AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

F–22 COST CONTROLS: HOW REALISTIC ARE PRODUCTION COST REDUCTION PLAN ESTIMATES?

HEARING

BEFORE THE

SUBCOMMITTEE ON NATIONAL SECURITY, VETERANS AFFAIRS AND INTERNATIONAL RELATIONS

OF THE

COMMITTEE ON GOVERNMENT REFORM

HOUSE OF REPRESENTATIVES

ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

AUGUST 2, 2001

Serial No. 107–101

Printed for the use of the Committee on Government Reform

Available via the World Wide Web: http://www.gpo.gov/congress/house
http://www.house.gov/reform

U.S. GOVERNMENT PRINTING OFFICE

81–595 PDF WASHINGTON : 2002

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

COMMITTEE ON GOVERNMENT REFORM

DAN BURTON, Indiana, *Chairman*

BENJAMIN A. GILMAN, New York
CONSTANCE A. MORELLA, Maryland
CHRISTOPHER SHAYS, Connecticut
ILEANA ROS-LEHTINEN, Florida
JOHN M. MCHUGH, New York
STEPHEN HORN, California
JOHN L. MICA, Florida
THOMAS M. DAVIS, Virginia
MARK E. SOUDER, Indiana
JOE SCARBOROUGH, Florida
STEVEN C. LATOURETTE, Ohio
BOB BARR, Georgia
DAN MILLER, Florida
DOUG OSE, California
RON LEWIS, Kentucky
JO ANN DAVIS, Virginia
TODD RUSSELL PLATTS, Pennsylvania
DAVE WELDON, Florida
CHRIS CANNON, Utah
ADAM H. PUTNAM, Florida
C.L. "BUTCH" OTTER, Idaho
EDWARD L. SCHROCK, Virginia
JOHN J. DUNCAN, JR., Tennessee

HENRY A. WAXMAN, California
TOM LANTOS, California
MAJOR R. OWENS, New York
EDOLPHUS TOWNS, New York
PAUL E. KANJORSKI, Pennsylvania
PATSY T. MINK, Hawaii
CAROLYN B. MALONEY, New York
ELEANOR HOLMES NORTON, Washington, DC
ELIJAH E. CUMMINGS, Maryland
DENNIS J. KUCINICH, Ohio
ROD R. BLAGOJEVICH, Illinois
DANNY K. DAVIS, Illinois
JOHN F. TIERNEY, Massachusetts
JIM TURNER, Texas
THOMAS H. ALLEN, Maine
JANICE D. SCHAKOWSKY, Illinois
WM. LACY CLAY, Missouri
DIANE E. WATSON, California

BERNARD SANDERS, Vermont (Independent)

KEVIN BINGER, *Staff Director*
DANIEL R. MOLL, *Deputy Staff Director*
JAMES C. WILSON, *Chief Counsel*
ROBERT A. BRIGGS, *Chief Clerk*
PHIL SCHILIRO, *Minority Staff Director*

SUBCOMMITTEE ON NATIONAL SECURITY, VETERANS AFFAIRS AND INTERNATIONAL RELATIONS

CHRISTOPHER SHAYS, Connecticut, *Chairman*

ADAM H. PUTNAM, Florida
BENJAMIN A. GILMAN, New York
ILEANA ROS-LEHTINEN, Florida
JOHN M. MCHUGH, New York
STEVEN C. LATOURETTE, Ohio
RON LEWIS, Kentucky
TODD RUSSELL PLATTS, Pennsylvania
DAVE WELDON, Florida
C.L. "BUTCH" OTTER, Idaho
EDWARD L. SCHROCK, Virginia

DENNIS J. KUCINICH, Ohio
BERNARD SANDERS, Vermont
THOMAS H. ALLEN, Maine
TOM LANTOS, California
JOHN F. TIERNEY, Massachusetts
JANICE D. SCHAKOWSKY, Illinois
WM. LACY CLAY, Missouri
DIANE E. WATSON,California

EX OFFICIO

DAN BURTON, Indiana
HENRY A. WAXMAN, California

LAWRENCE J. HALLORAN, *Staff Director and Counsel*
J. VINCENT CHASE, *Chief Investigator*
JASON CHUNG, *Clerk*
DAVID RAPALLO, *Minority Counsel*

CONTENTS

	Page
Hearing held on August 2, 2001	1
Statement of:	
Barr, Hon. Bob, a Representative in Congress from the State of Georgia	20
Druyun, Darleen A., Principal Deputy Assistant Secretary of the Air Force, Acquisition and Management, Department of the Air Force, Department of Defense; Dr. George Schneiter, Director of Strategic and Tactical Systems, Department of the Air Force, Department of Defense; and Francis P. Summers, Regional Director, Defense Contract Audit Agency, Department of Defense	37
Li, Allen, Director, Acquisition and Sourcing Management, U.S. General Accounting Office, accompanied by Robert Murphy, Assistant Director, Acquisition and Sourcing Management, U.S. General Accounting Office; and Donald Springman, Senior Analyst, Acquisition and Sourcing Management, U.S. General Accounting Office	6
Letters, statements, etc., submitted for the record by:	
Barr, Hon. Bob, a Representative in Congress from the State of Georgia, prepared statement of	21
Druyun, Darleen A., Principal Deputy Assistant Secretary of the Air Force, Acquisition and Management, Department of the Air Force, Department of Defense, prepared statement of	42
Li, Allen, Director, Acquisition and Sourcing Management, U.S. General Accounting Office, prepared statement of	10
Schneiter, Dr. George, Director of Strategic and Tactical Systems, Department of the Air Force, Department of Defense, prepared statement of	73
Shays, Hon. Christopher, a Representative in Congress from the State of Connecticut, prepared statement of	3
Summers, Francis P., Regional Director, Defense Contract Audit Agency, Department of Defense, prepared statement of	81

F–22 COST CONTROLS: HOW REALISTIC ARE PRODUCTION COST REDUCTION PLAN ESTIMATES?

THURSDAY, AUGUST 2, 2001

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON NATIONAL SECURITY, VETERANS AFFAIRS AND INTERNATIONAL RELATIONS,
COMMITTEE ON GOVERNMENT REFORM,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 2154, Rayburn House Office Building, Hon. Christopher Shays (chairman of the subcommittee) presiding.

Present: Representatives Shays, Otter, Kucinich and Tierney.

Also present: Representative Barr.

Staff present: Lawrence J. Halloran, staff director and counsel; Jason M. Chung, clerk; David Rapallo, minority counsel; and Earley Green, minority assistant clerk.

Mr. SHAYS. A quorum being present, the Subcommittee on National Security, Veterans Affairs and International Relations hearing, entitled, "F–22 Cost Controls: How Realistic are Production Cost Reduction Plan Estimates," is hereby called to order.

In less than 2 weeks the Defense Acquisition Board will be asked to launch production of the F–22 Raptor air superiority fighter as the Air Force's premiere tactical aircraft modernization platform begins to roll off the assembly line. The program faces a critical question: Can the F–22 hit production cost targets?

The Air Force hopes to purchase 333 production aircraft while staying within the $37.6 billion cost cap set by Congress, but two Department of Defense DOD estimates put F–22 production costs between $2 billion to $9 billion over the limit. A major factor contributing to the $7 billion disagreement is the value ascribed to near- and long-term cost-cutting plans. A difference of that magnitude signals significant risk that current cost control strategies may not be adequate to allow production of the right number of F–22s at an affordable per-unit price.

This is our third hearing on F–22 production cost reduction plans [PCRPs]. As in the past, the subcommittee asks the General Accounting Office to analyze DOD estimates and the PCRP evaluation to refine our understanding and increase our confidence in the scope and validity of the production cost savings effort. Today GAO reports some savings have been achieved, and more can be anticipated as the airframe and engine production programs mature, but cost pressures persist, and it is still not at all clear there will be

enough PCRP savings to keep the F–22 on target, particularly if higher production estimates prove more accurate.

Since we began following the formulation and implementation of ambitions PCRP initiatives, total savings needed to address cost growth has doubled, now totaling $26 billion. F–22 contractors told GAO half of those cost reductions are already implemented in supply contracts or lean production processes. To varying degrees, cost estimators credited the program with additional savings identified but not yet implemented. So-called challenge PCRPs represent more than $4 billion of hoped-for, but still undefined, savings.

If those savings can be achieved, the Raptor will soar. If gaping differences over estimating and evaluation methodologies can be narrowed, the F–22 production cost reduction process could represent a major weapons system acquisition reform. If DOD fully implemented an earlier GAO recommendation to improve the frequency and consistency of PCRP status reports, they would be far more effective management tools. And if the Department agreed to provide GAO and this subcommittee greater access to the data supporting costs and savings estimates, we would all have greater confidence in the adequacy and integrity of the PCRP effort.

We welcome our witnesses this morning, and we look forward to their testimony on the important issue of tactical aircraft production cost reduction plans.

[The prepared statement of Hon. Christopher Shays follows:]

DAN BURTON, INDIANA,
CHAIRMAN

BENJAMIN A. GILMAN, NEW YORK
CONSTANCE A. MORELLA, MARYLAND
CHRISTOPHER SHAYS, CONNECTICUT
ILEANA ROS-LEHTINEN, FLORIDA
JOHN M. McHUGH, NEW YORK
STEPHEN HORN, CALIFORNIA
JOHN L. MICA, FLORIDA
THOMAS M. DAVIS, VIRGINIA
MARK E. SOUDER, INDIANA
STEVE SCARBOROUGH, FLORIDA
STEVEN C. LaTOURETTE, OHIO
BOB BARR, GEORGIA
DAN MILLER, FLORIDA
DOUG OSE, CALIFORNIA
RON LEWIS, KENTUCKY
JO ANN DAVIS, VIRGINIA
TODD RUSSELL PLATTS, PENNSYLVANIA
DAVE WELDON, FLORIDA
CHRIS CANNON, UTAH
ADAM H. PUTNAM, FLORIDA
C.L. "BUTCH" OTTER, IDAHO
EDWARD L. SCHROCK, VIRGINIA
JOHN J. DUNCAN, JR., TENNESSEE

ONE HUNDRED SEVENTH CONGRESS

Congress of the United States
House of Representatives

COMMITTEE ON GOVERNMENT REFORM

2157 RAYBURN HOUSE OFFICE BUILDING

WASHINGTON, DC 20515–6143

MAJORITY (202) 225–5074
FACSIMILE (202) 225–3974
MINORITY (202) 225–5051
TTY (202) 225–6852

www.house.gov/reform

HENRY A. WAXMAN, CALIFORNIA
RANKING MINORITY MEMBER

TOM LANTOS, CALIFORNIA
MAJOR R. OWENS, NEW YORK
EDOLPHUS TOWNS, NEW YORK
PAUL E. KANJORSKI, PENNSYLVANIA
PATSY T. MINK, HAWAII
CAROLYN B. MALONEY, NEW YORK
ELEANOR HOLMES NORTON,
DISTRICT OF COLUMBIA
ELIJAH E. CUMMINGS, MARYLAND
DENNIS J. KUCINICH, OHIO
ROD R. BLAGOJEVICH, ILLINOIS
DANNY K. DAVIS, ILLINOIS
JOHN F. TIERNEY, MASSACHUSETTS
JIM TURNER, TEXAS
THOMAS H. ALLEN, MAINE
JANICE D. SCHAKOWSKY, ILLINOIS
WM. LACY CLAY, MISSOURI
DIANE E. WATSON, CALIFORNIA

BERNARD SANDERS, VERMONT,
INDEPENDENT

SUBCOMMITTEE ON NATIONAL SECURITY, VETERANS AFFAIRS,
AND INTERNATIONAL RELATIONS
Christopher Shays, Connecticut
Chairman
Room B-372 Rayburn Building
Washington, D.C. 20515
Tel: 202 225-2548
Fax: 202 225-2382
GROC.NS@mail.house.gov
http://www.house.gov/reform/ns/

Statement of Rep. Christopher Shays
August 2, 2001

In less than two weeks, the Defense Acquisition Board will be asked to launch production of the F-22 Raptor air superiority fighter. As the Air Force's premier tactical aircraft modernization platform begins to roll off the assembly line, the program faces a critical question: Can the F-22 hit production cost targets?

The Air Force hopes to purchase 333 production aircraft while staying within $37.6 billion cost cap set by Congress. But two Department of Defense (DOD) estimates put F-22 production costs between $2 billion and $9 billion over the limit. A major factor contributing to the $7 billion disagreement is the value ascribed to near and long term cost cutting plans. A difference of that magnitude signals significant risk that current cost control strategies may not be adequate to allow production of the right number of F-22s at an affordable per-unit price.

This is our third hearing on F-22 production cost reduction plans (called "PCRPs). As in the past, the Subcommittee asked the General Accounting Office (GAO) to analyze DOD estimates and PCRP valuation to refine our understanding and increase our confidence in the scope and validity of the production cost savings effort. Today, GAO reports some savings have been achieved, and more can be anticipated as the airframe and engine production programs mature. But cost pressures persist, and it is still not at all clear there will be enough PCRP savings to keep the F-22 on target, particularly if higher production estimates proves more accurate.

Since we began following the formulation and implementation of ambitious PCRP initiatives, total savings needed to address cost growth have doubled, now totaling $26 billion. F-22 contractors told GAO half those cost reductions are already implemented in supply contracts or lean production processes. To varying degrees, cost estimators credited the program with additional savings identified but not yet implemented. So-called "challenge PCRPs" represent more than $4 billion of hoped-for, but still undefined, savings.

If those savings can be achieved, the Raptor will soar. If gaping differences over estimating and valuation methodologies can be narrowed, the F-22 production cost reduction process could represent a major weapon system acquisition reform. If DOD fully implemented an earlier GAO recommendation to improve the frequency and consistency of PCPR status reports, they would be far more effective management tools. And, if the Department agreed to provide GAO and the Subcommittee greater access to the data supporting cost and savings estimates, we could all have greater confidence in the adequacy and integrity of the cost saving effort

We welcome our witnesses this morning, and look forward to their testimony on the important issue of tactical aircraft production cost reduction plans.

Mr. SHAYS. At this time I would like to call on Mr. Kucinich, the ranking member of the committee.

Mr. KUCINICH. I thank the Chair. It's an honor to join you this morning for this hearing and welcome the witnesses.

Over the past 2 years this subcommittee has held several hearings on the increasing costs of developing the F–22 fighter plane. Our previous inquiries revealed a strong potential for the program to exceed the budgeted cap established by Congress. It has now become necessary for this committee again to examine the project to determine whether the Air Force can deliver on its commitment to execute the F–22 program within the limits Congress prescribed.

A more fundamental and perhaps more important question concerns the Department of Defense's overall aircraft acquisition strategy. In previous hearings GAO and others raised the problem of aging aircraft. As aircraft get older, they tend to break more often, they take longer to inspect and maintain, and they are less available for operations. But the Pentagon's current plan for acquiring replacement planes will not reduce the average age of aircraft.

As GAO has pointed out elsewhere, the Pentagon is investing in extremely expensive programs that will yield very few aircraft. The F–22 program is a prime example. The original plan was to purchase 880 planes for $40 billion. Because of the Pentagon's inability to accurately predict costs or meet testing hurdles, however, we now expect fewer than 333 planes. In fact, GAO will testify today that the number most likely will decrease by another 85 planes. Rather than updating our fleet, the F–22 purchase will actually increase the average age of each aircraft.

In addition, past assurances that the Air Force would stay under the cost caps—despite those past assurances that the Air Force would stay under the cost caps, it appears they have missed the mark again. GAO will report that estimates by both the Air Force and the Secretary of Defense exceed the cost gap, the Air Force by $2 billion, and the Secretary of Defense by $9 billion.

Why is the Pentagon proceeding on this course if these purchases result in a fleet that breaks down more and flies less? Shouldn't we buy more aircraft that, although less sophisticated, may be more reliable? Currently defense spending is approaching the average levels of the cold war in the 1970's, yet the Pentagon is seeking billions more. Congress deserves reassurance that this money is going toward a force that is more effective, not less.

Thus, our examination of the problem of cost controls within the F–22 program necessarily must take place in the context of the Pentagon's overall mode of operation and culture. Aging aircraft are a symptom of systemic issues and needs to be addressed.

Finally, I would like to take this opportunity to thank the Project on Government Reform and Oversight for the report they are issuing today regarding this issue. The report further highlights these problems. It concludes as follows, "As long as we keep investing in weapons systems that are highly complex and rely on technologies that are not fully proven, we will find ourselves spending more and more on fewer and fewer weapons that are of questionable relevance."

Danielle Brian, the executive director of the Project on Government Oversight, reiterated this observation in a statement she

made when releasing the report, "The F–22 is a continuation of the flawed weapons-building system that allows overpriced, undertested weapons to dominate our military policy. As long as the Pentagon continues this trend, defense contractors will benefit at the expense of the military and taxpayers," and I might add our national security.

I thank the Chair for holding this hearing, and I look forward to the testimony.

Mr. SHAYS. Thank the gentleman for his statement.

At this time I would recognize our panel, Mr. Allen Li, Director, Acquisition and Sourcing Management, U.S. General Accounting Office, accompanied by Mr. Robert Murphy, Assistant Director of Sourcing Management, GAO; and Mr. Donald Springman, Senior Analyst, Acquisition and Source Management, GAO.

And before I swear you, gentlemen, I would just like to say for both panels my hope is that we have an honest dialog with no games, no spin, just straight talk.

At this time I would like to administer the oath, and if you gentlemen would stand.

[Witnesses sworn.]

Mr. SHAYS. Note for the record our witnesses have responded in the affirmative.

And I also would say before, Mr. Li, you give your testimony, I don't know if we have all of the answers, because I'm not sure that you have all of the data submitted to you by DOD to answer all of the questions. We don't feel that we have all of the data, but let's give it a try and see what you have got.

STATEMENTS OF ALLEN LI, DIRECTOR, ACQUISITION AND SOURCING MANAGEMENT, U.S. GENERAL ACCOUNTING OFFICE, ACCOMPANIED BY ROBERT MURPHY, ASSISTANT DIRECTOR, ACQUISITION AND SOURCING MANAGEMENT, U.S. GENERAL ACCOUNTING OFFICE; AND DONALD SPRINGMAN, SENIOR ANALYST, ACQUISITION AND SOURCING MANAGEMENT, U.S. GENERAL ACCOUNTING OFFICE

Mr. LI. Mr. Chairman and members of the subcommittee, I'm pleased to be here today to summarize our statement on the impact of cost reduction plans on estimates for producing the F–22.

We were asked by the chairman to update information we provided last year, and have prepared a report being released at today's hearing.

As you know, the Air Force started developing the F–22 in 1991. Development is scheduled to be completed by September 2003. The Air Force plans to procure 333 production aircraft at a cost currently limited to $37.6 billion by the Fiscal Year 1998 Defense Authorization Act. The act does not specify the total number of aircraft to be produced.

Before I summarize our work, allow me to provide some background information with regards to the production of the F–22. In 1997, the Air Force and contractors reported that the production costs could go up substantially. Since then the contractors and the Air Force have been developing and implementing plans to reduce costs by enhancing production technology, improving manufacturing techniques and improving acquisition practices.

Cost reduction plans are categorized in three ways: challenge, not yet implemented, and implemented. Challenge plans are those that are not yet well defined and are not yet close to achieving future cost reductions. Not yet implemented plans are those that are better defined and are believed to be sound and possible. Implemented plans are those closest to achieving cost reductions.

I have three main points this morning. Point one, potential cost reductions identified by contractors have increased, but their actual impact is yet to be determined. The estimated amount of contractor-identified cost reduction plans added up to $26.5 billion in January 2001. The total consists of about $4.2 billion in the challenge category, $8.5 billion in cost reductions not yet implemented, and about $13.7 billion in cost reductions that have been implemented.

It is clear that if the savings from cost reduction plans are to be achieved, production costs—production contract prices and Air Force expenditures must be lower than would have been the case if the planes had not been implemented. However, until contracts are negotiated, cost estimates will continue to reflect the judgment of cost estimators about the potential impact of cost reduction plans.

Because F–22 production is in its early stages, most of the cost reductions associated with the cost reduction plans have not yet been achieved. An analysis of some cost reduction plans categorized as implemented indicates that lower costs can be achieved.

Last year the Air Force asked the Defense Contract Audit Agency [DCAA], to conduct a limited review of some of the plans. DCAA is responsible for contract audits at DOD. DCAA examined 11 cost reduction plans totaling $425 million in estimated cost reductions. DCAA's report indicated three things. First of all, DCAA did not take exception to the potential cost reductions for 8 of the 11 plans it reviewed. Second of all, the agency found potential cost reductions on two others to be based on judgment, not discrete, measurable events. And the third thing that it found, it has found the documentation on one to be lacking.

Mr. Summers of DCAA will testify later and should be able to provide the subcommittee with further details.

Point No. 2, latest F–22 production cost estimates still exceed the congressional cost elimination. As we reported to you last year, both the Air Force and Office of the Secretary cost estimators projected that in late 1999 that productions costs would exceed the congressional cost limitation.

Air Force cost estimators projected productions costs at $40.8 billion, and those from the Office of the Secretary estimated $48.6 billion. Even though the cost estimates exceeded the cost limitations in effect at that time, the Secretary of the Air Force maintained that the actual costs would not exceed the limitation, and established the Air Force's position on production costs at the $39.8 billion limitation amount.

So what are the latest projections we analyzed? In estimates made December 2000 to support the fiscal year 2002 budget request, both the Air Force and the Office of the Secretary cost estimators continued to project that production costs will exceed the congressional cost limitations. The Air Force cost estimators projected that production costs were likely to exceed the current $37.6

billion congressional cost limitation by $2 billion. The estimate produced by the Office of the Secretary indicates that costs will likely exceed the limitations by $9 billion. The $7 billion difference between those two estimates is due to such things as the Office of the Secretary estimating higher labor costs for subcontractors, as well as higher costs for the F–22 engines.

Air Force officials advise us that their estimates consider the same cost reduction means as those by the Office of the Secretary, but that they reflect differing judgments regarding the viability of the plans and potential amounts of cost reductions applied.

At this time we cannot advise you on which estimate will prove to be more accurate, but what if the higher estimate turns out to be true? If the Office of the Secretary's higher estimate is correct, and additional cost reduction plans are not developed and implemented, we project that the Air Force would have to buy about 85 fewer F–22s than the 333 aircraft now planned to stay within the cost limitation.

My final point. DOD has not completed action on our prior recommendations to reconcile the number of F–22s with the cost limitation and report to the Office of the Secretary on the status of cost reduction plans. We made two recommendations last year to the Secretary of Defense, namely that he reconcile the number of F–22s that need to be procured with the cost limitation and report to the Congress on the implications of procuring fewer F–22s because of potentially higher costs. And the second recommendation was to report to the Under Secretary of Defense on the status of the cost reduction plans each quarter.

Regarding our first recommendation, DOD partially agreed, stating that affordability of the F–22 would be evaluated during QDR. More recently, DOD indicated that a review of DOD programs directed by the President must be completed before it can comment further on this recommendation.

Regarding our second recommendation, we note that in the Air Force's March 2001 quarterly review to the Under Secretary, the information reported included only summary information on the total estimated cost reductions.

DOD, in commenting on the draft of our report being released today, indicated the information reported in the last quarterly review in June 2001 contained more detailed information. We have examined documentation supporting that review and agreed that it contains more information on cost reduction plans than previous reviews; however, the information reported is still not consistent with what we recommended.

Specifically, information was not reported regarding the total number of cost reduction plans identified, the number implemented, cost reductions realized to date, and any additions or deletions in the plans included in the prior report. Such information would be useful.

And, Mr. Chairman, your statement with regards to getting more information is—I am referring to that point. For example, the quantification of cost reductions realized to date would allow us to

identify what the baseline cost estimate is prior to including the impact of implemented end-cost reduction plans.

Mr. Chairman, that concludes my statement. I would like to answer any questions that you have at this time.

Mr. SHAYS. Thank you.

[The prepared statement of Mr. Li follows:]

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform, House of Representatives

For Release on Delivery
Expected at 10:00 a.m.,
Thursday, August 2, 2001

TACTICAL AIRCRAFT

Impact of F-22 Production Cost Reduction Plans on Cost Estimates

Statement of Allen Li, Director, Acquisition and Sourcing Management

GAO-01-636T

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss our work regarding the impact of F-22 cost reduction plans on cost estimates for F-22 production.

As you know, the Air Force started developing the F-22 in 1991, and plans to complete development in September 2003. The Air Force plans to procure 333 production aircraft at a cost currently limited[1] to $37.6 billion by the National Defense Authorization Act for Fiscal Year 1998.[2] The act does not specify the total number of aircraft to be procured.

