

IDA PAPER P-2551

THE ROLE OF THE OFFICE OF THE SECRETARY OF DEFENSE  
IN THE DEFENSE ACQUISITION PROCESS

Volume I Main Report

Barbara A Bicksler  
Thomas P Christie  
David R Graham  
Herschel Kanter

February 1991

*Prepared for*  
Office of the Under Secretary of Defense for Acquisition

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# INSTITUTE FOR DEFENSE ANALYSES

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The Defense Science Board Task Force on Acquisition Streamlining undertook an extensive study to describe and time-line the acquisition process in the Department of Defense The Task Force examined, in detail, the experience of a large sample of acquisition programs over a five-year time period from 1986 to the present The Institute for Defense Analyses (IDA) participated in this fact-finding phase of the Task Force, taking the lead responsibility for examining the processes in the Office of the Secretary of Defense (OSD) for overseeing and funding acquisition programs This study describes the OSD processes and assesses the extent to which these and other oversight activities delay acquisition programs The IDA report contains four volumes the main report contains the findings and observations of the study, Appendix A contains the fact-finding questionnaire, Appendix B contains individual program notes, and Appendix C contains the interview summaries

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INSTITUTE FOR DEFENSE ANALYSES

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## **PREFACE**

This study was requested by the Office of the Under Secretary of Defense for Acquisition to support the Defense Science Board (DSB) Task Force on Acquisition Streamlining. The study describes the processes within the Office of the Secretary of Defense (OSD) for overseeing major acquisition programs and budgeting, and assesses the extent to which these and other oversight activities delay acquisition programs.

This study was conducted under contract MDA 903-89C-0003, task order number T-A6-797, Acquisition Streamlining.

The authors thank the OSD officials who provided data and answered questionnaires on more than 50 programs for this study. Approximately 25 interviews were used in preparing this report. The authors thank the interviewees for their time and for sharing their experience and insight. The DSB study was a large undertaking requiring careful cooperation and coordination. The authors gratefully acknowledge the members of the tri-service team, who worked hard to establish an effective team of government and contractor personnel. Particular thanks go to Captain Bruce Pieper, USN, Colonel Joseph Bailey, USAF and Carol Gardenier of the Army Materiel Command. Valuable comments were provided throughout the project by Philip Major, Vice President for Planning and Evaluation, Institute for Defense Analyses.

Finally, we thank Mitchell Robinson and Terri Walsh for computational support, and Teresa Dillard who coordinated the schedules of the study team and provided excellent secretarial support.



## CONTENTS

The DSB Task Force on Acquisition Streamlining undertook an extensive study to describe and time-line the acquisition process. It examined in detail the experience of a large sample of acquisition programs over a five-year time period from 1986 to the present. The Institute for Defense Analyses (IDA) participated in this fact-finding phase of the Task Force, taking the lead responsibility for examining the OSD processes for overseeing and funding acquisition programs. This briefing describes IDA's role and summarizes the data and analyses IDA provided to the Task Force. The presentation covers five areas:

- **The DSB Task Force and IDA's Role:** The briefing first describes the overall goals and organization of the Task Force along with IDA's role
- **Quantifying the Schedule Effects of Oversight Processes:** The second section of the briefing describes the processes examined and IDA's approach for quantifying their effect on program schedules. Relevant changes in the process during the sample period are also identified
- **Findings for the 52 Program Sample:** IDA examined the programs within the DSB sample that were subject to OSD oversight. Section three summarizes the findings for these 52 programs.
- **Interview Findings:** The briefing then summarizes the two-dozen interviews with oversight officials on the value added of oversight, oversight's effects on program schedules, and possible improvements in the oversight processes.
- **Observations:** The briefing concludes with three main points that IDA stressed to the Task Force:
  - Delays account for a third to a half of program time on average. Delays most often result from substantive program issues, which vary across the phases of a program
  - Oversight processes account for a very small fraction of program delays
  - Funding shortfalls relative to initial program plans occur primarily for the procurement funding for programs in low rate initial production (LRIP) and production. Shortfalls thus may be a schedule driver in the later program phases. However, such shortfalls did not occur in the earlier development phases. Research and development (R&D) funding typically grows in response to cost and schedule growth.

In addition to this briefing, the IDA report includes three appendices. Appendix A contains the fact finding questionnaire. Appendix B contains individual program notes and Appendix C contains the interview summaries.



## **CONTENTS**

- 1. THE DSB TASK FORCE AND IDA'S ROLE**
- 2. OVERSIGHT PROCESSES AND RECENT CHANGES**
- 3. FINDINGS FOR THE 52 PROGRAM SAMPLE**
- 4. INTERVIEW FINDINGS**
- 5. OBSERVATIONS**

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# **1. THE DSB TASK FORCE AND IDA's ROLE**

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## **DSB TASK FORCE TERMS OF REFERENCE**

The Under Secretary of Defense for Acquisition (USD(A)) commissioned the DSB Task Force on Acquisition Streamlining early in 1990. The Task Force's work was structured to overcome many of the weaknesses of earlier studies of the acquisition process. First, the Task Force built a substantive data base to provide factual support and justification for its recommendations. Second, it examined why earlier acquisition study recommendations often did not get carried out. Third, it included an explicit implementation phase.

The USD(A) set a fifty percent reduction in the acquisition cycle time as a Task Force goal. He set this target to help to focus the study away from marginal improvements and toward truly substantial change. He acknowledged that the goal may be infeasible.

Because of the emphasis on acquisition cycle time, the Task Force focussed almost exclusively on process times, time drivers, and how to shorten the process. The Task Force recognized that streamlining also entails improving administrative efficiency regardless of the effect on cycle time. Nevertheless the Task Force thought it could work more effectively if it focused on this single, clear objective. It also believed that efficiency gains would naturally result from actions to reduce process times.



## **DSB ACQUISITION STREAMLINING TASK FORCE TERMS OF REFERENCE**

**FROM USD(A) TO JOHN RITTENHOUSE, CHAIRMAN:**

- **UNDERSTAND AND DOCUMENT THE DEFENSE ACQUISITION PROCESS**
- **IDENTIFY ROOT CAUSES OF SCHEDULE STRETCHOUTS**
- **COMPARE MILITARY/COMMERCIAL PROCESSES**
- **IDENTIFY BARRIERS TO IMPLEMENTING PAST STUDY RECOMMENDATIONS**
- **DESCRIBE A PROTOTYPE STREAMLINED DEFENSE ACQUISITION PROCESS TO REDUCE TIME BY 50 PERCENT**
- **CREATE AN IMPLEMENTATION PLAN**

## TASK FORCE PLAN

In its initial organizational meetings, the Task Force organized its work into three phases

- **Phase I:** The Task Force established three Phase I teams to build the data bases needed to support the Task Force's objective of documenting and timelining the acquisition process. Team 1 constituted the primary study effort. (IDA's work supported Team 1, as will be discussed in more detail subsequently.) Teams 2 and 3, compiled the best practices from both exemplary commercial firms and defense programs, and lessons learned from past studies of the acquisition process. Team 2 described the best industrial practices currently in use, and described how productivity and quality improvements have been achieved by some of the nation's leading companies. Team 3 reviewed the long history of acquisition reform studies and commissions, and explained why their recommendations were, or were not, acted upon.
- **Phase II:** Phase II participants are to use this factual material in formulating the Task Force's summary findings and recommendations. It also includes three teams. The "Team of Six," comprised of Phase I study team representatives and Service representatives, is structuring the Phase II activities and drafting the DSB report. Two additional teams support their activities. Team A is working to identify candidate process improvements using the Phase I data base. An example could be a reduction in time required to issue a request for proposals. Team B is identifying candidates for a broader restructuring of the acquisition process--looking across a large set of individual process steps. Their work will be consolidated in the DSB report.
- **Phase III:** The Department of Defense (DoD) will be responsible for following up on the DSB findings and recommendations. A DoD implementation plan will be developed and executed.



## OVERALL TASK FORCE PLAN

- **PHASE I (JAN - DEC 1990): FACT FINDING**
  - IDA⇒ -- **Team 1: Process Description and Timelining**
  - **Team 2: Best Practices**
  - **Team 3: Past Studies and Implementation Barriers**
- **PHASE II (SEPT 1990 - FEB 1991): IDENTIFY ROOT CAUSES AND POSSIBLE IMPROVEMENTS**
  - **"Team of Six": Improvements Founded in Data**
  - **Team A: Process Streamlining**
  - **Team B: Process Restructuring**
- **PHASE III (MARCH 1991.....): DOD IMPLEMENTATION**

## **DESCRIBING THE ACQUISITION SYSTEM IN DETAIL**

Team 1 created a generic model of the acquisition process, which describes the detailed steps required for the completion of an acquisition program. Such a model is essentially a PERT chart showing the scheduling of detailed program activities. This model draws upon earlier studies done by the Navy and the Air Force. Service acquisition officials reviewed and modified the resulting model. The tri-service team made additional changes when needed to make the model commensurate with the data collected.

The model provided the structure for collecting data for the 150 program sample. The programs in the sample were nominated by the Team 1 working group, and reviewed by the Team 1 Service representatives.

The data collection relied on questionnaires completed by officials within industry, program management offices, and OSD. The data collection proceeded in two waves. Wave I tested the acquisition process model and the data collection methods, by applying the tentative approach to ten representative programs. Many revisions were made based on the lessons learned. In particular, as discussed in this Section, IDA revised the data collection approach for OSD. Wave II then used the revised questionnaire to collect data on the full sample of programs.





## **DESCRIBING THE ACQUISITION SYSTEM IN DETAIL**

### **TEAM 1 TASKS:**

- **BUILD A 600 STEP FLOW MODEL OF THE ACQUISITION SYSTEM**
- **SELECT 144 PROGRAMS (PLUS 6 BLACK)**
- **DESIGN QUESTIONNAIRE TO**
  - (1) Measure the time to complete each step**
  - (2) Collect "time drivers" for each step**
- **CONDUCT TEST ON 10 PROGRAMS--WAVE ONE**
- **GATHER DATA ON REMAINING PROGRAMS (EARLY SEPTEMBER TO MID-OCTOBER)--WAVE TWO**
- **DRAFT REPORTS**

## **DSB TASK FORCE TEAM 1 MEMBERS**

Team 1 met several times in 1990 to structure the fact-finding activities and review progress. The Team representatives came from industry, OSD, Congress, and the Services. A working group to support the Team included staff from the three military departments. This tri-service team established headquarters at Andrews Air Force Base. It was responsible for structuring and executing the Team 1 tasks. General Marsh, the Team 1 Chairman, took an active role in overseeing the working-level activities, meeting regularly with the leader of the tri-service team.



## **DSB TASK FORCE TEAM 1 MEMBERS**

**General R. T. Marsh, Chairman**  
**MG. Richard Beltson**  
**MG. Robert Eaglet**  
**Mr. Jonathan Etherton**  
**Mr. Art Flathers**  
**RADM Richard Friichtenicht**  
**MG. Richard Kenyon**  
**Ms. Colleen Preston**  
**Dr. George Schneider**  
**Mr. Harry Stonecipher**  
**Mr. Stephen Trodden**  
**Mr. Alvin Tucker**

**Thiokol Corp.**  
**HQDA SARD-ZC**  
**SAF/AQ**  
**Senate Armed Serv. Committee**  
**G.E. Aerospace**  
**NAVAIR/SYSCOM**  
**DynCorp.**  
**House Armed Serv. Committee**  
**USD(A) DDR&E (S&TNF)**  
**Sundstrand Corp.**  
**DoD IG (Auditing)**  
**OSD Comptroller**

## PERSPECTIVES TO BE INCLUDED

The questionnaires on program experience covered all levels of the acquisition process. Several teams, worked in parallel to create the questionnaires and obtain responses

- **Weapon Contractors:** Booz-Allen Hamilton (BAH), working under contract with Team 1, had the primary responsibility for developing the questionnaire for defense contractors and for filling out the questionnaires through a series of on-sight interviews.
- **Program Offices:** The Analytic Sciences Corporation (TASC) had contractual responsibility for the government program office questionnaires TASC also provided training to the DoD field personnel who administered the questionnaires in the field
- **Other Service Levels:** Higher level Service oversight functions, such as headquarters or buying commands, were also the responsibility of TASC.
- **OSD:** IDA developed and administered the OSD questionnaires In addition, IDA inserted questions in the industry and program management questionnaires to identify oversight interventions that delayed programs
- **Joint Staff/Congress:** IDA was also responsible for examining how these organizations affect program schedules Three approaches were used First, the oversight questions going to industry and program management permitted them to identify oversight actions that delayed their programs Second, the IDA questionnaires and interviews asked how these organizations affect program schedules Third, IDA examined the Congress' treatment of DoD budget requests



## **PERSPECTIVES TO BE INCLUDED**

- **WEAPON CONTRACTORS**
- **PROGRAM OFFICES**
- **OTHER SERVICE LEVELS**

**IDA ⇒ • OSD**

**IDA ⇒ • (JOINT STAFF/CONGRESS)**

## IDA TASKS FOR TEAM 1

A breakdown of IDA's specific tasks for Team 1 is shown in the accompanying figure. These tasks are summarized below.

- **Describe Oversight Processes:** IDA helped identify oversight process steps that were included in the detailed 600+ step model of the acquisition process. Primarily, these steps involve the Defense Acquisition Board (DAB) oversight process, which reviews the largest acquisition programs at program milestones. In addition, IDA identified a number of non-DAB oversight activities, and suggested approaches for incorporating them in the study.

- **Timeline by Documenting Program Experience:** In Wave I the Team 1 Task Force tried to obtain time line data on all of the DAB activities identified in the 600-step acquisition model. IDA tested the Wave I questionnaire approach for ten programs during July and early August, 1990. The test showed that OSD lacks the corporate memory needed to reconstruct the detailed history of the DAB preparation activities called for in this model. Wave II therefore dropped the attempt to describe the DAB process in detail, and instead focused on describing how each program evolved over the sample period. The questionnaires were redesigned to include a brief historical summary of the schedule and funding for each program, and to ask questions as to why programs deviated from their initial plans. These histories drew upon the Selected Acquisition Reports for each program beginning in 1982 and ending in 1990.

In addition, IDA provided oversight questions for the industry and government program management questionnaires that asked them to identify oversight activities that delayed their programs.

- **Interview Officials to Obtain OSD Perspective:** IDA conducted twenty-five interviews with current and prior officials responsible for overseeing acquisition programs. These interviews provide an OSD perspective on the value added of the oversight processes, the root-cause time drivers of programs, and possible improvements in the acquisition process.



## **IDA TASKS FOR TEAM 1**

- **DESCRIBE OVERSIGHT PROCESSES**
  - **OSD (Joint Staff, Congress)**
  - **DAB, non-DAB Oversight, Budgeting**
- **TIMELINE BY DOCUMENTING PROGRAM EXPERIENCE**
  - **Wave I (10 Programs): Test Detailed Questionnaire Approach (600 Step Model)**
  - **Wave II (52 Programs): Questionnaires Emphasize Program Schedule Drivers (Program Phases)**
  - **Supplemental Data**
- **INTERVIEW OFFICIALS TO OBTAIN OSD PERSPECTIVE**

## OBSERVATIONS ON THE STUDY APPROACH

Several specific observations on the breadth and limitations of the study are in order to place the IDA study effort in context. This study

- **Focuses Primarily on Documenting Oversight Processes for 52 Programs over the Last 5 Years:** The bulk of the study effort was devoted to drafting and testing the Wave I and II questionnaires and data collection. The program data collection emphasized program schedule delays.
- **Analysis Limited by Uneven Corporate Memory:** The more aggregated approach taken by IDA in Wave II was due to the lack of detailed data on the dates and duration of every Defense Acquisition Board (DAB) preparation activity.
- **Supported by Good Questionnaire Responses From OSD:** OSD action officers completed Wave II questionnaires in most cases. Where necessary, additional information on program histories supplemented their responses.
- **Identifies Recent Process Changes:** The data from the five year time period are representative of the current oversight process in most areas. There are some specific areas where USD(A) policies altered the process in 1990.
- **Raises Program Technology Issues:** The questionnaire responses identify program technical problems or testing problems as time drivers for many of the programs in full scale development (FSD) and LRIP. This study raises these issues, but it does not explore their substance in any depth.
- **Focuses on Existing Processes:** Finally, this study examines oversight and its effect on schedules in the context of the existing formal acquisition process. It does not compare and contrast radically different processes--as might be in place for some black programs--to show how the structure of the acquisition process influences program schedules.





## **OBSERVATIONS ON THE STUDY APPROACH**

- **Focuses Primarily on Documenting Oversight Process For 52 Programs Over Last 5 Years**
  - **OSD (Congress, JCS)**
  - **DAB oversight, non-DAB oversight, budgeting**
  - **Emphasis on Program Schedule Delays**
- **Analysis Limited by Uneven Corporate Memory**
- **Supported by Good Questionnaire Response From OSD; Supplemented by Available Program Data**
- **Identifies Recent Process Changes, Which Are Not Fully Reflected in Program Data**
- **Raises Program Technology Issues, But Does Not Examine Them in Depth**
- **Alternative Oversight Frameworks Are Not Examined in Depth**
  - **Black Programs Not Examined**
  - **Enterprise Programs Never Fully Implemented**

## **THE APPROACH FOR DOCUMENTING THE MANAGEMENT PROCESSES**

The two main management systems within the DoD are

- The Defense Acquisition Board that oversees major acquisition programs, and
- The Planning, Programming, and Budgeting System (PPBS) that develops and integrates DoD's budgets.

