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EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF SCIENCE AND TECHNOLOGY POLICY
WASHINGTON, D.C. 20506

January 17, 1992

MEMORANDUM FOR THE VICE PRESIDENT

FROM: D. ALLAN BROMLEY *Alan*
SUBJECT: NATIONAL AEROSPACE PLANE

At the last National Space Council meeting, you concluded that the Federal Government should proceed full speed ahead on NASP, and admonished the DOD and NASA representatives to ensure that NASP remained a high priority for both agencies.

I wanted to alert you to current NASA and DOD planning for the National Aerospace Plane which may be viewed by Congress and others as a departure from your guidance.

I am the EOP's representative on the NASP Steering Group, which met yesterday to consider a proposed new budget and alternative program goals for NASP. As a result of Congressional action, NASP Phase II completion has slipped 6 months, although NASA reprogramming may allow some recovery. The FY 93 budget proposed by NASA is fully one-third less than planned just a year ago (\$80 million vs. \$120 million); the FY 93 DOD budget is holding firm, but proposed outyear funding falls far short of full Phase III requirements.

The reasons stated for NASP funding cutbacks were twofold: (1) waning Congressional support, and (2) lack of funds.

I would defer to your judgment concerning Congressional support, but it seems to me that a one-time budget cut by an Appropriations Subcommittee Chairman angered over Space Station funding should not be interpreted as expressing the judgment of Congress on the value of the National Aerospace Plane. As you know, support from the Authorization Committees runs high, even though the Administration has never done as capable a job as we might in advancing NASP on the Hill. We have had no integrated, well reasoned presentation on what NASP represents or why it is important to us from either a defense applications or technology preeminence perspective. With some modest leadership on our behalf, and a demonstration of a firm Administration commitment, I am convinced that we will have all the Congressional support we need for the full NASP program.

With respect to the argument that we are budget constrained, I confess some lack of understanding. At a time when defense requirements are declining because of changes in the threat, R&D and technology programs previously shortchanged should be beneficiaries of new budget priorities. The technology programs that have been so critical to you and to the President--of which NASP is a prime example--should be a featured centerpiece of the President's FY 93 budget. From what I have seen, some in the bureaucracy have not gotten this message.

While it may be too late to correct NASA's FY 93 budget submission, I would urge you to convene a full Space Council meeting at your earliest convenience to review the National Aerospace Plane program. Major questions remain concerning FY 94 funding and beyond. In addition, various proposals have been advanced for scaling back our research and technology goals for NASP; and I would be very reluctant to see planning continue down that path absent clear guidance from you and the Space Council.

NASP Officials Planning Development Stretchout To Cut Early Acquisition Costs

STANLEY W. KANDEBO/NEW YORK

National Aero-Space Plane officials are developing a detailed X-30 acquisition and construction plan that would stretch the effort to develop a hypersonic, single-stage-to-orbit vehicle by about two years, to lower initial acquisition costs.

The detailed plan, which has been described in an abbreviated form to the program's oversight committee, is expected to be presented to the committee and National Space Council in April. The plan, which proposes postponing first flight of the NASP by 18-24 months, would shift that date to 2000.

Program officials said money troubles, not technology problems, are behind the proposed stretchout, which is the second in the past several months (AW&ST Dec. 16/23, 1991, p. 24). By lengthening the detailed design, construction and flight-test portion of the NASP effort, which is known as Phase 3, program officials hope to short-circuit congressional opposition to funding large, near-term X-30 construction budgets.

If the program continues into Phase 3, the proposed stretchout would bring a substantial cut in the near-term X-30 budget growth rate, Robert Barthelemy, director of the National Aero-Space Plane Joint Project Office, or JPO, said. Projections indicate Fiscal 1994-96 funding

rates for the NASP would drop from \$800 million-1 billion per year without the planned stretchout to \$300-500 million annually with the delay, he said. NASP annual funding has been \$250-300 million for the past few years.

"Slowing the program and increasing

The alternative to stretching the development effort could be termination of the program

duration of the early portion of the Phase 3 effort is a strategy that deals with fiscal realities," Barthelemy said.

It also is a strategy that is being supported by presidential science adviser Allan Bromley; John Welch, U. S. Air Force undersecretary for acquisition; NASA's acting deputy administrator, and the acting director of DARPA, Barthelemy noted.

The alternative to stretching the development effort could be program termination, because the costs of even a reduced-capability X-30—which would be unable to achieve single-stage-to-orbit—are still substantial.