As requested, we have updated the information we provided to the Subcommittee last August[3] on the F-22 production program and have prepared a report being released today.[4]

Today, we will highlight our work concerning (1) potential cost reduction plans, (2) production cost estimates by the Air Force and the Office of the Secretary of Defense, and (3) DOD's actions to implement recommendations included in our August 2000 report.

In summary, the F-22 contractors' estimated amount of cost reduction plans total about $26.5 billion. Plans pertaining to about half of this amount have been implemented. After considering the cost reduction plans, both Air Force and the Office of the Secretary cost estimators projected in late 2000 that F-22 production costs would still exceed the $37.6 billion congressional cost limitation if the Air Force were to procure

[1] The cost limitation, as adjusted, is currently $37.6 billion for 333 aircraft and does not include $1.575 billion in fiscal year 2000 funding associated with six aircraft labeled Production Representative Test Vehicles that are excluded from the production cost limitation. Those aircraft are funded mostly with appropriations for Research, Development, Test and Evaluation as approved by the Congress. The production cost limitation does, however, include about $200 million for advanced procurement related to those six aircraft.

[2] P.L. 105-85, Nov. 18, 1997.

[3] *Defense Acquisitions: Recent F-22 Production Cost Estimates Exceeded Congressional Limitation* (GAO/NSIAD-00-178, Aug. 15, 2000). See Related Products List for additional reports on the F-22 program.

[4] *Tactical Aircraft: Continuing Difficulty Keeping F-22 Production Costs Within the Congressional Limitation* (GAO-01-782, July 16, 2001).

333 F-22s. Air Force estimators projected the cost at $39.6 billion;[5] the Office of the Secretary estimated $46.6 billion.[6]

Since both the Office of the Secretary and the Air Force had projected that costs would exceed the limitation, we recommended in August 2000[7] that the Secretary of Defense reconcile the number of F-22s needed with the amount of the congressional cost limitation on F-22 production. DOD officials agreed but said they would make the judgements as part of the next Quadrennial Defense Review. We also made a recommendation regarding the regularity and scope of reporting by the Air Force to the Under Secretary of Defense for Acquisition, Technology, and Logistics on the status of the cost reduction plans. While the status of cost reduction plans was a topic in the last Air Force briefing to the Under Secretary, information reported was less comprehensive—and thus less useful—than we had recommended.

Background

In 1997, the Air Force and contractors reported that the F-22 production cost could grow substantially and that the contractors should develop cost reductions to offset that cost growth. The Office of the Under Secretary of Defense for Acquisition, Technology and Logistics agreed. Since then, the contractors and the Air Force have been developing and implementing plans to reduce costs by enhancing production technology, improving manufacturing techniques, and improving acquisition practices.

Cost reduction plans are categorized as "challenge," not yet implemented or implemented. This categorization defines the relative progression of these plans toward potentially achieving future cost reductions. Challenge plans are those that are not yet well defined and are not yet close to achieving future cost reductions. Because these challenge plans are not yet well defined, neither Air Force nor Office of the Secretary cost estimators assumed any cost reductions from the challenge plans when

[5] Air Force cost estimators projected the costs for 331 aircraft at $38.5 billion. To arrive at the cost for 333 aircraft that are planned, $1.1 billion must be added for 2 aircraft approved for fiscal year 1999, making the projected cost $39.6 billion for 333 aircraft.

[6] Briefing documents indicate that Office of the Secretary estimators projected the costs for 331 aircraft at $45.5 billion. To arrive at the projected cost for 333 aircraft that are planned, $1.1 billion must be added for 2 aircraft approved for fiscal year 1999, making the projected cost $46.6 billion for 333 aircraft.

[7] GAO/NSIAD-00-178.

formulating their estimates. Not yet implemented plans are those that are better defined and are believed to be sound and possible. However, actions necessary to make them a reality have not been taken. Implemented plans are those closest to achieving cost reductions. The Air Force and contractors' criteria for determining if a cost reduction plan is implemented include whether

- the contractor has submitted a firm-fixed price proposal that recognizes the impact of the cost reduction,
- the impact of the reduction has been reflected in a current contract price—either with the prime contractor or a supplier to the prime contractor,
- the contractor has reduced the standard number of hours allocated to a specific task,
- the reduction has been negotiated in a forward pricing rate agreement, or
- the reduction has been negotiated with a subcontractor or vendor.

The current F-22 production cost limitation that stands at $37.6 billion has been adjusted to reflect planned acquisition of 333 production aircraft, 6 fewer than included in the cost limitation in effect in 1999. This change reflects congressional action on the fiscal year 2000 Air Force budget, in which the Congress approved funding for 6 aircraft using appropriations for Research, Development, Test and Evaluation. Accordingly, the 6 aircraft and most costs were eliminated from the production cost limitation and added to the development cost limitation.

Potential Cost Reductions Identified by Contractors Have Increased

The F-22 contractors' estimated amount of cost reduction plans added up to $26.5 billion in January 2001. The total consists of

- About $4.2 billion (16 percent) labeled as a challenge amount;
- About $8.5 billion (32 percent) in cost reductions not yet implemented; and
- About $13.7 billion (52 percent) in cost reductions that have been implemented.

In January 1997, the Air Force and contractors had estimated cost reduction plans totaling $13.1 billion dollars. Thus, the value of these plans has doubled in a four-year period. Ultimately, if the savings from the cost reduction plans are to be achieved, production contract prices and Air Force expenditures must be lower than would have been the case if the plans had not been implemented. The Air Force and contractors have entered into an understanding that relates the probable total affordability

of F-22 production to target contract prices for low-rate initial production. Until contracts are negotiated, cost estimates will continue to reflect judgements of estimators about the potential impact of cost reduction plans when implemented.

Because F-22 production is in its early stages, most of the cost reductions associated with the cost reduction plans have not yet been achieved. One analysis of some cost reduction plans categorized as implemented indicates that lower costs can be achieved. The Air Force in mid-2000 asked Defense Contract Audit Agency (DCAA)[8] to conduct a limited, independent review of some of the plans. DCAA examined eleven cost reduction plans amounting to $425 million of the total $26.5 billion in estimated cost reductions. DCAA did not take exception to the potential cost reductions for 8 of the 11 plans reviewed; found potential cost reductions on two others to be based on judgement, not discrete, measurable events; and found documentation on one to be lacking.

Latest F-22 Production Cost Estimates Exceed Cost Limitation by Greater Margin

As we reported to you in August 2000, both the Air Force and Office of the Secretary cost estimators projected in late 1999 that production costs for 339 aircraft would exceed the congressional cost limitation of $39.8 billion in effect at that time. The Air Force cost estimators projected production costs at $40.8 billion, and the Office of the Secretary estimated $48.6 billion for the 339 production aircraft. Even though the cost estimates exceeded the $39.8 billion cost limitation in effect at that time, the Secretary of the Air Force maintained that the actual cost would not exceed the limitation, and established the Air Force's position on F-22 production cost at the $39.8 billion limitation amount.

In estimates made in December 2000 to support the fiscal year 2002 budget request, both Air Force and Office of the Secretary cost estimators continue to project that F-22 production costs will exceed the congressional cost limitation. The Air Force cost estimators projected in late 2000 that production costs were likely to exceed the $37.6 billion congressional cost limitation by $2 billion. The cost estimate produced by the Office of the Secretary indicates that costs will likely exceed the congressional cost limitation by $9 billion. Air Force officials advised us that their cost estimates consider the same cost reduction plans as those by the Office of the Secretary, but that differing judgements regarding the

[8] DCAA is responsible for contract audits at DOD.

viability of the plans and potential amounts of cost reductions are applied. The Office of the Secretary excluded some cost reduction plans because of the limited viability and estimated lower savings from some cost reduction plans. The following table compares the two cost estimates.

Table 1: Comparison of Production Cost Estimates by the Air Force and the Office of the Secretary and the Impact of Cost Reduction Plans on These Estimates

Then year dollars in billions		
Estimate	**Air Force**	**Office of the Secretary**
Production cost estimate including implemented cost reduction plans	$47.2	$51.9
Impact of not yet implemented cost reduction plans	($7.6)	($5.3)
Total production cost estimate	**$39.6**	**$46.6**

Source: GAO analysis of Air Force and Office of the Secretary data.

If the Office of the Secretary's higher estimate is correct and additional cost reduction plans are not developed and implemented, we project that the Air Force would have to buy about 85 fewer F-22s (or about 25 percent) than the 333 aircraft now planned to stay within the cost limitation. In our August 2000 report, we made a similar projection.

Actions to Implement Prior GAO Recommendations

We recommended in our August 2000 report that the Secretary of Defense reconcile the number of F-22s that need to be procured with the cost limitation and report to the Congress on the implications of procuring fewer F-22s because of potentially higher costs. DOD partially agreed, stating that the affordability of the F-22 will be evaluated during an upcoming Quadrennial Defense Review. More recently, DOD indicated that a review of DOD programs, directed by the President, must be completed before it can comment further on this recommendation.

Our August report also contained a recommendation that the Air Force report to the Under Secretary of Defense on the status of the cost reduction plans each quarter and that quarterly reports include, as a minimum, summary information such as the total number of cost reduction plans identified, the number implemented, the total estimated cost reductions, cost reductions realized to date, and additions and deletions from the plans included in the prior report. However, in the Air Force's March 2001 quarterly review to the Under Secretary, the information reported included only summary information on the total estimated cost reductions.

DOD, in commenting on our report being released today, indicated the information reported in the last quarterly review (June 2001) contained more detailed information. We have examined the June 2001 quarterly review and agree it contains more information on cost reduction plans than previous quarterly reviews in terms of total estimated cost reductions. However, the information reported is still not consistent with what we recommended be reported in August 2000. Specifically, information was not reported as we recommended regarding the total number of cost reduction plans identified, the number implemented, the cost reductions realized to date, and any additions or deletions from the plans included in the prior report.

Mr. Chairman, that concludes my statement. I will be happy to respond to any questions you or other Members of the Subcommittee may have.

Contacts and Acknowledgments

For future questions regarding this testimony, please contact Allen Li, (202) 512-4841, or Robert Murphy, (937) 258-7904. Individuals making key contributions to this testimony include Edward Browning, Arthur Cobb, Marvin Bonner, C. Todd Brannon, Michael J. Hazard, Don Springman and John Van Schaik.

Related GAO Products

Tactical Aircraft: Continuing Difficulty Keeping F-22 Production Costs Within the Congressional Limitation (GAO-01-782, July 16, 2001).

Tactical Aircraft: F-22 Development and Testing Delays Indicate Need for Limit on Low-Rate Production (GAO-01-310, Mar. 15, 2001).

Supporting Congressional Oversight: Framework for Considering Budgetary Implications of Selected GAO Work (GAO-01-447, Mar. 9, 2001).

Defense Acquisitions: Recent F-22 Production Cost Estimates Exceeded Congressional Limitation (GAO/NSIAD-00-178, Aug.15, 2000).

Defense Acquisitions: Use of Cost Reduction Plans in Estimating F-22 Total Production Costs (GAO/T-NSIAD-00-200, June 15, 2000).

Budget Issues: Budgetary Implications of Selected GAO Work for Fiscal Year 2001 (GAO/OCG-00-8, Mar. 31, 2000).

F-22 Aircraft: Development Cost Goal Achievable If Major Problems Are Avoided (GAO/NSIAD-00-68, Mar. 14, 2000).

Defense Acquisitions: Progress in Meeting F-22 Cost and Schedule Goals (GAO/T-NSIAD-00-58, Dec. 7, 1999).

Fiscal Year 2000 Budget: DOD's Procurement and RDT&E Programs (GAO/NSIAD-99-233R, Sept. 23, 1999).

Budget Issues: Budgetary Implications of Selected GAO Work for Fiscal Year 2000 (GAO/OCG-99-26, Apr. 16, 1999).

Defense Acquisitions: Progress of the F-22 and F/A-18E/F Engineering and Manufacturing Development Programs (GAO/T-NSIAD-99-113, Mar. 17, 1999).

F-22 Aircraft: Issues in Achieving Engineering and Manufacturing Development Goals (GAO/NSIAD-99-55, Mar. 15, 1999).

F-22 Aircraft: Progress of the Engineering and Manufacturing Development Program (GAO/T-NSIAD-98-137, Mar. 25, 1998).

F-22 Aircraft: Progress in Achieving Engineering and Manufacturing Development Goals (GAO/NSIAD-98-67, Mar. 10, 1998).

Tactical Aircraft: Restructuring of the Air Force F-22 Fighter Program (GAO/NSIAD-97-156, June 4, 1997).

Defense Aircraft Investments: Major Program Commitments Based on Optimistic Budget Projections (GAO/T-NSIAD-97-103, Mar. 5, 1997).

F-22 Restructuring (GAO/NSIAD-97-100R, Feb. 28, 1997).

Tactical Aircraft: Concurrency in Development and Production of F-22 Aircraft Should Be Reduced (GAO/NSIAD-95-59, Apr. 19, 1995).

Tactical Aircraft: F-15 Replacement Issues (GAO/T-NSIAD-94-176, May 5, 1994).

Tactical Aircraft: F-15 Replacement Is Premature as Currently Planned (GAO/NSIAD-94-118, Mar. 25, 1994).

Viewing GAO Reports on the Internet

For information on how to access GAO reports on the INTERNET, send e-mail message with "info" in the body to:

info@www.gao.gov

or visit GAO's World Wide Web Home Page at:

http://www.gao.gov

Reporting Fraud, Waste, and Abuse in Federal Programs

To contact GAO FraudNET use:

Web site: http://www.gao.gov/fraudnet/fraudnet.htm
E-Mail: fraudnet@gao.gov
Telephone: 1-800-424-5454 (automated answering system)

Mr. SHAYS. I would like to recognize that we have Mr. Barr as the vice chair, and Mr. Tierney, who has sometimes served as the ranking member of this committee, to help Mr. Kucinich. So you have four Members who are very interested in the committee.

And at this time I recognize Mr. Barr. You have your time.

STATEMENT OF HON. BOB BARR, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF GEORGIA

Mr. BARR. Thank you very much, Mr. Chairman. I thank you for allowing me to participate in this important hearing today on the air superiority fighter that will maintain our superiority and consequently lead directly to our superiority on the battle field well into the 21st century.

Mr. Chairman, I have a more complete statement that I would appreciate unanimous consent to insert into the record.

Mr. SHAYS. If I could at this time just take care of that business. I ask unanimous consent that all members of the subcommittee be permitted to place an opening statement in the record, and that the record remain open for 3 days for that purpose. Without objection, so ordered.

I would ask further unanimous consent that all witnesses be permitted to include their written statement in the record. Without objection, so ordered.

Mr. BARR. Thank you, Mr. Chairman.

Mr. Chairman, during the past year the F–22 Air Force Industry Team has achieved a number of significant accomplishments, among them: Completed all production release criteria required for a low-rate initial production go-ahead. Completed initial measurements of the F–22's in-flight stealth characteristics. These measurements confirmed that the F–22 is meeting or exceeding its stealth requirements; demonstrated in-flight fusion of sensor data from the F–22's integrated avionics system; completed engine life testing representing the equivalent to 8 years of operational use; validated the detection range of the F–22's radar. These measurements confirmed the radar is capable of detecting targets at greater than ranges of the F–22's specification requirements; completed static strength testing of critical aircraft structure. These tests confirmed the F–22 meets operational strength requirements with a 50 percent safety margin.

Additionally, the team has currently accomplished over 1,250 hours of flight testing during 500 flights since flight tests began.

Mr. Chairman, by any measure the F–22 is on range to be an outstanding aircraft which exceeds even the very, very high goals set for it earlier on. The F–22 program has met all calendar year double 00 LRIP DAB performance criteria. One thing, though, that concerns me, Mr. Chairman, is congressional action over the last several years which has eroded because of uncertainty over continuation of the program and size of the program, eroded supplier confidence.

[The prepared statement of Hon. Bob Barr follows:]

Opening Statement
The Honorable Bob Barr
Subcommittee on National Security, Veterans Affairs and International Relations
Oversight of the F-22 Program
August 2, 2001

Chairman Shays, thank you for allowing me to participate in this hearing today.

As you know the Lockheed-Martin Marietta Plant, located in Georgia's 7th District, is the final assembly plant for the F-22 Raptor fighter. I am proud to champion the F-22 program, which is developing the next-generation air superiority fighter for the Air Force to counter emerging worldwide threats. The fast, agile and stealthy F-22 will take over the air dominance role with Air Combat Command starting in 2005, assuring the United States continued control of the skies during combat well into this new century.

This superior and much-needed aircraft will be able to penetrate enemy airspace and provide first-look, first-shot, first-kill capability against multiple targets, through the use of highly-sophisticated stealth technology and advanced sensors. The F-22 is characterized by a low-observable, highly maneuverable airframe; advanced integrated avionics; and aerodynamic performance allowing supersonic cruise without afterburner.

The F-22 was developed to counter the increasing sophistication and threat of hostile air forces and integrated air defense systems in use around the world. As foreign

countries continue to develop and purchase increasingly advanced air defense systems, our nation must continue advancement of our own fighters to preserve future air superiority.

The F-22 will counter future threats posed by foreign advanced surface-to-air missiles (SAMs). As we have witnessed in recent years over the skies of Iraq, Bosnia and Kosovo, SAMs and other advanced fire-controlled radars pose a very real threat to U.S. combat air fighters. The only effective defense against those systems is the F-22, which has the ability to operate against multiple targets and, using its stealth capability, fly undetected by radar to its target. In the cockpits of F-22, pilots will be able to engage the enemy over their own territory and support long-range air-to-ground assets such as the F-15E.

Air and ground threats the F-15 will no longer be able to counter will be defeated by the lethal and survivable F-22, with its balance of increased speed and range, enhanced offensive and defensive avionics, and low observability or stealth. The F-22's design also emphasizes reliability and maintainability of systems.

The F-22's engine is expected to be the first to provide the ability to fly faster than the speed of sound for an extended period of time without the high fuel consumption characteristic of aircraft that use afterburners to achieve supersonic speeds. It is expected to provide high performance and high fuel efficiency at slower speeds as well.

For its primary air-to-air role, the F-22 will carry six AIM-120C and two AIM-9 missiles. For its air-to-ground role, the F-22 can internally carry two 1,000 pound-

class Joint Direct Attack Munitions (JDAM), two AIM-120C, and two AIM-9 missiles. With the Global Positioning System-guided JDAM, the F-22 will have an adverse weather capability to supplement the F-117 (and later the Joint Strike Fighter) for air-to-ground missions after achieving air dominance.

The F-22's combat configuration is "clean", that is, with all armament carried internally and with no external stores. This is an important factor in the F-22's stealth characteristics, and it improves the fighter's aerodynamics by dramatically reducing drag, which, in turn, increases the F-22's range. The F-22 has four under wing hardpoints, each capable of carrying 5,000 pounds. A single pylon design, which features forward and aft sway braces, an aft pivot, electrical connections, and fuel and air connections, is used. Either a 600-gallon fuel tank or two LAU-128/A missile launchers can be attached to the bottom of the pylon, depending on the mission.

The research, development, and construction of the F-22 aicraft is an expensive process. For that reason, the Air Force and Lockheed Martin have developed many proposals on methods to decrease the cost of the program. One such proposal involved the relocation of the project from its current site in Marietta, Georgia, to a Lockheed Martin plant in Fort Worth, Texas. A recently concluded Air Force study found relocating the plant would cost more than having it remain in Marietta. In fact, the Air Force could not identify any significant savings in the proposed move, and Lockheed Martin has said the transfer of the project would involve considerable, unacceptable corporate investment. For these reasons, I am pleased the Air Force and Lockheed Martin have no plans to pursue this relocation proposal. I will continue to meet with our colleagues in the Congress, with military leaders and Administration officials, and

with management and labor union leaders at Lockheed Martin, to ensure the F-22 continues to be assembled in the Lockheed Martin plant in Marietta, Georgia, in which both Lockheed Martin and the U.S. government have invested millions of dollars in order to meet the rigorous requirements for assembly of this magnificent aircraft.

The Air Force and the F-22 Industry Team have set the example for future acquisition programs. Lockheed Martin, along with Lockheed's team partners Boeing and Pratt & Whitney, and with thousands of suppliers across this great nation, have performed superbly and have been great stewards of the taxpayers' money. They have responded to the challenges of four major program restructures, directed by the government, since the initial contracts were let in 1991. We all need to remember the original requirement for this aircraft was 750 F-22s, built at a rate of 72 aircraft a year to replace the F-15C, with an operational combat readiness target date of 1995.

The 1997 Quadrennial Defense Review amounted to the fourth restructure of the program. It limited total production to 339 aircraft, reduced the production rate to 36 aircraft per year and led to a combat readiness date of 2005. The biggest single contributor to cost growth per aircraft has been the downsizing of this program by the government. The combined Air Force/Contractor Team, and their suppliers, have worked tirelessly for 10 years to keep costs within the allotted caps dictated by the government for Engineering and Manufacturing Development, as well as for the Production phase of the program.

The Air Force and their Industry Partners are to be commended for their ongoing efforts to reduce costs during the EMD phase, as well as for the aggressive approach they have taken to drive down projected costs.

The history of warfare is clear -- whoever owns the sky and space above it will own the battlefield. The F-22 is the only opportunity our nation has to ensure America's military continues to control the sky as we move into the 21st century. There is no other tactical combat aircraft in service today -- or planned -- that has similar capacity to successfully operate amid our growing future foreign threats.

Mr. BARR. I would like to ask Mr. Li, does superior uncertainty add to overall production cost?

Mr. LI. I understand that the Air Force has identified that. I have not looked at that particular issue to verify that was the case. I would need to talk to the individual subcontractors that were involved and to identify whether or not that was indeed the case. But I do understand that the Air Force has raised that as an issue, sir.

Mr. BARR. Thank you. I would appreciate that.

Mr. Li, with the majority of the development program now complete, should the remaining effort principally involving testing move on to the testing phase?

Ms. LI. When we are talking about the engineering, manufacturing and development phase of the program, our position has been that as of our last report which we issued last March, which was before some of the progress that you mentioned today, sir, our position has been that a lot of testing still needed to be performed, and that was the reason why we had made the recommendation that, because of the uncertainty with regards to how the testing was going—if it was going to be completed in time, we recommended not to accelerate production.

However, in direct response to your question, sir, I believe that the remainder of the time that is associated with the engineering, manufacturing and development program is indeed for testing, and I would support that testing being completed.

Mr. BARR. With regard to the significant cost investment that both the government and Lockheed Martin has had to put into place at their facility in Marietta, GA, to conduct the assembly, would moving that assembly to any other location involve substantial cost both to the government and to Lockheed Martin?

Mr. LI. I have not looked at that particular issue. I do understand that discussions have been going on with regards to the possibility of either moving facilities or building. The facility currently at Martin Marietta that they are utilizing is a government-owned—part of it is a government-owned facility.

Mr. BARR. Would not common sense tell you, though, that if there has been significant investment at a facility, in this case Air Force plant No. 7 at the Lockheed Martin facility in Marietta, in order to get to the point where the aircraft can be assembled there, and is there being assembled, to pick all of that up and have to invest, make that investment elsewhere would involve necessarily additional cost; would it not?

Mr. LI. Yes. That is a very good point. That would be one of the factors that Lockheed and the Air Force would have to consider.

Mr. BARR. Thank you.

Mr. SHAYS. At this time, I would recognize Mr. Kucinich. We are going to do 5 minutes and then allow a longer time for the second time if we need it.

Mr. KUCINICH. I thank the Chair.

To Mr. Li. You indicated in your report that the under Secretary of Defense cost estimate, the Pentagon will be forced to cut 85 more aircraft. How many airplanes do you expect will be acquired in this program? About 248.

Mr. LI. The statement that we are making was to try to put a sense of magnitude as to what would happen if the Office of the

Secretary's estimate was proven to be accurate and true. In other words, in the current cost limitation and the current plans, the Air Force currently plans to procure 333 aircraft. What we are saying, sir, was, if the higher estimate was proven to be true, and they could not develop any additional cost reductions, they would be—in essence—only be able to buy 200 something—85 less. That was our analysis.

Mr. KUCINICH. How many were originally envisioned?

Mr. LI. Over 700.

Mr. KUCINICH. And some cost estimates were $40 billion for project development; is that right?

Mr. LI. Yes.

Mr. KUCINICH. What is the current total under the Secretary of Defense estimate?

Mr. LI. The engineering, manufacturing, development congressional cost cap is around $20 billion, and the current production cost cap is at $37.6.

Mr. KUCINICH. Isn't it closer to $46 billion plus another $19 billion or so for development equals about $66 billion?

