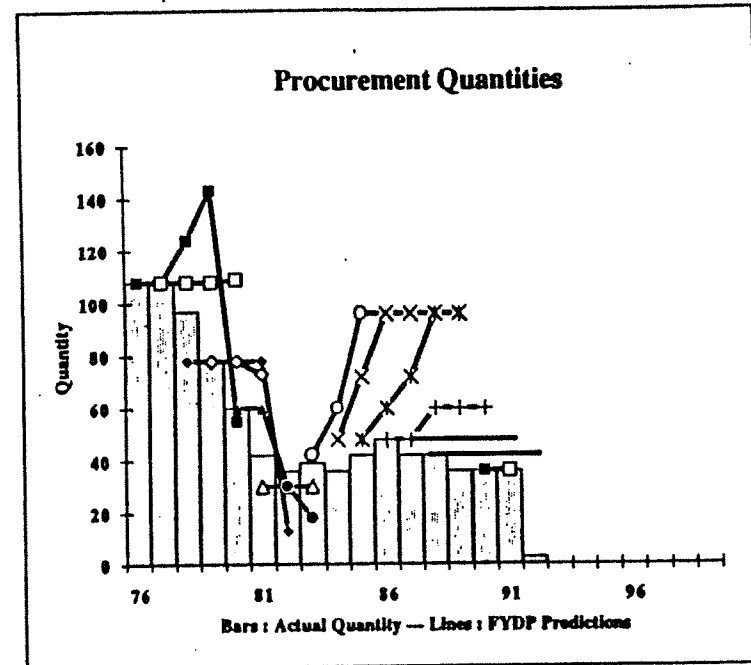
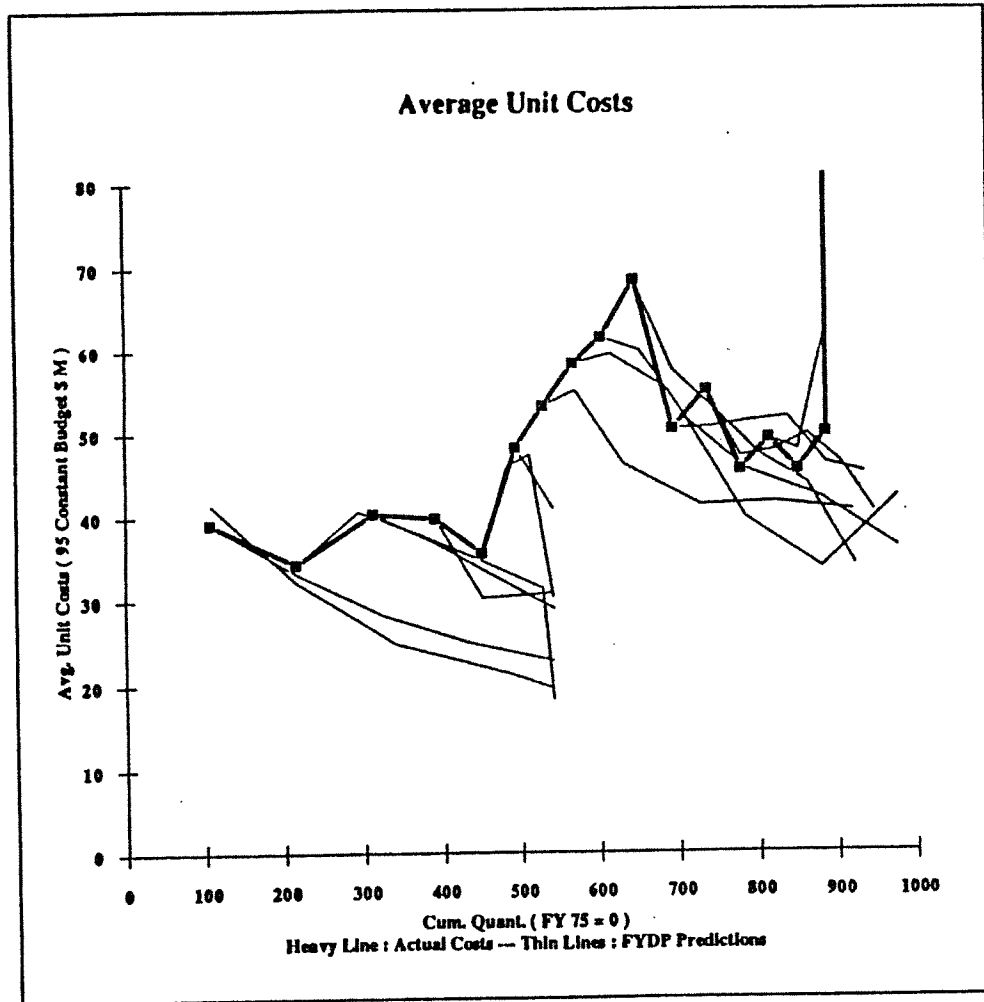
E-3A SENTRY AWACS