In documenting the acquisition process, the DSB wanted to model these two processes and to determine how they influence program schedules. This section describes these processes and the approach taken to quantify their effects on program schedules



## **2. PROCESSES AND RECENT CHANGES**

- A. DAB Process Description**
- B. Major Changes in the 1980s**
- C. PPBS Process**
- D. Observations on the Process**

## **DAB MILESTONE PROCESS TODAY**

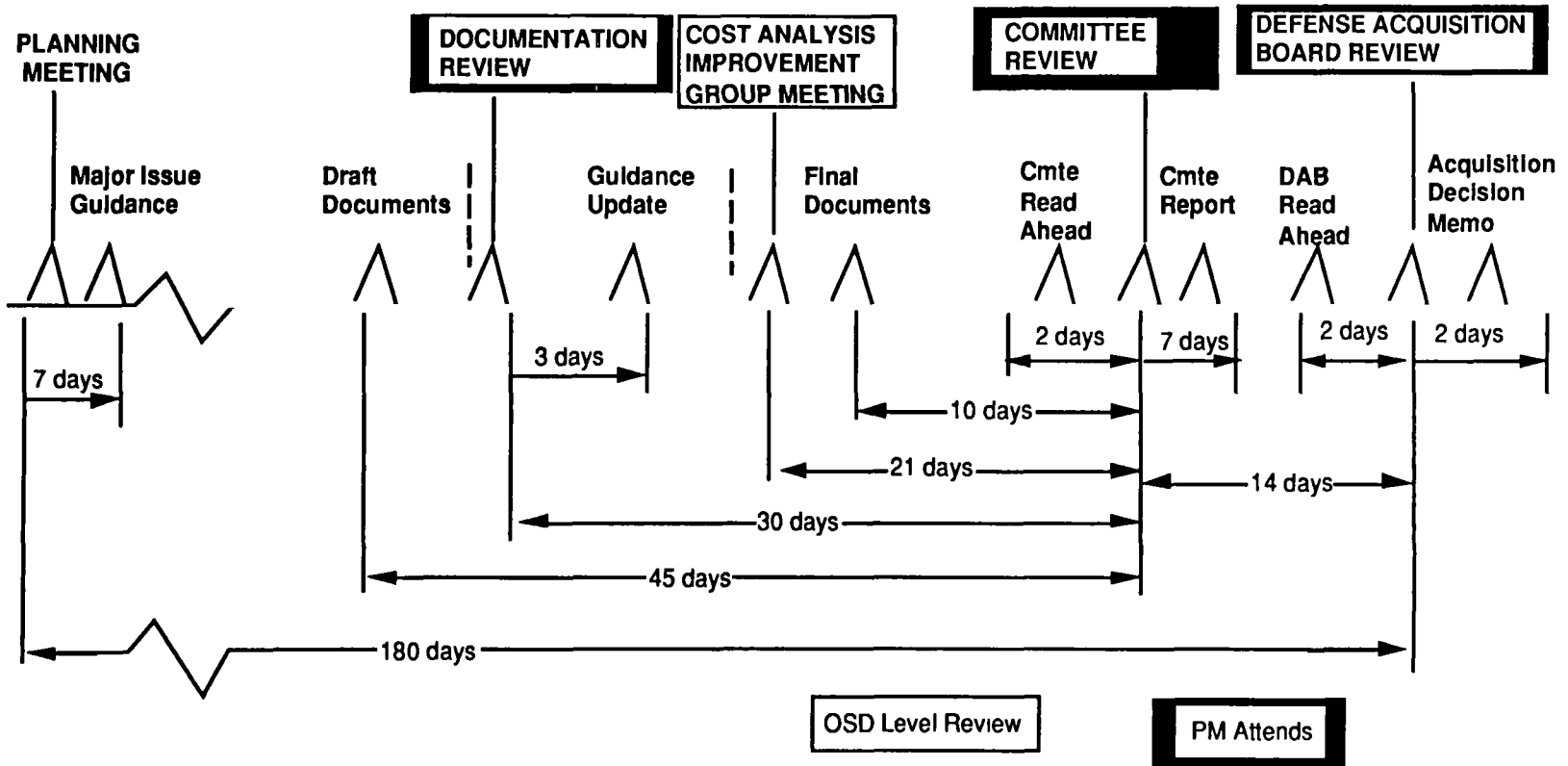
The detailed acquisition model developed by the tri-service team for the Task Force included several of the main steps in the DAB milestone process. They based this model on the formal DAB milestone process, which has evolved over the years into a formalized six month process as shown in the accompanying figure. The formal process involves five major OSD activities, beginning with the planning meeting and concluding with the DAB meeting six months later. Over this six month period, eleven specific pre-DAB activities are identified.

The DSB initially wanted to model the DAB process in detail and incorporate it within the 600+ step acquisition model. The Wave I data collection tested this approach, and found that the needed information was lacking. The study therefore quantifies the process by measuring the extent to which DAB reviews stretch beyond the six-month time frame stipulated in DoD regulations.



# DAB MILESTONE PROCESS TODAY

## DAB MILESTONE TIMELINE (MILESTONES I-IV)



Note Program Review timeline will be tailored to the nature of the review but will not exceed Milestone requirements

## **REQUIRED DOCUMENTATION FOR MILESTONE DECISIONS**

The accompanying Table identifies the 12 documents formally required for a milestone review. The processes for staff review of the major DAB documents were also included in the 600-step acquisition model. Team 1 wanted to identify how the processes for reviewing and approving these documents affect program schedules.

The IDA analysis focused on three of the main documents: the Independent Cost Estimate (CAIG) report, the Test and Evaluation Master Plan (TEMP), and the Cost and Operational Effectiveness Analysis (COEA) report. The analysis considers the extent to which the processes for preparing and reviewing these documents delay milestone reviews.

# REQUIRED DOCUMENTATION FOR MILESTONE DECISIONS

Documentation	0	I	II	III	IV	RESPONSIBILITY
Mission Need Statement	√					JCS
Integrated Program Summary (IPS) (Inc Baseline)		√	√	√	√	USD(A)
System Threat Assessment Report (STAR)		√	√	√	√	DIA
BCE/ICE <sup>1</sup>		√	√	√	√	CAIG
JROC Assessment		√	√	√	√	JCS
Beyond LRIP Report				√		DOT&E
TEMP		√	√	√	√	DDT&E
Cost and Operational Effectiveness Analysis (COEA)		√	√	√	√	PA&E
Computer Resources Life Cycle Management Report		√	√	√	√	P&L
Manpower Estimate Report (MER)			√	√	√	FM&P
Competitive Prototyping Strategy Exception Report		√	√			USD(A)
Competitive Alternative Sources Exception Report			√	√		USD(A)

<sup>1</sup> Baseline Cost Estimate/Independent Cost Estimate

## **LESSONS LEARNED FROM OSD DATA COLLECTION -- WAVE I**

Wave I data collection tested whether the DSB could obtain detailed data on the DAB oversight process for the 600+ step model--in effect developing a detailed history of the process for each program. Wave I showed that dates for some of the major oversight activities are retained and available. However, the dates of many of the DAB preparation activities are not recorded, and in many areas, the turnover of staff limits the corporate memory.

Wave I also revealed a definitional problem in modeling documentation reviews and other DAB preparation activities as discrete activities. These oversight functions occur informally throughout a program phase, and often have no agreed beginning or end. For example, one response indicated that OSD approved a TEMP in only one week. This was because the draft was coordinated informally for some months prior to its formal submission. In another example, a program office reported that a Cost Report took an entire five-year program phase to complete, because there were estimates and revisions made throughout the phase.

Following Wave I, IDA therefore concluded that the program offices may be the best source of information on the detailed schedule data required for the 600+ step model, this kind of information was not generally available in the records of the OSD staff. IDA proposed that its Phase II data collection efforts focus on program phases as defined by major program milestones.





## **LESSONS LEARNED FROM OSD DATA COLLECTION -- WAVE I**

- **SPECIFIC DATES ARE AVAILABLE AT OSD FOR**
  - DAB AND COMMITTEE MEETINGS
  - ACQUISITION DECISION MEMORANDA
  - SOME DOCUMENTATION APPROVAL -- E.G., TEMPS
- **PROGRAM OFFICES ARE BEST SOURCE FOR DATES OF OTHER DAB PREPARATION ACTIVITIES**
  - UNEVEN OSD CORPORATE MEMORY (STAFF TURNOVER)
  - RECORD KEEPING LIMITED
- **TIME LINE APPROACH WITH DISCRETE "ACTIVITIES" NOT ALWAYS APPROPRIATE FOR DAB PROCESS**
  - MANY ACTIVITIES HAVE NO AGREED BEGINNING OR ENDING
  - MANY ACTIVITIES ARE ITERATIVE WITH MUCH INFORMAL EXCHANGE

## **WAVE II DATA COLLECTION**

IDA proposed to approach Wave II by developing a history of program schedules and funding, and establishing main factors that drove schedules and funding during the sample period

The IDA analysis of the schedule impact of the DAB attempts to measure the extent to which the overall process stretches beyond this 180 day formal time line. The reasoning for this approach is that if the the DAB cycle runs according to plan, and is completed within the 180 day schedule, then there is a good chance these activities will run in parallel with other program activities, and therefore not slow the program. However, if the DAB is postponed beyond the 180 day window, or the Acquisition Decision Memorandum (ADM) is issued with a substantial lag following the DAB, then the potential exists for such lags in the process to interfere with the orderly execution of the program

This approach has two main steps. First, to help overcome the unevenness in the OSD corporate memory, IDA did the spadework necessary to develop a schedule and budget history for each program. These histories showed the baseline plans for the program (at the outset of the current phase of the program or the beginning of the coverage period (1985-1990)) and then showed how schedules and funding changed relative to these plans throughout the five-year study period. USD(A) action officers were then asked to explain the reasons for these program changes. They were also asked to identify specific oversight events, and how oversight affected program execution. In addition, they were given the opportunity to comment on the acquisition process and how it might be improved.

To supplement this approach, IDA relied on a number of data sources in addition to the action officer questionnaires. Of particular importance were the Selected Acquisition Reports, Acquisition Decision Memoranda, DAB meeting schedules, and annual editions of the Summary of Major Defense Acquisition Programs



## **WAVE TWO DATA COLLECTION**

- **IDA PROVIDED PROGRAM SCHEDULE AND FUNDING HISTORY**
- **USD(A) PROGRAM-LEVEL FACT-FINDING QUESTIONNAIRE (52 "oversight" Programs)**
  - **PROGRAM PHASE "TIME DRIVERS" AND "FUNDING DRIVERS"**
  - **SPECIFIC OSD EVENTS WHERE POSSIBLE**
  - **IMPACT ON PROGRAM EXECUTION**
  - **OSD VIEWS ON PROCESS**
- **OTHER SOURCES**
  - **SARS, ADMS, OT&E REPORTS, MAJOR PROGRAM SUMMARY, GAO RPTS, CONGRESSIONAL REPORTING REQUIREMENTS, IG REPORT SUMMARIES**
- **FACT-FINDING FOLLOW UP INTERVIEWS (USD(A) Action Officers, PA&E, Functional Staffs)**

## **DEFENSE PPB SYSTEM**

A simplified description of the defense Planning, Programming, and Budgeting System is shown in the accompanying figure. The process is designed to run on a calendar schedule, and takes approximately three years from start to finish.

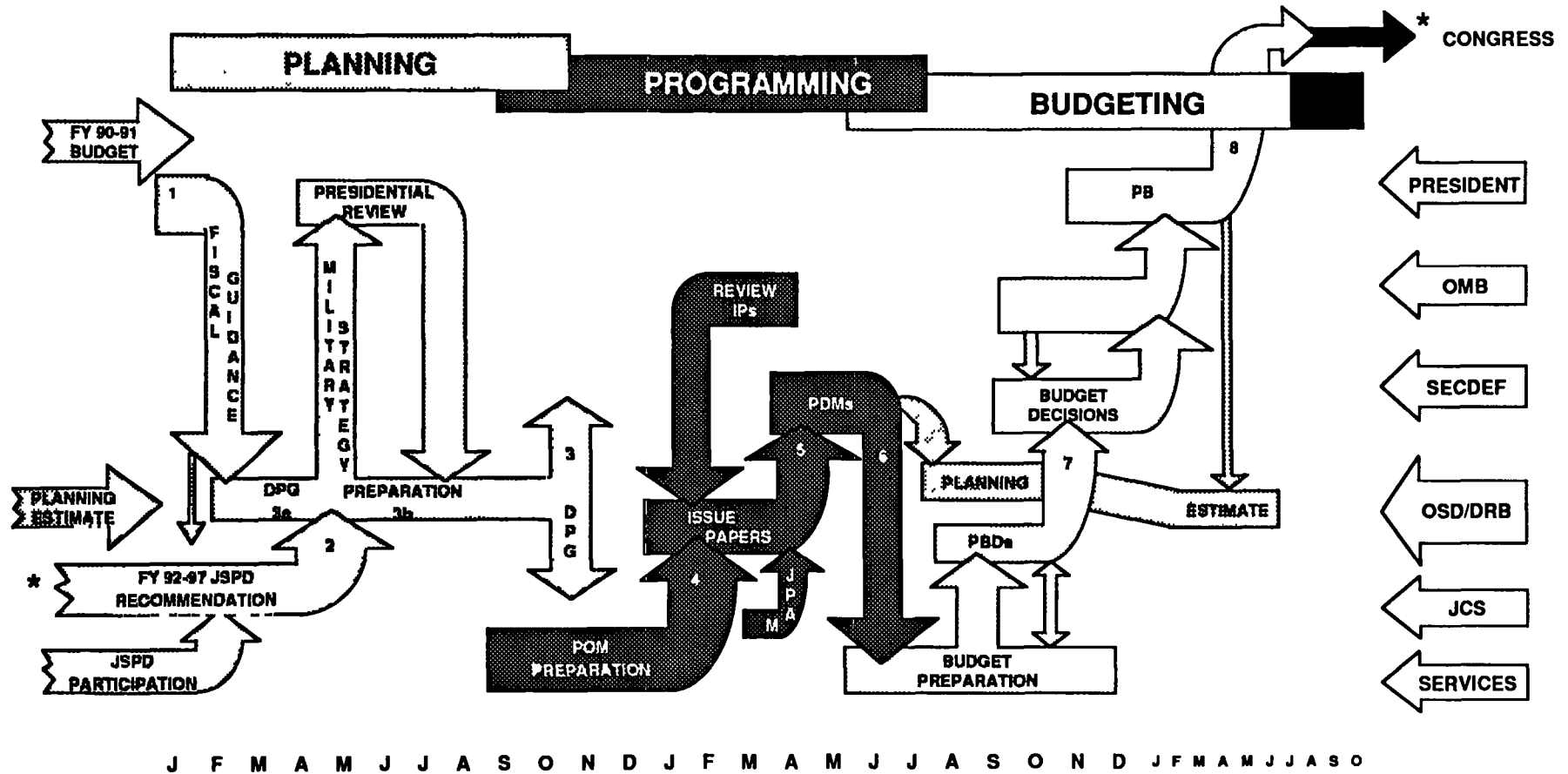
The DSB Task Force also developed a schematic of this process and wanted to link it with the acquisition model. However, since the PPBS runs on a calendar cycle it was not possible to link its activities with acquisition program activities which are event driven.

Because the PPBS activities do not directly fit within the acquisition timeline, detailed data on the process were not sought. Instead IDA sought to quantify the interaction of the PPBS with program schedules using the following two complementary approaches:

- The questionnaires submitted to industry and program managers asked them to identify cases in which the PPBS activities, such as participating in special studies, issue papers, or program reviews, delayed their programs.
- IDA examined the outcome of the process--in terms of the program budgets approved--comparing actual funding with the levels anticipated for each program.

The PPBS process places a burden on program managers, who must deal with the debates and issues raised within the process. Throughout this three-year PPBS cycle, funding for individual programs is planned, debated, and revised. The program manager often is heavily involved in explaining and defending his program at various critical points in the process. Issues may be raised, decided, and then raised again. This process no doubt consumes an undesirable amount of program management time. These activities do not, however, directly interfere with the execution of a program because they deal with future budgets. Moreover, because the PPBS is a regular ongoing process, most of these activities go on in parallel with other program tasks. Hence, the main effect of the PPBS on programs is through the outcome of the process--the funding approved for the program.

# DEFENSE PPB SYSTEM



- |  |   |   |
|--|---|---|
| <p>1 PRESIDENT'S FISCAL GUIDANCE</p> <p>2 JOINT STRATEGIC PLANNING DOCUMENT</p> <p>3 DEFENSE PLANNING GUIDANCE</p> <p>    a Defense Policy and Strategy</p> <p>    b Force/Resources Planning Guidance</p> <p>    c Detailed Fiscal Guidance</p> | <p>4 PROGRAM OBJECTIVES MEMORANDA</p> <p>5 ISSUE PAPERS</p> <p>6 PROGRAM DECISION MEMORANDA</p> | <p>7 PROGRAM BUDGET DECISIONS</p> <p>8 PRESIDENT'S BUDGET</p> |
|--|---|---|

## **MAJOR PROCESS CHANGES**

There was concern within Team 1 that recent changes in the acquisition system may create problems in relating the sample data to the current process. To address this issue, the accompanying table identifies some of the major changes made in the second half of the 1980's.