Mr. LI. If you take those new—the other estimates into account.

Mr. Murphy, do you have anything?

Mr. KUCINICH. That is satisfactory actually.

So that the number of planes keep dwindling, and the cost keeps escalating. Do you have the ability to project out at least those rates?

Mr. LI. Excuse me?

Mr. KUCINICH. Do you have the ability to project out at these rates the increase—cost escalating, the means guidelines; have you tracked the rate of decline for the number of aircraft and the rate of increase for cost so you estimate where we might be in 2 years or 3 years according to these trends?

Mr. LI. We have not.

Mr. KUCINICH. You know, can you see something in the future where we have like one plane for, you know, $1 trillion?

Mr. LI. I know, Mr. Augustine has indicated that with his theory, that soon we will only be able to buy one weapons systems for the billions of dollars investment. I don't have that projection, sir.

Mr. KUCINICH. That is what I was wondering. Can you do that projection?

Mr. LI. I think it would depend upon the particular weapons systems itself.

Mr. KUCINICH. What about the average age of aircraft? Even if the Air Force procures all of the F–22s it wants as well as all of the Joint Strike Fighters, for that matter, won't the current planes leave our fleet even older, sir?

Mr. LI. Absolutely, sir. We issued a report on this same subject, on the problem of aging aircrafts, and we did indicate that for the tactical fleet, using the current plans for modernization, that indeed, that after all is done, the average age of the Air Force fleet would be higher than what it was before its modernization started.

Mr. KUCINICH. Colonel Riccioni from the Project on Government Reform and Oversight submitted a report today that criticizes the Pentagon's aircraft procurement program. He cites exactly these kinds of cost and age problems. Essentially he finds, as a fighter

pilot himself, that the Pentagon is engaged in what he calls a course of unilateral disarmament.

What do you think? Could you comment on that?

Mr. LI. I wouldn't go that far. I do think that it is of concern that individual aircraft programs that we have right now for modernization may not reach those particular goals in terms of allowing DOD to have the average age of aircraft that it currently enjoys.

Obviously there are a lot of other factors, too, beside that age that come into play in terms of capabilities, that Mr. Barr was talking about, the increased capabilities that the F–22, for example, would have. So many other factors would have to be——

Mr. KUCINICH. One final question before we go back. By permitting the reduction of the number of planes, does this actually reward cost overruns and put the burden for overruns on the taxpayers, not the contractors, rewarding inefficiencies, the taxpayers get less for more money? They are the ones that have to suffer because they are promised X amount of planes and they get far less.

Doesn't it seem like a game of bait and switch?

Mr. LI. Mr. Kucinich, I think that one of the problems that are associated with weapons systems is the difficulty to project out and to do cost estimating in the first place.

Mr. KUCINICH. I understand.

Mr. Chairman, as I go over this material, you know, I'm here on behalf of people in my district who are taxpayers, and I have to tell you I feel that people are really being cheated on this. They are being cheated. They are being ripped off, and the national security is suffering adversely. And part of these hearings, you know, we go through these hearings, and I think in order for them to have the kind of meaning which they are meant to have, I think it's appropriate for us to call into accounting this rotten system, because it's very clear that the contractors are the last ones to lose, and the taxpayers are the first ones to lose.

Thank you.

Mr. SHAYS. Thank you.

At this time, I recognize Mr. Tierney.

Mr. TIERNEY. Thank you.

Thank you, sir, for joining us. I'm going to ask that we put up a slide, and maybe you can help me with some calculations.

See if we can get this done before we go down to vote on that.

He is going to give you a written copy of that because if your eyes are as challenged as mine, on the wall, that won't help you too much.

Now, supposedly the congressional cost cap currently stands at $37.6 billion?

Mr. LI. That's correct.

Mr. TIERNEY. In your report you said that both the Air Force and the Office of the Secretary came up with estimates that exceed that cap.

Mr. LI. That is correct.

Mr. TIERNEY. They were $39.6 billion and $46.9 billion; is that correct?

Mr. LI. That's correct, sir.

Mr. TIERNEY. On the issue of production cost reduction plans, PCRPs, my argument is that these savings are somehow not re-

turned to the government, so they must be compensating for cost overruns in other areas. I'm trying to determine now how much those costs have escalated, and that is what this chart is all about. We asked the staff to help us with some tallying.

First, we can determine how much money is saved through those so-called PCRPs, the production cost reduction plans. On page 8 of your report you stated that some PCRPs have been implemented, and others have not. You provided the amounts for those that are not yet implemented, which I listed on the chart, at $7.6 million under the Air Force estimate and $5.3 billion—sorry, $7.6 billion under the Air Force estimate, and $5.3 billion under the OSD; is that right?

Mr. LI. That's correct.

Mr. TIERNEY. Your report did not list amounts for PCRPs that are already implemented, but during a meeting yesterday the staff asked the Air Force about this. The Air Force said that 87 percent of the contractors' projections are already implemented. So, according to your report, the contractors predicted $13.7 billion in reductions; is that right?

Mr. LI. Yes. When we did our work, we tried to make that breakout of what was the effect of those PCRPs that were already implemented within the cost baseline, and they were unable to do so when we asked them.

Mr. TIERNEY. So they have $13.7 billion in reductions, and they say 87 percent of the contractors' projections are already implemented. This apparently means that the Air Force has already implemented $11.9 billion worth of production cost reduction plans. Does that generally meet your calculations?

Mr. LI. Yes.

Mr. TIERNEY. So if you add the PCRPs that have already been implemented to those that have not, that comes to around $19½ billion, as the chart indicates. When you add these to the Air Force estimate, you get about $59.1 billion, right?

Mr. LI. Yes.

Mr. TIERNEY. So the bottom line is that this amount somehow exceeds the congressional cost cap by $21.5 billion. And my question is, where did it go?

Mr. LI. The cost to the contractor and to both Lockheed and to Pratt & Whitney, from your chart it is correct to say that had there been no PCRPs, it would have come in at this amount, but because of the cost reductions that both contractors have implemented, we are able to bring it in closer to the cap.

Mr. TIERNEY. But, I mean, somewhere in that F–22 program, costs are escalating pretty fast. You are saving at the end, and you are still spending all of this money. I mean, costs are going up like wildfire somewhere else?

Mr. LI. That's correct.

Mr. TIERNEY. So you look at the estimate by the Secretary of Defense, their bottom line is even higher.

Mr. LI. Yes.

Mr. TIERNEY. They say under their analysis it could potentially be $26 billion. I find it a little hard to believe that somewhere in a $37 billion program, costs could have escalated by as much as $26 billion. That appears to be what they are saying.

Do you have any idea where in the program costs have gotten so out of control?

Mr. LI. No. That is one part of the analysis that we did not do. I think that would probably be a more appropriate question to ask the Air Force in terms of what happened to those particular costs.

Mr. TIERNEY. I think your efforts have been commendable, but it seems like you are put in the position of always doing it after the fact. Every time the program goes over by another billion dollars, you go—point that out, they go out and try to find $1 billion in efficiencies, but never really address the inefficiencies that seem to be growing.

So my concern is that they haven't really been accrually predicting the underlying costs to begin with, and they are not being realistic about how these costs rise over time. That is different than in compensating them after the fact. So I think if we can presume the program has already implemented the easiest efficiencies, it will be the low-hanging fruit, so to speak, what is going to happen in the future when there are fewer efficiencies to find, but the costs continue to escalate somewhere else?

Mr. LI. That obviously is a concern. But, I know that with the cost pressures associated with the program, both Lockheed, Pratt & Whitney and the Air Force are working hard at trying to come up with cost reductions that will enable them to meet that cap.

You are right in terms of trying to—in terms of the low-lying fruit, that they have—it is more challenging, obviously, as the program goes along to find cost reductions.

Mr. TIERNEY. I just close with the fact that the Air Force apparently is deeply committed to the President's faith-based programs, but we are losing faith.

Thank you.

Mr. SHAYS. Which cost estimates, Mr. Li, do you consider more accurate, the Air Force or the Office of the Secretary of Defense?

Mr. LI. As I indicated in my short statement, I think that it is very difficult to be able to pinpoint which one is more accurate. I think what I can say is that in terms of program projections that have been made in the past, the ones that have been the lowest have been the least accurate, and that in this particular case, OSD has made a lot of projections that have proven to be closer to the truth.

That said, I think before I could make an assessment as to which one is more accurate, I would have to look at more of the individual details associated with how they did their analysis.

In terms of the Office of the Secretary, I believe that I would have to go into greater detail into how they made their projections, how they did their methodology to project those savings.

Mr. SHAYS. Could you explain the production cost discrepancy between the two estimates?

Mr. LI. We found that the differences are primarily—and this is a big amount of—the biggest chunk was in the estimate of labor costs associated with the subcontractors. There were costs also associated—of $1.2 billions—associated with engine cost that was a difference in the estimate; also $1 billion in terms of the production cost reduction plans, and also $800 million difference in terms of

what the Air Force's plans for—relating to productivity investments.

Mr. SHAYS. What would you say the significance of the production cost estimates discrepancy is? What is the significance? What should we take from these two different estimates?

Mr. LI. Those are two very respectable cost estimating groups. I have a lot of respect for both of them. I think obviously people can disagree, but it also points out to me, Mr. Chairman, that the uncertainty associated with some of them still puts it into question.

As to your initial question as to which one is more accurate, it—there are some differences of opinion there that underlie the fact that there is uncertainty.

Mr. SHAYS. OK. We have 7 minutes left to vote. Let me just ask this question.

We are actually going to come back. Let me just ask this last question and ask you to stay.

What would be gained by providing detailed production cost reduction plans status reports to the Office of the Secretary of Defense, OSD?

Mr. LI. I think it would be very helpful to both the Congress and obviously to myself if I was asked to continue monitoring this program.

I think that an example would be, the question that Mr. Tierney just put up there, in terms of he was saying there was no ability to identify what was the true impact of when they interpreted the baseline, what is the amount associated with what has already been implemented, and you—they never identified that. If I had that number, it would help me. So that is an example.

Mr. SHAYS. OK. What we'll do is we'll come back, and we'll go back to Mr. Barr if he has more questions. Thank you.

I think we have one vote, a Journal. I have this concern that there may be a procedural—a motion to adjourn, so we may be a little longer, but we'll keep you informed. Thank you.

[Recess.]

Mr. SHAYS. I'll call this hearing to order.

Mr. Li, I'd like you to explain to me what information you would like to get that you aren't getting, and I'd like to explain why you're not getting that information. And what is the—first off, is there some information that you are not getting? Is there some information that you're not getting from the Department of Defense? So they are basically saying they won't—the Department of Defense—and who in particular is saying they will not provide information to you?

Mr. LI. Let me give you some background on that particular set of circumstances. To respond to your request that we update last year's report, what we said before to do was to identify what were the latest cost estimates from both the Air Force and the Office of the Secretary. The specific organization that you're asking me to identify is the CAIG, C-A-I-G, the Cost Assessment Estimating Group. And that particular group, we asked them in writing to provide us with some information. They identified to us that information was predecisional and could not be provided at that point in time, Mr. Chairman. In trying to answer the question that you had in terms of what the estimates were, I found an alternative source

that identified what that top number was. I took that number, and I went back to the Office of the Secretary, because I wanted to corroborate and to say, is this indeed the number that the Office of the Secretary had identified? And they confirmed that. So for the purposes of my work, I was able to complete my work in the report.

Had you asked me to provide additional details on assessing such things as the accuracy, I would have to start at the point of perhaps doing a greater sample of the PCRPs, something similar to what the DCAA did in terms of looking at the methodologies involved in each one and the reasonableness of the rates. I would need greater information from that standpoint, and I did not have that information to do that.

Mr. SHAYS. Is the information that you requested, was that made available under the previous administration?

Mr. LI. We did not do this type of work on the F–22, so we did not—I can't comment on that.

Mr. SHAYS. And the justification for not providing it being predecisional is that they were not basically going to acknowledge that they had come to a conclusion or that—in other words, let me understand. Is predecisional meaning that there is evaluation, judgment that had not been made, or was there raw data that you wanted? Do you see the difference?

Mr. LI. Yes, I wanted the raw data. I did—was not looking for the decision. It is DOD's position, however, that the information that I was requesting was not yet acted on by the highest levels which would in essence, the Defense Acquisition Board, and that information was performed at their request for them. And their position was since it had not been acted on, I could not get access to it.

Mr. SHAYS. And when did they say it would be "acted on?"

Mr. LI. They did not identify that.

Mr. SHAYS. So they didn't say give us 2 weeks?

Mr. LI. I'm sorry. I'd like for Mr. Springman to add something.

Mr. SPRINGMAN. If I might interject.

Mr. SHAYS. Is your mic on, Mr. Springman?

Mr. SPRINGMAN. I believe so.

Mr. SHAYS. Tap the mic just so I have confidence. Thank you.

Mr. SPRINGMAN. They did indicate that after the DAB was completed, that "the cost estimate remains predecisional until the DAB" are their exact words.

Mr. SHAYS. Until the what?

Mr. SPRINGMAN. Until the Defense Acquisition Board meeting, the upcoming Defense Acquisition Board.

Mr. SHAYS. Did they say when that board would be meeting?

Mr. SPRINGMAN. At this time the letter back from them was dated March 28th. At that point I don't remember what date the DAB was actually scheduled for, but it is currently scheduled, as I understand, for——

Mr. SHAYS. So even if you wanted this information today, you wouldn't get it; is that what you're saying?

Mr. LI. That's correct. The board is not scheduled to meet, as Mr. Springman said, until August 14th.

Mr. SPRINGMAN. August 14th.

Mr. LI. And that would be the earliest time at which they would provide that information.

Mr. SHAYS. Mr. Kucinich.

Mr. KUCINICH. I would like to review with Mr. Li, if I may, some questions regarding cost control measures. Can you tell us about this new category of production cost reduction measures called challenge measures? What are they exactly?

Mr. LI. Challenge plans are those that are not yet well defined, and they are different from those that are not yet implemented because of the lack of firm definition. In our report that we're releasing today, Mr. Kucinich, we actually have a diagram on page 6 that gives you a pictorial with regards to the progression, and it shows that—it gives you an example that—for example, if—for a challenge plan currently that is being identified is being characterized as the potential cost reductions by buying rather than making selected components. While there is a dollar value added to that, it is not very specific, and I wanted to contrast how each one gets better defined as you go along.

Mr. KUCINICH. I appreciate that. I had the chance to review it, but I'm wondering if contractors haven't fully developed their ideas about these challenge measures, how in the world can they estimate the amount they hope to save by implementing them? In other words, on page 5 of the report.

Mr. LI. I can't address specifically and I can't answer for the contractor——

Mr. KUCINICH. Well, I just wonder if you go to page 5, where do contractors get that $4.2 billion?

Mr. LI. I did not go into seeing how they estimate it. However, I do want to add, sir, that both the Air Force and the CAIG did not consider challenge PCRPs when they did their estimates.

Mr. KUCINICH. Now, the Air Force has argued on occasion that cost increases are really Congress' fault. They say contractors suffer from uncertainty about the government's commitment to the program and that this causes cost to increase. Specifically they say contractor prices have gone up, because there has been no production decision. Let me ask you, when the Air Force originally went to these contractors for estimates, they didn't have a production decision then, did they?

Mr. LI. No.

Mr. KUCINICH. And they don't have one now either, do they?

Mr. LI. No.

Mr. KUCINICH. So are things really that different?

Mr. LI. I will ask Mr. Murphy to answer, give you some more specifics, but this is the same point that Mr. Barr brought up earlier. I think the subcontractor—the Air Force has identified the fact that the lack of certainty associated with making the production decision has—that delay has, according to them, caused some concern and perhaps been viewed as a lack of commitment on the part of the government.

Mr. KUCINICH. So if I may, contractors could argue that they feel uncertain because a production decision was postponed at the beginning -.

Mr. LI. That's right.

Mr. KUCINICH [continuing]. Of the year? Have you heard that?

Mr. LI. Yes. I have heard that from the Air Force.

Mr. KUCINICH. But as you stated on page 7 of your report, the estimates you cited in your report were from December of last year. Isn't that right?

Mr. LI. That's correct.

Mr. KUCINICH. So that argument doesn't explain how these new estimates increased, does it?

Mr. LI. No, no.

Mr. KUCINICH. Now, even assuming that there's something to this contractor uncertainty argument, how does it work in practice? I mean, 1 year the contractor provides detailed cost estimates to the Air Force. The next year the contractor says, you know, I'm not sure about the commitment to this program. So my price just went up by 50 percent. Now, does the Air Force really accept that kind of justification when dealing with contractors?

Mr. MURPHY. They have mentioned this several times. I think as I see it, it is a generalization that they've made. If there's some data that they have put together that shows how the subcontractors are reacting to the current continued extension of a production decision, we haven't seen any data that would support that statement.

Mr. KUCINICH. Mr. Li, just I want to take this in a different direction for a moment. I just want to take this in a different direction for a moment.

You know, I read your report and am grateful for the work of JO on this, but if you were a Member of Congress, how in the world would you explain to your constituents why they keep paying more and getting less?

Mr. LI. This goes back to my point about not being able to do good cost estimates in the first place. I think that, perhaps, they were too optimistic in identifying what those iterational costs were. Mr. Kucinich, I'm also associated with reviewing all of NASA's programs, and very similar types of issues have come up with regards to the space station, and a lot of people are saying that—how do I explain to my constituent it is fact that the program is getting more expensive and the content is getting less?

Mr. KUCINICH. Well, if I may, though, you know, just to respond and then to yield back to the Chair, there is a critical difference here. We accept NASA as an incubator of new technologies and the price of developing alpha technologies is something that the government has long been ready to absorb. We don't accept the role of contractors in propelling costs of any material. We don't accept that. And it is not up to them to make that decision, because that is really done apart from the government. NASA is an internal program, in the sense of some of the cost increases have been anticipated. But for the first time we are beginning to scrutinize some of these weapons systems, where, you know, the taxpayer isn't ready to give the Department of Defense a blank check on anything.

Mr. LI. My parallel was not to try to say that there is some parallel in terms of the mission of either. My only reason for bringing this up was to say that the issue of cost estimating is very difficult and other agencies besides DOD are trying to tackle this issue.

Mr. KUCINICH. All right. I appreciate the gentleman's comments. Mr. Chairman, thank you so much.

Mr. SHAYS. Thank you. Mr. Otter, do you have any questions you'd like to ask?

Mr. OTTER. I do, Mr. Chairman.

Mr. SHAYS. You've got the floor.

Mr. OTTER. Thank you. My apologies to the panel for being late. It's been kind of an exciting morning after a long night. It sounds like I ought to be back in Idaho at the Shorty's Country Western Lounge, but unfortunately that isn't where it was.

You know, as a citizen and as a businessman for years and years and years, I always heard of these horror stories of cost overruns in the Defense Department and it was always made a big deal for one reason or another. If you didn't like the Defense Department, you made a big deal out of how inadequate they were at leadership in managing their own operation. But it seems to me that we continue to kind of aggravate the whole concept. And I guess maybe our mechanical and out aviation technology is outrunning our technology on accounting, because we haven't been able to develop a system that says, this is what our expectations of the costs are, and this is what they're going to be.

Now, for 30 years when I worked in the private sector, if I were going to build a potato french fry plant—and my apologies again, Mr. Chairman, for this constant use of this analogy. But I went out to many contractors. I went out to the contractors that were going to pour the concrete and put the beams up who were different contractors, and then of course all the equipment that went through the plant, so that I could send a potato in one end, and in exactly 22 minutes I had a french fry for McDonald's coming out the other end.

Mr. SHAYS. Can we just state for the record that this process made him a very wealthy man?

Mr. OTTER. I don't think I could buy one of these airplanes, though. Anyway, one of the things that generally—about the only thing that we could accept is when our engineers would come running back in to us and they'd say, Butch, we've got a problem here, and the problem is that we underestimated the cost of the cutter deck, and so instead of buying seven cutter decks, we really only have the budget in place to buy five. I go back to Milestone, who happened to be the company that makes the cutter decks, and I say, you know, that template that you just made, now you were prepared to amortize that template over seven cutter decks, but now you can only do it in five. And they'd say, well, you know what's going to have to happen. Each cutter deck has got to go up in price in order for us to get the amortization that—and the full economic utility out of the template that we were going to use.

I'm reminded of that only because in the short time I've been here I've seen how fickle and how indecisive sometimes those who benefit from congressional decisions and how tenuous, I think, their position can be. And I'll tell you, if—and I'm not laying this totally to blame for that, but I do know that your unit cost is going to go up considerably if you're not going to build very many units. Henry Ford figured that out 100 years ago. I don't know why we can't figure that out ourselves. But I would just ask you to be as

gentle as possible on myself and my colleagues, Mr. Li, and is sometimes the go, no-go decision period for us of Congress where we say we're going to cut the program or not going to cut the program, does that have an obvious effect on the contractors and the subcontractors, in terms of where they think they're going to have to go to get the economic recovery back out of the equipment—the equipment that they have to build that is uniquely for a specific piece of defensive equipment, like the F–22?

Mr. LI. I think that I understand the point that you're making. Where I come from is I'd like to think that I'm advising the Congress, I'm looking out for the interests of the Congress and the taxpayer, and the issue here is, yes, the contractors have that particular concern, but we as taxpayers should have confidence that whatever we're being sold that we can afford and can meet the requirements that have been established. Many times the confidence in both the affordability and in the ability to meet the requirements have not been established yet, and, therefore, I don't think it is prudent to make a financial commitment to something where you don't have that confidence.

Mr. OTTER. That I understand, Mr. Li. But I think we ought to have at least somewhere in all these buildings, some institutional memory, and that institutional memory should maybe lead us to believe that in our bid and acquisition process, we say, well, what if—you know, before this has happened on another piece of equipment, instead of 35, what if we only buy 20, and what if we buy 15, and what if we buy 12, so that we've got some sort of a predetermined course of action and an expectation that if in fact we do decide we can't buy as many as we thought or for some reason somebody decides in the Pentagon that this isn't going to be able to fulfill and execute the mission that we had hoped it would, and so we don't need as many as we thought we did. But it seems to me that this has gone on for a long, long, long time, and—the cost overrun, I mean. And there has got to be some core reason for that to happen, and the only thing—the common denominator that I can look at is indecision, and many times in indecision, we make a decision. And that inability of us to make a decision or go forward with a commitment, you know, we want 35, no, we want 20, well, maybe we'll take 27, that can cause us a lot of problems. And it just seems to me that we would prepare the environment for being unsatisfied by saying, if you don't go full force with this, if you don't take the 35 that you said so that we can get a cost unit amortization out of this equipment that you need to the construction of this piece of armor, that your cost per unit has got to go up.

Mr. LI. I understand. The only caution I would add, sir, that by almost acknowledging the fact that you might have reduced quantities reduces the leverage that the government has in terms of trying to get the contractor to sharpen his or her pencil.

Mr. OTTER. I hear that, but is your way working now?

Mr. LI. It's not my way, sir. It's the——

Mr. OTTER. Is the way that we're employing now working?

Mr. LI. I would say no.

Mr. OTTER. OK. Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentlemen. Bottom line, I have the feeling that you probably will be staying to hear the testimony.

Mr. LI. I will.

Mr. SHAYS. And you'll get your information any way you can get it, right?

OK. So we may ask you to comment on what you've heard. And at this time we thank this panel and we'll go to the next.

At this time we would call and ask them to remain standing Ms. Darleen A. Druyun, Principal Deputy Assistant Secretary of the Air Force Acquisition and Management Department of Defense; Dr. George Schneiter, Director of Strategic and Tactical Systems, Department of Defense; Mr. Francis P. Summers, Regional Director of Defense Contract Audit Agency, Department of Defense. What we'll do is we'll swear you in.

[Witnesses sworn.]

Mr. SHAYS. Note for the record that our witnesses responded in the affirmative.

And if we could proceed on the basis of how I called you. So Ms. Druyun, you will go first and then Mr. Schneiter and then Mr. Summers. We'll help you in this process. We will have 5 minutes, and we'll wait to show it red for you just a little bit and then we'll roll it to another 5 minutes. So you have basically 10 minutes at the very max, each of you. So we'll go that way. OK?

STATEMENTS OF DARLEEN A. DRUYUN, PRINCIPAL DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE, ACQUISITION AND MANAGEMENT, DEPARTMENT OF THE AIR FORCE, DEPARTMENT OF DEFENSE; DR. GEORGE SCHNEITER, DIRECTOR OF STRATEGIC AND TACTICAL SYSTEMS, DEPARTMENT OF THE AIR FORCE, DEPARTMENT OF DEFENSE; AND FRANCIS P. SUMMERS, REGIONAL DIRECTOR, DEFENSE CONTRACT AUDIT AGENCY, DEPARTMENT OF DEFENSE

Mr. DRUYUN. Thank you, Mr. Chairman, and members of the committee for the opportunity to appear before you to discuss the Air Force's F–22 program and the cost controls we've implemented to deliver an affordable program.