(FYDP Predictions versus Reality)



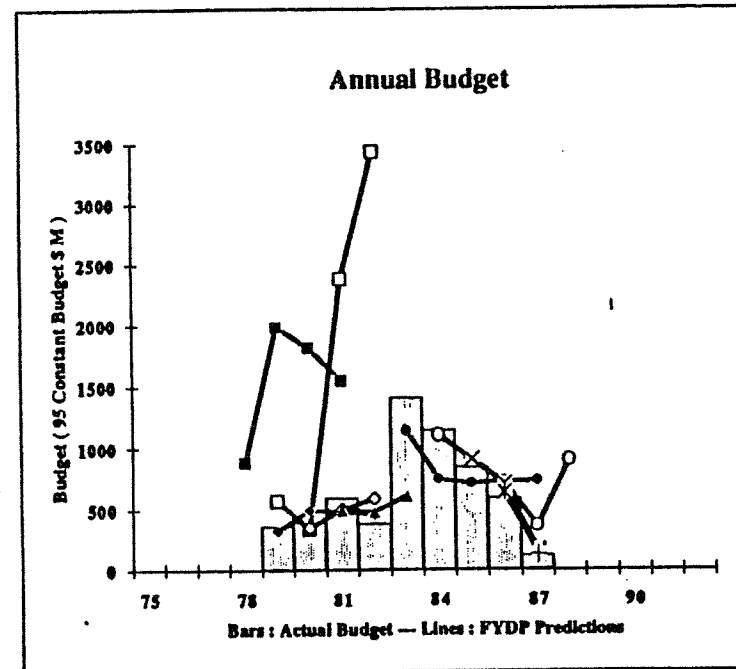
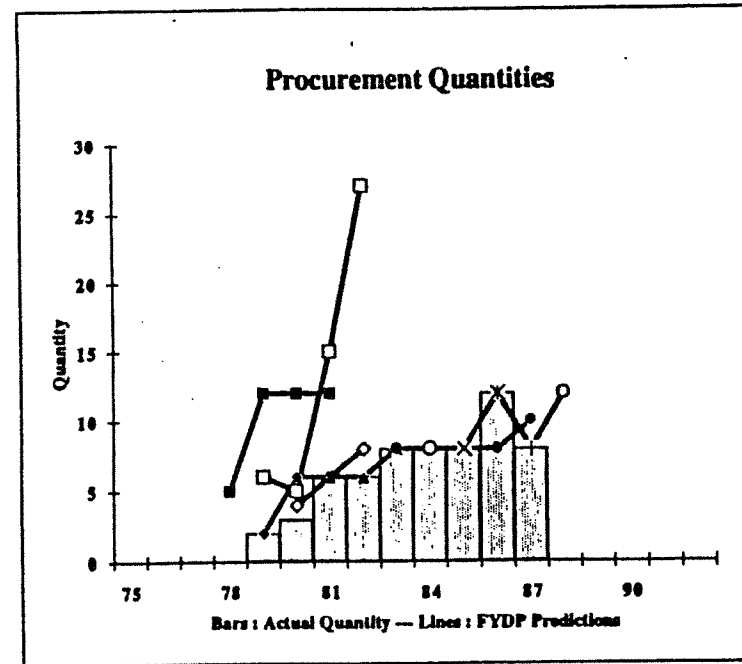