Most of these changes occurred early in the five-year sample period. This means that the data will incorporate the effects of these major changes, and hence reflect the system as it operates today. The exception is the recent change granting decision authority to the USD(A). The study is able to examine the effect of this change, because it has had an immediate effect on the DAB milestone schedule data base.

One potentially significant change affecting program schedules was the creation of the DAB committee structure in 1986. With the committees came a more formalized DAB preparation process. Some believe the committees have increased the time required in moving from one program phase to another, while others argue it simply provided a more formal structure for existing activities.

In 1990, the USD(A) resolved to discipline the process, to ensure programs were ready when they were brought forward for milestone reviews. While not a formal change, his higher review standards have led, in recent months, to several postponements of milestone reviews.



## **MAJOR PROCESS CHANGES**

- **DOT&E ESTABLISHED BY CONGRESS IN 1985**  
**--Independent Evaluations to Congress Required**
- **USD(A) ESTABLISHED IN 1986**
- **DAB COMMITTEE PROCESS CREATED IN LATE 1986**
- **AUDIT FUNCTIONS EXPANDED IN 1982, RESTRICTED IN 1987**
- **DMR RECOMMENDED STRENGTHENING USD(A) CHARTER IN 1989**  
**-- USD(A) Given Decision Authority on DAB Programs**



### **3. PROGRAM-LEVEL DATA**

- A. Sample Description**
- B. Phase Schedules and Time Drivers**
- C. Oversight Processes**
  - Milestones Reviews**
  - Other Oversight**
- D. Program Funding**

b



## WAVE II PROGRAMS

The DSB Task Force identified 150 programs for its study. The sample includes programs across Services, system type, and program phase, as well as a range of large and small programs.

The IDA sample includes all of the DSB sample programs that were subject to Defense Acquisition Board (DAB) oversight during the 1985-1990 period. In addition, several large programs in the DSB sample were not DAB programs during the sample period, but were nevertheless high-profile programs within the PPBS process. Six such programs were also included in the IDA sample.

The accompanying chart lists 52 programs, grouped within their respective USD(A) warfare areas. The sample is reasonably representative of the full population of DoD programs under OSD oversight, except that it excludes black programs.

## WAVE II PROGRAMS \*

### Tactical Warfare (29)

#### Land Warfare

1. AAWS-H
2. AAWS-M\*\*
3. FAADS LOS F-H
4. LH\*\*
5. LONGBOW
6. MLRS-TGW
7. OH-58 AHIP
8. PLS
9. V-22

#### Naval Warfare and Mobility

1. AN/BSY-1
2. AN/BSY-2
3. AN/SQQ-89I\*\*
4. C-17A
5. DDG-51\*\*
6. MK-48 ADCAP
7. MK-50 ALWT
8. NATO AAWS
9. ROTH-R
10. SEA LANCE
11. SSN-21

#### Air Warfare

1. AIWS
2. AMRAAM\*\*
3. F-14D
4. F-15E\*\*
5. SFW

#### Conventional Initiatives

1. ATACMS\*\*
2. Tacit Rainbow - GL
3. Joint STARS

### Command, Control and Communications (13)

#### Strategic & Theater Nuclear Forces C<sup>3</sup>

1. DSCS-III
2. E-6A\*\*
3. MILSTAR
4. OTH-B
5. UHF-FO

#### Theater & Tactical C<sup>3</sup>

1. ADDS
2. FAAD C2I
3. JTIDS\*\*
4. MARK-XV CIS
5. MSE
6. SINGARS\*\*

#### Other C<sup>3</sup>

1. AFWAM
2. ASPJ

#### Strategic and Tactical Nuclear Forces (10)

- |                |                        |
|----------------|------------------------|
| 1. ACM         | 6. DMSP                |
| 2. ADI         | 7. GSTS                |
| 3. ASAT (Army) | 8. Peacekeeper-RG      |
| 4. B-1B        | 9. SRAM-T              |
| 5. BSTS        | 10. TRIDENT II Missile |

#### Research and Advanced Technology (1)

1. NASP

\* Selection Criteria: ACAT 1D programs on DSB list (40 programs); ACAT 1C programs that have been DAB programs in recent past (6 programs: OH-58 AHIP, AN/BSY-1, MK-48 ADCAP, MSE, DSCS-III, DMSP), selected ACAT 1C programs that have been major PPB issues (6 programs: DDG-51, ROTH-R, F-14D, F-15E, E-6A, OTH-B)

\*\* Wave One Program

## SAMPLE DESCRIPTION

### A. PROGRAMS

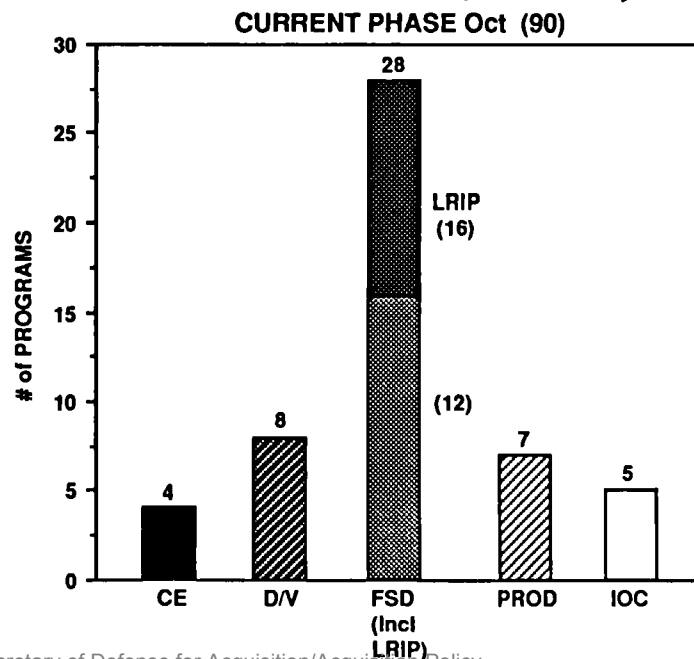
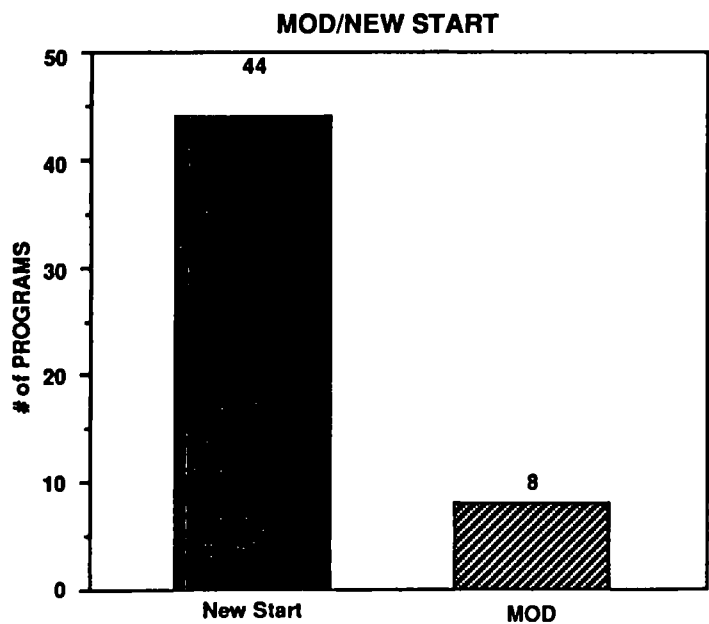
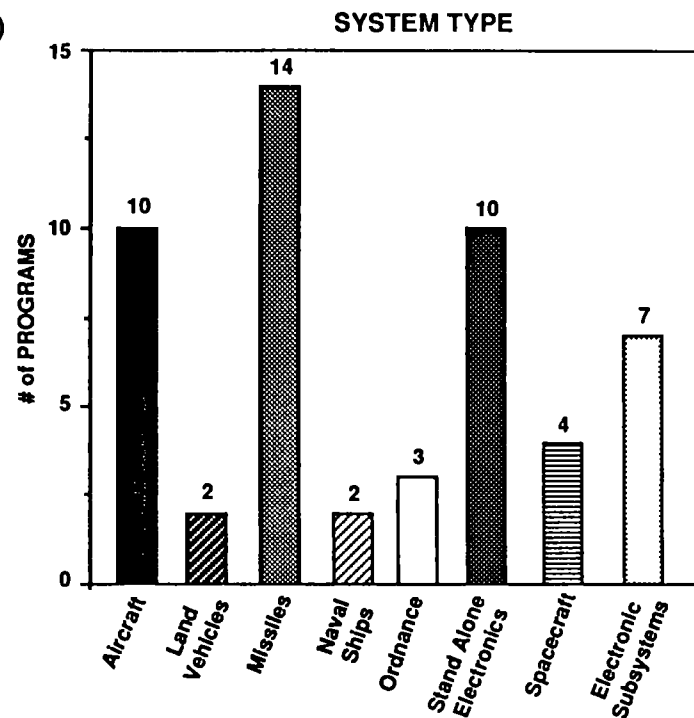
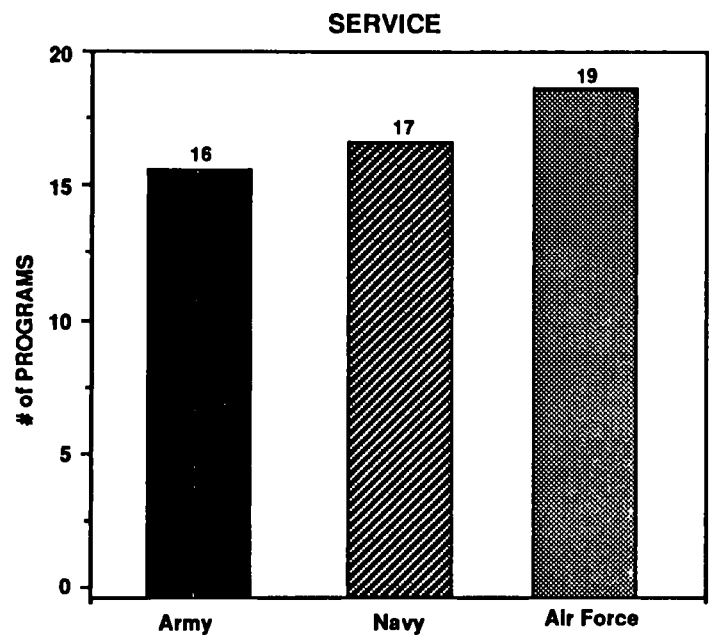
The accompanying figure provides four sets of summary statistics for the programs in the IDA sample.

- **Service:** The sample is roughly balanced across the Services.
- **System Type:** The DSB defined eight categories of weapons for the study. The systems represented in the sample are predominantly aircraft, missiles, and electronics
- **Program Type:** The programs are mostly new starts rather than modifications to existing systems.
- **Program Phase:** Program phase is defined as the period between major milestones. The DSB defined five phases: Concept Exploration, Demonstration/Validation, Full-Scale Development, Production (up to IOC) and post-IOC. The IDA programs are predominantly in the FSD/LRIP phase of the program cycle, as of the fall of 1990

### B. TIME FRAME

The DSB targeted a 5-year window for the study, 1986 through 1990. IDA's examination of program phases included the current phase, plus the preceding phase if it fell wholly or partially within the 5-year study period. Funding data were obtained for the 5-year study period.

# SAMPLE DESCRIPTION



10-18-90(23)lad

## PHASE SCHEDULES AND TIME DRIVERS

The program schedule history included the initial planned duration for the phase obtained from the 1982 or later edition of the program's Selected Acquisition Report or through the OSD's annual Summary of Major Defense Acquisition Programs. Subsequent editions of these documents were used to track year-by-year changes in the schedule. Because the current program phase is not complete, further schedule changes are possible

OSD program action officers were asked to comment on the reasons for the year-to-year changes in the program schedule, as well the time drivers for the entire program phase IDA judged the response rate insufficient to report findings for the year-to-year program changes, and so the results reported are for the full phase only. Program action officers' responses for program phases include time drivers for the phase, the estimated schedule impact of the time driver on the phase, and the ranking of the significance of the time driver. Ten categories of time driver were offered for their responses. The following presentation combines these in the four categories shown below

SUMMARY CATEGORIES	QUESTIONNAIRE CATEGORIES
<b>Funding:</b>	<ul style="list-style-type: none"><li>• Budget Cuts/ Cost Growth</li></ul>
<b>Administrative:</b>	<ul style="list-style-type: none"><li>• Reporting Requirements</li><li>• Inadequate Documentation</li><li>• Personnel Shortfalls/Turnover of Key Personnel</li><li>• Contracting Delays</li><li>• Program Reviews</li></ul>
<b>Program Definition:</b>	<ul style="list-style-type: none"><li>• Requirements Changes</li><li>• Lack of Program Consensus</li><li>• External Guidance</li></ul>
<b>Technical:</b>	<ul style="list-style-type: none"><li>• Technical Difficulty/Test Problems</li></ul>



## **PHASE SCHEDULES & TIME DRIVERS**

### **APPROACH**

- **COMPILED PLANNED AND ACTUAL (CURRENTLY PROJECTED) SCHEDULES**
  - **Pre-FSD -- Time For Programs In Dem/Val Phase**
  - **FSD & LRIP -- Time From Milestone II to Milestone III B Decision**
- **DEVELOPED QUESTIONNAIRE FOR OSD ACTION OFFICERS FOR ASSESSMENT OF PHASE TIME DRIVERS**

## **SCHEDULES: CONCEPT EXPLORATION PHASE**

**Overview:** The accompanying figure and the following two figures present schedules and time drivers. The left hand panel shows the time planned and the time added to the planned schedule (through October, 1990). The figure also indicates how long each program has been within the current phase.

The right-hand panel summarizes the time driver responses for each program. The respondents indicated one or more time drivers as appropriate. The principal time driver(s) is (are) indicated in black, and any secondary drivers are shaded. The following figures include

- A. Concept Exploration:** Five programs
- B. Demonstration/Validation (DEM/VAL):** Eight programs
- C. Full Scale Development and Low Rate Initial Production:** Twenty-five programs

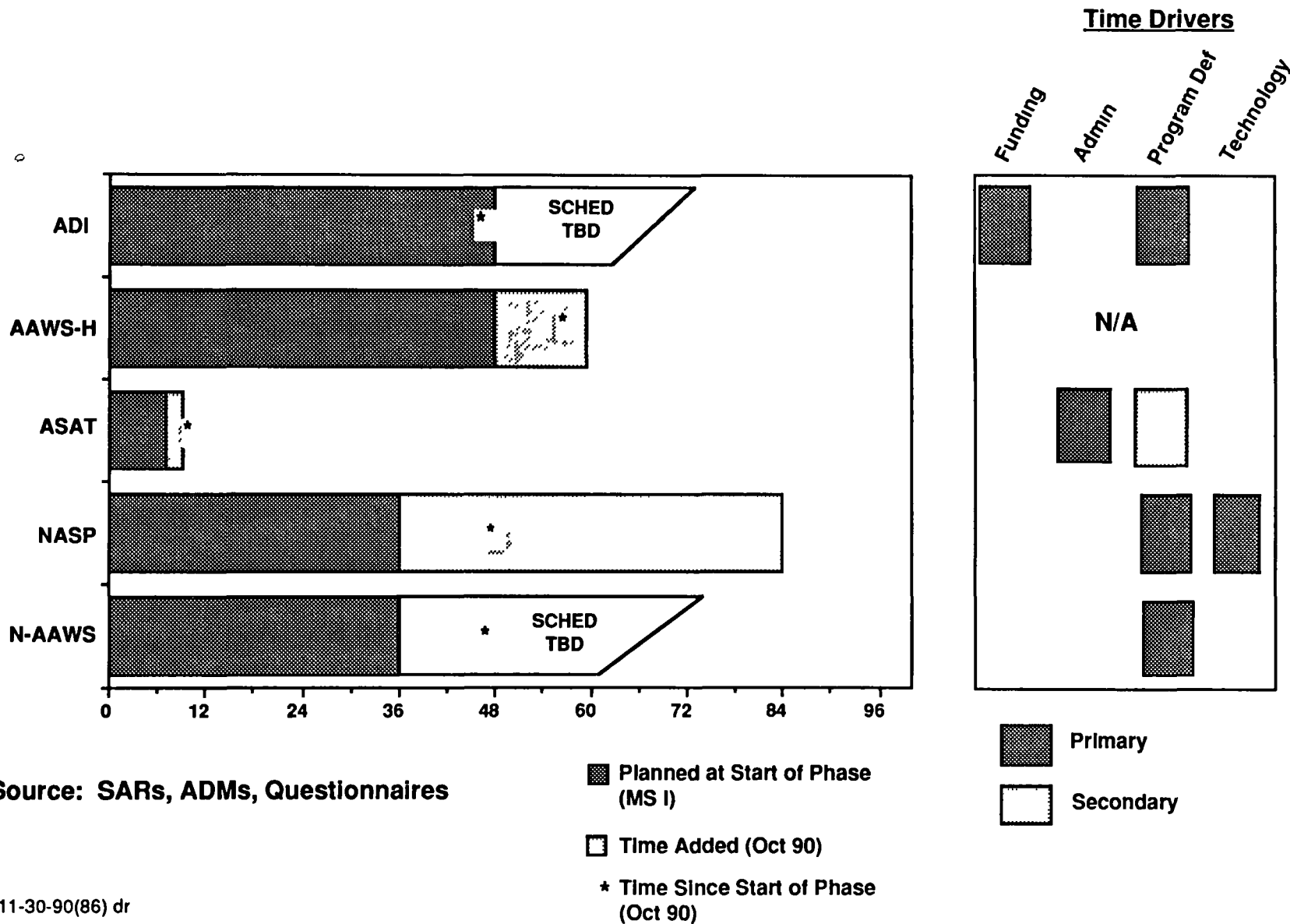
### **A. Concept Exploration Programs**

The Concept Exploration programs include a mix of traditional warfare programs that progressed roughly as planned, along with exploratory programs that are essentially open ended. Of the five programs included in the accompanying figure, N-AAWS and ADI presently do not have targets established for completing the phase. Two of the programs, ASAT and AAWS-H, are at or near completion of the concept exploration phase. The time added was relatively modest for each:

- ASAT had 2 months added (7 months planned) due to documentation problems and DAB staffing
- AAWS-H had 5 months added (48 months planned) with no explanation given

The National Aerospace Plane (NASP) was delayed because the initial schedule and program concept were judged to be unrealistic, given the technical challenges.