I've been involved in the program for many years. During that time congressional caps in production were established, and production cost reduction plans were developed in response to the Air Force and congressional goal to deliver 339 aircraft within a mandated production program cap. Therefore, I am able to describe the underlying philosophy of PCRPs that are being implemented to meet program affordability goals and assess progress in meeting the original affordability strategy objectives. The F–22 team remains absolutely dedicated to the objective to deliver 339 production aircraft to the war fighter at an affordable cost.

In order to achieve that objective, we continue to define and implement effective cost reduction initiatives. These initiatives have become known as the F–22 production cost reduction plans to drive down aircraft costs over the life of the production program. This will ensure we can deliver the revolutionary F–22 to guarantee air superiority well into the 21st century.

Today I'd like to discuss the status of our PCRPs and the realism of our projected savings. I will summarize the historical changes in production quantities as a key factor affecting average production unit costs. Next I will describe changes in the production program

acquisition strategy mandated by changes in funding, appropriations and delays in the LRIP decision. I will also describe the production cost estimates that were prepared for a scheduled DAB in December 2000. In addition, I will summarize the elements of accounting for production costs with flyaway cost as the preferred method to report the production costs.

Finally, the results of PCRPs through Lot 1 will provide evidence of results to date, and PCRP cost savings and the metric used to assess progress in meeting program affordability goals, which we've set through the target price commitment curve.

In 1985, at the beginning of the Advanced Tactical Fighter demo program, the Air Force planned to procure 750 aircraft at a rate of 72 aircraft per year, between 1992 and 2005. The 1997 QDR established the current F–22 production baseline and represents a 48 percent reduction in production quantity since the start of the F–22 EMD. The reduced quantity in production rates have been the dominant factors in increased F–22 production unit costs. Changing a total procurement of 750 aircraft at a rate of 72 aircraft per year to 339 aircraft at a rate of 36 aircraft per year results in about a 66 percent increase in the aircraft cost when calculated in base year 2000 dollars.

Simply stated, the average aircraft cost is higher, because fewer aircraft are being produced.

When I was before this committee last year, the original LRIP DAB had slipped from December 1999 to December 2000 in response to constraints established in the fiscal year 2000 Defense Appropriation Act. As a result, we were planning on the LRIP DAB for December 2000. The LRIP DAB would authorize full funding of 10 Lot 1 aircraft and advance buy for 16 F–22 aircraft. The LRIP DAB was delayed pending completion of two exit criteria and all of those criteria were completed the first week of February.

Because a defense strategic review had been initiated, the new Secretary of Defense elected to delay the LRIP decision. To avoid a break in production resulting from a delayed LRIP decision, Congress approved reprogramming the funds necessary to extend the Lot 1 advance by contract period of performance through September of this year.

Congress and the DOD have worked together to fund the F–22 production. However, the F–22 contractor industrial base, about 1,150 contractors total, have informed us that the greatest threat to meeting production program affordability goals has been the delayed LRIP decision. This lack of program commitment is perceived as a serious risk in the procurement of 339 aircraft and the 777 engines required for those airplanes.

Unfortunately, risk in business base and future business computations realistically translates into higher individual lot prices. An LRIP decision will greatly benefit the program by reaffirming DOD's commitment to current and future program execution. The fiscal year 1998 Defense Authorization Act established a $43 billion cost cap in the F–22 production program. The Secretary of the Air Force on an annual basis notifies Congress of adjustments to the caps for inflation and any changes in law. The current production cap is $37.6 billion for 333 airplanes. These changes resulted from the fiscal year 2000 Defense Appropriation Act, which funded the

six PRTV II aircraft with RDT&E funds, and also due to reductions in inflation. The inflation adjustments amount to about $3.9 billion. The cap reduction of $1.5 billion created from the transfer of the six aircraft from procurement money into R&D money was budget neutral, but obviously it affected the total production cap, which today is approximately $37.6 billion.

In preparation for the LRIP DAB, the Air Force and DOD completed production cost estimates in November 2000. The estimate focused on the annual production funding requirements and total production program costs. The December 2000 Air Force estimate for the F–22 production program of 333 aircraft was $2 billion above the current production cap established by the Congress. The OSD estimate was approximately $9.1 billion above the current production cap.

But those estimates indicating a higher probability the program would exceed the production cost cap, the Air Force developed a revised F–22 acquisition plan to fund additional cost reduction initiatives. The Air Force believes that additional investments in cost reduction will be effective in helping to reduce the total production program cost for the 333 airplanes. A revised act plan has been formulated by the Air Force and presented to the Office of the Secretary of Defense, which is currently under review by the SECDEF's organization. The PCRP program is reducing the flyaway cost for the F–22 program. The flyaway cost has decreased the first two airplanes we bought on the Lot 1 was approximately $318 million a piece. The next six airplanes we bought were approximately $231 million a piece. And the first Lot 1 airplanes were further reduced to $199 million a piece.

Cost control and affordability are critical focus priorities for the F–22 team. In June 1996, I think all of you were aware of the fact that a Joint Estimating Team was established. When the JET presented their findings in 1997, the initial estimate for the F–22 production of 339 aircraft, without benefit of cost reduction initiatives to really lean out the production line and become efficient, was $61 billion. Leveraging the recommendations made at that time to reduce production costs and lean out the manufacturing line following the principles from the Massachusetts Institute of Technology published report, the Air Force and contractor teams initiated a very comprehensive cost reduction program back then. The initial PCRPs that were established included initiatives in areas of producibility, process changes, adoption of new manufacturing techniques and implementation of acquisition reform. The results of the PCRPs are reviewed on a monthly basis by the Service Acquisition Executive and at least on a quarterly basis with the OSD staff and the Defense Acquisition Executive.

During the most recent DAE review, the Air Force estimated total value of PCRPs to be $21.5 billion for the airframe vehicle and for the engine about $4.8 billion. The F–22 program has built an efficient management structure to jointly oversee the development and, more importantly, the implementation of these projects. The management effort includes an online interactive data base for real-time reporting of the status of these PCRPs, spanning ideas from the very inception to the actual implementation.

We agree with the GAO assessment that approximately one-half of the then-year savings for both the airframe and the engine are in the production cost baseline, and the remaining PCRPs as they are actually implemented won't be incorporated into the future production lots.

The F–22 program does enjoy extensive oversight in evaluating cost performance and has established a standard methodology to assess cost performance based on several tenets. The first tenet is a methodology to establish a baseline and then measure cost reductions to that baseline.

Mr. SHAYS. Let me just interrupt for a second. How much longer do you think you have?

Ms. DRUYUN. I probably have, sir, about 5 more minutes, and it really kind of gives you the summary of what was in my detailed statement for the record.

Mr. SHAYS. Why don't we let you proceed?

Ms. DRUYUN. Thank you.

The second tenet is to update the estimate annually with the actually cost data from the current and prior production lots, and our third tenet is to leverage actual cost data as the primary method to validate the cost estimates. And that process is part of the ongoing Air Force and OSD review of the F–22 program.

The PCRPs for the air vehicle contract that became effective with Lot 1 totaled about $1.2 billion in savings or cost avoidance. The cost savings per engine was about $4.8 million per engine in Lot 1. The more significant element of the management process is the formal procedures used in the evaluation, selection and implementation of cost savings ideas. The process and procedures are documented and a published joint procedure is used by Lockheed Martin, Boeing and the government team, and I can submit that for the record.

The overall process is an iterative and a continuous process to go through all of the projects that are actually being implemented and then to go through the new ones as they are being recommended and further details being attached with each one of them. The Lockheed Martin and Boeing team implemented an on-line data base to assist in managing the cost savings initiative program. The management team assesses the status of cost savings that are coming from this and watches these very carefully on a monthly basis. I personally review them, and the actual teams at the SPO look at these as frequently as on a weekly basis.

The PCRP management and cost estimating process has been reviewed by the Defense Contract Audit Agency. DCAA reviewed the methodologies for establishing the cost savings initiatives at Lockheed and the Boeing manufacturing sites. Their written assessments did not take exception with the contractor methodologies in estimating production savings. The report also identified cases where additional information was required to substantiate the contractor estimates, and I believe that you should get an update on that today.

In addition to the DCAA audits, as I said before, I review these on a monthly basis, and then on a quarterly basis we do review this with the OSD staff. The process begins with the Air Force and OSD working integrated product team reviews, which are con-

ducted on a quarterly basis, and the data from those detailed reviews are basically summarized and presented to the defense acquisition executive.

I think a very good way to measure the effectiveness of our production cost reductions is in the target price curve that was put on contract in the development contract. The target price curve is a subset of the flyaway costs, and basically it captures all recurring costs, which includes materiel as well as labor to produce the aircraft. It does not include nonrecurring costs, such as spares or auxiliary mission equipment, for example. The target price curve establishes unit price goals in the LRIP phase of this program.

The goals for PRTV through Lot 4 aircraft are designed to achieve a rate of cost reduction adequate to achieve the necessary starting point for cost reduction once we get into high rate production. And I would tell you that if you were to look today at the target price commitment cost performance for the first three lots of airplanes that we currently have in contract today, you would find that they are clearly within the 5 percent band that was established back in the 1997 timeframe. In the case of the engines, the price for PRTV and PRTV II engines met the targets and Lot 1 engines were slightly under the specified TPC. Now, we laid this in as an incentive. We felt this was very important, and we attached about $150 million worth of funds associated with achieving that to really get them on the right point to be able to achieve the average unit flyaway costs.

Through actions such as this, the program maintains an aggressive and flexible management style and a challenging task of meeting the production program affordability goals. I believe that we do have a well-structured plan that is focused on pursuing cost savings initiatives. We do have I think a very good electronic data base that has been established that provides real-time monitoring.

I was down Monday at the Fort Worth facility and went through that data base again to see exactly what the latest status was. And I would tell you that performance to date for the first three lots is within the target price band established back in 1997.

Thank you for this opportunity to provide more information on the results of F–22 affordability initiatives, and I look forward to responding to your questions.

[The prepared statement of Mrs. Druyun follows:]

DEPARTMENT OF THE AIR FORCE

PRESENTATION TO THE COMMITTEE ON GOVERNMENT REFORM

SUBCOMMITTEE ON NATIONAL SECURITY, VETERANS AFFAIRS AND INTERNATIONAL RELATIONS

UNITED STATES HOUSE OF REPRESENTATIVES

SUBJECT: F-22 Cost Controls: How Realistic Are Production Cost Reduction Plan Estimates

STATEMENT OF: MRS. DARLEEN A. DRUYUN
Principal Deputy Assistant Secretary of the Air Force
For Acquisition and Management

August 2, 2001

NOT FOR PUBLICATION UNTIL RELEASED
BY THE COMMITTEE ON GOVERNMENT REFORM,
UNITED STATES HOUSE OF REPRESENTATIVES

Mr. Chairman and members of the Committee, I thank you for the opportunity to appear before you to discuss the Air Force's F-22 program and the cost controls we've implemented to deliver an affordable F-22 production program. I have been intimately involved in the program for many years to include the period when Congressional caps on Production were established and Production Cost Reduction Plans (PCRPs) were developed to meet the Air Force and Congressional goal to deliver 339 F-22 aircraft within a mandated production program cap. (The formal production cap is established today for 333 aircraft based on appropriation changes described later.) Therefore as one of the key architects behind the concept and implementation of PCRPs, I am able to describe the underlying philosophy behind the Air Force strategy implemented to meet the program affordability goals and assess progress in meeting the original affordability strategy objectives.

I would like to begin by affirming that the F-22 team remains absolutely dedicated to the objective to deliver 339 production aircraft to the warfighters at an affordable cost. In order to achieve that objective, we continue to define and implement effective cost reduction initiatives. These initiatives have become known as the F-22 Production Cost Reduction Plans (PCRPs), a critical tool enabling the Air Force to deliver F-22 aircraft within the production cost cap. More importantly, PCRPs will continue to drive down aircraft costs over the life of the production program. The continuous cost reductions lower the average unit production prices and ensure our warfighters get early access to the revolutionary F-22 capabilities that will enable the United States to guarantee Air Superiority well into the 21st century.

Today I would like to discuss the status of our PCRPs, our reviews with the Air Force and with the Office of the Secretary of Defense, and the realism of our projected savings. It is clear this hearing is focused on program costs. I will provide a summary of the historical changes in

production quantities because this is the most dominant factor that influenced average production unit costs. I will summarize changes in the production program acquisition strategy. This will account for changes in funding appropriations and a delay in the Low Rate Initial Production (LRIP) decision. The next section summarizes the production program cap. The production cap forms the basis for the team management approach in establishing the affordability objectives and cost savings targets for PCRP cost reductions. Attention then turns to the production cost estimates and the differences between the OSD Cost Analysis Improvement Group (CAIG) estimate and the Air Force Cost Analysis Agency (AFCAA) estimate that were prepared for a scheduled December 2000 Defense Acquisition Board (DAB) review. In reporting F-22 production program costs, several measures of production cost accounting are included in acquisition program management. To reduce the confusion on production cost reporting, a section is included which summarizes the various elements of accounting for production costs with a recommendation that flyaway cost be the preferred method to report production costs. A summary continues with the progress in affordability initiatives known as PCRPs. Finally, the results of PCRPs through Lot 1 will provide evidence of results to date in PCRP cost savings. The next section deals with the PCRP management and review process. The final section deals with the metric used to assess progress in meeting program affordability goals, the Target Price Curve (TPC).

Production Quantity

In 1985, at the beginning of the Advanced Tactical Fighter Demonstration/Validation phase, the Air Force planned to procure 750 aircraft at a rate of 72 aircraft per year between 1992 and 2005. Following the 1990 Major Aircraft Review, the DoD reduced the production rate from 72 per year to 48 per year. In 1991, at the beginning of the F-22 Engineering and Manufacturing

Development (EMD) phase, the DAB reduced the total F-22 procurement to 648 with production scheduled to occur between 1996 and 2012.

As part of the 1994 Defense Department Bottom-Up Review, the F-22 procurement program was further reduced to 442 aircraft. In June of 1996 the Air Force chartered a Joint Cost Estimate Team (JET) to review F-22 program costs, both development and production. The JET recommended a restructured production program to offset the costs associated with a nine-month extension of the F-22 EMD program to complete avionics development. The production ramp rate was reduced and four Pre-Production Verification (PPV) aircraft were deleted thereby reducing the total procurement to 438 aircraft. The PPV aircraft were to be used solely for Operational Test and Evaluation (OT&E). As a cost savings measure, the Air Force deleted these four aircraft dedicated solely to OT&E and elected to use two EMD aircraft and the first two production aircraft (then Lot 1, later renamed as Production Representative Test Vehicle (PRTV) aircraft) to satisfy OT&E aircraft requirements.

As the JET recommendations were being finalized, the 1997 Quadrennial Defense Review (QDR) emerged with a new F-22 production quantity. The QDR reduced F-22 procurement from 438 to 339 aircraft, reduced the Low Rate Initial Production (LRIP) ramp rate by 12 aircraft, and reduced the maximum production rate from 48 per year to 36 per year. The 1997 QDR established the current F-22 production baseline and represents a 48 percent reduction in production quantities since the start of F-22 EMD. The reduced quantity has been the most dominant factor in increased F-22 production unit costs. Cost estimate models indicate that changing a total procurement of 750 aircraft at a rate of 72 aircraft per year to 339 aircraft at a rate of 36 aircraft per year results in a 66 percent increase in the aircraft cost when calculated in base year 2000 dollars. The aircraft cost is more accurately referred to as the flyaway cost.

Simply stated the average aircraft flyaway cost will be higher due to fewer aircraft being produced.

Current Production Program Acquisition Strategy

In December 1998, the Air Force awarded contracts to fully fund two post-EMD aircraft and to initiate long lead for the next six aircraft. The first two aircraft were designated Production Representative Test Vehicles (PRTV). These two PRTV aircraft are being produced to initially support Dedicated Initial Operational Test and Evaluation (DIOT&E). Following DIOT&E, the two PRTV aircraft will be delivered to the Air Combat Command (ACC) at Nellis Air Force Base, Nevada. The next six production aircraft complete the planned production of eight aircraft for use at Nellis AFB by ACC for Force Development Evaluation (FDE).

With the PRTV aircraft contract awarded in December 1998, the Department of Defense (DoD) planned a Low Rate Initial Production (LRIP) decision for November 1999. The acquisition strategy approved by the Air Force Service Acquisition Executive (SAE) was to approve full production of six F-22 aircraft (production Lot 1) and initiate long lead funding for the next ten F-22 aircraft (production Lot 2).

The Fiscal Year (FY) 2000 Appropriations Act directed a funding appropriation change for the second annual procurement of post-EMD aircraft. The appropriation was changed from procurement funds to Research, Development, Testing, and Evaluation (RDT&E) funds. The lot nomenclature for the six aircraft was also changed from Lot 1 to Production Representative Test Vehicle II (PRTV II). This action was taken in lieu of an LRIP decision in November 1999. The result allowed procurement of six additional test aircraft to meet the ACC requirement for F-22 FDE at Nellis AFB. Combining the two PRTV lots fulfills the requirement for eight FDE

aircraft at Nellis AFB. This also maintained F-22 development and production schedules and the acquisition strategy designed to meet program affordability objectives.

In December 1999 within the guidelines established by the FY 2000 Appropriations Act, the Under Secretary of Defense for Acquisition and Technology approved full contract award for the six additional PRTV II aircraft and advanced buy for ten additional aircraft (Lot 1). This acquisition strategy balanced risk associated with concurrent EMD and production with the risk of program cost increases caused by a break in manufacturing for both prime contractors and subcontractors.

When we were before this committee last year, the planning date for the LRIP DAB was December 2000. The LRIP DAB would authorize full funding of 10 Lot 1 aircraft and advanced buy for 16 F-22 aircraft (Lot 2). The LRIP DAB was delayed pending completion of two exit criteria necessary for the DAB. All exit criteria were completed on 5 February 2001. At that point because a Defense strategic review had been initiated, the Secretary of Defense elected to delay the LRIP DAB. To avoid a break in production resulting from a delayed LRIP decision, the DoD requested and received congressional approval to extend the Lot 1 advanced buy contract. This Lot 1 extension was funded by reprogramming Fiscal Year (FY) 2001 Lot 1 procurement funds into the Lot 1 advanced buy accounts. Congress approved reprogramming the funds necessary to extend the funded period of performance through September 2001.

Congress and the DoD have worked together to fully fund F-22 production within the established production cap. However, contractors report that the greatest threat to meeting production program affordability goals is the delay in a LRIP decision. This lack of program "commitment" is perceived as a "risk" in the advertised procurement of 339 aircraft and 777 F119 engines. Unfortunately, "risk" in business base and future business computations

ultimately translate into higher individual lot prices. A LRIP decision will benefit the program by affirming DoD's commitment to current and future program execution.

Production Cap

The Fiscal Year 1998 Defense Authorization Act established cost caps on the F-22 EMD and production programs. The EMD program was capped at $18.688 billion and the production program was capped at $43.4 billion. The Secretary of the Air Force annually notifies Congress of adjustments to the caps for inflation and any changes in law. The current EMD cap is $20.4 billion. The current production cap is $37.6 billion for 333 aircraft. These changes resulted from the FY 2000 Defense Appropriation Act which funded the six PRTV II aircraft with RDT&E funds ($1.575 billion) and from reductions due to Office of Management and Budget (OMB) inflation adjustments ($3.886 billion). The cap reduction of $1.575 billion created from the transfer of six aircraft from the Production to the RDT&E account is essentially budget neutral with respect to the cost to build aircraft. However, the cap reduction of $3.886 billion due to inflation adjustments represents a reduction in real terms.

Production Cost Estimates

In preparation for the F-22 Low Rate Initial Production (LRIP) DAB, the Air Force and DoD completed production cost estimates in December 2000. The estimates focused on annual production funding requirements and total production program costs. The total program costs define whether the program can remain within the production cost cap of $37.6 billion for 333 production aircraft. The December 2000 Air Force Service Cost Position (SCP) for the current F-22 production program of 333 aircraft was $2.0 billion above the current production cap. The December 2000 Office of the Secretary of Defense (OSD) Cost Analysis Improvement Group

(CAIG) estimate for the F-22 production program of 333 aircraft was $9.1 billion above the current production cap.

With both estimates indicating a higher probability the program would exceed the production cost cap, the Air Force developed a revised F-22 acquisition plan to fund additional cost reduction initiatives. The Air Force believes that additional investments in cost reduction initiatives will be effective in reducing total production program costs for 333 aircraft. A revised acquisition plan has been formulated by the Air Force and presented to OSD for review and consideration. This plan will be formally approved by DoD as part of the LRIP DAB process and submitted to Congress in response to the statutory requirements laid out in Section 131 of the National Defense Authorization Act for Fiscal Year 2000 (P.L. 106-65). Complete details of the revised acquisition strategy will be released when the internal DoD review and decision process are complete.

Production Costs

There are several methods to calculate and report program costs. The methods include Flyaway Cost, Unit Procurement Cost, and Program Acquisition Unit Cost. Each category of cost includes the following elements:

Flyaway Cost:
Prime Equipment, Systems Engineering, Program Management, System Test and Evaluation, Warrantees, and Engineering Changes

Unit Procurement Cost:
Flyaway Cost Plus Training, Support Equipment, Data, Operation Site Activation, Initial Spares

Program Acquisition Unit Cost:
Unit Procurement Cost Plus RDT&E funding, and MILCON

The fact that three cost elements exist contributes to potential confusion when reporting F-22 costs. The situation is further compounded when the costs can be reported in base year

1990, base year 2000, and then year costs. The differences can be seen in the following cost table of computed F-22 production cost from the FY01 President's Budget:

$	Flyaway Cost	Unit Procurement Cost	Program Acquisition Unit Cost
BY90	$ 68.4M	$ 81.5M	$141.9M
BY00	$ 83.6M	$ 99.6M	$173.4M
TY $	$ 94.8M	$112.9M	$182.0M

This data represents the wide range of costs reported for F-22. One figure often reported is the then year value for Program Acquisition Unit Cost of $182.0 million per aircraft. It includes all sunk costs throughout the life of the program. While it is interesting to know how much has been spent on a program, I suggest it is more meaningful in budget priority debates to describe what it takes to go forward. In that case, then year value of Unit Procurement Cost of $112.9 million per aircraft is more representative of the cost ahead to field a combat capability. Finally, comparisons of the cost to produce aircraft with other fighter aircraft should use the value for Flyaway Cost of $83.6 million in base year 2000 as the more meaningful measure of production costs.

For purposes of clarity, I will use Flyaway Cost as the measure of the cost to produce a jet. The PCRP program is reducing the Flyaway Cost for the F-22. Table 1 summarizes the reductions in Flyaway Cost.

Table 1

Production Aircraft Lots	Number of Aircraft	Average Unit Flyaway Cost ($M)
PRTV I	2	$ 318.5M
PRTV II	6	$ 231.3M
Lot 1	10	$ 199.5M

This table demonstrates that jets are cheaper to produce with each succeeding procurement lot. The challenge is whether cost reductions are adequate to deliver the production program within the production cap.

Progress in Affordability Initiatives

Cost control and affordability are critical focus priorities for the F-22 team. In June 1996, the Air Force Assistant Secretary for Acquisition commissioned a joint government/contractor team of experts, the F-22 Joint Cost Estimating Team (JET). The team was chartered to develop the most probable F-22 production cost and identify realistic initiatives to promote lower production costs. When the JET presented their findings/results in 1997, the initial estimate for F-22 production of 339 aircraft without the benefit of PCRPs was $61.0 billion. Leveraging JET recommendations to reduce production costs, the Air Force and contractor teams initiated a comprehensive cost reduction program in 1997. To meet the production program affordability goals, the Air Force and contractor team identified PCRPs to lower production costs.

The initial PCRPs included initiatives in areas of producibility improvements, process changes, adoption of new manufacturing techniques, and implementation of Acquisition Reform principles. The airframe and engine contractors have on-going programs to identify additional

cost savings initiatives. The F-22 team (government and contractor) manages the PCRP program using jointly developed and contractor executed tracking and measurement procedures. In addition, the results are briefed quarterly to the Defense Acquisition Executive (DAE). During the most recent DAE Review on March 19, 2001, the AF presented the results in which the total value of PCRPs have steadily increased for the air vehicle contract ($21.5 billion) and the engine contract ($4.8 billion). To facilitate tracking of PCRPs, the contractor developed a computer database, which provides the team on-line access to get immediate and accurate status of any given PCRP effort. PCRP categories are defined below.