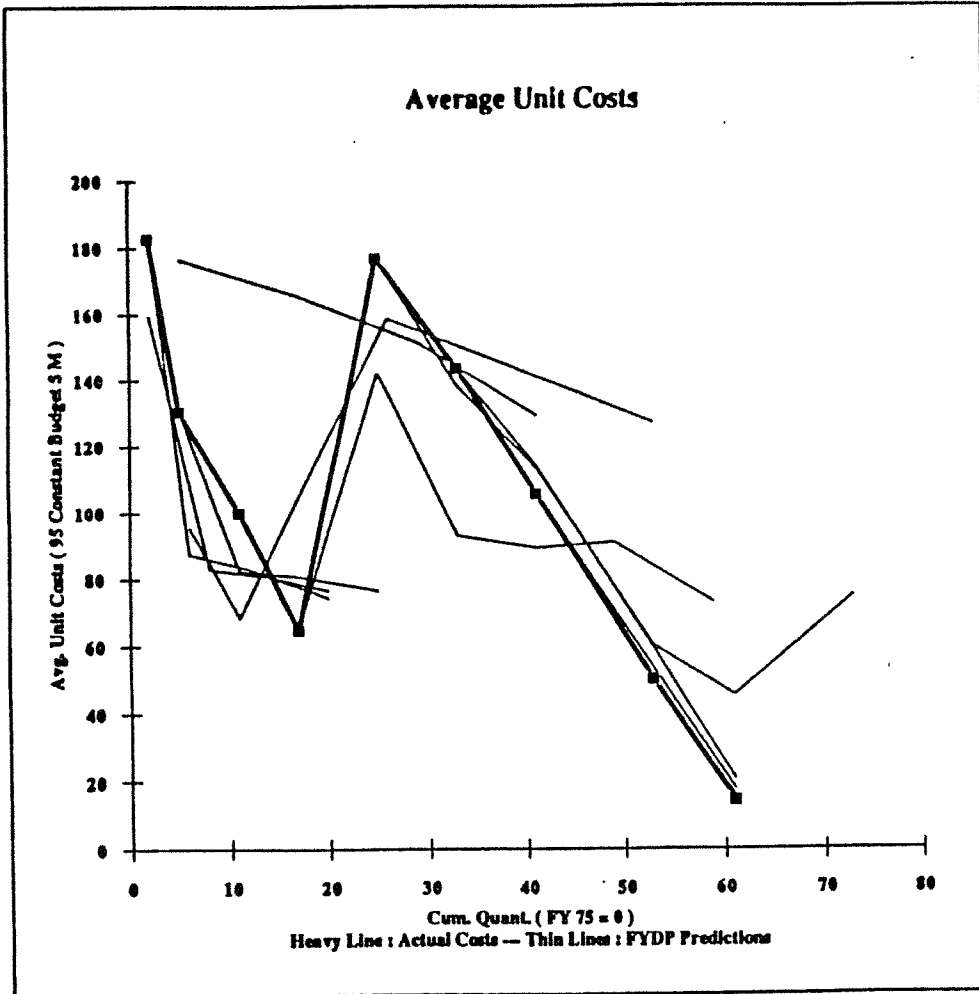
F-15 EAGLE

(FYDP Predictions versus Reality)



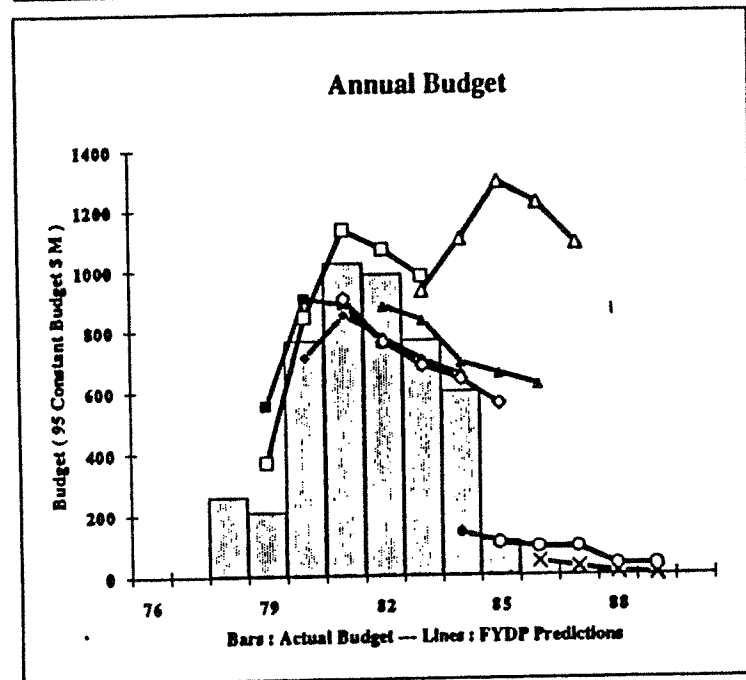