# SCHEDULES: CONCEPT EXPLORATION PHASE





## PHASE SCHEDULES AND TIME DRIVERS (CONT.)

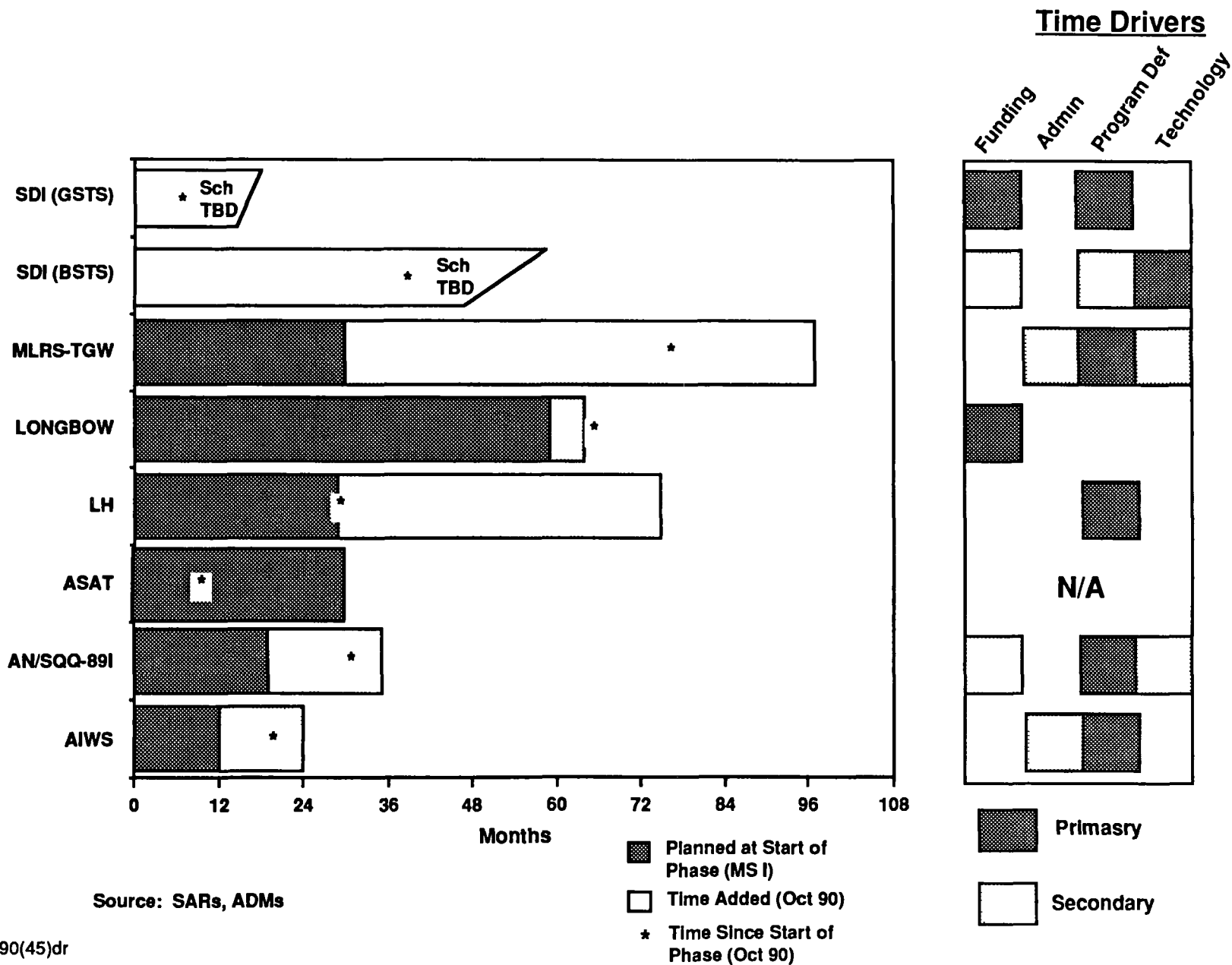
### B. Demonstration/Validation Programs

The 8 DEM/VAL programs are shown in the accompanying figure. The two SDI programs are open-ended, since no Milestone II has been scheduled. The average planned time for the remaining 6 programs is 30 months, and the time added averages 25 months.

A range of time drivers is cited. Program definition is the number-one time driver for five of the programs, and is hence the predominant reason cited for program delays in this phase.

- **Program Definition:** When program definition is cited, it most often reflects a lack of a strong organizational proponent. Such programs fall into one of four groups.
  - NATO Cooperative Programs: MLRS-TGW,
  - Joint Programs: AIWS,
  - Programs Lacking Consensus: AN/SQQ89I, LH, and
  - Changing Requirements: GSTS
- **Funding:** Funding was cited for two programs. ADI had congressional cutbacks, and GSTS experienced funding cutbacks.
- **Administrative:** The administrative delays cited include documentation, contracting, and procedural issues.
- **Technical:** Technical problems were cited in two cases, these programs were judged to lack the technology to complete DEM/VAL.

# SCHEDULES DEMONSTRATION AND VALIDATION PHASE



11-30-90(45)dr

## PHASE SCHEDULES AND TIME DRIVERS (CONT.)

### C. Full Scale Development and Low Rate Initial Production Programs

Twenty-five programs have complete data for the full-scale development and low-rate initial production phases of programs. The average planned time was 50 months. Time added is 33 months. This is a lower bound estimate, since some programs, such as SRAM-T, have just entered this phase, and could yet experience schedule slippage.

- **Technology:** Technical problems are the most frequently cited reason for time delay. These are cited in 16 of the 22 cases with questionnaire responses. Respondents cited technology as the principal time driver for every LRIP program. Technology is by far the most important time driver for this program phase.

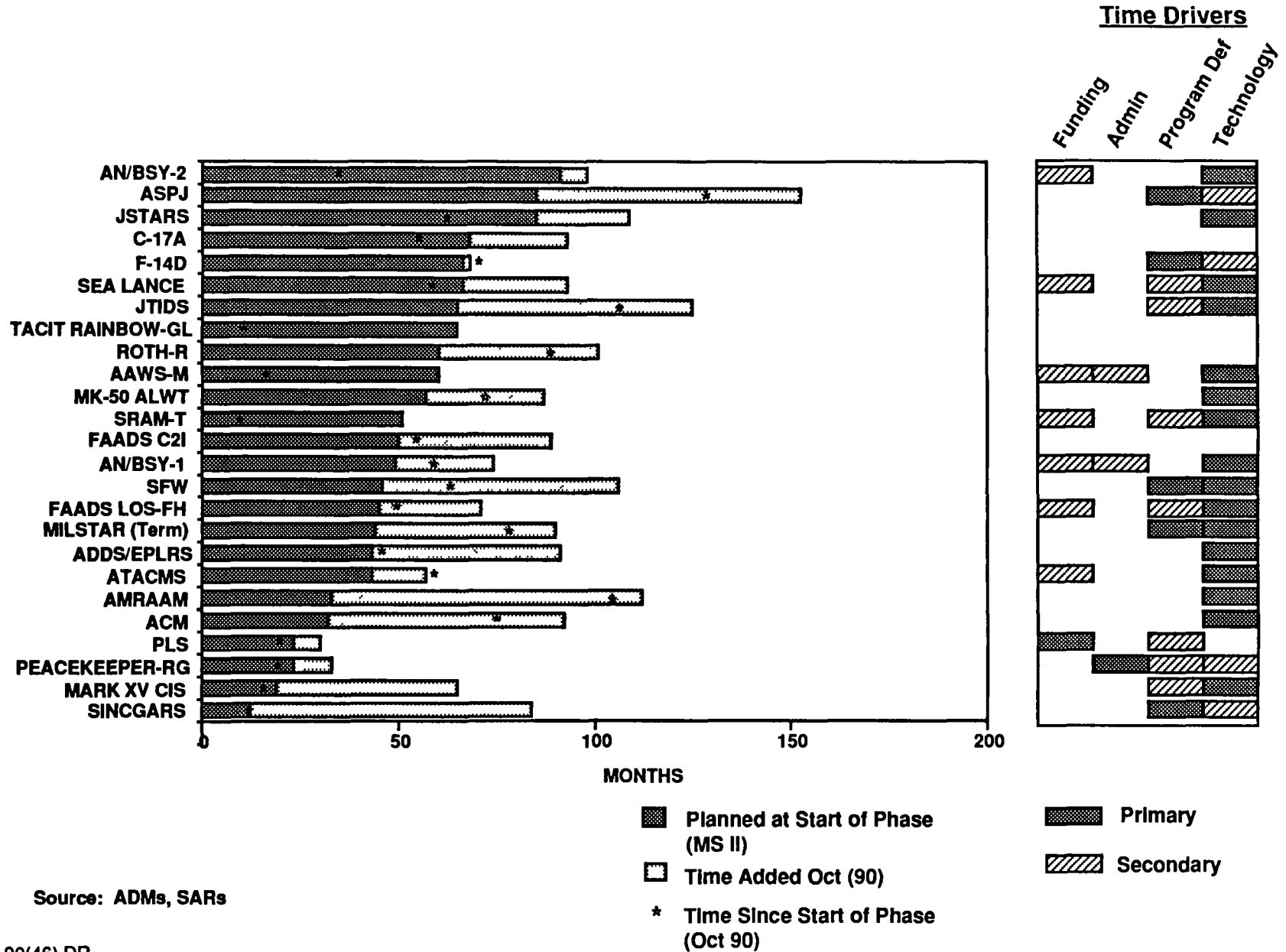
- **Program Definition:** Program definition is cited for an additional 5 programs. Changing requirements are cited for JSTARS, Sea Lance, and ADDS, lack of consensus is cited for V-22, which has been threatened with cancellation, and external guidance is cited for FAADS-LOS-FH, a non-developmental item for which Congress required a test and evaluation phase.

- **Administration:** Administration is cited only for the MARK XV CIS, and the underlying problem was the inability of the contractor to build up staff for the FSD phase.

- **Funding:** Funding cited for the Peacekeeper-RG stems from Congressional limitations on program funding. It is noteworthy that funding is cited as a secondary driver for several programs. Technical problems are the main driver in every case where funding is cited, and in every case R&D funding exceeds the baseline program projection. Development cost growth evidently is the underlying problem when program funding is cited as a time driver.

# SCHEDULES AND DRIVERS

## FSD START TO PROJECTED FULL RATE PRODUCTION



Source: ADMs, SARs

11-30-90(46) DR

## OBSERVATIONS: TIME DRIVERS

The accompanying figure summarizes the time-driver responses received for either the current or preceding program phase. These are grouped into two categories. (a) pre-full scale development and (b) full-scale development and low-rate initial production. This figure illustrates three important points:

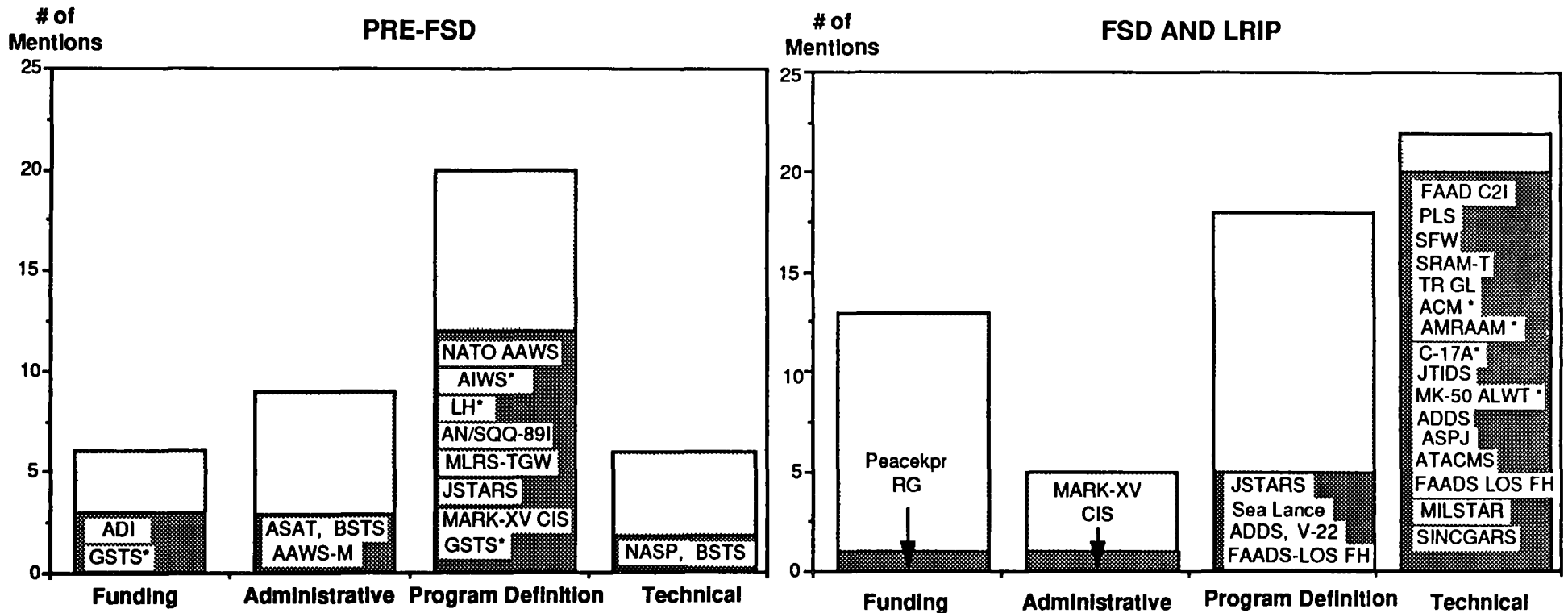
- **Time drivers vary significantly across phases.** In the early phases, there is a range of reasons for delays. The most often cited reasons relate to problems in defining programs. Joint programs, NATO cooperative programs, and programs where the Service and OSD differ on priorities tend to fall in this category. Technical problems predominate in FSD and LRIP--having been cited in 20 of 27 cases as the principal program time driver.

- **Substantive, programmatic issues are the predominant time drivers cited.** The problems in defining programs and solving the technology problems during development are the main reasons given for program delays. Addressing these issues is thus the key to shortening the schedules of acquisition programs.

- **Administrative and oversight issues were a source of delay in some cases.** Such delays account for a very minor fraction of the overall delays experienced by the programs in the sample. Nevertheless they reflect problems that potentially can be avoided, and therefore should be addressed. The issues raised in connection with these programs are as follows:

- **ASAT--**The Milestone I review and program transition were delayed about eight weeks because of documentation deficiencies, a change in program scope by the DAB, and the unavailability of the DAB chairman.
- **BSTS--**The transition from Concept Exploration to the DEM/VAL stage was delayed because of delay in starting contracts. The program manager had to find bridging dollars to keep the Concept Exploration contracts alive.
- **AAWS-M--**A ten-week delay between the ASARC Milestone II meeting and the DAB meeting slowed the transition to FSD. An issue over source selection contributed to this delay.
- **MARK XV-CIS--**A fifteen week delay resulted from the contractor's inability to staff up for FSD.

## TIME DRIVERS FOR ACAT ID PROGRAMS (Frequency of Mention)



\* # 1 Time Driver for Concept Exploration & Dem/Val

Source: OSD Questionnaire Responses



## **SUMMARY: PHASE SCHEDULES AND TIME DRIVERS**

The accompanying table shows the average time planned for each program phase (and the range of plans) and the average time added during the phase. It also identifies the top two time drivers identified for each phase. These summary statistics underscore that

- Delays account for an average of 40 to 50 percent of total program time in the IDA sample.
- Delays result primarily from substantive programmatic issues. These issues vary over the phases of programs. Program definition issues are the predominant time drivers in the pre-FSD phases. Technical problems are predominant in FSD and LRIP. Funding problems are predominant in production.
- Delays are sometimes caused by oversight or administrative processes, but the delays resulting from these causes account for a very small number of the delays observed in the IDA sample.