- Producibility Improvement Projects (PIP): PIPs are investments to improve manufacturing processes or incorporate new technology to reduce costs. Producibility enhancement projects are key to the long-term affordability of the F-22. PIPs require up-front investments to bring down the unit cost of the system.
- Lean Enterprise: The application of Lean principles optimizes process flows, improves quality, and reduces cycle times and inventories. Lean application utilizes the "Lean tool kit" developed by academia and industry to focus all involved personnel on the elimination of waste at three levels within the F-22 Program - on the factory floor, above the factory floor (office and engineering improvements), and at the suppliers. Lean training has and continues to encourage idea generation at all levels within the program.
- Diminishing Manufacturing Sources (DMS): As parts are no longer produced (also referred to as an out of production part or OPP), a strategy on redesign rather than remanufacture has the potential to reduce recurring unit costs through the utilization of newer, improved technology.

- Material Efficiencies: Utilizing improved buying strategies and supplier alliances are lowering the cost of raw material and purchased parts; such as team-wide and company-wide raw material and hardware procurements.
- Performance Based Contracting (PBC): PBC flows down acquisition reform principles into subcontractor business arrangements. Examples include Modified Requirements Contracting, Partnership Analysis and Source Selection processes, selective use of financial incentives to motivate cost management, and effective use of Single Process Initiatives. Since the majority of F-22 work is done via subcontractors, acquisition reform flowed down to subcontractors is an important part of the F-22 affordability strategy.
- Product Support: Savings from deferring and minimizing funds required to develop and establish an organic depot maintenance capability. Additional cost savings are possible by appropriate partnering with industry to reduce initial spares, decrease base hardware quantities and eliminate product warranty costs.
- Multi-year Procurement (MYP): Permitting the acquisition of known requirements for more than one year allows the contractor to conduct production and capitalization planning in a more efficient manner, even though total funds required for subsequent lots are not available at the time of contract award. The F-22 currently plans to use two multi-year periods during the high rate production program.
- Rate Savings Due to Joint Strike Fighter (JSF): The increased business base at the prime site and at the suppliers due to the procurement of the JSF will result in savings to both programs through reductions in manufacturing and general and administrative overhead rates. Additionally, the commonality in parts and processes will offer savings to both programs.

The process of defining PCRPs has been on-going since the JET program review. With the criticality of PCRPs to meet well known program affordability objectives, the F-22 team built an efficient management structure to jointly oversee the development and implementation of PCRP projects. The management effort includes an on-line interactive database that allows real time reporting of PCRP status spanning idea generation, approval, implementation and tracking. The results of that team effort are summarized in attachments 1 and 2. The Air Force assessment is that approximately one half of the then year savings for airframe PCRPs ($21.5 billion) and engine PCRPs ($4.9 billion) are in the production cost baseline. The remaining PCRPs will be incorporated in future production lots.

Production Cost Reduction Results

The F-22 program enjoys extensive oversight in evaluating cost performance for both EMD and production. This oversight has been continuous since the program was restructured in 1998. This is significant in that the oversight community has established a standard methodology to assess cost performance based on several tenets. The first tenet is a methodology to establish a baseline and then measure cost reductions to that baseline to define a program cost estimate. The second tenet is to update the estimate annually with the actual cost data from the current and prior production lots. And the third tenet is to leverage actual cost data as the primary method to validate the cost estimates.

The production program cost estimate is currently being updated by the Air Force to incorporate data from Lot 1. The source of data was existing Contractor Cost Data Reporting (CCDR) information for PRTV (2 aircraft) and PRTV II (6 aircraft) contracts and proposals received for Lot 1 (10 aircraft) production contracts. That update process is part of on-going Air

Force and OSD review of the F-22 program. The results of that review will be formalized as part of the future LRIP DAB.

Lot 1 Production Cost Assessment

The PCRPs for the air vehicle contract that became effective with Lot 1 are summarized in attachments 3 and 4; Realized with Lot 1 (attachment 3) and Validated in Lot 1 (attachment 4). The distinction between "realized" and "validated" are a part of the on-going contract definitization process. Realized means the cost savings are contained in a negotiated and completed supplier Firm Fixed Price (FFP) or Fixed Price Incentive (FPI) contract. Validated means the team has high confidence in the estimate and the savings are part of the Lockheed FFP contract proposal for Lot 1 aircraft. The data shows we have realized approximately $615 million worth of cost savings in Lot 1 and a potential to realize an additional $599 million cost savings once these efforts are placed on contract with the respective suppliers.

Cost savings for the engine are implemented in a different fashion because of the technical verification regiment to incorporate changes into the engine. The regiment calls for "block" upgrades to check installed engine performance through dedicated ground testing at Arnold Engineering Development Center (AEDC). The Pratt & Whitney (P&W) acquisition strategy targeted EMD Flight Test Engine number 18 (FTE 18) as the test platform to incorporate a significant number of PCRPs. With the PCRPs installed, that engine would be in a "production" configuration. The engine was also used in the durability testing to verify system performance and durability to simulate 6 to 8 years of operational service life prior to any depot overhaul. The range of cost reductions from FTE 18 to Lot 1 engines is summarized in attachment 5. It is interesting to note that 670 PCRPs were incorporated in FTE 18, and an additional 173 PCRPs were incorporated in Lot 1 engines. Pratt &Whitney aggressively

committed to additional Lot 1 savings as part of their FFP Lot 1 proposal. A partial list of the 670 PCRPs in FTE 18 is included as attachment 6. The 670 initiatives incorporated in the engine resulted in a unit cost savings of $3.3 million per engine. A list of the 69 PCRPs new to Lot 1 is included as attachment 7; the 69 PCRPs effective in Lot 1 reduced the price per engine by $207K. A list of the 104 other PCRPs in Lot 1 is included as attachment 8, which further reduces the unit cost by $1.3 million per engine.

PCRP Management

The information contained in the Lot 1 PCRP summaries in attachments 3 and 4 highlight the exceptional management attention continually applied to the PCRP program and the dynamic nature of the PCRP execution process. The first element is the exceptional management attention to PCRP execution. The more significant element of the management process is the formal procedures used in the evaluation, selection, and implementation of cost savings ideas. The process and procedures are documented in a Joint Procedure for the Lockheed Martin, Boeing, and government team entitled "F-22 Affordability Joint Procedure." The overall process is an iterative and continuous process. Essentially the procedure/process flow is the following:

Generate Ideas

Evaluate

Develop Cost Reduction Plans

Manage Implementation

Validate/Realize Savings

Measure Total Cost

Assess Affordability

Set new Goals

Communications

Generate Ideas.....

Supporting this procedural construct, the Lockheed Martin and Boeing team implemented an on-line database to assist in managing the cost savings initiative program. The management team assesses the status of generating cost savings initiatives, reviewing and deciding to fund cost savings initiatives, measuring cost savings achieved with the initiatives, and finally adjusting the overall cost savings initiative package based on the demonstrated cost benefit of continuing individual initiatives.

Beyond the program office and contractor activities, the PCRP management and cost estimating process has been reviewed by the Defense Contract Audit Agency (DCAA). The DCAA reviewed methodologies for estimating cost savings initiatives at the Lockheed Martin and Boeing manufacturing sites. Their assessment did not take exception with the contractor methodologies in estimating production savings. The report also identified cases where additional information was required to substantiate the contractor estimates. That effort emphasized that a contractor process and methodology is available and being used to estimate cost savings. The question is the amount of information needed to substantiate the basis of the cost estimates.

In addition to the DCAA audits, the Air Force and OSD have jointly implemented a quarterly review program to assess F-22 program progress in meeting the assigned program objectives. The process relies on the Working Integrated Product Team (WIPT) reviews in March, July, and August to receive comprehensive program updates. The agendas are established jointly by the Air Force and OSD based on current program status and program priorities. Each of these sessions is a prelude to the quarterly Defense Acquisition Executive

(DAE) program reviews. Again, the WIPT jointly establishes the agenda for the DAE reviews. Represented at the WIPT are members of the F-22 program office finance team, the AFCAA, and the OSD CAIG. If there are any significant deviations from the cost savings plan that warrant DAE review, the WIPT will recommend the level of reporting and review necessary at the DAE reviews. This is an essential function performed by both the Air Force and OSD staff because it is unrealistic to conduct a comprehensive DAE review of the more than 1000 PCRPs currently active in the F-22 air vehicle and engine program. Generally, the preliminary work by the WIPT allows a summary of PCRP performance to be presented at the DAE review. The summary level reports are adequate to establish meaningful trends to production program cost performance. In addition, the program established an overarching metric to assess the program in meeting the F-22 production program affordability goals – the Target Price Curve (TPC).

PCRPs Assessment—Target Price Curve (TPC)

A way to measure the effectiveness of production cost reductions is a Target Price Curve (TPC). The TPC is a subset of the Flyaway cost with all recurring costs to include the material to produce the aircraft, engineering and manufacturing labor in direct support of the aircraft build. It does not include nonrecurring cost associated with building an aircraft or non-aircraft specific material such as spares, Auxiliary Mission Equipment (AME), and training. These elements do however fit within the total program production cap. This distinction was established in contractual arrangement methodology to reimburse contractors for their investments in Production Cost Reduction Plans (PCRPs). Although a subset of Flyaway Cost, the TPC is a valid measurement of cost reduction efforts.

The TPC establishes unit price goals in Low Rate Initial Production (LRIP). The goals for PRTV through Lot 4 aircraft are designed to achieve a rate of cost reduction adequate to

achieve the necessary starting point for cost reduction in high-rate production. To account for the dynamic nature of cost reduction, a 5% control band was established around the TPC to assess progress in meeting program affordability goals.

The cost performance of the first 3 post EMD lots, commonly referred to as PRTV I, PRTV II and Lot 1, is within the 5% TPC band (Table 2). In the case of the engine, the price for PRTV and PRTV II engines met the targets and Lot 1 engines were slightly under the specified TPC. We continue to track performance against the TPC targets.

Table 2

Target Price Curve Values ($ in Millions)

Lot	Lockheed TPC Point	Pratt & Whitney TPC Point	Met Target or Within Band
PRTV I	$231	$11.8	Met Target
PRTV II	$203	$11.8	Met Target
Lot 1	$154	$10.9	Met Target (engine only) Air Vehicle within 5% band
Lot 2	$120	$10.6	TBD
Lot 3	$95.5	$10.0	TBD
Lot 4	$74.9	$9.2	TBD

As stated earlier, the production cost reduction effort is a very dynamic process. A 5% band was established to recognize the variability during start-up in the early LRIP program. The focus remains to deliver the planned number of jets within the approved Air Force budget. During the Lot 1 negotiations, the Air Force deferred some non-essential work to a later lot procurement to remain within the annual production budget for 10 aircraft. The Air Force deferred $162.7 million of work. This amounted to $149.7 million of deferred work on the air vehicle contract and $13.0 million deferred in the engine contract. This enabled Lot 1 to remain within appropriated budget values of $2.07 billion for the air vehicle and $309 million for the engine. None of the deferrals impacted the TPC values. Table 3 provides a synopsis of the deferrals.

Table 3

Lot 1 Deferral Summary ($ in Millions)

	Air Vehicle	**Engine**
Spares	$22	$13
AME	$11.8	N/A
Training	$19.5	N/A
Contractor Payback/ROI	$96.6	N/A
Totals	$149.7	$13

The elements of expense deferred from Lot 1 will be procured in Lot 2. Through actions such as this, the program maintains an aggressive and flexible management style in the challenging task of meeting the production cap constraints. The overall program management focus has been to continuously attack production costs and make the appropriate management decisions to execute the program within the requested and appropriated budgets while giving the team time to implement effective cost savings initiatives.

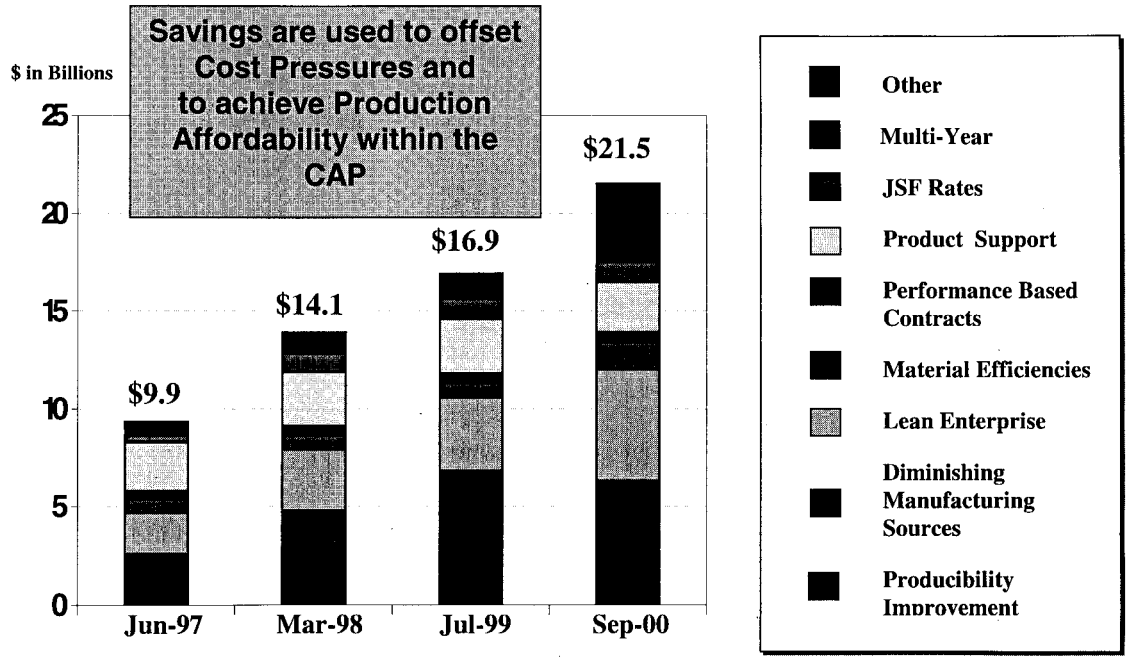
Summary

The F-22 production costs program remains a dynamic management initiative across the entire F-22 team. The program began in 1997 with the Joint Cost Estimating Team program review. Results of that effort have been effective in responding to the challenges of reduced quantities, reduced real dollar budgets when adjusted downward for Office of Management and Budget (OMB) inflation adjustments, and continuing perceptions of attendant program risk associated with three consecutive delays in a Low Rate Initial Production decision.

The F-22 program has a well-structured plan continuously pursuing cost savings initiatives. An exceptional management framework is established to provide real time monitoring and oversight of cost savings initiatives. And finally, performance to date is within the performance guidelines established for target price performance during the transitioning from development into production. Some deviations from the plan have occurred, and the F-22 team immediately implemented rational response, to these deviations in order to deliver the program within the requested and available appropriated production budgets. The F-22 team continues to make progress in cutting the cost to produce F-22s. The key management focus for the F-22 team is to constantly pursue cost savings initiatives adequate to ultimately deliver the program with in the appropriated production budgets.

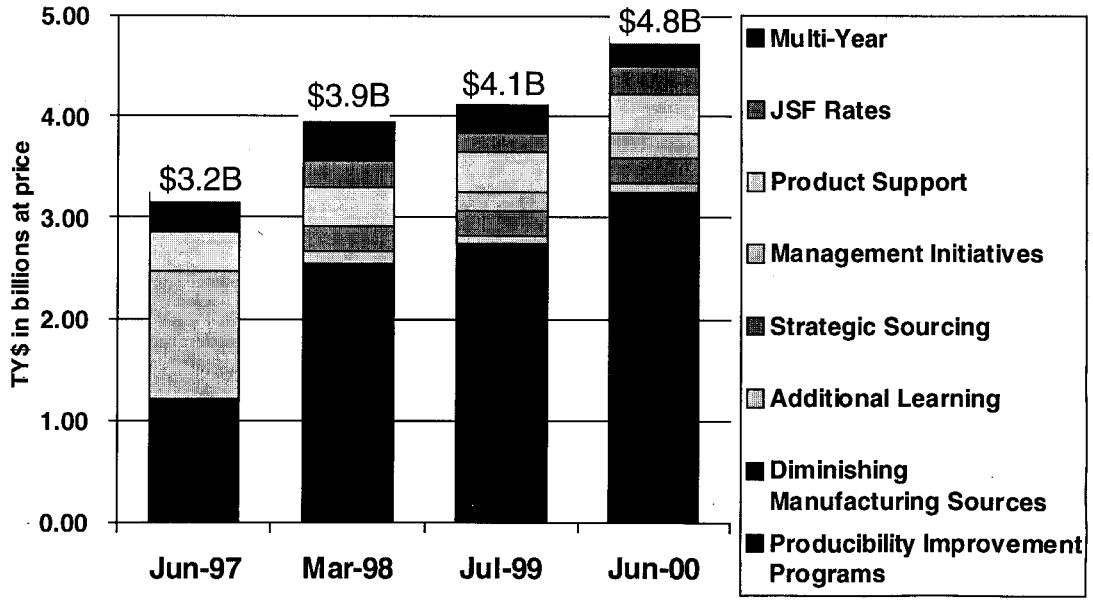
Thank you for this opportunity to provide more information of the results of F-22 affordability initiatives, and I look forward to your questions.

Attachment 1: Lockheed Martin PCRP Savings



Challenge Included: Mar-98, $1.7B; Jul-99, $1.8B; Sep-00, $4.1B

Attachment 2: Pratt & Whitney PCRP Savings



Attachment 3: Lockheed Martin Lot 1 Realized Savings

PCRP Search Results

COLORS	Project Number	IPT	Site	Title	$ Value	NRE $	Last Edited
	B141	Weapons Systems A&I	Boeing (Seattle)	AA00 Savings From MRS 00B Rates and Factors	291,702,234	0	10/30/2000
	B2	Avionics - Sensor Products	Boeing (Seattle)	T/R Module Design Update	189,358,048	13,231,000	04/05/2001
	DMS010D	Air Veh VMS	LM Aero (Ft. Worth)	VMS ADSS Redesign	25,430,132	9,360,000	04/05/2001
	36	Air Veh Build	LM Aero (Marietta)	6 SIGMA - MRB Cycle Time Reduction	19,028,307	0	11/20/2000
	LE023	Air Veh VMS	LM Aero (Ft. Worth)	BAE Systems-Overhead Reduction Commitment	18,403,718	0	04/05/2001
	74	Air Veh Airframe	LM Aero (Marietta)	Team Buy of Mechanical Hardware (Validated)	17,990,039	0	10/11/2000
	LE081	Air Veh VMS	LM Aero (Ft. Worth)	Move EHV Second Stage Manufacturing for the VMS Actuators	12,209,640	0	11/07/2000
	75	Air Veh US&A	LM Aero (Marietta)	Team Buy of Elect Hardware (Validated)	11,993,353	0	10/11/2000
	174	Avionics - Integrating Products	LM Aero (Marietta)	DPI - 2002	7,739,200	0	04/16/2001
	LE047	Air Veh Airframe	LM Aero (Ft. Worth)	H.M.Dunn Lean Initiatives	5,154,425	0	04/16/2001
	P133FLI	Air Veh US&A	LM Aero (Ft. Worth)	Remove CIC from Smiths Industries' PWBs	4,829,298	329,900	04/12/2001
	P072FJA	Air Veh VMS	LM Aero (Ft. Worth)	Investigate Use of Non-Military Components for the ADSS	3,997,607	381,700	04/05/2001
	B145	Air Veh Build	Boeing (Seattle)	Revised Forming of Lower E-Bay Panels	2,964,699	0	04/10/2001
	163	Avionics - Integrating Products	LM Aero (Marietta)	DMS0064 Raytheon Parts Buy	1,361,004	0	04/05/2001
	LE070	Air Veh VMS	LM Aero (Ft. Worth)	Second Source for VMS Actuator Internal Connectors	946,937	0	11/07/2000
	B121	Avionics - Sensor Products	Boeing (Seattle)	Boeing CCP0060 Parts Buy	774,541	0	10/30/2000
	PBC006	Air Veh US&A	LM Aero (Ft. Worth)	Curtiss Wright Flight Systems-Smart Buys for Lots 1-5	467,602	0	03/13/2001
	B119	Avionics - Sensor Products	Boeing (Seattle)	Boeing CCP 64 DMS Parts Buy	197,971	0	10/30/2000
	223	Air Veh Build	LM Aero (Marietta)	6 SIGMA - ASB 220 Pickup Precedence (Avoidance)	61,055	0	10/12/2000
				Subtotal $:	614,609,810	23,302,600	
				Grand Total $:	614,609,810	23,302,600	

19 rows found. [Page 1 of 1]

Attachment 4: Lockheed Martin Lot 1 Validated Savings

PCRP Search Results

COLORS	Project Number	IPT	Site	Title	$ Value	NRE $	Last Edited
	LE050	Support System	LM Aero (Ft. Worth)	Recompetition of IMIS	118,604,912	0	09/12/2000
	276	Air Veh Build	LM Aero (Marietta)	High Speed Machining	117,193,198	0	11/15/2000
	ME005	Air Veh Airframe	LM Aero (Ft. Worth)	Additional Team Buy Of Compostie Materials	72,947,933	0	09/12/2000
	274	Air Veh Airframe	LM Aero (Marietta)	Composites Offload	65,415,155	0	02/15/2001
	249	Air Veh Airframe	LM Aero (Marietta)	Offload 20 Machined Parts	48,588,953	315,256	04/16/2001
	LE071	Air Veh Build	LM Aero (Ft. Worth)	Airframe Producibility Initiatives PSAS Period D	42,776,026	0	04/03/2001
	235	Air Veh Build	LM Aero (Marietta)	Fabrication Cells	24,949,017	0	11/15/2000
	P069FBE	Air Veh Airframe	LM Aero (Ft. Worth)	Fabrication of Composite ACFC Duct	18,913,594	2,602,900	02/13/2001
	P010FGA	Avionics - Sensor Products	LM Aero (Ft. Worth)	APM/DPM Combination for MLD	18,098,300	1,781,100	09/13/2000
	LE045	Air Veh Build	LM Aero (Ft. Worth)	Module 4 Kaizen Blitz	16,010,891	0	10/02/2000
	51	Air Veh Build	LM Aero (Marietta)	P063MBI - Change Inlet Lip to Co-cured Design	14,608,248	4,200,000	04/12/2001
	257	Air Veh Build	LM Aero (Marietta)	P140MBD - Point-of-Use Enhancement - ASB220	12,078,542	606,954	10/12/2000
	LE044	Air Veh Build	LM Aero (Ft. Worth)	Module 3 Kaizen Blitz	6,827,221	0	11/17/2000
	P071FBE	Air Veh Build	LM Aero (Ft. Worth)	Orbital Welding of Aluminum Tubing	5,714,526	685,300	04/03/2001
	P135FBE	Air Veh Build	LM Aero (Ft. Worth)	Near Net Shapes 5HF42511-113	5,658,434	76,700	11/07/2000
	P109FJA	Air Veh VMS	LM Aero (Ft. Worth)	Alternate PWB/Core for VMS AIM/ADIO and IVSC LDIMs	5,066,836	296,400	01/10/2001
	P134FLI	Air Veh US&A	LM Aero (Ft. Worth)	Contactor Distribution Panel Redesign	3,629,161	111,400	04/12/2001
	215	Air Veh Build	LM Aero (Marietta)	6 Sigma-Lean Tube Production	2,202,015	0	10/11/2000
				Subtotal $:	599,282,962	10,676,010	
				Grand Total $:	599,282,962	10,676,010	

18 rows found. [Page 1 of 1]

Attachment 5: Pratt & Whitney Flight Test Engine (FTE) 18 and Lot 1 Savings

PCRP	*# Initiatives*	*Unit Savings (Lot 1) (@ price '02$)*	*Comments*
PIP 1 + PIP 2	670	$3,319	In pricing system (FTE 18 verification)
PIP 1, PIP2 (New to Lot 1)	69	$207	Lot 1 below the line adjustment
Other PCRPs impacting Lot 1	104	$1,297	Lot 1 below the line adjustment
P&W management challenge in Lot 1	N/A	$329	Lot 1 below the line adjustment