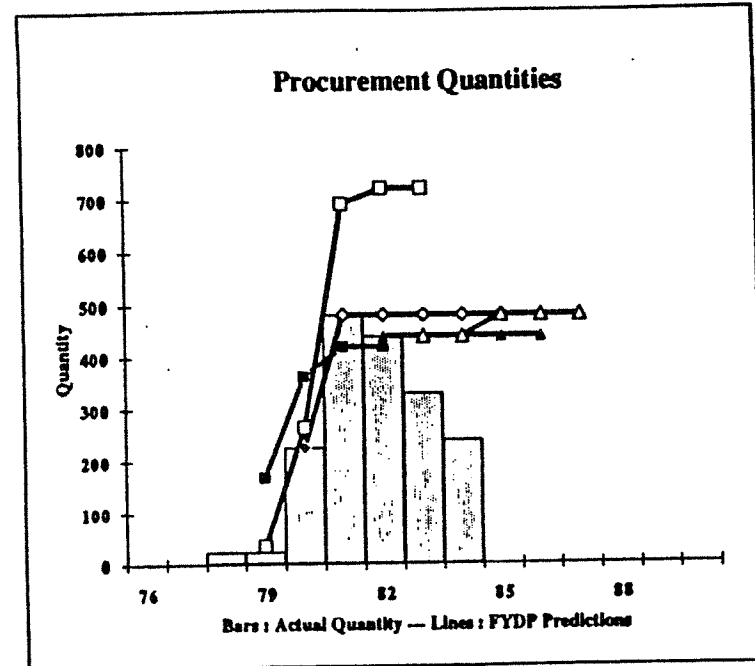
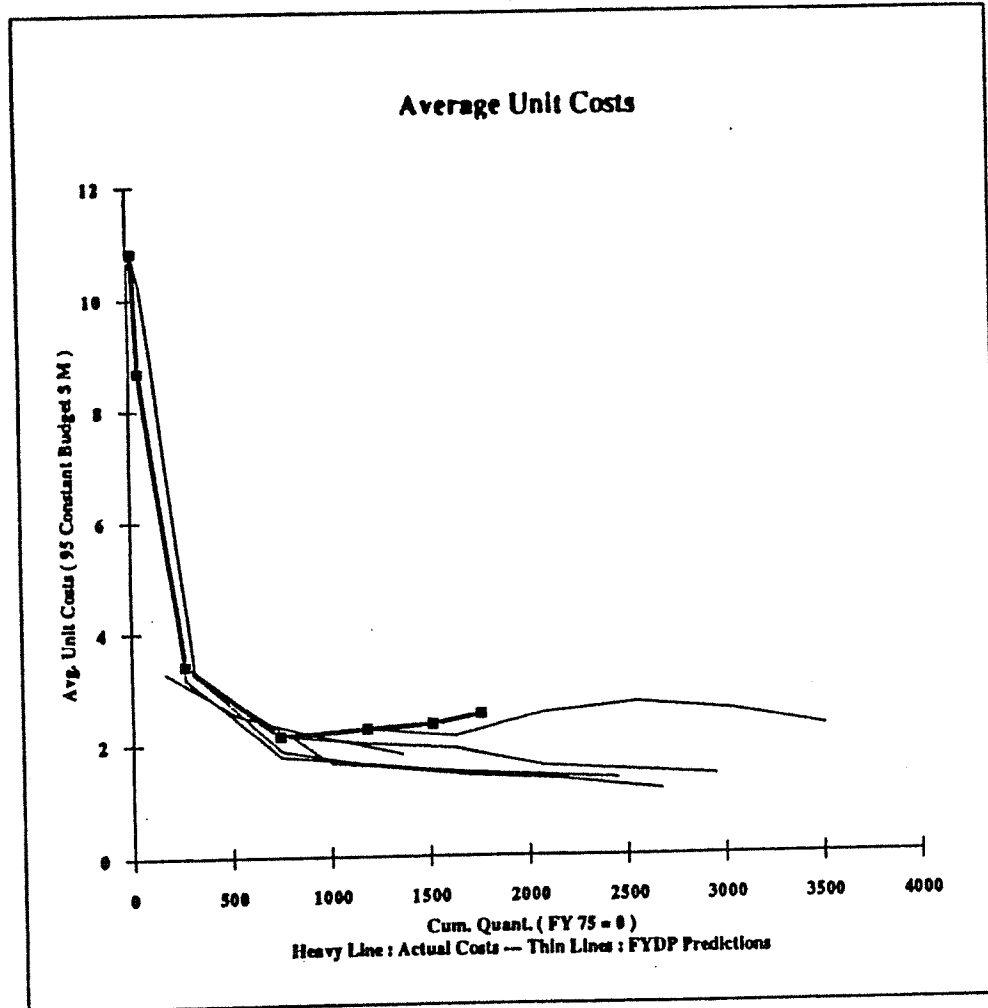
KC-10

(FYDP Predictions versus Reality)