# OBSERVATIONS: PHASE SCHEDULES AND TIME DRIVERS

## PHASE SCHEDULES

## TIME DRIVERS

**PRE-FSD PROGRAMS**

**FSD & LRIP PROGRAMS**

Average Plan	Average Time Added	
30 Mo. (12 to 59)	30 Mo. (5 to 67)	<ol style="list-style-type: none"> <li>1. Program Definition (11 of 19 cases)</li> <li>2. Administrative (3 of 19 cases)</li> </ol>
51 Mo. (12 to 91)	33 Mo. (0 to 79)	<ol style="list-style-type: none"> <li>1. Technical Difficulties (20 of 27 cases)</li> <li>2. Program Definition (5 of 27 cases)</li> </ol>



## OVERSIGHT PROCESS ANALYSES

The study examined the OSD oversight processes in an attempt to document in greater detail how the process affects program schedules. This analysis has two main components:

- **DAB Oversight:** The study documents the timeline for DAB meetings held since March, 1988. (This was the earliest date for which DAB schedules are available.) This analysis measures the extent to which the process deviates from the 6 month formal process described in DoD directives. The underlying assumption is that the initial schedule for a DAB Milestone review marks the intended completion of the 6-month formal process. This process ordinarily goes on in parallel with other program work. However, if the DAB is postponed beyond that date or excessive time is required to prepare an Acquisition Decision Memorandum (beyond the 2 days allotted in the formal process), the process stretches beyond the allowed 6 months. This added review time could potentially delay program activities and cause schedule delays.

- **Other Oversight:** The study also attempts to document the number and effect of non-milestone oversight activities such as audits, investigations, special studies, and non-milestone reviews. Two complementary approaches are taken:

- **Industry and Program Manager Questionnaires:** IDA included questions asking industry and program management respondents to identify oversight activities and to assess how they affected program schedules. These questionnaire responses constitute the primary source of data on the effects of oversight activities.
- **Oversight Authority Documentation:** To complement the program-level questionnaire data, IDA asked oversight authorities, including the General Accounting Office (GAO), Inspector General, and Comptroller, to provide data on the extent of their involvement with the programs in the IDA sample.



## **OVERSIGHT PROCESS ANALYSES**

### **APPROACH**

- **DAB PROCESS -- Measures of process time**
  - **Compiled DAB Schedules Since March of 1988**
  - **Compiled ADMs Since 1985**
  - **Examined Schedule Impact of DAB Documentation Using OSD Studies and Interviews**
  
- **OTHER OVERSIGHT -- Measures of frequency and effect on schedules**
  - **Compiled Experience With Major Program Reviews, IG Audits, GAO Audits, Congressional Reporting Requirements**
  - **Examined DSB Questionnaire Findings on Oversight From Program Managers and Industry**

## MILESTONE REVIEW TIMES

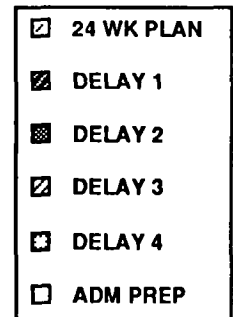
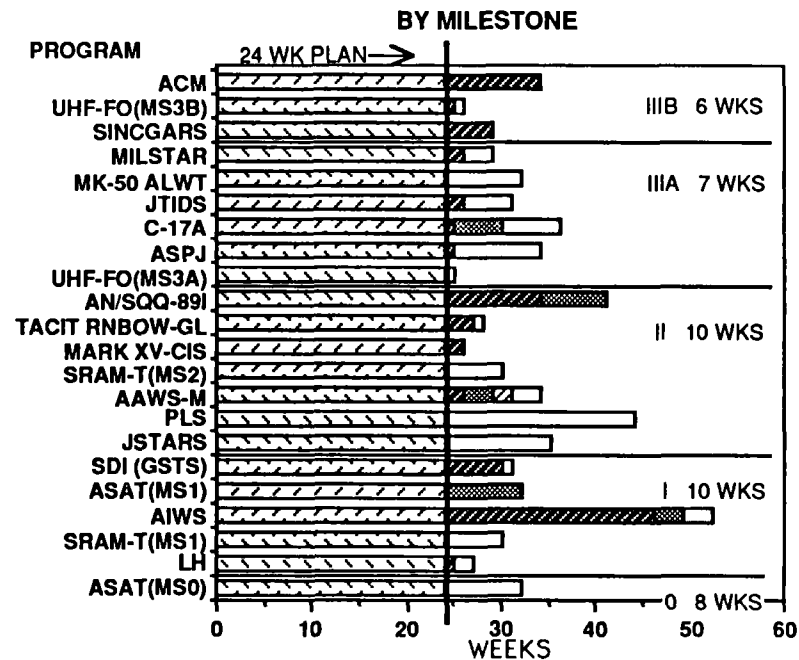
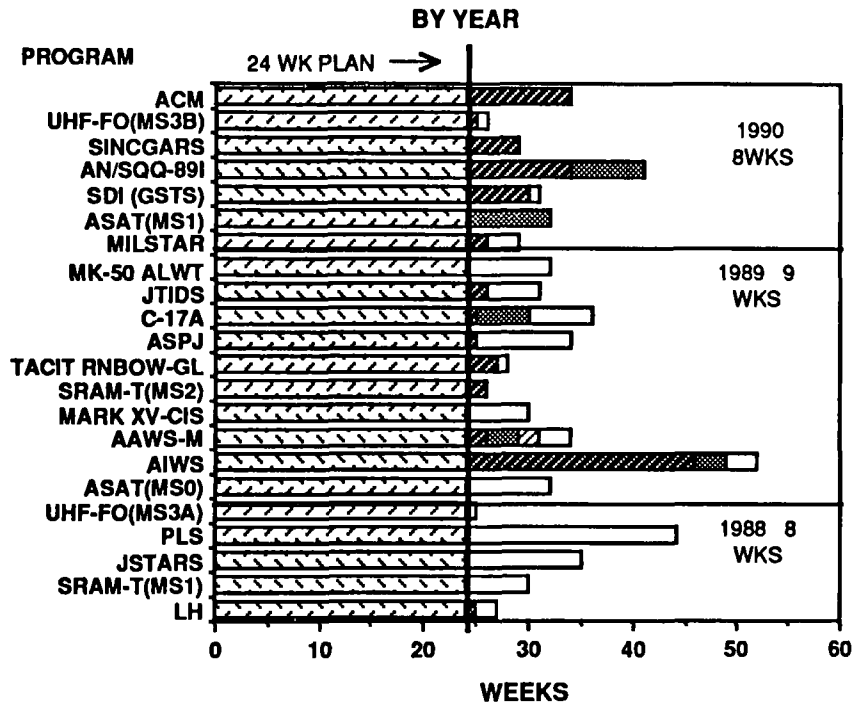
The accompanying figure displays the milestone schedule data for the 22 DAB milestone reviews conducted for the IDA sample programs since March, 1988. These schedule data are provided in two different ways, in order to examine possible patterns in the data.

- **Milestone Review Times by Year:** The average stretch-out of the milestone review beyond the 24-week planned process has not varied significantly over the sample period. The average was 8 or 9 weeks in each year. The delays in 1988 primarily took the form of lags in issuing ADMs, whereas delays in 1990 primarily took the form of postponements in the DAB meetings. This reflects the differing approaches of the USD(A) over the years. In 1988, the USD(A) wanted to convene meetings on schedule, and some issues consequently remained to be settled following the meeting. In 1990, the USD(A) resolved not to convene a DAB until the program was ready, and then to issue ADMs within two days of the meeting. The result has been more postponements of the DAB meetings, but less delay in issuing ADMs.

- **Milestone Review Times by Program Milestone:** The average process stretch-out is 10 weeks for Milestones I and II, 6 or 7 weeks for Milestones IIIA or IIIB. Given this small sample size, it is not clear whether this observed difference is statistically meaningful.

- **Effect on Program Execution:** These data show that stretch-outs in the milestone process beyond the planned 24 week process are typical, and average about 8 to 9 weeks. Potentially, such stretch-outs could affect program execution, were they to affect the flow of program funds or delay signing a contract. Such stretch-outs were cited in only a few cases as schedule drivers. OSD action officers generally mention that program activities proceed apace, in parallel with oversight, even when delays occur in the review process. Therefore it would appear that such slippages typically do not affect ongoing work.

# MILESTONE REVIEW TIMES



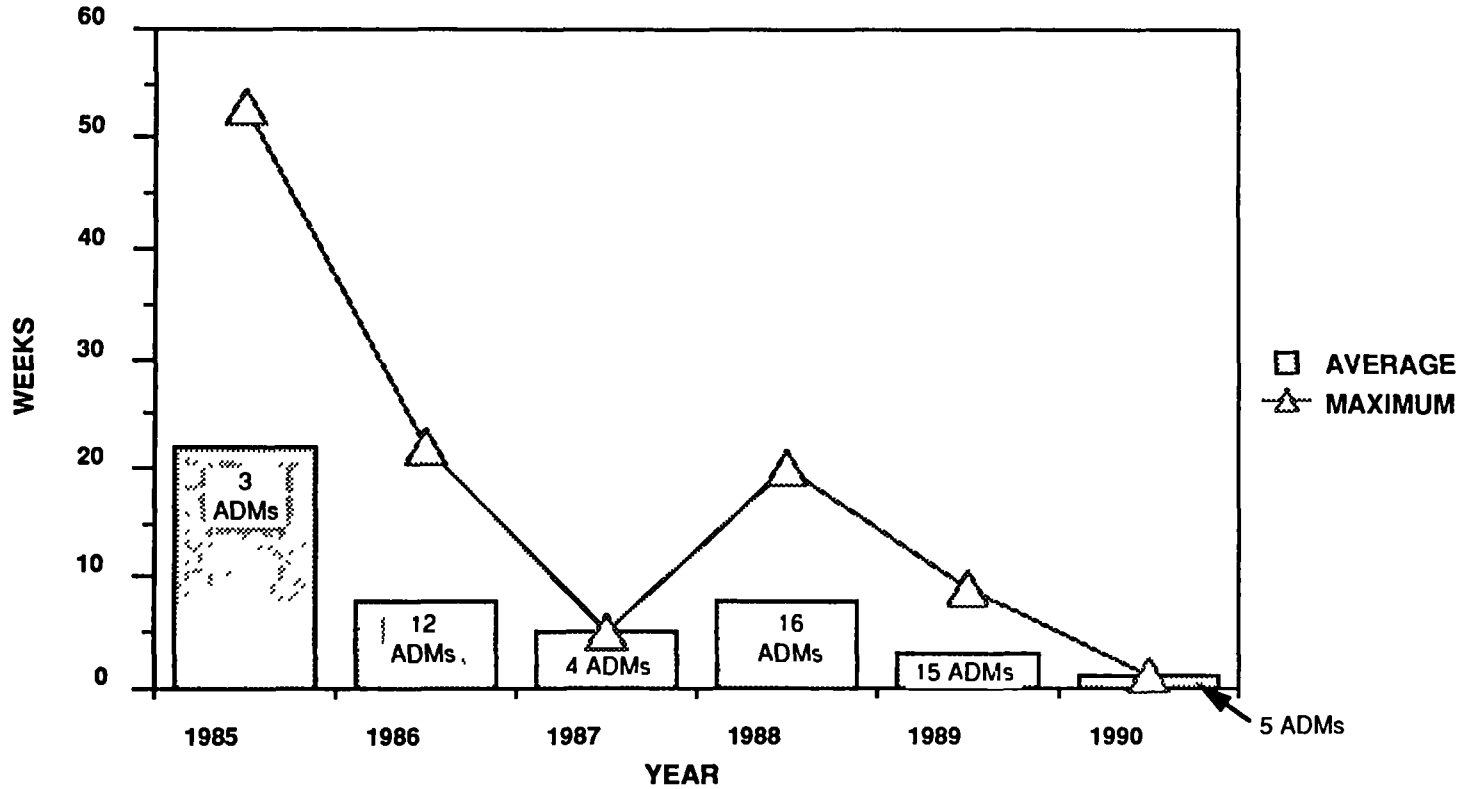
\* ADM Not Yet Issued  
Source: DAB Meeting Schedules and ADMs

11-30-90(65)

## **TIME REQUIRED FOR ADM PREPARATION**

Lags in issuing Acquisition Decision Memoranda are sometimes raised as a procedural problem that has delayed programs. The accompanying figure focuses on the time required for issuing the ADM following a DAB milestone review. The figure shows, for each year since 1985, the average and maximum preparation time and the number of ADMs issued. The ADM preparation time declined substantially over the second half of the 1980s. In 1990 the average time shrank to under one week, because the USD(A) had the authority to sign ADMs and set a policy of issuing decisions within 48 hours.

## TIME REQUIRED FOR ADM PREPARATION



Source: DAB Schedules and ADMs For 1985, 86, ...90.

11-30-90(66)

## REVIEW OF MAJOR DAB DOCUMENTATION REQUIREMENTS

The study examines whether milestone reviews are delayed because of problems or issues with the documents required for DAB milestone reviews. The study team interviewed officials responsible for these areas, and in some cases, reviewed available documentation or records on the process for preparing and reviewing these documents. The finding is that DAB documentation has not been a source of delay. This is consistent with the questionnaire results, which identified only one program delay caused by documentation requirements. The findings for the three documents reviewed are shown on the accompanying figure.

- **Test and Evaluation Master Plan:** The TEMP and its review has been a contentious issue between the Services and OSD. Consequently, OSD recently examined the TEMP review process, and instituted a two-week review time limit for the OSD staff. It should be noted that TEMP reviews occur on a different cycle than the DAB, and that milestones were not delayed for the lack of an approved TEMP. The TEMP therefore is not a DAB schedule driver.
- **CAIG Report:** The OSD staff prepares the independent cost report in parallel with program sponsor estimates. CAIG report schedules were not examined, because there is a general consensus that CAIG reports are timely and do not delay milestone review meetings.
- **The Cost and Operational Effectiveness Analysis:** Interviewees uniformly agree that the COEA does not drive DAB schedules. DABs often go forward without the COEA, even though it is required by DoD directives.
- **Recent Changes:** In 1990 the USD(A) resolved to discipline acquisition decisionmaking, and postpone DAB meetings when documentation is inadequate. Interviewees estimate that in recent months perhaps as many as one-half of scheduled DABs were postponed for this reason. It appears documentation inadequacies did not slow program reviews throughout most of the sample period, but they are delaying programs in recent months.



## **REVIEW OF MAJOR DAB DOCUMENTATION REQUIREMENTS**

- **TEST AND EVALUATION MASTER PLAN**
  - **OSD reviews Temp annually -- not on DAB cycle**
  - **Lack of a Temp has not held up DAB reviews**
- **CAIG REPORT**
  - **Virtually always on schedule**
- **COST AND OPERATIONAL EFFECTIVENESS ANALYSIS**
  - **Although required in 5000.1, lack of COEA has not held up DAB reviews**
- **RECENT USD(A) POLICY HAS EMPHASIZED DISCIPLINE**



## **OVERSIGHT: PROGRAM MANAGER AND INDUSTRY QUESTIONNAIRE RESPONSES**

First hand information on the effects of oversight on program execution was sought in the questionnaires issued to industry and program management. Respondents were asked to identify oversight activities into their programs and estimate the effect on program schedule. The accompanying figure summarizes the responses.