Attachment 6: Pratt & Whitney Flight Test Engine (FTE) 18 Savings

Cost Reduction Description	Investment Cost	25th Engine Savings ('01$ $2mo)
4325 TAC TEC	3,058,568	(87,959)
T-Duct Body Weldment Material Change	1,086,482	(82,729)
PCR Cost Initiatives Incorporated on FTE9	0	(67,620)
LE Down Gating Sys 50% yield (baseline)	51,299	(63,000)
Elim Aft Flap Braze/Mech attach panels(Chem Mill)	4,159,271	(60,430)
Material Change to Ti - 3rd Stator	2,000,000	(56,953)
One Piece Aft Nozzle Bulkhead	0	(56,212)
Spar Improvements - Including 6-2-4-2	0	(52,521)
Composite Stator vs Stainless Steel Intermin	0	(50,000)
Material change to Ti - 2nd Stator	2,017,970	(48,948)
Non-FLR T-Duct Liners	8,267,853	(47,061)
Eliminate Alloy "C"	20,000	(46,891)
Eliminate Gas Sizing at Bond	1,443,185	(46,700)
Block 1 TEC Cast ID Flow Path (2000 TAC)	0	(40,000)
Utilize commercially available plastic parts	2,000,000	(38,532)
Airfoil Milling vs ECM ($29,472) in 26 stat	0	(29,472)
Chem Milled / Formed Liner	200,000	(28,347)
Utilize commercially available plastic parts	0	(25,129)
AEC Liner Value Engineering	225,000	(24,245)
PCR Cost Initiatives Incorporated on FTE10	0	(23,558)
SAVE Event - Low Risk Items	370,339	(23,104)
Eliminate machining on Load Plate with as cast lug	390,235	(22,455)
Sensors (Single flatpack/Simplified Filter)	229,485	(23,397)
Aluminum Re-design	300,000	(21,831)
Okuma Milled Struts	11,537	(21,692)
S/M Liner Hangers (See idea 09 for Savings)	0	(21,142)
Change TiMMC Piston Rod to steel	14,952	(20,569)
Cutback Stator Tooling Cost Decrease	43,486	(20,000)
Eliminate ACS	336,405	(19,878)
Single EHSV Fan Vane Actuator	104,000	(19,191)
Improve yield to 60%	401,133	(18,753)
F119 HPC Fixed 5th Stage Variable Vane	71,652	(18,037)
Special Technology Coating CR	53,310	(17,761)
Alternate Stud/Collar system	0	(17,617)
Dual Source	0	(17,344)
PCR Cost Initiatives Incorporated on FTE12	532,363	(16,970)
Airfoil Milling vs ECM ($16,770) in 26 stat cost	299,046	(16,770)
Convergent Flap Hanger Redesign	67,080	(16,717)
Improve yields from 20% to 40%	158,089	(15,600)
Beta 21 S Honeycomb	234,466	(14,896)
Eliminate Hanger Brkts	74,361	(14,261)
ISR Diff Case w/EGV Fix & New Hub Seal Design	0	(14,232)
High Speed Milling	500,516	(13,900)

Cost Reduction Description	Investment Cost	25th Engine Savings
Eliminate Kaiez seal feature (Spraybars)	0	(13,768)
Redesign to GF configuration (Full Value)	724,000	(13,362)
Eliminate Kaiez seal feature	34,372	(13,307)
Redesign Flow Guide	100,000	(12,695)
Resource to Chemtronic	290,000	(12,600)
Production Tooling to improve casting	658,500	(12,261)
Cast hood design, incld's mat'l change	632,205	(12,147)
Redesign Heat Shield	100,000	(12,112)
Post LFW milling operations (Completed)	64,417	(12,000)
Switch to "Conformal" Seal	0	(12,000)
Replace Compglass in Shrouds with INCO 625	0	(11,619)
Switch to "Conformal" Seal	0	(11,500)
Improve Yields to 55% —Incorp early	958,838	(11,462)
Oil Flow Management Re-design-elim 6 pts	0	(11,330)
Kaizen assembly operation	0	(11,205)
Lean EHSV1	0	(11,085)
Lean EHSV 1	0	(11,085)
Cast Mat'l Sub to PWA1267	143,607	(11,000)
Special Technology Coating CR	411,325	(10,924)
Main Body Lean Initiative	711,730	(10,916)
Hard tooling to cast stinger	87,814	(10,569)
Eliminate/Reduce EDM @ Fan Assy	68,148	(10,400)
Batch process Spar 1-5 100% real	0	(10,367)
Eliminate Flow Guide	0	(10,072)
(3B) Elim 3rd Stator Viton Coating Loss	0	(10,000)
(3B) Elim 1 3rd Stator Viton Coating Loss	0	(10,000)
Optimize Number/Size of Hot Sheet Holes	15,000	(10,000)
Design into 1 piece TOBI (SEE GF01)	0	(9,950)
SMED Equipment	0	(9,920)
Process Changes & Tools	616,305	(9,894)
Improve casting yields (Accomplished ref 6.01/.02)	0	(9,716)
Replace Compglass in Shrouds with INCO 625	0	(9,682)
Cast Alloy C Shrouds at Selmet	330,000	(9,358)
Forge Cyclinder Blank	469,442	(9,322)
Redesign Heatshield/ Cast Stiffener	1,605,582	(9,086)
Eliminate wt.red. kidney cuts (+0.7#, IFR BOM)	0	(9,000)
Reduction of detail/assembly process times	0	(8,630)
Imprvd A/A Hx Mnts & Plbg,ICD,1 A/A Hx Config,remo	0	(8,480)
SMED Equipment	217,411	(8,475)
New Machine Source for Airpump Flowpath	78,806	(8,421)
Robotic Stud Welder	0	(8,404)
Cont Flowpath Cstg Supply	0	(8,311)
Reduce Final Machining Requirements	50,000	(8,191)

$3,310K engine cost price
(FTE 18 Validation)

Attachment 7: Pratt & Whitney New Initiatives For Lot 1 Savings

Description	Invest $	Lot1 Savings 2001 $ LMO
High Speed Milling	0	(30,850)
MOF laser to drill coating holes (Tooling)	25,000	(19,044)
High Speed Milling	500,516	(13,900)
Improve yields to 70% --- begins w/PRTV	0	(13,078)
Bond Productivity improvement	1,512,370	(12,000)
Incorporation of BETA 21	83,000	(9,142)
Reduce R/M thru reduced LFW collar size.	130,353	(8,000)
Use OSPREY Spraycast Material (alt to 03)	0	(7,992)
Improve Casting Yield	150,000	(7,700)
Reduced and combine machining processes	0	(6,700)
Swirler Source Change to Wyman-Gordon	70,000	(6,100)
Purchase Black Forgings	450,344	(6,000)
Replace Cat Arc w/ PWA 286 coat ---to be removed	48,011	(5,681)
Osprey to reduce R/M csot (MEC SAVE)	100,000	(5,305)
Reduce Coating Thickness	0	(5,301)
Improve casting yield to 68%	0	(5,270)
Improve casting yields to 70%	0	(4,973)
Back Extrude Forge Technology	150,000	(4,550)
Back Extrude Forge Technology	0	(4,550)
Nozzle Fastener Material Substitution	64,250	(4,549)
Single Shot Wax Die	431,963	(4,387)
Reduced EDM setups	148,811	(4,019)
Incorporation of Beta 21	300,000	(3,444)
Turbo Tip Removal	0	(3,120)
Revise Forward Seal Design	0	(3,000)
Improve casting yield to 75%	0	(2,990)
L.E. Down Casting Mold	0	(2,448)
Improved EDM process	0	(2,213)
Improve casting yield to 60%	0	(1,981)
Use near net forging	0	(1,592)
Water jet split/Saw cut	10,000	(1,339)
Elim AMT Cycles 40 hr	0	(1,320)
Elim HPC Axiam 15hr	0	(1,210)
Use new forge tool	250,000	(1,188)
Near net shape forging	65,000	(849)
Igniter Boss Assy Resource - Pratt & Whitney	10,000	(800)
Eliminate measured length	4,000	(756)
Cast by-pass cooling holes	0	(714)
Elim Headroom Check 20 hr	0	(660)
Improved shotpeen mask - dec core plugging	0	(574)
Wire EDM bristle height to size	21,697	(500)
Eliminate Core Break to Improve Yield	50,000	(500)
Eliminate High Temp A/Gall	10,000	(485)
Eliminate High Temp Anti Gall	5,000	(485)
Hollowed cast root/ reduced wire EDM	4,000	(481)
Flat grind tip/eliminate tip EDM	4,000	(447)
New breach roughing inserts 100% real carbide	50,000	(427)
Various producability changes	0	(350)
"E" Quality Parts 15hr	0	(330)
Eliminate cast airflow masking	0	(288)
Cast in damper oil supply hole	0	(265)
Scavange tubes material 270/273	0	(263)
ECI in Mdtn 100% real	0	(213)
As Cast ID Feed Slots	20,000	(200)
Allow Patch /plate weld during casting process	330,000	(173)
open tolerances	0	(167)
Cast O.D. & axial grooves	0	(143)
Use single maskant	0	(127)
Re-Dim cast to eliminate lip	0	(91)
Program deburr	0	(74)
Eliminate MFTV Leaks at Test 2 hr	0	(66)
Use single maskant	0	(64)
Open wall tolerances	0	(62)
Eliminate 63 finish on windows	0	(57)
Program deburr	0	(37)
Cast in oil scavenge pilot hole	0	(34)
use bi-lateral profile on ID of OD flange	0	(21)
Relax tolerance of anti-rotation tangs	0	(1)
Increase tolerance of bearing snap	0	0
		(225,608)

$207 Weighing Guide
69 Ideas

Attachment 8: Pratt & Whitney Modular Center Lot 1 Cost Savings Initiatives

Initiative Description	Lot 1 Savings in 2002 $ @ price
Incorporate Redundant Tooling	$ (384)
Part Probing Outer Case	$ (384)
Work Flow Sequencing	$ (10,240)
Reduce Inner Case VTL Machining	$ (495)
Reduce Outer Case VTL Machining	$ (1,101)
Purchase Details At EOQ	$ (774)
Purchase Details At EOQ	$ (774)
Variation Reduction- Washer Assy	$ (692)
Supplier Price Concessions (Multiple Parts)	$ (10,000)
As Cast Combustion Hole	$ (4,480)
As Cast Combustion Hole	$ (1,494)
Gaging for Laser Ops, Target Hole Gage	$ (231)
Gaging for Laser Ops, Target Hole Gage	$ (231)
Swirler Resourcing	$ (7,808)
Igniter Resourcing	$ (1,024)
As Cast Combustion Hole	$ (2,968)
Tubes - Change Chordal and Envelope Tolerance Requirements Projec	$ (888)
Forging Initiative	$ (745)
F119T EC Insource Machining	$ (640)
Insource Grossite shop support	$ (3,210)
Improve casting yield	$ (5,760)
Percussion laser drilling	$ (1,944)
Quick change tooling	$ (3,111)
Eliminate panel casting FPI	$ (3,111)
Reduce deburr of laser splatter	$ (3,889)
Eliminate 1 laser flow op	$ (11,666)
Multiple panel coating	$ (24,421)
Implement LTA for forging	$ (897)
Move Operation 150 from K&T to Okuma	$ (962)
Reduce DEA time	$ (3,850)
Mfg to standard work	$ (3,208)
Based on 3/00 supplier review	$ (5,691)
Coating fixture to prevent warping	$ (1,497)
MOF laser to drill coating holes (tooling)	$ (5,754)
Bolt on Sidewall hole change	$ (13,610)
Insourcing initiative	$ (14,582)
Set-up reduction/quick change	$ (7,035)
Develop form dies	$ (4,278)
Revise stiffener pre-load	$ (1,944)
4X heatshield press	$ (4,278)
Incorporation of BETA 21	$ (41,288)
SPF aft panel insource	$ (38,734)
Cellular layout improvement	$ (24,304)
Reduce labor rework	$ (7,777)
Eliminate forward seal on impingement sheet	$ (572)
Heatshield producibility improvement	$ (6,595)
Heatshield producibility improvement	$ (6,595)
Aftcomb casting reduction	$ (2,437)
Heatshield casting reduction	$ (4,932)
Negotiation reduction	$ (5,448)
Seal assy process improvement	$ (72,912)
Current PO's (since project start)	$ (33,280)
Updated Realization Rates	$ (167,680)
Learning (P&W 162)	$ (83,200)
OH Rate Adjustment	$ (179,200)
HPB Machining Resourcing	$ (78,633)
Material deductions (P&W 36-P&W 162)	$ (143,360)
Overhead Reduction	$ (23,424)
Elimination of AMT cycles & Headroom check	$ (20,531)
Realization Rates	$ (60,782)
Eliminate Pickle Ops	$ (640)
Task Coating Group Initiatives	$ (6,400)
IBR Quality Improvement	$ (6,400)
As-milled platforms	$ 4,480
Eliminate ECM, High Speed Machining, Improve yield, pour ratio	$ (5,651)
Eliminate ECM, High Speed Machining, Improve yield, pour ratio	$ (23,336)
Lase Shot Peen requirement	$ 19,200
Implementation of Rapid Coater Technology	$ (15,360)
EDM Pricing Concessions	$ (17,262)
Stock Reduction at Tip Grind	$ (2,637)
Stock Reduction at Tip Grind	$ (2,637)
Autotime	$ (3,840)
Resource Abradable	$ (7,680)
Near net forging from Viking	$ (4,036)
Reduce Braze time preparation	$ (1,792)
Inlet Case EC for Functionality & Producibility	$ (18,575)
Pump PO reduction	$ (19,200)
Cost Reduction Initiatives in ECCO	$ (14,080)
	$ (1,297,030)

104 Lean Engineering Office
$1,297K

Mr. SHAYS. Thank you. Dr. Schneiter.

Mr. SCHNEITER. Mr. Chairman, members of the committee, thank you for the opportunity to discuss with you again the Department of Defense efforts to control and monitor the cost of the F–22 aircraft program, particularly with regard to the PCRPs.

When I was here last year, I indicated that a program as technically challenging as the F–22 brings with it a challenge regarding cost and schedule performance. I also noted this challenge has been complicated by the congressional cost caps on the engineering and manufacturing development and production. Let me first very briefly discuss program progress.

The F–22 program continues to demonstrate technical progress that meets or exceeds the performance measures established for the program. Progress in the past year, particularly in flight testing, was impeded by some delays in the delivery of engineering and manufacturing development aircraft. More recently, however, in the past 4 months the program has shown a significant increase in flight testing tempo. We now have five flight test aircraft flying at Edwards Air Force Base.

Also earlier this year, the program successfully completed the exit criteria for the low-rate initial production milestone decision, including demonstration of Block 3.0 avionics software.

However, as Ms. Druyun mentioned, the LRIP decision was postponed to permit the new administration to review the program, and as you know, the Department has been conducting a comprehensive review of strategy and programs. We're now ready to conduct the LRIP review, and the Defense Acquisition Board will meet on the program later this month.

Ms. Druyun has covered in some detail the PCRP process. I'll mention some of the things the Office of Secretary of Defense is continuing to do regarding cost control on F–22. F–22 cost control has been a key item for the Department for sometime. Following the Defense Acquisition Executive's review of the program in December 1998, he reiterated the importance of seeking to execute the program within the cost caps and directed quarterly briefings to him on the development in production cost status. We continue to use these special quarterly reviews to examine cost and schedule trends and track program progress.

I described last year that the OSD cost estimates in November 1998, December 1999 included assessments of the effects of the PCRPs and broadly the estimates were prepared into steps: The recurring costs incurred to date on the engineering and manufacturing development units, including the actual costs which reflect PCRPs that had been implemented to date, and then a separate estimate on the savings to be expected from the still unimplemented PCRPs.

I'll agree the PCRPs will have a significant effect on cost and are well worth undertaking. This is not an issue. There are disagreements about the magnitude of the reductions to be achieved by the PCRPs and about what cost experience to date implies for the future apart from the PCRPs. The repeated disagreements have had to do with how rapidly the cost of purchased materials and subsystems will decline from the levels observed in EMD and in the first lot of the production representative test vehicles.

Both we and the Air Force have updated our cost estimates, and four important events in the past year have influenced these estimates.

First, we have another year of actual costs that have been accrued on the aircraft being built. Second, the low-rate initial production decision was delayed. Third, the contractor's fiscal year 2001 contract terms were negotiated. And fourth, the Air Force's planned cost savings program has been enlarged.

The first three of these increased the expected costs, and the last was constructed to offset those costs. This year the actual costs came in somewhat higher than the Air Force expected, and as a consequence, they raised their aircraft production cost estimate from $39.6 billion in November 1999 to $42 billion in November 2000.

Let me talk about the differences between the cost estimates between OSD and the Air Force, both of which are now above the congressionally mandated production cost cap. The difference between the OSD and Air Force estimate, as has been stated here, is $7.2 billion, and of that, $4.7 billion is the difference due to estimating the basic cost estimating process, which I mentioned includes PCRPs already implemented, and $2.5 billion due to differences in savings expected from PCRPs.

The Department considers F–22 costs very important. The Under Secretary of Defense for Acquisition, Technology and Logistics and the Secretary of the Air Force have personally been addressing this issue as a high priority. The result of their review, as well as our continuing review will be an input into the upcoming Defense Acquisition Board review. If the outcome of the DAB review is a decision to proceed with low-rate initial production, the Department will comply with the current statute and send Congress the reasons for proceeding with F–22 LRIP, the revised production plan for the F–22, and the revised cost estimate for the remainder of EMD in production.

Thank you very much.

[The prepared statement of Mr. Schneiter follows:]

Embargoed Until Release by the
House Committee on Government Reform

Statement of

George R. Schneiter

Director, Strategic and Tactical Systems
Office of the Under Secretary of Defense for Acquisition, Technology and Logistics

Before the
Subcommittee on National Security, Veterans Affairs, and International Relations
of the
House Committee on Government Reform

on

F-22 Cost Controls: Will Production Cost Savings Materialize?

August 2, 2001

Embargoed Until release by the
House Committee on Government Reform

Mr.Chairman, members of the committee, thank you for the opportunity to discuss with you the Department of Defense's efforts to control and monitor the cost of the F-22 aircraft program, particularly with regard to the Production Cost Reduction Plans (PCRPs).

When I appeared before this committee last year, I indicated that a program as technically challenging as the F-22 brings with it a challenge regarding cost and schedule performance. I also noted that this challenge has been complicated by the Congressional cost caps on the Engineering and Manufacturing Development (EMD) phase (now $20.4 billion) and on the production phase (now $37.6 billion) of the program.

Let me first discuss briefly program progress. The F-22 program continues to demonstrate technical progress that meets or exceeds the performance measures established for the program. Progress in the past year, particularly in flight-testing, was impeded by some delays in the delivery of Engineering and Manufacturing Development aircraft. This slowing of the pace of flight-testing came at a time when a more aggressive flight-test tempo was expected. The good news is that the program, in the last four months, has shown a significant increase in flight-testing tempo. We now have five flight-test aircraft flying at Edwards AFB. Also, earlier this year the program successfully completed the exit criteria for the Low-Rate Initial Production (LRIP) milestone decision, including demonstration of Block 3.0 avionics software. However, the LRIP decision was postponed to permit the new administration to review the program. As you know, the Department has also been conducting a comprehensive

review of strategy and programs. We are now ready to conduct the LRIP review, and the Defense Acquisition Board will meet on the program later this month.

Ms. Druyun will cover the detailed status of the cost reduction program more thoroughly in her statement. I shall focus on what the Office of the Secretary of Defense is continuing to do regarding cost control on F-22.

Cost control on the F-22 has been a key item for the Department for some time now. Following the Defense Acquisition Executive's review of the F-22 program in December 1998, he approved the go-ahead for production of the two-aircraft lot of Production Representative Test Vehicles, and he reiterated the importance of maintaining continued emphasis on executing the F-22 program within the congressional cost caps. He challenged the Air Force and its contractors to continue efforts to reduce costs. He also directed the Air Force to provide him quarterly briefings on the development and production cost status. The Department continues to use these special quarterly reviews to examine cost and schedule trends over shorter periods and to track program status to a higher degree of fidelity.

The Office of the Secretary of Defense (OSD) cost estimates of November 1998 and December 1999 included assessments of the effects of the Production Cost Reduction Plans. Broadly, the estimates were prepared in two steps:

1. The recurring costs incurred to date on Engineering and Manufacturing Development units were used to forecast production costs. These "actual"

costs reflect the degree of success of PCRPs that have been implemented to date.

2. A separate estimate of the savings to be expected from the still-unimplemented PCRPs.

The final production cost estimate was the net of these.

All of the contractor, Air Force, and OSD estimators that looked into the effects of the PCRPs agree that they will have a significant effect on cost, and are well worth undertaking. This is not at issue. There have been, and still are, disagreements about the magnitude of the reductions that will be achieved by the PCRPs. These have centered on the savings that will be realized on PCRPs that have been defined, and the allowances that should be made for savings on PCRPs not yet fully defined. There also have been disagreements about what the cost experience to date implies for the future, apart from the PCRPs. The key disagreements have had to do with how rapidly the cost of purchased materials and subsystems will decline from the levels observed in EMD and on the first lot of Production Representative Test Vehicles.

Both OSD and the Air Force have completed updates to the development and production cost estimates in preparation for the LRIP review.

In the past year, four important events have influenced production cost estimates: another year of "actual" costs has been accrued on the aircraft being built; the Low-Rate Initial Production decision was delayed; the contractor's FY01 contract terms were negotiated; and the Air Force's planned cost savings program has been enlarged. The

first three of these increased expected costs, and the last was constructed to offset those increases.

The actual costs—by which is meant the labor hours, material costs, overheads, etc., actually expended to build the currently produced aircraft—are carefully watched because they have proven to be conclusive evidence of where final aircraft production costs will be. This year those costs came in somewhat higher than the Air Force expected, and, as a consequence, they raised their 339-aircraft production cost estimate from 39.6 billion then-year dollars in November 1999 to 42.0 billion then-year dollars in November 2000.

Partly as a consequence of these higher-than-expected actual costs, the negotiated FY01 contract terms (which were finalized the third week of November, after the baseline cost estimates prepared for the December 2000 review were completed) were $162.7 million above the amount budgeted by the Air Force. Consequently, the Air Force deferred Lot 1 content amounting to $162.7 million from the FY01 work scope into FY02. The Air Force reduced the FY02 quantity by 3 aircraft from 16 to 13 to cover the Lot 1 content and other Lot 2 cost increases.

Finally, the scope of the F-22's cost savings program was increased to generate additional savings. Essentially, the size of near-term investments in the producibility projects was increased in order to achieve greater out-year savings. The Air Force also increased the assumed rates-of-return for those producibility investments, which increased the computed savings. Nevertheless, the Air Force production cost

estimate is still above the Congressionally mandated production cost cap.

Despite these changes and the increased production cost experience, there remains a difference between the OSD and the Air Force estimates. The difference between the OSD and Air Force estimates is $7.2 billion (TY) for the revised production ramp rate (13 aircraft vice 16 in FY02). Of that $7.2 billion, $4.7 billion is difference due to estimating, and $2.5 billion is due to differences in savings expected from the PCRPs. Of the estimating differences, $3.0 billion is differences in non-prime contractor costs, and $1.2 billion is engine costs, both of which are due to assumptions about the rate of price decreases for Lot 2 and beyond.

As evidence that the Department considers F-22 cost very important, and in an attempt to better understand the differences between the two cost estimates, the Under Secretary of Defense for Acquisition, Technology and Logistics and the Secretary of the Air Force have been addressing this issue as a high priority. The result of their review will be an input into the up-coming Defense Acquisition Board (DAB) review. If the outcome of the DAB review is a decision to proceed with low-rate initial production, the Department will comply with the current statute and send Congress the reasons for proceeding with F-22 LRIP, the revised production plan for the F-22, and the revised cost estimate for the remainder of EMD and production.

The Department's objective is to ensure that the F-22 program, meeting established performance requirements, will be accomplished for an acceptable cost and on an acceptable schedule. The Department's senior leadership believes it has an obligation to the Congress and the American taxpayer to achieve this objective.

Mr. SHAYS. Thank you, Dr. Schneiter.

Mr. Summers.

Mr. SUMMERS. Mr. Chairman, members of the subcommittee——

Mr. SHAYS. Is your mic on?

Mr. SUMMERS. It's on.

Mr. SHAYS. Just a little closer, please.

Mr. SUMMERS. All right.

Mr. Chairman, members of the subcommittee, as you requested, I will describe the audit activities of the Defense Contract Audit Agency [DCAA], as they relate to the production cost reduction plans under the F–22 program. I am Francis Summers, Jr., Director of the Central Region of DCAA. The region is comprised of 13 field audit offices, geographically dispersed throughout the central United States. One of these field offices is located at the Lockheed Martin Aeronautics Co. Resident Office in Fort Worth, TX. This office is responsible for the audits of the Lockheed Martin Aeronautics Co., the prime contractor on the F–22 program.