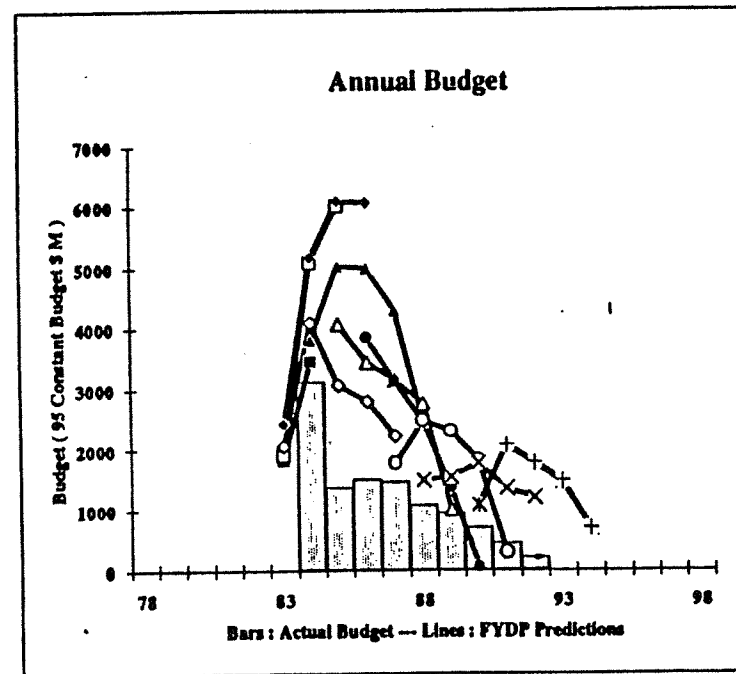
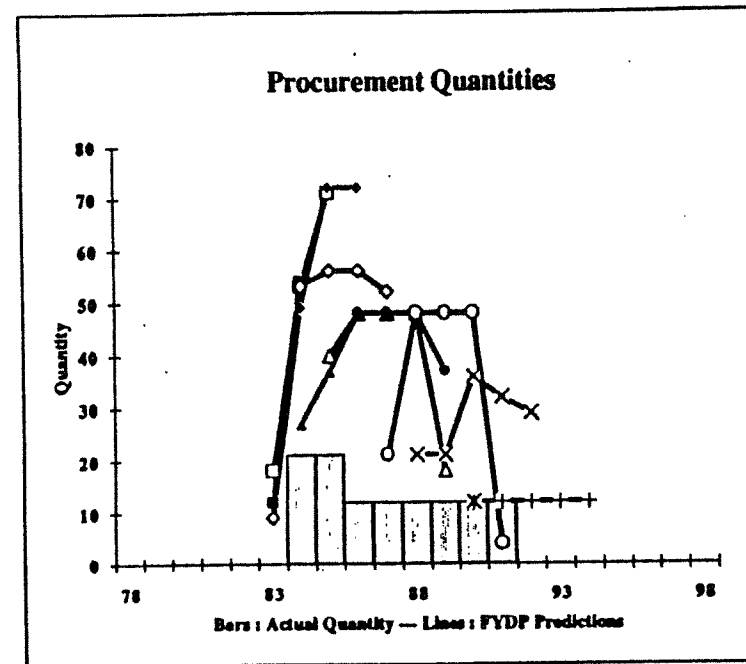
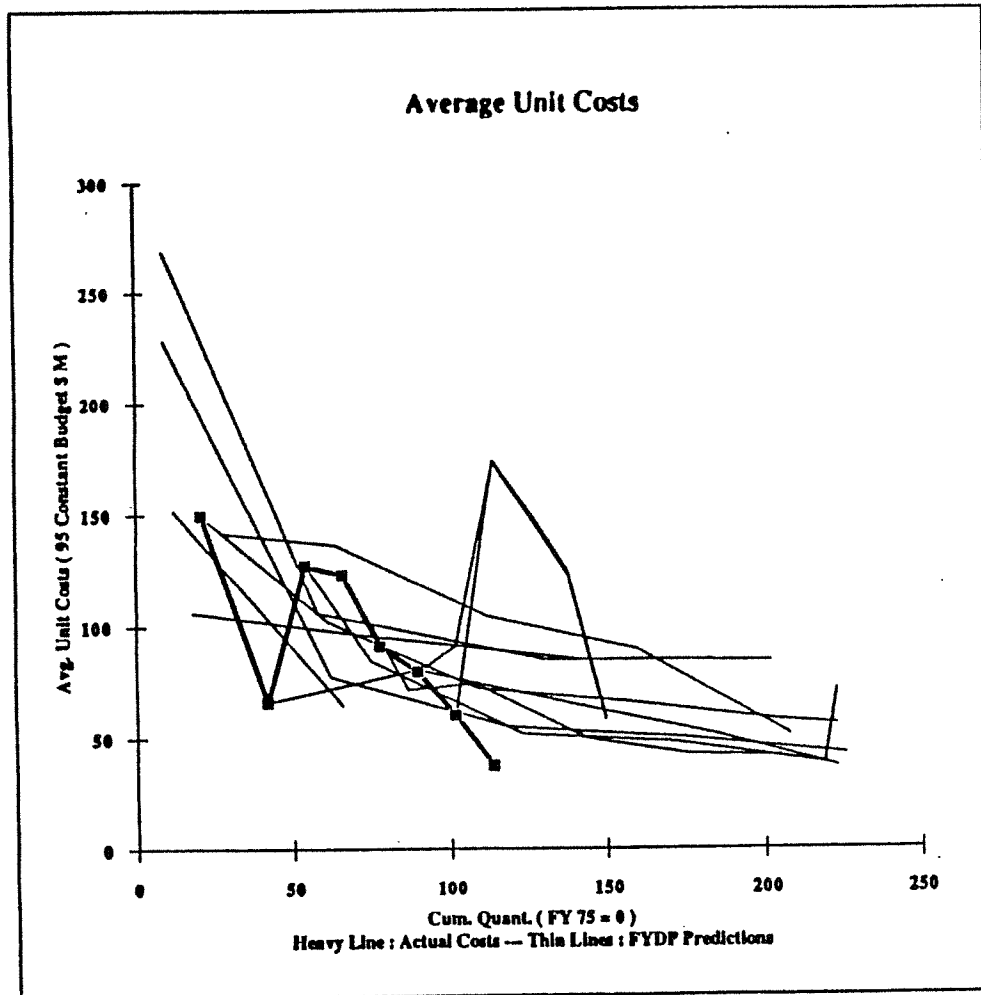