- **Responses for the 52 program sample:** The questionnaire responses included 211 oversight activities identified by either the program manager or industry respondents. Of these 211 responses, there were 8 cases identified by both the program manager and industry. In most cases, the oversight activities evidently did not affect the entire program significantly, since it was noted by only one respondent.
- **Program delays:** Respondents identified delays in 7 programs that were caused by oversight activities. The programs and delays are identified in the accompanying table

## OVERSIGHT: PM AND INDUSTRY QUESTIONNAIRE RESPONSES

- **FOR THE 52 PROGRAMS IN THE IDA SAMPLE**
  - **211 Activities Reported by Either the PM or Industry**
  - **8 Cases Identified by Both PM & Industry**
  - **7 Programs Where Activities Were Reported to Have Caused Delay:**

<u>Program</u>	<u>Weeks</u>	<u>Authority</u>	<u>Comments</u>
FAADS-LOS-FH	140	Congress	Additional test requirement
GSTS	52	OSD	Funding cut/additional D/V unit and flight test
JSTARS	52	Buying Command	Audits due to large cost overruns
NASP	156	Steering Committee	Program restructured due to technical complexity
Peacekeeper-RG	78	Buying Cmd/Svc IG	Audits in response to test failures and unstable requirements
ROTH-R	50	SvcSec/Buying Cmd	PPBS funding cut
SRAM-T	7	OSD	AF led program assessment in response to technical problems

## OVERSIGHT ACTIONS

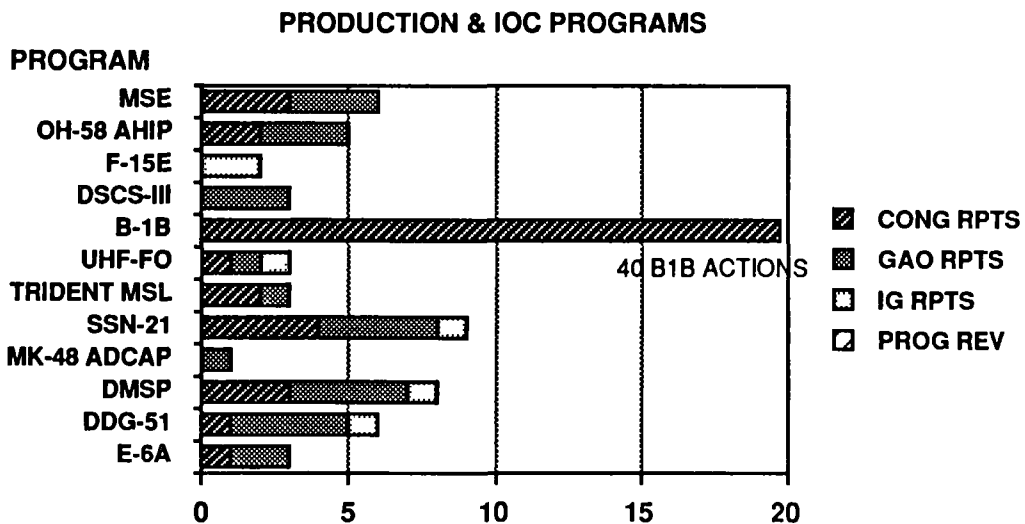
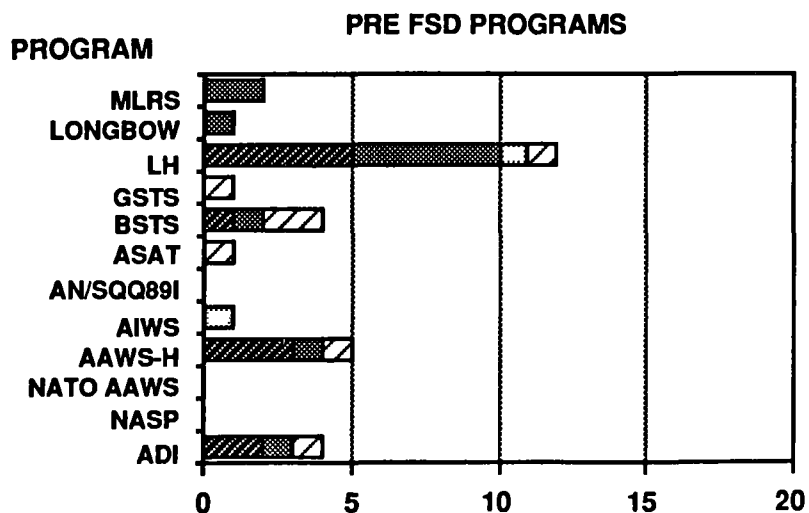
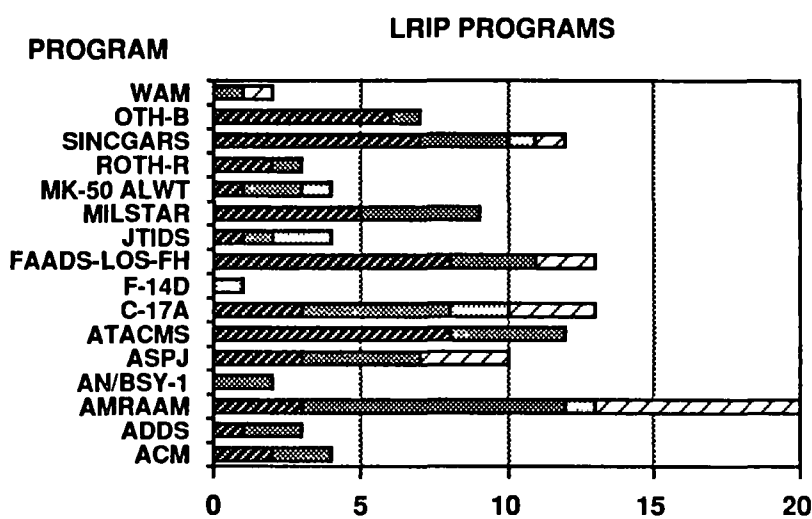
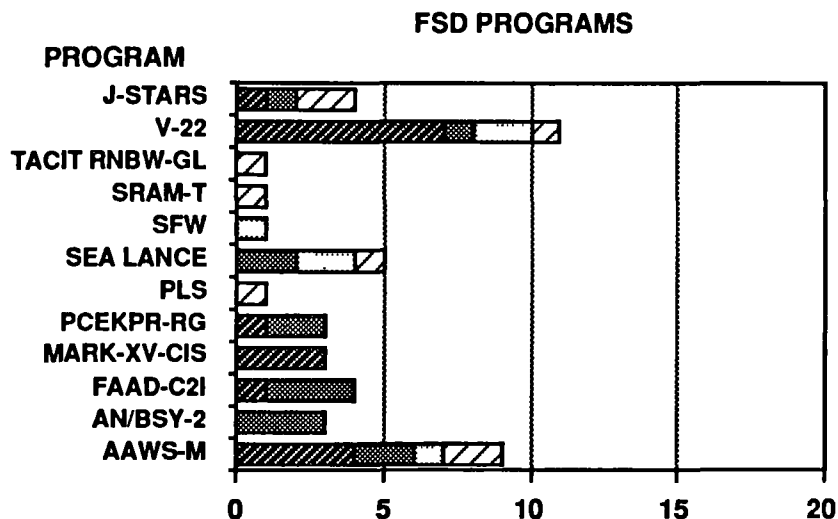
To complement the program questionnaire data on oversight, IDA asked the major oversight organizations to identify oversight activities relating to the IDA sample of programs. The areas examined and the sources of data are as follows.

- **GAO Reports:** The GAO provided copies of reports on the 52 programs over the past five years.
- **Congressional Reporting Requirements:** The Comptroller provided copies of its tracking logs for required Congressional reports for the last five years.
- **Inspector General Reports:** The Inspector General provided IDA a computer printout identifying the IG audits over the last five years.
- **Major Program Reviews:** A review of the Acquisition Decision Memoranda obtained for the study identifies the major program reviews (non-milestone reviews of major programs) held in the last five years.

The accompanying table provides a count of these events. It shows a substantial level of oversight activity. There were 19 programs that experienced 5 or more interventions, 14 of these were in the LRIP or production phase.

Comparison of these findings with the preceding questionnaire suggests that most of the oversight activities identified here do not significantly affect program schedules. There was extensive oversight activity as identified by both the oversight agencies and the program questionnaires. Nevertheless, relatively few programs had delays associated with such oversight.

# OVERSIGHT ACTIONS (Frequency by Program)



Source: OSD, Comptroller, OSD IG, GAO, DAB Schedules and ADMs

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## PROGRAM FUNDING

Funding shortfalls are often hypothesized to cause programs to deviate from cost and schedule projections. The program schedule and time-driver data showed that funding is often cited as a contributing factor to program delays, and occasionally as the principal time driver. This section provides the funding history of the programs in the IDA sample to show how funding compares with program planning assumptions. The analysis considers two aspects of funding:

- **Actual funding compared to the January, 1985 projection:** These statistics compare actual program funding over the five year study period, 1986 to 1990, against a five-year projection made at the outset of the period. Both the projections and actual budget data were obtained from the annual editions of a program's Selected Acquisition Report.
- **Congressional approvals compared to the President's request:** The second statistic examines the year-to-year level of Congressionally approved budgets compared to the amount requested in the President's budget. This shows the extent to which Congress supports the spending proposed by the executive branch.



## **PROGRAM FUNDING**

### **APPROACH:**

- **Compared Five-Year Cumulative Funding For FY 86-90 Relative To The Projection Made In Jan 1985**
  - **R&D Funding For FSD & LRIP Programs**
  - **Procurement Funding For LRIP Programs**
  - **Procurement Funding For Production Programs**
- **Examined Possible Funding Drivers**
  - **Technical problems and schedule slippages**
  - **Overall budget trends**

## **PROGRAM FUNDING COMPARED TO PLANS: FSD AND LRIP PROGRAMS**

- **R&D Funding Compared to the 1985 Projection**

The left-hand display in the figure shows the ratio of actual to projected funding for the programs in the FSD and LRIP phase for which a 5-year funding history was obtained (The ratio equals 1 if actual funding equals the projection.) There are two important points illustrated in the figure.

-- The data do not support the hypothesis that programs are delayed because they are underfunded compared to plans. Indeed, 11 of the 16 programs are funded at 100 percent or more of the 1985 projection. In interpreting the ratios for the remaining cases, each program must be examined individually. AAWS-M and MARK XV-CIS funding is less than the projection because program problems in the DEM/VAL phase slowed transition into full-scale development and the buildup of development funding.

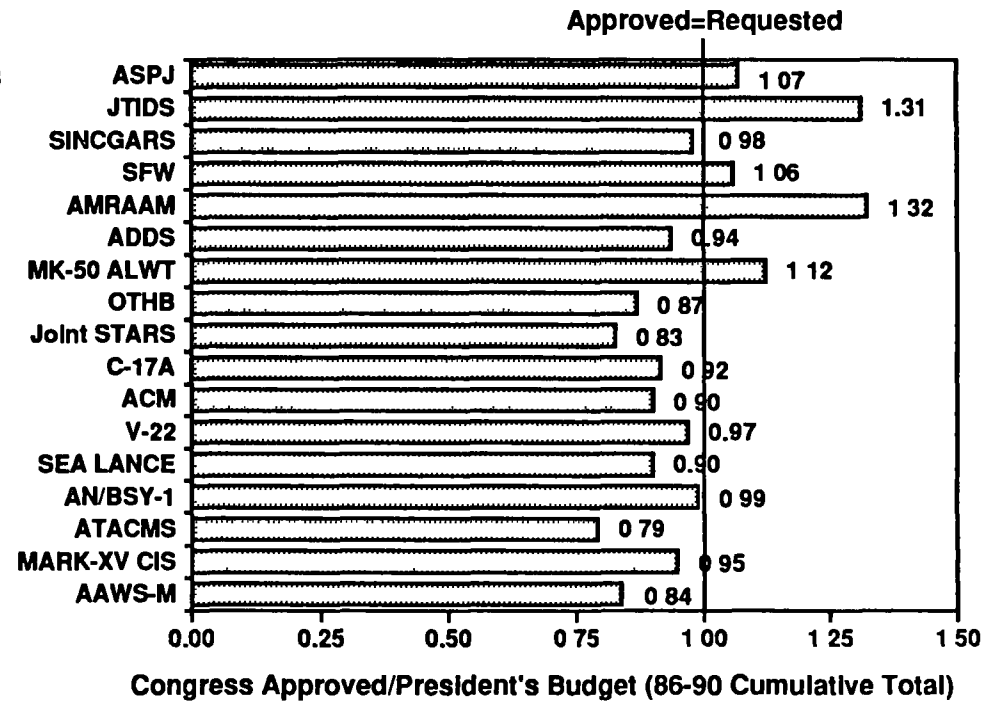
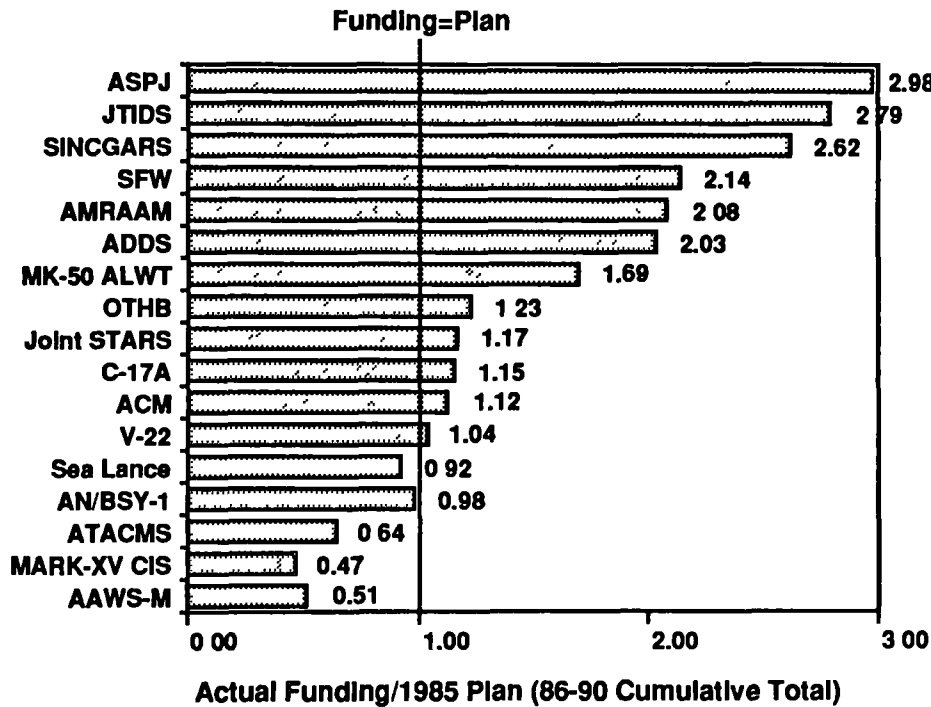
-- Those programs for which R&D funding exceeds the plan by more than 150 percent also have technical problems cited as the principal time driver. Technical problems thus appear to cause both schedule and cost growth. Ironically, although funding exceeds the plan for these programs, action officers cite funding shortfalls as a secondary time driver. This suggests that programs experiencing R&D cost growth get additional money, but the added money is not commensurate with growing costs.

- **Annual Congressional Approvals Relative to the President's Request**

The display at the right of the figure compares the funding approved by Congress each year against the President's budget request for each year in the sample period. Congress approved at least 90% of the President's budget request for 13 of the 17 programs. Congress generally approved the increases in R&D funding requested in the President's budget when development programs experienced technical problems.

# PROGRAM FUNDING RELATIVE TO PLANS\*

(R&D Funding for FSD & LRIP Programs)



\* Constant Dollars

Source: SARs and Major Program Summaries



## **PROGRAM FUNDING COMPARED TO PLANS: LRIP PROGRAMS**

- **Procurement Funding Compared to the 1985 Projection**

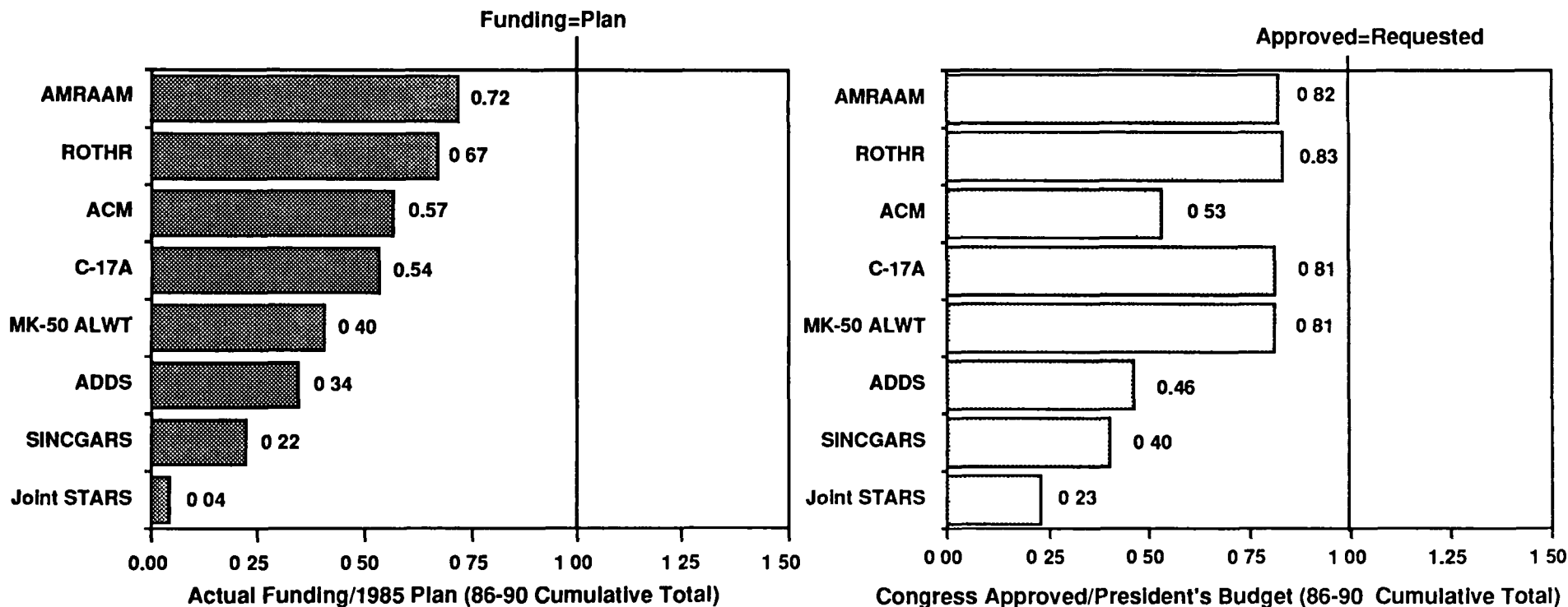
The display at the left of the accompanying figure shows actual versus planned funding ratios for those programs in the LRIP phase with a five-year history of procurement funding. Whereas the preceding figure showed R&D funding grew for most FSD programs, this figure shows that procurement funding lags significantly behind projections. The technical problems that delay completion of full scale development also postpone the transition to low-rate production, reducing the need for procurement funding. This figure and the preceding one show that funding levels tend to follow from program developments.

- **Annual Congressional Approvals Relative to the President's Request**

The right hand display shows that Congress often cuts LRIP funding requests even below the reduced levels requested in the President's budget. For the programs examined, Congress never approved 90% or more of the President's request, and approved 80% or more in only 4 of the 8 cases. There are two complementary explanations for why this might happen. First, Congress is pro-active at this point in a program's life, apparently focusing close attention on the transition from R&D to production. Second, there is an eight-month lag between the President's budget and Congressional approval. DoD will often ask for production money and then, during this eight month period, decide the program is not ready after all. This information is then transmitted to Congress, which reduces the budget request accordingly.