Before I begin, I'd like to provide a brief background about DCAA. DCAA is a separate agency of the Department of Defense under the direction, authority and control of the Under Secretary of Defense, Comptroller. The DCAA mission is to perform all necessary contractor audits for DOD and to provide accounting and financial advisory services regarding contracts and subcontracts to all DOD components responsible for procurement and contract administration.

These services are provided in connection with the negotiation, administration and settlement of contracts and subcontracts. As Regional Director, I am responsible for the oversight of all facets of contract audit operations and related support services of the Central Region. This responsibility includes the quality of audit and financial advisory services, technical support services and litigation support.

The F–22 program is performed by Lockheed Martin Aeronautics Co. at its three major sites, Fort Worth, TX, Marietta, GA and Palmdale, CA. Boeing Aircraft and Missiles Systems, Puget Sound, WA is the major subcontractor to Lockheed Martin. The United Technologies Corp., Pratt-Whitney, military engines division, East Hartford, CT, provides the engines under a separate contract. Although my direct responsibility involves only the Lockheed Martin portion of the F–22 program in Fort Worth, my testimony today addresses effort by DCAA at all three contractors as it relates to the production cost reduction plans [PCRPs].

To date, we have performed discrete evaluations addressing 11 PCRPs, which cover about $425 million in projected savings. The objective of these evaluations was to determine the reasonableness of the objective savings by examining the estimating techniques, assumptions and underlying evidential support. To put our effort into perspective, we evaluate about 2 percent of the PCRP savings. Overall, of the $425 million, we were unable to reach a conclusion on about $71 million because the savings were based on judgmental contractor estimates without sufficient evidential support. In addition, during our evaluation of the $425 million, the contractor provided more current information, resulting in a reduction in the estimated savings of about $4 million.

Our other involvement was significant PCRP cost savings that occurred in late 1997 during evaluations of various F–22 proposals. This PCRP related effort primarily involved performing procedures requested by the Air Force, including verifying that the proposal reflected the projected PCRP savings previously estimated by the contractor. In general, we concluded that the contractor was including its estimated PCRP savings and applicable proposals.

As described, our involvement has been fairly limited to date as we have only evaluated certain aspects of a limited number of PCRPs.

Mr. Chairman and members of the subcommittee, this concludes my statement, and I will answer any questions you may have. Thank you.

[The prepared statement of Mr. Summers follows:]

Statement

Francis P. Summers, Jr.

Regional Director, Central Region
Defense Contract Audit Agency

Before the U.S. House of Representatives
Committee on Government Reform
Subcommittee on National Security, Veterans Affairs,
And International Relations

August 2, 2001

Audits of F-22 Production Cost Reduction Plans

NOT FOR PUBLICATION UNTIL RELEASED BY THE
SUBCOMMITTEE

Mr. Chairman and members of the Subcommittee:

As you requested, I will describe the audit activities of the Defense Contract Audit Agency (DCAA) as they relate to production cost reduction plans under the F-22 program. I am Francis Summers, Jr., Director of the Central Region of DCAA. The region is comprised of 13 field offices geographically dispersed throughout the central United States. One of these field offices is the Lockheed Martin Aeronautics Company Resident Office in Fort Worth, Texas. This office is responsible for the audits of Lockheed Martin Aeronautics Company, the prime contractor on the F-22 program.

Before I begin, I would like to provide a brief background about DCAA. DCAA is a separate agency of the Department of Defense (DoD) under the direction, authority, and control of the Under Secretary of Defense (Comptroller). The DCAA mission is to perform all necessary contract audits for DoD and to provide accounting and financial advisory services regarding contracts and subcontracts to all DoD components responsible for procurement and contract administration. These services are provided in connection with the negotiation, administration, and settlement of contracts and subcontracts.

As regional director, I am responsible for the oversight of all facets of the contract audit operations and related support services of the Central Region. This responsibility includes the quality of audit and financial advisory services, technical support services, and litigation support.

The F-22 program is performed by the Lockheed Martin Aeronautics Company at its three major sites - Fort Worth, Texas; Marietta, Georgia; and Palmdale, California. Boeing Aircraft and Missiles Systems, Puget Sound, Washington, is the major subcontractor to Lockheed Martin. United Technologies Corporation, Pratt-Whitney, Military Engines Division, East Hartford, Connecticut, provides the engines under a separate contract. Although my direct responsibility involves only the Lockheed Martin portion of the F-22 in Fort Worth, my testimony today addresses effort by DCAA at the three contractors as it relates to the production cost reduction plans (or PCRPs).

To date, we have performed discrete evaluations addressing 11 PCRPs, which cover about $425 million in projected savings. The objective of these evaluations was to determine the reasonableness of the projected savings by examining the estimating techniques, assumptions and underlying evidential support. To put our effort in prospective, we evaluated about two percent of the PCRP savings. Overall, of the $425 million, we were unable to reach a conclusion on about $71 million because the savings were based on judgmental contractor estimates without sufficient evidential support. In addition, during our evaluations of the $425 million, the contractor provided more current information resulting in a reduction in estimated savings of about $4 million.

Our other involvement with significant PCRP cost savings occurred in late 1997 during evaluations of various F-22 proposals. This PCRP related effort primarily involved performing procedures requested by the Air Force, including verifying that the proposal reflected the

projected PCRP savings previously estimated by the contractor. In general, we concluded that the contractor was including its estimated PCRP savings in applicable proposals.

As described, our involvement has been fairly limited to date as we have only evaluated certain aspects of a limited number of PCRPs.

Mr. Chairman and members of the Subcommittee, this concludes my statement. I will answer any questions you may have.

Mr. SHAYS. Thank you. At this time, the Chair would recognize Mr. Barr for 5 minutes, rolled over to 10.

Mr. BARR. Thank you very much, Mr. Chairman. Ms. Druyun, it is good to see you again. We appreciate you and the other witnesses being here today and I appreciate the chairman allowing me to sit in as a member of the full committee on this hearing today.

Ms. Druyun, is it not true that there have been no overruns in the production contract for the F–22 and that these production figures are simply estimates of what it might cost?

Mr. DRUYUN. Yes, sir. That is, I think, very true. The Air Force believes that we're still very early in the production program. To date we have two what we call production representative test vehicle lots on contract. That is a total of 8 airplanes and we have another 10 on contract, which is a total of 18. And then we have a long lead contract. We're looking at costs that go out through the year 2013. If you look at the target price commitment curve that we set up back in 1997 to really focus in on where we need to be in the learning curve to be able to achieve delivering 339 airplanes within the cost cap established by the contractors, I would tell you for PRTV I and II and for Lot 1 we are within the 5 percent band and in some cases actually below the commitment curve that was put on contract. And we also put some very specific incentives in terms of money to the contractors.

The first set of investments were made by the contractors to try to bring down the cost of these airplanes, and we further incentivized a return on those investments if in fact they stayed within those target price commitment curves. And the first 3 lots show that we are currently, you know, within that area. I would tell you for Lot 2 we have our own set of challenges. We're in the process of negotiating that, and we're working very hard with the primes, as well as with the suppliers to try to bring Lot 2 in within that 5 percent band as well.

Mr. BARR. Thank you. With regard to the location where the aircraft is assembled, it's currently assembled at the Lockheed Martin plant, Air Force Plant No. 7 in Marietta, GA. Given the fact that there has already been a very substantial, in the hundreds of millions of dollars, investment by Lockheed Martin and certainly by the government, both directly and indirectly in building that infrastructure to accommodate the final assembly, would it be reasonable to expect that there will be substantial additional costs over and above what we now see for this aircraft if that production—if that assembly responsibility were to be picked up and moved to another plant where they don't have that infrastructure in place?

Mr. DRUYUN. Yes. I think that's a very fair statement, sir. In fact, it was about 2 years ago, perhaps 2½ years ago that we did actually go in and take a look at what it would cost the program if we were to move the production facility final assembly to Fort Worth, and our estimates ran, as I recall, somewhere in the range of an additional $600 million to $1 billion cost; you know, the penalty that one would incur. But more importantly, it would be terribly disruptive to the program. I think if you were to go today and look at the Marietta facility, they had made tremendous investments there, and they are building a lean production line, and, you know, when you look at the training that has gone on with the peo-

ple, if one were to try to make some decisions to change the final assembly, it would have a very detrimental effect on the program in terms of our ability to meet schedule and certainly our ability to meet costs.

Mr. BARR. Thank you. Mr. Chairman, again, I appreciate your allowing me to be a part of this hearing, and I would urge the chairman, who I know is very concerned about costs and is certainly a good steward of taxpayer money, to keep a continuing eye on these rumors that we hear and we see from time to time some evidence of. I think this would have a very, very—the Assistant Deputy Secretary of State has indicated will have very significant effect, both monetarily and otherwise on the production of this aircraft.

Thank you, Mr. Chairman.

Mr. SHAYS. I thank the gentlemen.

At this time the Chair would recognize Mr. Otter.

He is curious to know if there will be any more potato analogies.

Mr. OTTER. Probably so. And let me apologize in advance for the possibility of that.

Mr. SHAYS. For the record, this full committee and all future variants, you will never need to apologize.

Mr. OTTER. Thank you.

Dr. Schneiter, you said in your statement that initially the challenges that the F–22 brings with it—in fact, your statement is the F–22 brings with it a challenge regarding cost and scheduling performance. I also noted that this challenge has been complicated by congressional cost caps on the engineering and manufacturing phase, now $20.4 billion, and on the production phase, $37.6 billion of the program.

How did Congress arrive at those caps? Surely it wasn't congressional people. I mean, it wasn't the Congressmen and women themselves that said they are going to put these caps on there. They had to get information from someone to arrive at these caps.

Mr. SCHNEITER. Yes. And I believe those caps were based on the then current estimates of the program costs for the development.

Mr. OTTER. And who made those at that time, those estimate costs that the Congress relied upon to set the caps?

Mr. SCHNEITER. I believe the Air Force did. Right?

Mrs. DRUYUN. Yes, that's correct. That was back in the 1997 timeframe.

Mr. OTTER. That was back in 1997?

Mrs. DRUYUN. Yes.

Mr. OTTER. I understand that.

How does the Department of Defense then arrive at the cost estimates; I mean, solely from the Air Force, or is there an independent body? Is there an independent accounting—is there some kind of watchdog that says the Air Force may be a little too generous here or may not be thinking about this and thinking about that?

Mr. SCHNEITER. We do that independently with this group called Cost Improvement Analysis Group, which we called the CIG in OSD. They make an estimate. In fact, at certain milestones they are required, I believe by statute, to make a certain estimate of what the costs will be, and do that independently.

Mr. OTTER. When these caps were set, was there oversight on those caps? Did somebody get a chance to look at the Air Force's

caps and, say, suggestions for the caps and say, hey, we agree with these, we disagree with these?

Mr. SCHNEITER. I don't recall that OSD was asked for suggestions.

Mr. OTTER. Would it be a good idea if they did that?

Mr. SCHNEITER. I think that we would think so, yes.

Mr. OTTER. Would there be some capability, would there be a way in which all who are going to be looking at this through the future and working as this team that you talk about to say we can agree or we disagree with those caps that are set?

Mr. SCHNEITER. I think clearly that would be the case. There is also the question as to the wisdom of caps, particularly on a development program. And I think the Department is now on record at this point of requesting relief from the engineering and manufacturing development cap, because we think that at this point it could serve only to cause us to not do things that we need to in completion of the development program.

Mr. OTTER. So maybe we need—philosophically we need to go back and take a look at our beginning points. Is it a good idea to put on caps or not?

Mr. SCHNEITER. Yes, sir.

Mr. OTTER. What were the reasons that caps were put on in the first place?

Mr. SCHNEITER. You would have to ask those who put the caps on, which I believe was Congress.

Mr. OTTER. I see. So——

Mr. SHAYS. Could I just ask the gentleman to yield?

You have the ability and some knowledge to explain what the rationale was. You don't have to agree with it, but there was rationale, and this gentleman is a new Member, and you could give him some history as to why. So whether or not you agree with it or not, aren't you in a position to explain why the caps are there?

Mr. SCHNEITER. I can give you my views as to——

Mr. SHAYS. There was rationale for it, and the Air Force bought off on it, and it would be helpful for the record at least for us to have an understanding of—if you appreciate why they were put in—and if you——

Mr. SCHNEITER. I would be pleased to do that.

Mr. SHAYS. Could you answer the gentleman's question there?

Mr. OTTER. Thank you, Mr. Chairman.

Mr. SCHNEITER. My understanding is that Congress's intent was basically to arrest growth in costs of the program. The program had experienced some cost increases in the past, and they wanted to stop that, and they felt a way to do that would be to put caps on the engineering and manufacturing development program and on the production program.

Mr. OTTER. Well, I guess my time is up, Mr. Chairman.

Mr. SHAYS. You have another 5 minutes.

Mr. OTTER. Thank you, Mr. Chairman. I'll give you another order of french fries for that.

I'm really interested in this because in the discipline, and I understand that maybe it isn't fair for me to always use the discipline that I have become familiar with or that I grew up with, that I worked with for 30 years in the private sector, but we had kind of

a cost versus benefit analysis. If we were going to buy one forklift that could lift 4,000 pounds to load a truck, and maybe we could get some additional utility out of it by maybe having it perform another function, maybe we would buy one that could lift 6,000 pounds, so that was going to cost a little bit more, so we kind of had to factor that in.

The process that I go through in thinking about these things is that we are going to buy a new piece of equipment that will provide some certain national defense, but it still has to have some kind of cost versus benefit: We can do this with fewer people, we have a greater level of service in national security, we can eliminate all of the F–4s, which is the one I'm most familiar with.

But there was a cost versus benefit analysis, and so from that we established an expectation of what we were going to get this piece of equipment for.

Is there a cost versus benefit analysis that the—what kind of process does the Air Force go through in order to say, we want all of these F–22s?

Mr. SCHNEITER. Yes, sir, we have such a process. We exercise it particularly at milestones in the program. For example, when we start a program, we will do a cost-benefit analysis. We examine alternative ways of doing the job and see which makes the most sense. Does it make more sense to improve our old aircraft, buy more of the old aircraft with some updates, or buy a new aircraft?

In the case of the F–22, we decided that for assured air superiority that we needed new aircraft, and we knew it was going to be more expensive than other aircraft, but we concluded that was worth what we would pay for it. And as we proceed with the program, we continue to make that assessment.

Mr. OTTER. I understand. And I understand there is mission assessment, and the success of the mission assessment is invisible. I mean, it is an expectation that you have, but it is going to work to the degree and to the effectiveness that we thought.

But is there any savings? Are we going to eliminate—for instance, if we eliminated the F–4 and ended up with the whatever the new aircraft was that replaced the Phantom, and we figure, well, you know, these have been breaking down. It is an aircraft technology from 1966, 1968, and here we are 30 years later, and we finally decommission it. We are going to save a lot of money because we are not going to have to maintain it and maintain parts.

In the cost versus benefit analysis and the deciding caps that are put on, is there a savings factor figured in?

Mr. SCHNEITER. We assess the costs, do the cost-benefit analysis. We include in the cost the operating costs of our air fleet. And so we gain the advantage in buying new aircraft of not having to do the increasingly expensive maintenance of the old aircraft that we replace.

And just commenting on the point, I'm sorry that, Mr. Kucinich isn't here, but part of what we are doing here with the F–22 is arresting the aging of our air superiority aircraft.

Right now, until we start building the F–22, they get 1 year older every year. As the F–22 is introduced into the air superiority fleet and replacing older F–15s, then we will see the average age of the

fleet start to come down and reach levels which we believe are satisfactory.

Mr. OTTER. How soon after employment then do we expect the first report of success or fairly—where are the hurdles met? Do we have a followup, this is what it was going to do? When do we get the first report saying it is doing what we intended it to do?

Mr. SCHNEITER. Really I think the first report of that sort is what we call the initial operational test and evaluation. And that is something, that is where the operational pilots fly the aircraft in operationally realistic scenarios, and we see how it performs against its requirements. And we have to complete that process, that IOT&E process, before we begin full-rate production of the aircraft.

This decision we are facing now is low-rate initial production. It is the first production. We will, a few years from now, go into full-rate production, and we must precede that by the IOT&E program on the basis that program, the Director of Operational Testing Evaluation submits a report to the Secretary of Defense and to the Congress on the results of that operational testing.

Mr. OTTER. Thank you.

Mr. SCHNEITER. So that is the point whether we know if we have been successful in providing a good product to the warfighter.

Mrs. DRUYUN. I would also add that for the last 2 years, the test community has been conducting operational assessments and have reported on an annual basis, which I think Mr. Schneiter could talk on, how well it is potentially going to satisfy the requirements. And basically it has been very favorable reports that have come forward.

Mr. SCHNEITER. That is true. As I mentioned in my statement, the aircraft is meeting all of its technical criteria. We have a set of so-called key performance parameters, acceleration, speed, stealth, things of that sort, and all of those are being, for the most part, exceeded by the performance that we have seen in the tactical assessments so far.

Mr. OTTER. Thank you.

Mr. Chairman, might I ask that those reports that were just referred to be part of the official record of this hearing?

Mr. SHAYS. Without objection, we will do that.

Mr. SCHNEITER. I'm not sure I understand which reports.

Mrs. DRUYUN. Yes. We certainly can submit that.

Mr. OTTER. Thank you.

Mr. SHAYS. Thank you. I appreciate the gentleman's questions. I would say besides looking at cost-benefit, we also look at opportunity costs, which is somewhat, I think, Mr. Kucinich's and Mr. Tierney's questions were getting at.

Although there is some limit to what we can spend, if we go above that, we are going to be taking from other programs within DOD. Then we say is that opportunity cost worth it?

Let me ask all three of you, does it make sense for Congress to have caps on this program? Start with you, Mrs. Druyun.

Mrs. DRUYUN. If I could start with development, I think you recognize in development we are 95 percent complete. The phase of development we are in right now is very detailed testing, and I have formally recommended, as I believe the Secretary of the Air

Force and the Chief of Staff, that it is time to remove the cap on the development portion of this aircraft, because we need to finish the testing that is required to show very clearly that it will satisfy the needs of the warfighter as established in the operational requirements document.

When the cost cap was established back in the 1997 timeframe, at the time the Assistant Secretary in the Air Force for Acquisition was Mr. Muellner. All of us basically signed on to the cost cap as being something good to really help keep the focus in on driving down the cost of this airplane. When that cost cap was established, we had not laid into the program funds, for example, to do produceability enhancements to make this airplane more cost-effective.

And so that has been a challenge to us to find some funds within that cost cap to make those investments. What I have found is that if you make those investments up front, and you go in and you redesign elements of that airplane, or you spend money to work with subs to relayout their manufacturing facility, you have a great return on your investment.

We had the contractors make an investment of about $170 million up front. I didn't have the money to pay for it. And I think that——

Mr. SHAYS. Let me just make this request. Your answers are very important. I'm going to ask that they be a little shorter, and I promise you—not that I need promise, but I will give you an opportunity to make any additional points at the end. But I almost forget what my question is after the question. The response is too long.

Mrs. DRUYUN. Yes, sir.

Mr. SHAYS. So what I'm hearing you tell me is that cost caps helped drive down costs, but you're concerned on the development side that you are getting to a point where the caps will prevent you from making some development discoveries that could ultimately save?

Mrs. DRUYUN. Well, what we need is to have additional funds. We have testified to this before the Senate Armed Services and House Armed Services as well as Appropriation Committees. We need some additional funds and some additional time to finish testing this airplane.

Mr. SHAYS. OK.

Mrs. DRUYUN. I think everyone in OSD is in agreement with us.

With respect to the production cost cap, it served us well, but I will also tell you that there are some things that have changed with respect to the timeframe in which that production cost cap was established. I think it is important for the Congress to periodically go back and see what has changed to ensure that you basically have kind of an equity or an apples and apples with what was started in 1997 versus what has happened in the last 4-year period, and I think it is important that be looked at.

Mr. SHAYS. What is your answer to the question?

Mr. SCHNEITER. I agree with Mrs. Druyun. The EMD cost cap, as I mentioned, should be dropped, in our view. That is also the position of my boss, the Under Secretary for Acquisition Technology and Logistics.

With regard to the production cost cap, at this point everyone's estimate of what it would take for the program to complete production is above the cost cap. It seems that it has certainly outlived its usefulness in the present form, unless one wishes to constrain us in the number of aircraft that we can buy, which is a constraint at this point that we would prefer not to have.

Mr. SHAYS. Mr. Summers.

Mr. SUMMERS. Yes. Certainly we would favor cost controls. We think that we bring cost controls to all of the Departments in the program. We certainly assisted on that. But any comment with caps with respect to this program I would have to defer to the Air Force and OSD.

There is also a cost-benefit to what you do, and certainly the Air Force and OSD would have to evaluate whether or not those cost controls in the form of caps are impeding in some way their performance. So I have no position on cost caps on this program.

Mr. SHAYS. Now, let me understand, Ms. Druyun. The cost caps are divided along each way, or it has it an overall cost cap, and then the Air Froce decides how to allocate within the different parts?

Mrs. DRUYUN. Today we have two separate cost caps, one for development and one for production, and we basically have formerly asked that the development one be removed.

Mr. SHAYS. With no limits as to what that would——

Mrs. DRUYUN. We have—I think with—I believe that the Air Force and the OSD are pretty much in agreement as to what we believe it will take to get through all of the testing that needs to be done in this program, and we have laid into our budget approximately an additional $350 million to complete the testing of this program, which would bring development to an end.

Mr. SHAYS. We had a hearing a year ago, almost a year ago—well, actually a year ago, June 15th. And Mr. Barr asked you, should we in the Congress have any reason to suspect the F–22 program will not be complete within the current EMD cost caps? That is—engineering, manufacturing, development cost caps. And your answer: No, sir.

So I said, should we in the Congress have reason to suspect the F–22 program will not be completed within the current EMD cost caps? Your response. No, sir. Our official position with the Air Force is that this program will be completed, as we see it today, within the cost caps established by Congress. Then you went on.

You said when you look at the production cost cap initiatives that we have laid in place, we have—and I would invite you, sir, next time you are in Marietta, GA, to go look at the electronic data base that contains all of the data on every single one of these issues, and it tracks it through the PRTV–1 unit of the Lot 2, and every single one of these initiatives laid out, explains what the initiative is, who the owner of the initiative is and so.

What has changed? What has changed in the last year?

Mrs. DRUYUN. With respect to development, it basically has been the issue of some late delivery of aircraft that were needed to successfully get us through the development program. And rather than reduce the number of test hours required on this program, we feel it was more important that we spend some extra money to do the

full testing on this program as opposed to trying to shave off the number of test months.

So what has changed? Last year we had expected that we would have had more aircraft available. Today I now have five aircraft available. The productivity in our test program has picked up significantly over the last 4½, 5-month period. I have five aircraft today, and I'm expecting three more aircraft, which will round up the number of airplanes that I need for testing to be delivered by the end of December of this year.

In looking at the actual performance to date of those three remaining aircraft expected to be delivered, they are basically within 1 or 2 weeks of their projected delivery date, and that is why we have basically asked that the cost cap be shifted so that we do not have to trim back the number of test hours necessary to fully test out the airplane.

Mr. SHAYS. To be lifted again to what level?

Mrs. DRUYUN. We believe that IOT&E will start around April. We have funded, or we will fund in our upcoming budget through the end of July, a start as late as—that for the start of IOT&E, July 2003. That amounts to about, as I recall, in the neighborhood of I believe it has around $300, $350 million. If you were to look in the past at the Air Force estimate for development, as well as the OSD estimate for development, I think Dr. Schneiter would confirm that we were always very, very close.

Mr. SCHNEITER. But I would caution that there is still a lot of testing to do in that period. There may still be unforeseen problems which we don't factor into those numbers, and they could take additional time and additional money.

Mr. SHAYS. The thing that concerns me about the cost caps is that, we were looking at one time at a program that was going to cost about this much, and we were going to get twice as many planes, correct, early on? The way that we stayed within the cost on the program was to cut the number of planes almost in half. Obviously the per-unit costs go up.

But the bottom line to it was that is what we did. We said, OK, we are going to make less, but we are going to stay within the costs. In fact, we even increased the cost of the program. We increased the cost of the program and kept reducing the number of planes.

Now, there is a reason why we had these cost caps. If we didn't, the program would have been killed. We weren't going to, you know, have an $80 billion program. So I just want to make sure this isn't a ruse to have gotten us caught up in the program, and now we are seeing it unravel, and we are not going to start to see people say, we need to reduce the cost.

Mrs. DRUYUN. I think if you were to look at the cost schedule performance data that is reported on a monthly basis, you would see that development is over 90 percent complete—I think it is about 95 percent complete—and that the task, the work to go, is basically in the test arena. We have worked very closely with the OSD test community to reach agreement on the number of hours we believe that it will take to complete the test program.