ALCM (AF)

(FYDP Predictions versus Reality)



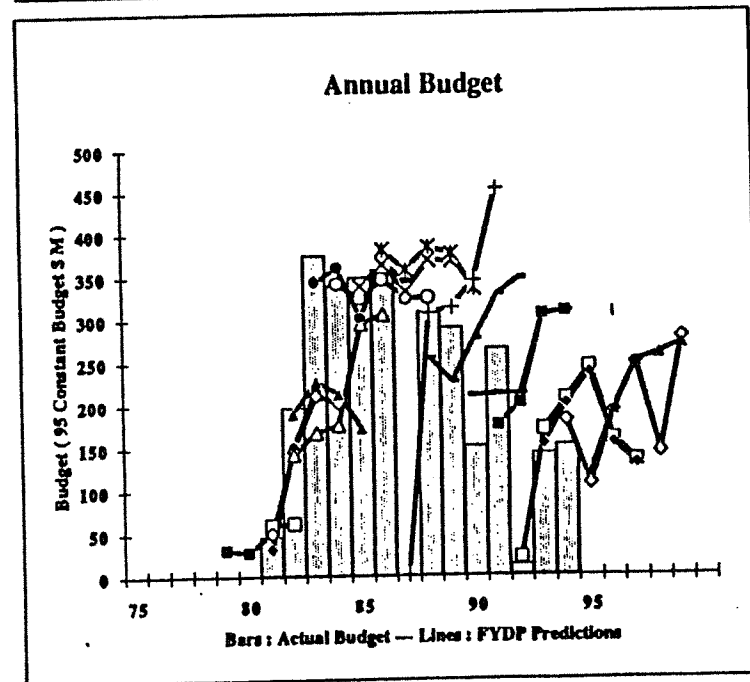