## PROGRAM FUNDING RELATIVE TO PLANS\*

### (Procurement Funding for LRIP Programs)



\*Constant Dollars

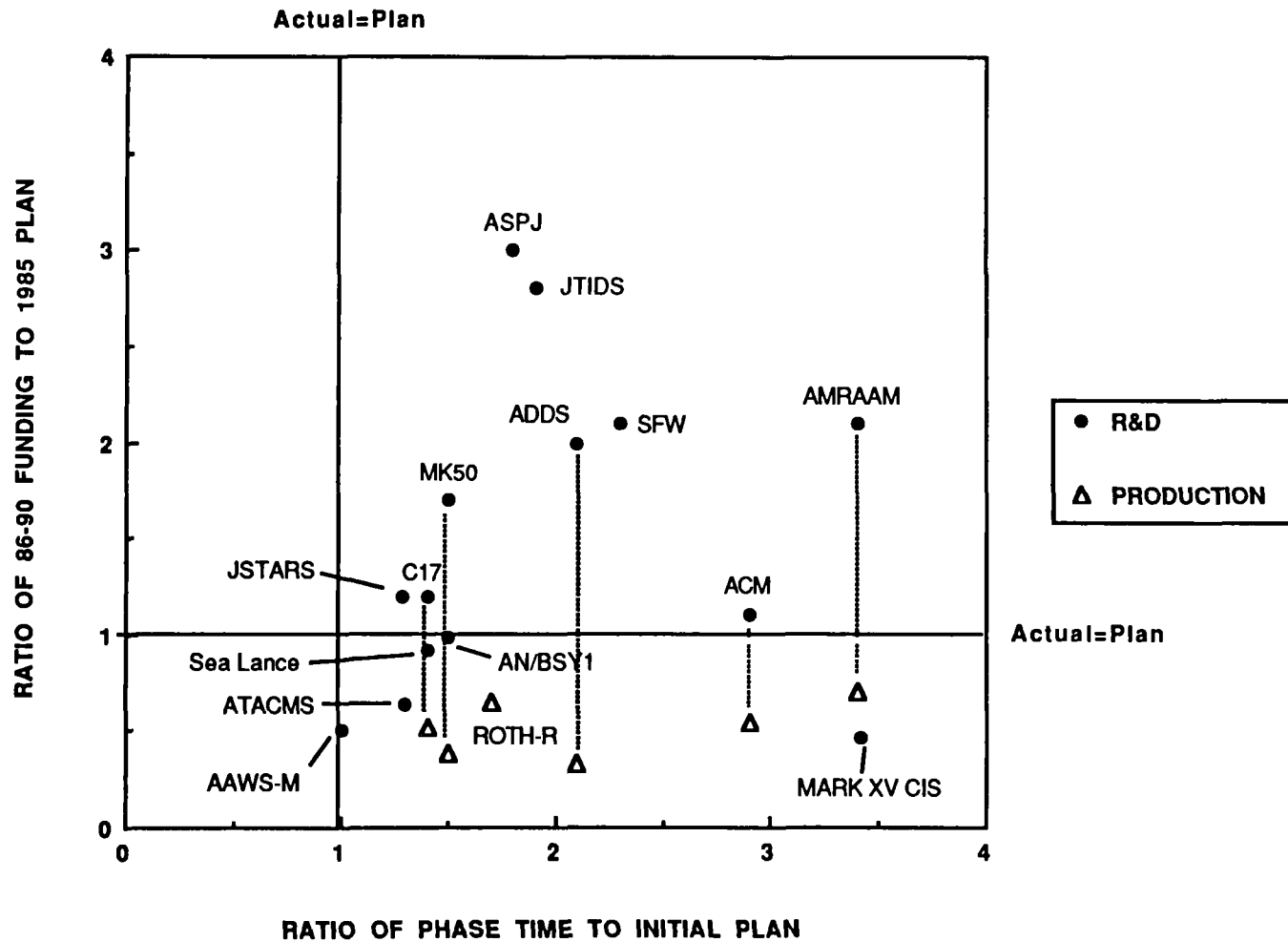
Source. SARs and Major Program Summaries

## **CORRELATION OF FSD PROGRAM FUNDING VERSUS SCHEDULES**

The accompanying figure illustrates the relationship between program schedule slippage and funding growth. Shown on the horizontal axis is the ratio of program time in phase to the planned time--a ratio of one means the program is proceeding according to plan. The vertical scale represents the ratio of actual to projected funding--the same data as discussed above. A dot represents R&D funding and a triangle represents procurement funding. (Procurement and R&D funding for the same program are connected with a dotted line.)

As expected, the observations for R&D spending tend to be in the upper right hand quadrant of the figure--programs with schedule slippages also experience R&D funding growth. Also as expected, the observations for procurement spending tend to be in the lower right-hand quadrant--programs with schedule slippages experience lags in production funding. The figure thus illustrates the pattern of findings noted in discussing the preceding figures.

# CORRELATION OF FSD PROGRAM FUNDING VS. SCHEDULES



## **PROGRAM FUNDING COMPARED TO PLANS: PRODUCTION PROGRAMS**

- **Procurement Funding Compared to the 1985 Projection**

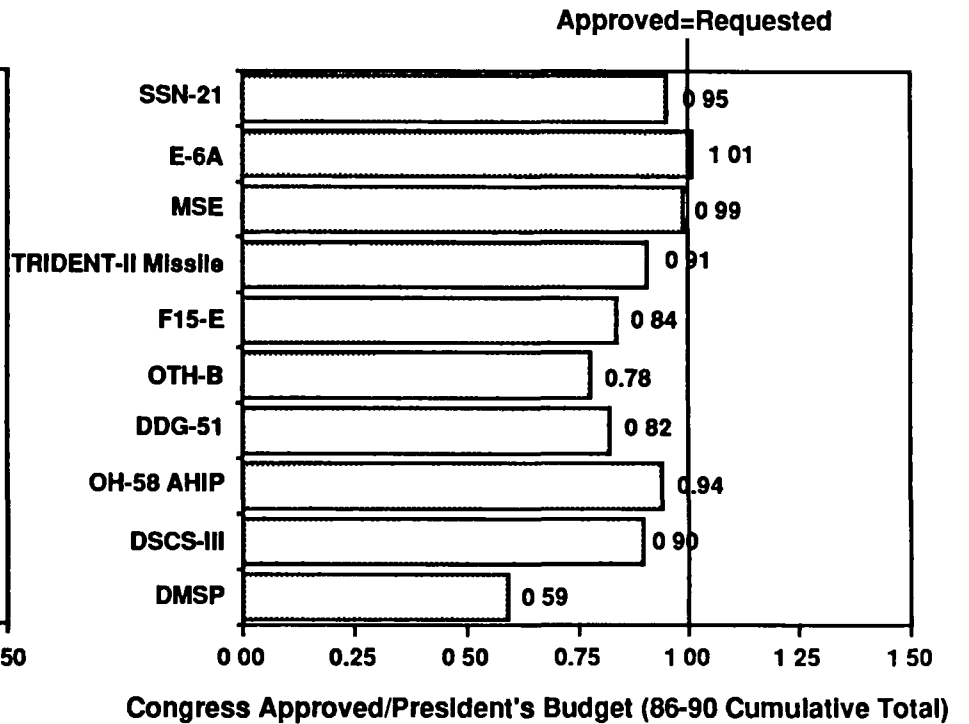
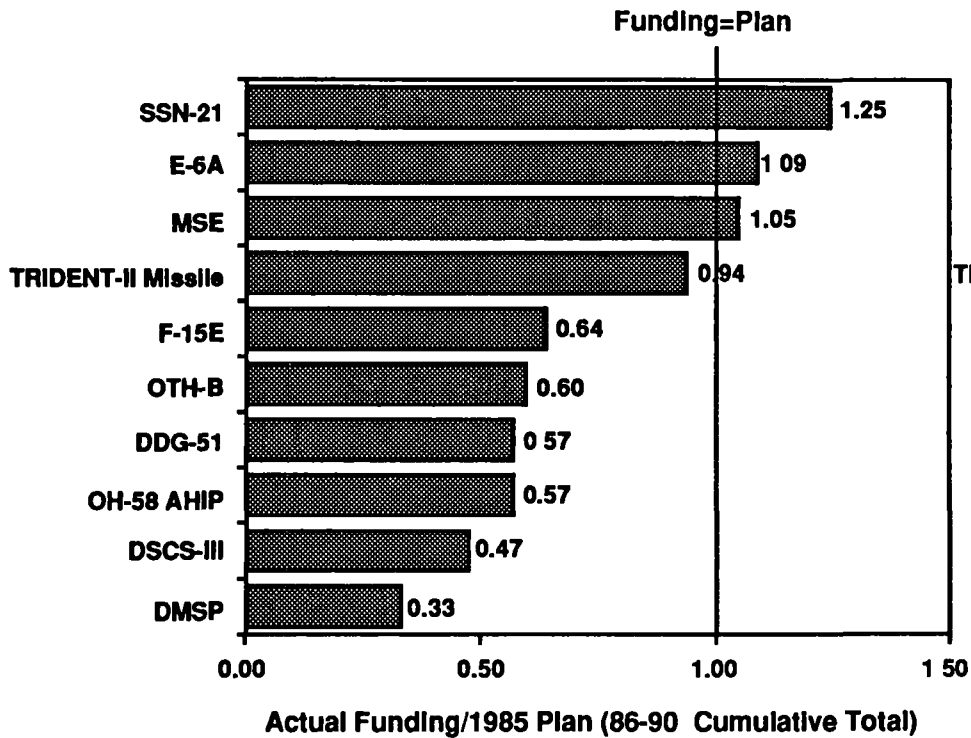
Procurement funding equals 80 percent or more of the 1985 projection for only 4 of the 10 production programs in the sample. Funding fell well below projections in the remaining cases. These programs have achieved technological maturity, so deviations from plan are primarily due to management and budgetary decisions rather than underlying problems relating to technology or program definition. The underfunding of these programs relative to plan is, in fact, consistent with the large gap between actual DoD budgets and the levels projected in 1985. Mature acquisition programs are often used as "bill payers," that is, their production rates are stretched to bring acquisition spending in line with budget totals.

- **Annual Congressional Approvals Relative to the President's Request**

Congressional approvals equal at least 80 percent of the President's request in 8 of the 10 cases. Hence, as found for R&D requests in the full-scale development phase, Congress tends to approve DoD's requests for production funding. Most of the changes shown in the left-hand display were made by DoD before the budgets were submitted to Congress.

## PROGRAM FUNDING RELATIVE TO PLANS\*

### (Procurement Funding for Production Programs)



\*Constant Dollars

Source: SARs and Major Program Summaries

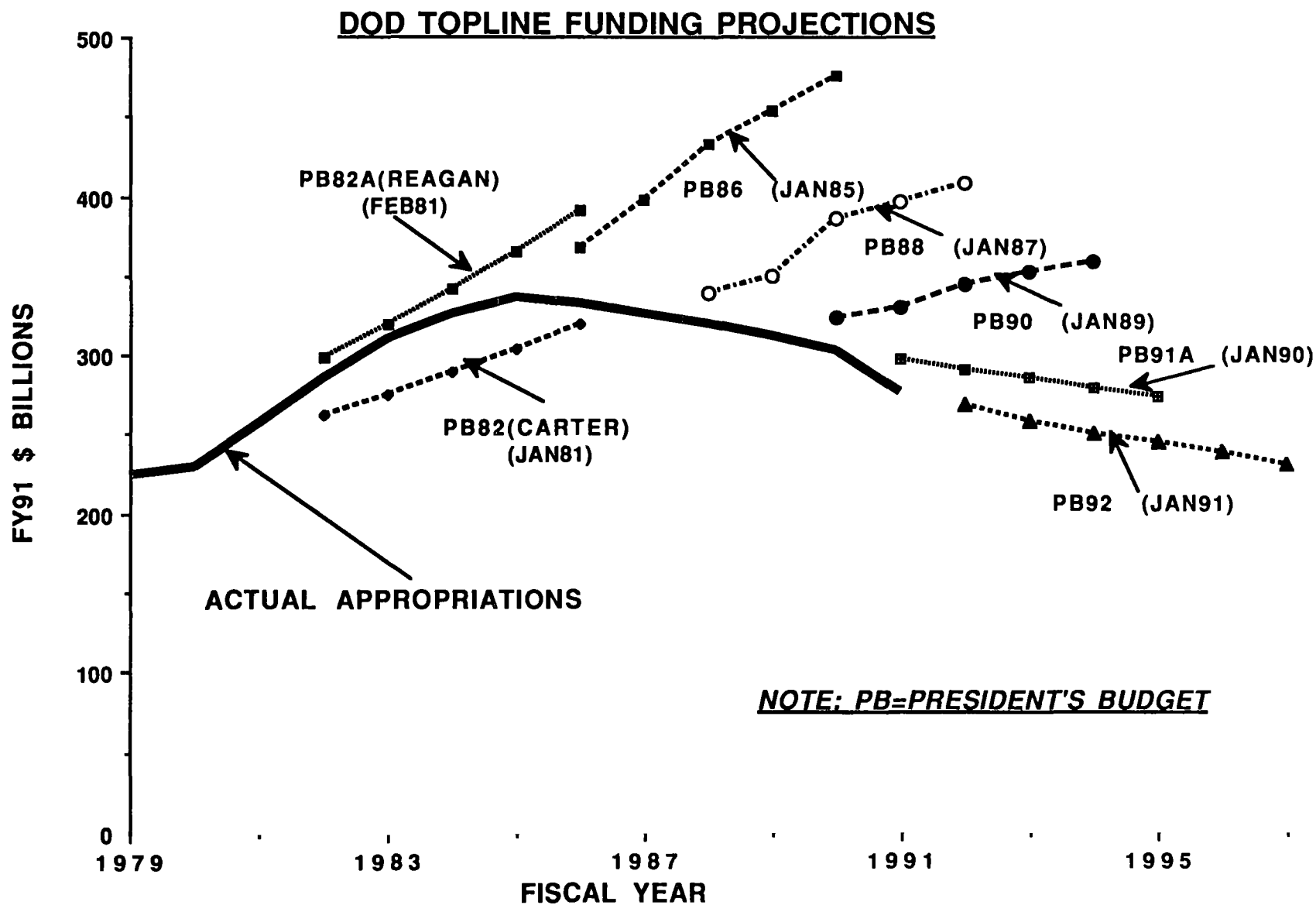
## **DOD TOPLINE FUNDING PROJECTIONS**

The accompanying figure provides several five-year budget projections and compares them to actual DoD budgets. The early Reagan budget projections (1981) were roughly in line with the actual budgets during the first half of the decade. After 1985 the defense budget began to decline, but DoD projections assumed continued growth. The DoD topline projection at the outset of the DSB sample period (the President's 1986 budget, submitted to the Congress in January 1985) therefore greatly exceeded subsequent budgets. This made it impossible to fund every acquisition program according to the 1985 plan.<sup>1</sup> Stretch-outs and delays were employed to keep acquisition spending in line with budgets.

The IDA program sample illustrates how overoptimism in DoD budget planning can create individual program instability. Most of the production programs experienced large cutbacks in funding compared to the levels planned in 1985. Budget planning has thus been an important schedule driver for such programs. Acquisition streamlining--reducing the time to execute programs--thus requires careful management to ensure that individual programs add up to an affordable total program.

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<sup>1</sup> One unpublished OSD study found that over the decade of the 1980s, acquisition spending was most affected when budgets were smaller than planned. For example, an analysis of actual spending relative to the level projected five years earlier found that on average only fifty percent of the projected acquisition funding was approved.







## 4. INTERVIEW FINDINGS

11-30-90(9)tad

## **INTERVIEW APPROACH**

IDA interviewed approximately 25 current and former DoD officials to obtain their views on the oversight process and streamlining. These officials included members of the Defense Acquisition Board, committee chairmen, other OSD officials involved in the acquisition process, Congressional staff, and the Joint Staff. This section summarizes their responses to the following four questions:

- What is the value added of the oversight function?
- What are the primary reasons for the length of the acquisition process--that is, what are the major root cause time drivers?
- What, in particular, is the effect of the oversight process on program execution?
- What are the opportunities for improving the process?



## **INTERVIEW APPROACH**

- 1. IMPACT OF THE OVERSIGHT PROCESS ON PROGRAM SCHEDULE AND FUNDING**
- 2. VALUE ADDED OF THE OVERSIGHT FUNCTION AND RECOMMENDATIONS FOR IMPROVEMENT**
- 3. PRIMARY REASONS FOR THE LENGTH OF THE WEAPONS ACQUISITION PROCESS**
- 4. RECOMMENDATIONS FOR IMPROVING AND STREAMLINING THE PROCESS**

## **INTERVIEWS: OSD VALUE ADDED**

Interview respondents described a rich set of tasks for the oversight process. They indicated that OSD possesses a unique combination of breadth of perspective and depth of technical knowledge. Respondents felt the tasks were not always done as satisfactorily or as efficiently as desirable, but that the tasks nonetheless accurately describe the ideal and necessary functions of the OSD staff.

The tasks fall into the five areas shown in the accompanying figure. In the view of the OSD staff, these functions are necessary. The goal of streamlining should not be to eliminate these functions, but rather to carry them out as efficiently as possible.