Plus I asked a group of experts outside of the Department of Defense to go in and independently look and come back and make rec-

ommendations to us as to how much additional test time was required, and they basically recommended we make some changes. I have incorporated all of those changes, and we all agreed that a start date for IOT&E of April 2003 was a moderate risk, but that we had done everything humanly possible to moderate that risk.

Mr. SHAYS. The bottom line point being what is your bottom line point, if you could?

Mrs. DRUYUN. My bottom line point is that I think that we have a very clearly handle on what the estimated costs are to complete the operational testing required of this airplane that will bring EMD to an end.

Mr. SHAYS. Now, what we are looking at is two cost estimates, one that is $2 billion over, and one that is $9 billion over.

Mr. DRUYUN. That is on the production side. Yes, sir.

Mr. SHAYS. Right. So are you telling me that on the engineering, manufacturing we are going to go up? And now which estimate are you most comfortable with, the $2 billion or the $9 billion?

Mrs. DRUYUN. The cost estimates itself that I have spoken to in previous hearings was the one that was developed this past fall. I have very good confidence in our cost estimators. We have seen additional procedures with respect to our subcontractors.

Mr. SHAYS. I mean, the Air Force's $2 billion?

Mrs. DRUYUN. The Air Force showed back in the November timeframe that we were about $2 billion over the cost cap established in this program, and our estimators have continued to work with the OSD estimators and to continue to update their data based on what they have seen in terms of performance under the production side of the program.

Mr. SHAYS. How do you respond to Mr. Li basically saying the more conservative estimates—in other words, the ones that allowed for the cost—in other words, he is saying it was—the lower estimates were the ones that were not kept; usually the higher estimate always prove to be true? In other words, his implication is that he is probably more comfortable that it would be closer to the $9 billion than the $2 billion. How do you respond to that?

Mrs. DRUYUN. In looking at our cost estimate, I believe that we have done a reasonable job of developing that cost estimate. That is done within the—a separate group who is independent.

And I firmly believe that when you look at the target price commitment curve that we have on contract—on the contractors' performance to date, that the estimate that the Air Force has looked at in the past and as they have continued to update it, I believe that it is a reasonable estimate.

And you must realize we are on the very front-end part of this program, and I think it is also difficult to make projections out to the year 2013. That is why we have focused, and we will continue to focus, this program on the first five lots, and to bring those first five lots down that learning curve so that we can have the ability to deliver 339 aircraft at an affordable price.

Mr. SHAYS. Is there a point at which you would find this plane is too expensive? Is there any number that you would actually recommend pulling the switch on it?

Mrs. DRUYUN. I have not really considered that. I think that you have to look very clearly at what the threat is out there. The F–

15 that we have out there today flying is not able to meet that threat. And if you would like, we can show you some classified data that was run on our range recently that I think would clearly make that point.

Mr. SHAYS. Mr. Otter, do you have some questions?

Mr. OTTER. I really only have one, Mr. Chairman. I thank you for the opportunity to ask it.

Mrs. Druyun, you said that you have a feel now that we have a very clear handle on this new figure for the cost of completing the testing, and I can't remember and quote verbatim your entire statement, but you do feel like in order to get us to the end of testing, that you have a very clear firm figure that you believe. And what was that figure again?

Mrs. DRUYUN. If I could elaborate on that for a moment, sir. We had a separate red team go out and basically look at what it would take for us to successfully get through testing of this airplane to satisfy all of the requirements out there.

And basically they recommended that we slip the start of dedicated IOT&E from December 2002 to April 2003.

I tried to build an additional factor in there when I talked to the Secretary of the Air Force, and basically what we have done, we have a 1½ percent cap that was granted by the Congress. That amounted to $307 million. Slipping the start of dedicated IOT&E, we have laid in another $250 million. We are laying that into the budget, and that really gives me about a 3-month pad in case we are not ready to begin dedicated IOT&E.

It has a moderate risk. The reason why it is at a moderate risk is because I only have one airplane that is instrumented to be able to do some of the flight testing that is required to fully open up the envelope, and that has always been a limitation of this program. We watched that very carefully. But we believe that what we have laid is basically a reasonable approach to successfully complete developmental operational testing.

Mr. OTTER. So for $557 million, that is the $307 plus the $250, so for $557 million you feel very comfortable that $557 million is a clear handle, that is what is going to be required for resolving the testing?

Mrs. DRUYUN. Based on the data that I have today, yes. I feel that is a reasonable estimate, and that is what we have laid in to successfully complete this program. Yes, sir.

Mr. OTTER. And you have gone through the analysis, and you feel very good about that?

Mrs. DRUYUN. I have gone through the analysis in a fair amount of detail, and that is why I also called in outside experts who had many, many years of test experience, including the chief test pilot out of NASA, to help me take a look at the program.

And more importantly, for the first time we actually have very detailed test sets and test sheets is basically the term we use that spells out what the tests are that we need to complete to buildup and get ready to enter into operational tests and evaluation.

Mr. OTTER. OK. Well, then, let me get to my bottom line, and just yes or no.

Mr. SHAYS. We have 5 minutes basically to conclude. If we can conclude, I'm not going to have you wait for us to get back to vote. So if the answers could be concise, that would be helpful.

Mr. OTTER. Yes or no is all I would require.

Would you accept the $557 million as a cap?

Mrs. DRUYUN. No, sir. We do not believe it is appropriate when we get into the final testing of this aircraft. We think the cap has served its purpose, and that is the reason that we want the cap removed.

Mr. OTTER. OK. Thank you.

Thank you, Mr. Shays.

Mr. SCHNEITER. From an OSD point of view, if we may comment, we feel the same way. I think we are not as sanguine as Mrs. Druyun with regard to being ready to start IOT&E at that time.

Mr. SHAYS. OK. We have a vote closing in about 8 or 9 minutes, and I—the clock says 7. I have five questions. If we can get through them, then we won't come back.

Bottom line. How confident is the Air Force that the challenged PCRPs can be achieved, the challenged ones?

Mrs. DRUYUN. If you look at the Air Force cost estimate, we basically gave them zero, because there is—at the time, there was no specificity attached to them. And as contractors develop specific projects and programs, and they have about 1.4 billion of specific projects and programs, we will continue to evaluate them and update our estimate. But our estimate back in November, and I believe even our current estimate, gave them no credit for that.

Mr. SHAYS. The bottom line. You have challenged, not yet implemented and implemented, and implemented obviously are clear. Not yet implemented and other, but challenged are the most difficult ones, correct?

Mrs. DRUYUN. The challenged, I think the contractors' description of areas that they have specifically targeted to develop specific projects to further bring down the cost of the airplane.

Mr. SHAYS. It is hard to get a yes answer from you, you know. I'll just have to come back. I'm sorry. We'll just come back.

[Recess.]

Mr. SHAYS. I now call to hearing to order. I know we are trying to do our best job, but I just want to say that I did have four questions, but that was in the hope that I didn't have to come back. And so there will be a number of other questions.

Would any of the three of you tell me if you ever raised with the Department or Congress that caps on engineering, manufacturing and development were not appropriate? Did any of you suggest that they weren't appropriate?

You are saying that now. I'm just wondering if you said it earlier.

Mrs. DRUYUN. I have officially, along with, I believe, the Secretary of the Air Force and the Chief, but I have officially at the hearing back in July recommended that the cost cap established by the Congress for development on F–22 be removed.

Mr. SHAYS. That is not what I asked. That was last year. I asked in 1997.

Mrs. DRUYUN. No, that was this year, sir.

Mr. SHAYS. July of this year?

Mrs. DRUYUN. July 2001.

Mr. SHAYS. But these caps were initiated in 1997, and we all basically agreed to them, and you last year, Mrs. Druyun, said that we were right on target. I'm just asking if you all ever made it clear to Congress that you didn't think caps on the engineering and testing was not appropriate?

Mr. SCHNEITER. I did not.

Mr. SUMMERS. No, we did not.

I would like to maybe rephrase my previous answer. We don't have a position on caps in Defense Contract. We think that is an Air Force position, so that is not in our charter.

Mr. SHAYS. Mrs. Druyun.

Mrs. DRUYUN. No, I don't have a recollection of that.

Mr. SHAYS. OK. I mean, that, you know, is probably an interesting point, but not a crucial point.

I would like to go back to the whole issue of—I felt that I was asking a simple question with the hope of understanding, and obviously this must not be a simple answer.

We have three categories in our reduction plan. We have what you call challenged, not yet implemented and implemented. Implemented—would you make an answer—and I'll answer it, because maybe my answer will be shorter. Implemented means that we have already taken the cost savings and put it into place. Would that be accurate?

Mrs. DRUYUN. Yes.

Mr. SHAYS. OK. The not yet implemented, tell me the difference between not yet implemented and challenged. That would be helpful for me to understand. Is not yet implemented a potential challenged reduction plan, or is it—or—the other way around?

Mrs. DRUYUN. Challenged is basically the contractors' description, I believe, of future cost reductions that they want to pursue. They put them into a variety of categories, and as they identify specific projects, then they move them in to be implemented.

Mr. SHAYS. What would be an example of that?

Mrs. DRUYUN. Well, OK. Let me give you an example. Back in September——

Mr. SHAYS. Is this of challenged?

Mrs. DRUYUN. This is of challenged, sir.

Mrs. DRUYUN. Back in September 2000, they had identified $4.1 million in challenged PCRPs. Since that time, they have identified some specific projects. One I will give to you is Lockheed Martin aeronautics consolidation. The company is, in fact, moving out and consolidating some of its overhead functions, for example, and they have attached a dollar amount with that.

And about 2 months ago, I had a cost team from—with representatives from DCMA, Defense Contract Management Agency, the SPO, and a variety of other folks go out and take a look at that to see how that was coming along, and indeed it is coming along. So today that wouldn't be part of the challenge, it would be moved into one of the other categories.

Mr. SHAYS. And the other categories would—it wouldn't be not yet implemented?

Mrs. DRUYUN. Not implemented means it is defined, but it has not been laid into the pricing, as I understand it, for Lot 2 or later.

Mr. SHAYS. OK.

Going back to the issue of the testing and so on. Originally we were looking at the $350 million, and then there was the number of $500 million. And Mr. Otter, Congressman Otter, asked could you stay within that, and you responded that you wouldn't stay necessarily within that cap.

Where was the $350 number and the $500, and tell me what you say ultimately the additional amount is we need to spend.

Mrs. DRUYUN. If you look at the—we had a cap increase of 1.5 percent. It required, as I recall, a certification made by OSD, I believe it was the——

Mr. SHAYS. That is the cost of living?

Mrs. DRUYUN. No, sir.

Mr. SHAYS. No.

Mrs. DRUYUN. There was in the 2001 statute that if the Director of IOT&E certified if we needed an additional increase in our cap, that they would grant us up to 1½ percent. The Director of IOT&E certified that we needed an additional increase in our development cap, the EMD cap of 1½ percent.

Mr. SHAYS. Of the total program or 1½ percent of the engineering part?

Mrs. DRUYUN. Of the EMD cap.

Mr. SHAYS. Right.

Mrs. DRUYUN. That was $307 million.

Mr. SHAYS. OK.

Mrs. DRUYUN. As a result of the further analysis that we have done, and the red team that I mentioned, we have added in or will be adding into our budget an additional $250 million.

Mr. SHAYS. $557.

Mrs. DRUYUN. Which gives you up to $557 million. And that basically delays the start of dedicated IOT&E from December 2002 until April 2002. But I put enough management reserve in that number, I could start as late as the end of July, first part of August and still have enough management reserve to cover that period of time.

Mr. SHAYS. And how comfortable are you with this number? With Mr. Otter, you basically said you weren't going to agree to cap that at $557. So what does that mean? How do you interpret that?

Mrs. DRUYUN. I thought that you were asking Dr. Schneiter.

Mr. SHAYS. Dr. Schneiter is fine. I was just throwing it out there.

Mr. SCHNEITER. Well, my position is that we still have a lot of testing to do between now and the spring of 2002, and there may be additional problems. History would indicate that there likely will be. I'm not sure. I think in our view, we would not like to see a cap, for example, at that amount, because it would not leave us adequate reserve.

Mr. SHAYS. OK. So but would you say that $557 million is a conservative number, or conservative in the sense that you have given yourself some leeway, or is it kind of at the edge?

Mr. SCHNEITER. I think Mrs. Druyun is saying that her estimate is that—it is adequate. I would say it is at the edge——

Mr. SHAYS. OK.

Mr. SCHNEITER [continuing]. If I understand your terminology.

Mr. SHAYS. Yeah.

Mrs. DRUYUN. Yes. It is basically our best estimate with management reserve laid in. Based on the——

Mr. SHAYS. By laid in, in other words you have already included it, so you haven't left a reserve in case you have to go up?

Mrs. DRUYUN. I have left some reserve in that number. I have left about 3½ months of reserve in that number.

Mr. SHAYS. OK.

Mrs. DRUYUN. That is why it is our best estimate, and we think it is reasonable.

Mr. SHAYS. How confident is the Air Force that the challenged PCRPs can be achieved?

Mrs. DRUYUN. Well, as I explained to you earlier, sir, when the service cost Air Force estimate was put together, we gave them zero credit for the challenged PCRPs.

Mr. SHAYS. So you have no confidence that they can achieve them?

Mrs. DRUYUN. No. As the projects are specifically identified, we will evaluate them and see how reasonable they are in terms of their ability to turn them into reality. And there is cost estimation that went along with them.

Mr. SHAYS. So I'm trying to translate your answer. The bottom line is you can't answer the question because you haven't yet evaluated them?

Mrs. DRUYUN. No, sir. I tried to explain.

Mr. SHAYS. I know you are trying to explain. I'm just trying to understand.

Mrs. DRUYUN. Our cost estimate did not give them any credit for the PCRP.

Mr. SHAYS. That part I understand. You have given them no credit. So what is the process? What does that mean?

Mrs. DRUYUN. The process is that the contractor will begin to, and has begun to, identify specific projects that they are going to pursue that will be included in the challenge, and once they identify those and go through the process of clearly defining them, laying in plans as to how they would execute them, how they would develop the estimate of what the savings would be associated with it, we will evaluate them and decide.

Mr. SHAYS. So the answer is you can't give an answer yet now because you haven't yet evaluated them.

Mrs. DRUYUN. That's correct.

Mr. SHAYS. Why hasn't DOD fully complied with the GAO recommendation to report cost reduction plan information in the quarterly reviews?

Mr. SCHNEITER. The Air Force does in its quarterly reviews present the status of the PCRPs.

I think part of the issue between us and the GAO view is the amount of detail that one needs to go into with regard to that. It is always done in a summary fashion. In some cases we go into more detail. At the last one of our reviews, I think something over 300 were actually shown, although certainly not evaluated.

The Under Secretary for Acquisition, Technology and Logistics, I believe, has a good understanding of the PCRPs. When he visited the plant in Marietta, he spent some amount of time going through the process that they used as well as sampling some of those.

So we believe that we have done that adequately.

Mr. SHAYS. So my question, will further quarterly review include all of the PCRP information GAO recommended you have? Basically the answer would be that you all have a disagreement as to whether you are complying or not, and so that would be hard to answer? I mean, how would you answer that?

Mr. SCHNEITER. Well, there is something over 1,100 PCRPs. I think it is impractical for us to go through these at each of the quarterly reviews. We do examine how well they are doing, and then additionally we have the Cost Analysis Improvement Group examine these in great detail. They are our cost analysis people, and so they examine those. They take account of those in their estimate, and they report to the Under Secretary.

Mr. SHAYS. I'm going to let counsel ask a question.

Mr. HALLORAN. Would you at some point agree to provide the same level of detail twice in a row? The problem, I think, we are having is to track the progress and interpretation of PC data when you pick and choose what goes upstairs for review, so it is never the same twice in a row. We just can't connect the dots. What would be wrong with settling on some consistent level of detail from quarter to quarter?

Mr. SCHNEITER. If that is what the request is, I would have to consider that and get back to you.

Mr. HALLORAN. That was the request last August.

Mr. SCHNEITER. Then that is failure on our part in understanding exactly what you were after there. I think the important thing in this is really what the estimate is, and not tracking each and every PCRP. How well the PCRPs do is less important than what the overall estimate is, taking account of the PCRPs.

So on the OSD side, we try to not focus just solely on the PCRPs, because the basic estimate is important, actually more important. And over time, the PCRPs become part of the basic estimate.

As I explained in my statement, the estimate that we do is made of two parts, what we now call the basic estimate, which includes a number of PCRPs, and so that now becomes part of the basic estimating process.

Mr. HALLORAN. I understand.

Mr. SCHNEITER. But the implemented PCRs——

Mr. HALLORAN. But as long as you are operating under the cost cap on the production side, the PCRP content of the estimate is very significant, it is the measure of your chance of getting at the cap—at or near the cap.

Mr. SCHNEITER. It is significant, but so are many other aspects of the cost estimate.

Mr. SHAYS. Talking in general, we had the concept of cost-benefit and opportunity cost. What concerns me in my 10 years serving on the Budget Committee is the issue of opportunity costs. There is only so many things that we can do. And I basically consider myself a supporter of the F–22. When I say basically, I just want to know it is not going to cost $80 billion.

I don't want a fair fight. In other words, I want our men and women to basically have superior platforms. I want them to be able to shoot and see the enemy before the enemy sees us.

I get concerned when I see the 700 number go down—750 number go down to 339, 333, and I get concerned that ultimately a year from now we may be looking at a continued reduction of the number of platforms, and then obviously the per-unit cost going up, and that we won't have significant new costs.

I supported the tax cut. I voted for taking off some of the surplus so we don't have this unlimited sum out there, and I'm not unlike other Members of Congress. The thing that concerns me the most, and I'll say this to you, Mrs. Druyun, I find you a difficult witness, and that is a negative in the one sense for me. But it is a positive, because I have a feeling that you are difficult with the contractors, and I like that. So that is a plus. But what starts to happen to me is when I feel that information isn't being provided, to GAO in particular, I then start to get nervous.

And we had made requests to the Secretary of Defense for information, and we are basically being told that if decisions haven't been made, then it is not available to us. With specific reference—here is the letter that we sent to Mr. Rumsfeld June 19th. We said, with specific reference to the F–22 cost controls, it is certainly our impression that the decision to pursue cost control initiatives has been made. We conclude the bases for the decision are within the legitimate oversight reach of the subcommittee. Cost estimate methodology and the validity of PCRPs are not dependent on any production milestone being relevant generally to acquisition processes and applicable specifically to the production of 1, 339 or more in the 700 F–22s.

And our response on that: This is in reply to your letter to—and this is from Mr. Aldridge. This is in reply to your letter of Secretary Rumsfeld requesting access to the F–22 cost estimate records provided by the Office of the Secretary of Defense, Cost Analysis Improvement Group.

Our policy to not allow access to predecisional material continues. This is essential to allowing the Department of Defense [DOD], to fully debate program funding internally before making program decisions.

What I'm interested in knowing is the raw data that is involved is also being denied us. Why would the data be denied us and not necessarily the decisions or the interpretation of the data?

Mr. SCHNEITER. I'm not sure exactly what you mean by the raw data. The GAO has had good access to the data from the Air Force. Mrs. Druyun can speak to that process.

I think some of what has been sought here is not what I would call raw data, but rather data that has been processed by our cost analysts, which includes many judgments on their part, and we don't like to have all of that be debated publicly while we are in the process of making internal decisions within the Department.

The Department lawyers perhaps can tell you more about that, but this is my understanding of why it is that we are as unwilling as we are in the process of going up to a decision and making a decision to provide some of that information, much of which in this case is judgmental. The reason for a lot of the difference between our estimate and the Air Force estimate on this has to do with the judgments of the cost analysts in terms of what learning curves are

going to be, how much the cost will go down as we learn more and so forth, and that is not raw data.

Mr. SHAYS. The difference between the $2 billion and the $9 billion is within the Department of Defense. I mean, it is not GAO saying $9 billion and DOD saying $2 billion. It has an internal difference. And don't you think it is important for Congress to understand in very real terms how we can arrive at two different numbers, especially since both are over the cap? I mean, both are truly over the cap.

Mr. SCHNEITER. The Department has not yet made a decision as to what it thinks the cost estimate of the program is in the context of the current program.

Mr. SHAYS. When will that decision be made?

Mr. SCHNEITER. That decision will be made, I think, within a month. As I indicated in my statement, we have a congressional—a statutory requirement that if we decided in the Department to proceed with low-rate initial production, that then we need to send Congress the reasons for proceeding with low-rate initial production, the revised production plan. And that is revised in the sense of revised from what we had previously, which we now all agree will not fit within the cap. So we have to give you a revised production plan, and the revised cost estimate for the reminder of EMD and production. So by law we need to provide that if we decide to proceed with low-rate initial production. So the Department will provide a revised cost estimate.

Mr. SHAYS. In other words, when you say if, the question is when, not if, correct?

Mr. SCHNEITER. I would not prejudge myself that.

Mr. SHAYS. What would be the alternative, to stop the program?

Mr. SCHNEITER. That is one alternative.

Mr. SHAYS. What, just stay in EMD for a while longer? Just help me understand. What can I anticipate? In other words, not that you know what is going to be done, but the options are to basically begin production, stay in EMD, end EMD or stop the program. Those will be the three potentials. Are there any other choices?

Mr. SCHNEITER. None come to mind. I think there is a general expectation that we will proceed. We have put money in the budget for the next LRIP, but the decision is not made.

Mr. SHAYS. OK. So since you all haven't determined where that number between $2 and $9 billion is, but once you determine that, then all of the data that we have requested is going to be made available?

Mr. SCHNEITER. I don't know exactly what all has been requested.

Mr. SHAYS. Fair enough.

Mr. SCHNEITER. I think that more will be made available once the decision is made. You have a Department position, and I think that we will have an obligation then to explain the basis for what our estimate is.

Mr. SHAYS. I would just love to have GAO take the mic and just enlighten me as to what data we might be looking at. If you can just lift the mic up and speak while standing.

Mr. LI. Mr. Chairman, the type of data—and I guess I would disagree with Mr. Schneiter. When we issued our draft report, it was

commented on by DOD, and at that point in time in our draft, in response to the words that we had, there was a misunderstanding as to what was the level of detail.

In our final report we clarified our position in terms of summary data, and a few minutes ago there was some responses about the number of PCRPs and the detail that was provided. That is not what I'm looking for.

I'm well aware of the fact that it is a very time-consuming and labor-intensive thing to do. I'm looking at summary data. I indicated that the summary data that—an example. When you asked me, that question was providing summary data regarding the dollar impact of those PCRPs that were implemented, and that is the type of thing that I'm looking for so that I can answer the type of questions that Mr. Tierney was raising.

I would like to note the fact that in the 60-day letter, which is a requirement, a statutory requirement, that the agency respond to the final report, that DOD did acknowledge the fact that I modified my recommendations, they agreed with those recommendations.

So they did agree with the fact that, yes, I'm going to provide summary data in a way that you described in the draft report.

Mr. SHAYS. I would just request that you stay in close contact with the committee in terms of the future analysis of this project, and, you know, we'll try to work this out internally. I have never recommended that we subpoena—at least I don't recall that this committee has, but I wouldn't be hesitant to recommend that information about the F–22 be provided, and if it is not, to subpoena.

And I will be very candid with you. I would have to get the chairman's approval and the Speaker's, so that obviously gives you the opportunity to talk to the Speaker. But I would certainly argue very strenuously that information about this project be provided so we have a fair analysis.

I know all of you are very sincere about this project. I think that you are working overtime to keep it within cost. I don't have any doubt about that, and I consider all of you very fine public servants, and we are grateful that you are working for the government. But these may be just tensions that exist between three different groups.

But in the end, if information isn't provided, you have the potential of making enemies out of friends who, you know, would like to see this project go forward. And I also understand that we are still dealing with estimates.

So, Ms. Druyun, when you were pretty certain that we weren't within costs and comfortable at that a year ago, I realize things can change, so I am not—I like definitive statements and I like us to say how well we are able to keep them, so I don't have complaint about that. I am just concerned that this may be a $9 billion overrun instead of a $2 billion overrun, and it still may be worth it. But it would be better that we know it.

I have no questions that I want to ask.

Do you have any? Do any of you want to make a closing comment? Then we can adjourn.

Mr. SUMMERS. No, sir.
Ms. DRUYUN. No.
Mr. SCHNEITER. No, sir.
Mr. SHAYS. Thank you all very much.
This hearing is adjourned.
[Whereupon, at 12:55 p.m., the subcommittee was adjourned.]