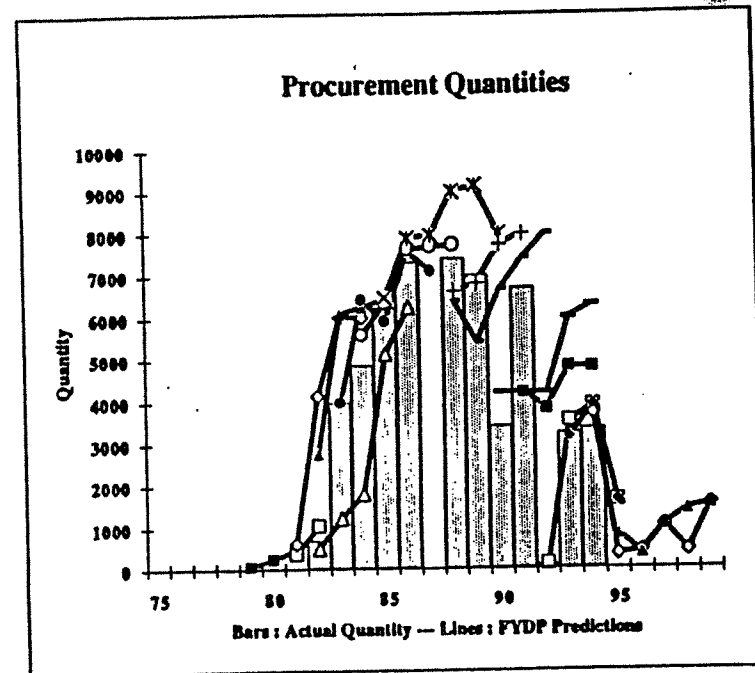
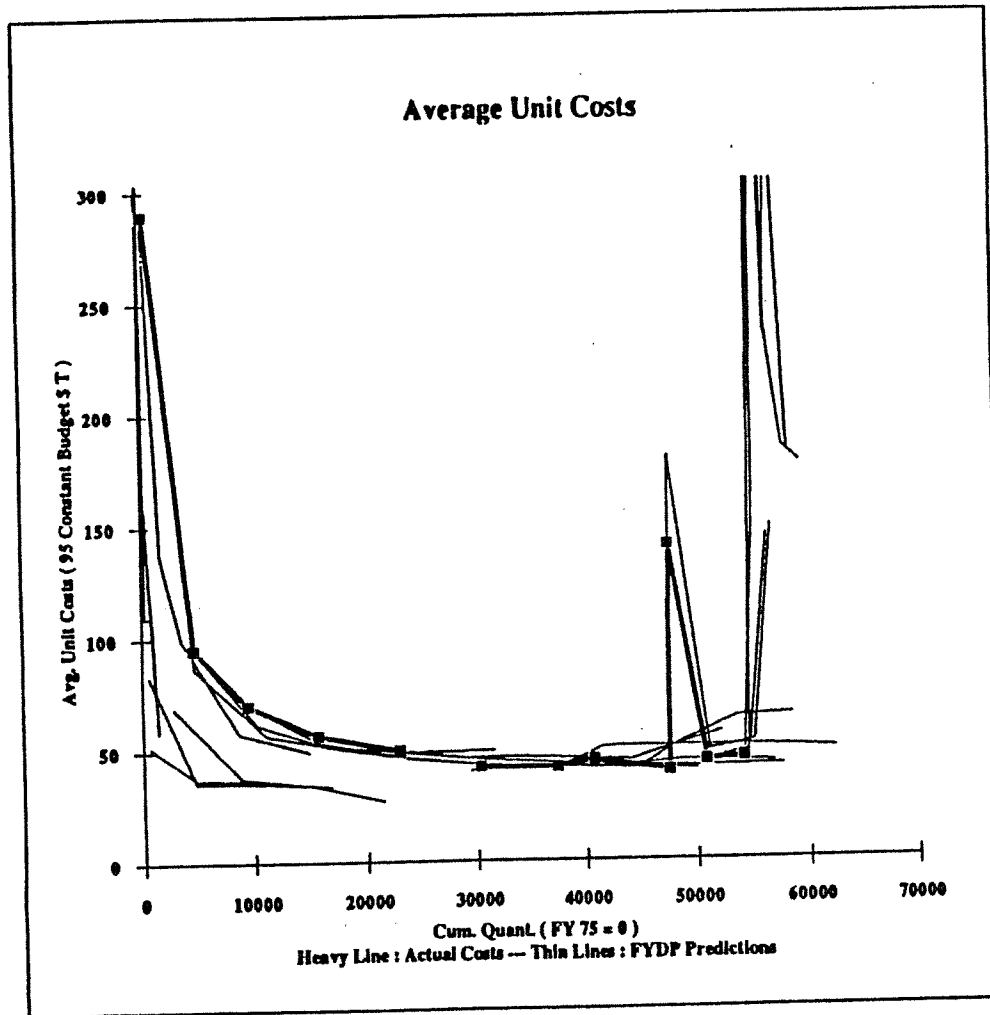
M-X PEACEKEEPER

(FYDP Predictions versus Reality)



HELLFIRE (A&N)

(FYDP Predictions versus Reality)



AGM-88A HARM (AF&N)

(FYDP Predictions versus Reality)