## **INTERVIEWS: OSD VALUE ADDED**

- **ADVISE SECDEF**
  - **Devil's Advocates (Propose Alternatives)**
  - **Ensure Program Realism (Technical, Schedule, Cost)**
  - **Speak for Integrated Perspective**
  - **Monitor, Test, and Validate Programs**
  
- **MESH PROGRAMS WITHIN OVERALL BUDGET**
  - **Integrate DAB - DPRB Decision Making**
  
- **SET ACQUISITION POLICY (Implement Congressional Requirements)**
  
- **MANAGE AND DISCIPLINE THE ACQUISITION PROCESS**
  
- **INFORM CONGRESS**

## OSD INTERVIEWS: TENTATIVE ROOT CAUSE DRIVERS OF SCHEDULES

The accompanying figure summarizes the five main determinants of program schedules from the OSD perspective. These factors are ranked in terms of importance in determining program schedules, based on the study team's subjective weighting of interview responses. These interviews were conducted in parallel with the collection of data reported earlier. They provide an additional perspective on program time drivers, but one that is largely consistent with the time drivers reported for the IDA sample programs.

- **Technological problems:** There is strong belief that once full-scale development begins technological problems and test problems dominate the pace of program development. This is consistent with the IDA sample of programs examined earlier--where the average program had about 30 months time added in the FSD and LRIP phase due primarily to technical problems.
- **Poorly defined, unrealistic, or controversial requirements:** Some respondents believe virtually all program problems are caused by deficient program requirements definition. A major contributor to the technological problems seen in full scale development is indecision and an inability to define the technology requirements for achieving program goals prior to undertaking FSD. In the early Concept Exploration or DEM/VAL phases, programs without a clear consensus may remain under study indefinitely. Programs such as LH and V-22 never are cleared for FSD, because there is a lack of consensus on the need for the program.
- **Overall Modernization Program Not Affordable:** Individual programs cannot be executed according to plan when the modernization program is not affordable. Many in OSD believe that because DoD has taken on more programs than can be executed efficiently, the execution of each individual program suffers.
- **Oversight Process Inefficiencies:** Although OSD respondents believe oversight is not a major time driver, they believe there is room for improvement. Suggested improvement fall into the four broad areas shown.
- **Personnel:** Almost every respondent mentioned personnel as a major factor. Some argued that the acquisition process itself is not what really drives programs. The decisive determinant is the quality of the people involved at all levels.

11-2-90(2)

## **OSD INTERVIEWS: TENTATIVE "ROOT CAUSE" DRIVERS OF SCHEDULES**

- 1. Technological Problems: Lengthy FSD/LRIP Phase is Largely Due to Complex, Ambitious Programs**
- 2. Poorly Defined Requirements and Program Planning Optimism: Creates Funding Overruns And Schedule Delays**
- 3. Overall Modernization Program Not Executable: Undermines Efforts to Execute Individual Programs According to Plan-- Slows Transition To Production**
- 4. Oversight Process Inefficiencies:**
  - Lack of discipline -- Organizational checks and balances not disciplined, excessive time required to build consensus and iron-out issues**
  - Lack of flexibility at front end slows initiation of needed studies**
  - Lack of Baselines (Exit Criteria), establishing program expectations, creates staffing disagreements over testing criteria, as well as cost and schedule surprises, and disappointments**
  - Lack of management feedback loop measuring staffing performance and progress limits focus on management efficiency**
- 5. Personnel Turnover and Lack of Experience**

## **OSD INTERVIEWS: OVERSIGHT PROCESS AS A ROOT CAUSE**

OSD respondents believe that the oversight processes are not in themselves important time drivers. In their view, substantive programmatic issues are the predominant drivers, and oversight reacts to problems. Hence oversight activity is a symptom of program problems rather than a root cause of schedule delays.

Secondly, there was also a consensus that oversight improves individual programs or prevents problem programs from proceeding. In particular, it is believed that programs not subject to the usual oversight processes have not on average been faster or better. There have been some successes, but also some spectacular failures.

Finally, respondents believe that the oversight process can and should be improved, even though it is not a major program time driver.





## **OSD INTERVIEWS: OVERSIGHT PROCESS AS A ROOT CAUSE**

- **OSD oversight tends to be a symptom of program problems rather than a cause of delay**
  - **Schedules are primarily determined by requirements definition, technical challenge, and test issues**
  - **Oversight focuses on programs that deviate from plans, especially when there are surprises.**
- **Oversight processes are costly, but have value added**
  - **Programs not subject to usual oversight (e.g. black programs) aren't necessarily faster or better: some successes, some failures**
- **OSD should strive to increase efficiency**

## OSD INTERVIEWS: BUDGET PROCESS AS A ROOT CAUSE

The respondent's comments on the budget process had three main themes.

- **PPBS-DAB Linkage:** Many respondents noted problems created by the disconnect between the acquisition process and the planning, programming, and budgeting system. Decisions made in the acquisition system are not necessarily honored within the budget process. For example, milestone decisions may be based on planning assumptions that are subsequently overturned in the budget process.

Views differed on the appropriate solution. Some argued that a realistic modernization roadmap is needed to allow the acquisition system and the budget process to play off the same sheet of music. Others argued that the USD(A) needs greater authority in executing the modernization program within the Secretary's overall fiscal guidance. However, neither solution will be effective as long as DoD topline funding plans differ substantially from actual funding, and as long as topline funding estimates are changed repeatedly. In other words, programs that are affordable at one funding level are not necessarily affordable at much lower levels of resources.

- **Funding is Endogenous:** OSD respondents stressed that funding is not entirely an exogenous driver of program schedules, because funding changes often follow from developments within the program itself. This is consistent with the patterns observed for the IDA sample of programs.

- **Program Funding Should be Stabilized:** OSD respondents support the idea of stabilizing program funding between milestones. This would give the program manager a better understanding of the funding he could count on, and reduce the need to constantly defend program budgets. There was a clear recognition of the important barriers to implementing this approach. Programs would have to be planned more realistically. (In the IDA sample of programs, full scale development could not be completed with the planned funding, stabilized funding would have caused more problems than it would solve.) A second barrier is that it is not desirable to fence off funding for a large set of individual programs when the total budget plan is not realistic. The result would be magnified perturbations in the remaining programs.



## **OSD INTERVIEWS: BUDGET PROCESS AS A ROOT CAUSE**

- **The continuing disconnect between acquisition and PPBS processes can create program instability, and should be addressed.**
- **However, program funding changes often reflect--follow from--program problems.**
  - **R&D funding often greatly exceeds projections**
  - **Production funding lags projections**
- **Funding should be stabilized between milestones, but there are significant practical hurdles that must be overcome:**
  - **Program cost and schedule projections often are too optimistic**
  - **Can't stabilize ("fence off") a large share of individual programs unless the overall budget plan is executable.**

## OSD INTERVIEWS: PROPOSED IMPROVEMENTS

The accompanying figure and the following two pages summarize the ideas offered by the OSD respondents for improving the acquisition process. Some of these ideas can be readily acted upon and would be beneficial. The ideas are grouped into the five time driver areas identified earlier.

- **Technology Management:** There was a general belief that shortening the acquisition cycle will require a more systematic approach for managing the introduction of technology in the defense modernization program. The IDA sample and the interview responses both suggest that careful management of technology is the most important prerequisite for reducing the time required to complete full-scale development and low rate production.
- **Program Planning:** Greater realism in planning would help prevent situations where programs fail to meet expectations and then begin to flounder. When surprises occur, it is probable that oversight is stepped up and funding is harder to justify. To contribute to program realism, OSD oversight officials should be sufficiently knowledgeable to provide an arm's length review of program planning assumptions.



## **OSD INTERVIEWS: PROPOSED IMPROVEMENTS**

### **1. TECHNOLOGY MANAGEMENT**

- **Rely more on incremental technology advancement**
- **Acknowledge program risks -- plan budget and manage accordingly**
- **Highlight program concurrency as a management decision**
- **Improve management of software development**
- **Use commercial products whenever feasible**

### **2. PROGRAM PLANNING**

- **Insist on Program Realism: Costs, Technology, and Schedules**
  - **Surprises give programs a black mark; sow seeds of distrust**
  - **OSD staff should be experts on the time and cost of doing things right**

## OSD INTERVIEWS: PROPOSED IMPROVEMENTS (CONT.)

- **Programming and Budgeting:**

The solutions offered for stabilizing program funding fall into two broad alternatives

-- **Forge a stronger linkage between the acquisition and PPB processes.** This approach relies on three interrelated actions (1) establishing a more realistic planning environment, (2) creating an overall modernization roadmap showing how individual programs fit within the plans, and (3) employing mechanisms such as baselining and milestone authorization to stabilize individual program funding within the plans.

-- **Delegate greater execution authority to the USD(A).** There are three main variations of this theme, offering differing degrees of authority to the USD(A). One idea that has long been suggested has been to provide the USD(A) (or the Secretary) with the authority to transfer funds between procurement and R&D program elements. This flexibility would be useful for programs in the full scale development phase, because the IDA sample shows there are often cases where such transfers are required

A second idea has been to give the USD(A) greater control over study funds for concept exploration and demonstration and validation. Such a discretionary fund would allow a faster start in exploring promising programs by uncoupling study funding from the calendar budget cycle

A third idea is to delegate authority to the USD(A) to execute the entire modernization program within fiscal guidance provided by the Secretary. This is the vision created by the first USD(A), Richard Godwin, which many within the acquisition community still support. Many outside of this community believe such authority should not be delegated.



## **OVERSIGHT INTERVIEWS: PROPOSED IMPROVEMENTS (cont.)**

### **3. PROGRAMMING AND BUDGETING**

- **Forge a stronger acquisition-PPBS process linkage**
  - **Establish a realistic top line budget projection**
  - **Create an executable overall DoD program (roadmap) within the top line**
  - **Stabilize Program Funding: Baselining, Multiyear Procurement, Milestone Authorization**
  
- **Delegate greater execution authority to USD(A)\***
  - **Allow OSD to shift limited funds from production to R&D in FSD**
  - **Allocate an R&D study fund for concept exploration and demonstration/validation studies**
  - **Allow USD(A) to execute acquisition program within overall budget parameters**

**\*Not a consensus view across OSD.**

## OSD INTERVIEWS: PROPOSED IMPROVEMENTS (CONT.)

- **Acquisition Process:**

The OSD respondents offered a wide range of ideas for improving the acquisition oversight process. These fall into three broad categories

- **Increase front end flexibility:** It often takes too much time to get initial study contracts underway, so more flexibility should be permitted. The point made earlier about the need for a pool of study funds is also relevant. The 1990 DSB Summer Study and others have argued that early milestones should be simple and tailored to the circumstances. DSB recommended the creation of fast track programs for technology demonstration

- **Define program expectations:** Acquisition programs involve several communities in program decisionmaking, including acquisition, military operations, and testing and evaluation. It is important that these communities have a common understanding of the goals for the program. These should be clarified through such mechanisms as baselining or milestone exit criteria

- **Discipline the process:** Finally, a strong consensus emerged among respondents that disciplining participants to adhere to existing procedures and sound management practices would improve the operation of the process. An important element of such discipline would be the development of management goals and performance measures focusing on the efficiency of the management process. The creation of a historical data base on program execution would assist by providing benchmarks for assessing current program plans and progress

- **People:** Respondents believe DoD needs to strengthen personnel experience and continuity at all levels. Several specific ideas are shown here





## **OVERSIGHT INTERVIEWS: PROPOSED IMPROVEMENTS (cont.)**

### **4. ACQUISITION PROCESS**

- **Increase Process Flexibility at Front End**
  - **Tailor early milestones**
  - **Expedite early R&D contract awards**
- **Institute Effective Baseline (Exit Criteria) -- Clarify Program Goals In Terms Of Outputs**
  - **Testing and operational goals should be set in program baseline**
  - **Documentation and staffing requirements should be clarified in baseline**
  - **Event-driven decision making -- keyed to baseline**
- **Structure and Discipline the Documentation Review Process**
  - **Establish OSD focal point, clarify jobs, discipline involvement**
  - **Set staffing response time goals; measure performance; establish benchmark data base**
  - **Create a robust flow of information among participants**

### **5. PEOPLE**

- **Create a Professional Acquisition Corps to Increase Experience and Continuity**
- **Increase Personnel Exchange Between Industry and Government**
- **Increase Education and Continuity; Use Incentives to Retain Experienced Senior Personnel Beyond Normal Retirement**
- **Broaden Job Incentives -- Reward Sound Management at all Levels**



## 5. OBSERVATIONS

11-30-90(10)tad

## OBSERVATIONS

Three main points made in this briefing deserve reemphasis:

- **Schedule Drivers:** Delays accounted for a third to a half of program time on average in the IDA sample. Delays most often result from substantive program issues, which vary across the phases of a program. Attempts to shorten the acquisition cycle should address these substantive issues.
- **Oversight Processes:** Oversight processes account for a very small fraction of program delays. Oversight, while it may be burdensome, particularly to key program office personnel, is not found to be a major program time driver. The analyses and interviews suggest a number of ways to improve the efficiency of the oversight processes, and there is a consensus among OSD staff that such improvements are needed. Such improvements will not substantially shorten the acquisition cycle, however, because substantive programmatic issues are the predominant time drivers.
- **Funding:** Funding shortfalls relative to initial program plans occur primarily for procurement funding in the LRIP and production phases. Shortfalls thus appear to be a schedule driver in these later program phases. However, similar shortfalls did not routinely occur for R&D funding in the earlier development phases. R&D funding for development typically grew in response to cost and schedule growth.



## **OBSERVATIONS**

- **PRIMARY TIME DRIVERS VARY BY PROGRAM PHASE**
  - **Pre FSD: Program Definition**
  - **FSD & LRIP: Technical Problems**
  - **Production: Budget-Driven Stretchouts**
  
- **OVERSIGHT PROCESS CONSUMES RESOURCES BUT IS NOT A MAJOR PROGRAM TIME DRIVER**
  - **Data and Interviews Suggest Areas For Improvement**
  
- **UNDERFUNDING RELATIVE TO PLAN "INSTABILITY" NOT THE MAJOR TIME DRIVER FOR PROGRAMS IN R&D**
  - **Programs Often Receive More R&D Funding Than Planned**
  - **Production Funding Often Lower Than Planned**
  - **Funding Changes Often Reflect Technical Problems and Program Stretchouts**



# **ATTACHMENT: DETAILED SCHEDULE DRIVERS**

# SCHEDULE DRIVERS CONCEPT EXPLORATION

	Funding	Reporting Requirements	Documentation	Changing Requirements	Tech Difficulty	Lack of Consensus	Staffing	Contracting	Oversight	External Guidance	Cost Growth
ADI	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>					
NASP					<input checked="" type="checkbox"/>						
NATO AAWS						<input checked="" type="checkbox"/>					
AIWS			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
ASAT			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
BSTS	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			
GSTS	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>					
LH						<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	

= # 1 Time Driver for Program Phase

Source OSD Questionnaire Responses

11-30-90(22)

# SCHEDULE DRIVERS DEMONSTRATION/VALIDATION

	Funding	Reporting Requirements	Documentation	Changing Requirements	Tech Difficulty	Lack of Consensus	Staffing	Contracting	Oversight	External Guidance	Cost Growth
AIWS			✓							✓	
AN/SQQ-89I	✓				✓	✓	✓			✓	
BSTS	✓				✓	✓					
GSTS	✓					✓				✓	
LH				✓						✓	
MLRS-TGW				✓	✓	✓		✓			
AAWS-M						✓			✓		
JSTARS						✓					
MARK-XV CIS					✓	✓					

= # 1 Time Driver for Program Phase

Source OSD Questionnaire Responses

# SCHEDULE DRIVERS FULL SCALE DEVELOPMENT

	Funding	Reporting Requirements	Documentation	Changing Requirements	Tech Difficulty	Lack of Concensus	Staffing	Contracting	Oversight	External Guidance	Cost Growth
FAAD C2I	✓				✓	✓					
JSTARS				✓	✓						✓
MARK-XV CIS					✓	✓	✓				
Peacekeeper RG	✓			✓							
PLS					✓						
SEA LANCE				✓	✓	✓					
SFW	✓				✓			✓			
SRAM-T					✓						
Tacit Rainbow-GI				✓	✓						

= # 1 Time Driver for Program Phase

Source OSD Questionnaire Responses



# SCHEDULE DRIVERS FULL SCALE DEVELOPMENT (Cont)

	Funding	Reporting Requirements	Documentation	Changing Requirements	Tech Difficulty	Lack of Consensus	Staffing	Contracting	Oversight	External Guidance	Cost Growth
V-22					✓	✓				✓	
ACM					✓						
ADDS			✓								
AMRAAM					✓						✓
C-17A					✓						
FAADS LOS-F-H										✓	
JTIDS	✓			✓	✓	✓					
MK-50 ALWT	✓				✓		✓				

= # 1 Time Driver for Program Phase

Source OSD Questionnane Responses

# SCHEDULE DRIVERS LRIP

	Funding	Reporting Requirements	Documentation	Changing Requirements	Tech Difficulty	Lack of Concensus	Staffing	Contracting	Oversight	External Guidance	Cost Growth
ACM	✓				✓					✓	
ADDS	✓				✓						
AMRAAM					✓						✓
ASPJ					✓						✓
ATACMS					✓						
C-17A					✓						
FAADS LOS-F-H					✓						
MILSTAR	✓			✓	✓					✓	
MK-50 ALWT	✓				✓		✓				
SINGARS				✓	✓	✓			✓		

= # 1 Time Driver for Program Phase

Source OSD Questionnaire Responses