Barthelemy said program officials spent the past several months examining a variety of NASP procurement and vehicle options. The officials found the best approach to a program still would include the acquisition of one or two ground-test articles; two, three-engine, flightworthy X-30s that could eventually achieve single-stage-to-orbit capability; and a flight-test program that begins by about 2000. However, the price tag for this preferred option, in constant 1992 dollars, is about \$10.4 billion for the 10-year-long Phase 3 effort.

The alternative approaches studied, with their acquisition and flight-test costs expressed in constant 1992 dollars, included:

- A plan to procure one single-stage-to-orbit vehicle with some back-up components and spares, which was estimated to cost less than \$10 billion but more than \$8 billion.

- A scheme to develop a three-engine vehicle that could reach Mach 18-19. It would weigh about 350,000 lb., have large design margins and never—even with extensive modifications—be capable of achieving single-stage-to-orbit capability. The estimated cost is about \$8 billion.

- A plan to develop a smaller, two-engine vehicle that could reach Mach 15. The cost would be \$6-7 billion.

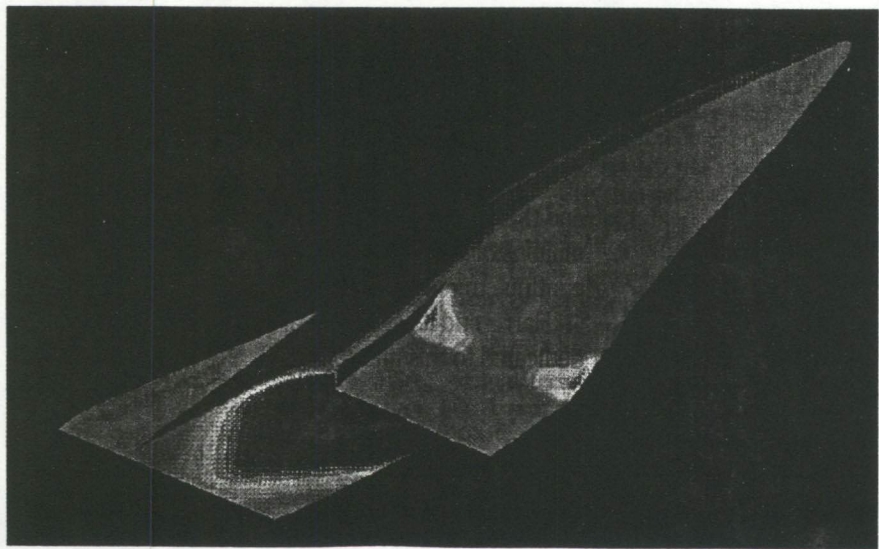
If the Phase 3 stretchout program is accepted by the Administration in April, as appears likely, program engineers probably will attempt to achieve the following goals during the first three years of the redefined Phase 3 effort, often called Phase 3A: ground-test a full-scale, flightworthy scramjet up to Mach 8 flight conditions; flight-test at least a partial, scaled engine on an SR-71 or on a rocket; perform highly detailed design work, and continue testing high-risk airframe subassembly and vehicle subsystems.

"We would have done these things in the early portion of Phase 3 anyway, but this approach moderates things in the early years of the effort. It is more cautious and further reduces risk," Barthelemy said.

Fabricating and ground-testing a full-scale flightworthy engine would give the program a "tremendous amount of confidence in the propulsion system," he said. The \$200-250-million cost to develop the engine and additional \$100 million required to modify test facilities at the Air Force's Arnold Engineering Development Center in Tullahoma, Tenn., indicate the size of the effort, Barthelemy added.

To extend the scramjet test envelope, the planned Phase 3A effort also would include flight test of at least a partial scramjet atop a rocket or on an SR-71. "This flight test is still being evaluated and we are just beginning to examine it in some depth. We do expect to gain some SR-71 experience in mid-1993 however by conducting external burning tests with one of the NASA aircraft," Barthelemy said. □

Computational fluid dynamic study of the X-30's scramjet engine exhaust is modeled under Mach 10 conditions. Blue-green colors indicate areas of highest air pressure.



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Former Soviet military flies first scramjet

Russian engineers in Kazakhstan have stunned world aerospace experts by flying the world's first dual-mode ramjet-powered aircraft.

The hypersonic aircraft, fitted with a variable-cycle ramjet/scramjet propulsion system, made its first flight Dec. 15, claim the top Russian engineer on the project and a French SEP engineer who witnessed one flight.

A few U.S. government officials expressed surprise at the report. "Up until this point, nobody that I know of had tested a scramjet engine," said one official, who asked not to be identified.

Questions to Robert Barthelemy, director of the U.S. National Aerospace Plane (NASP) joint program office, were referred to the Air Force and the State Dept. for comment, and remained unanswered two weeks later.

But one prominent American engineer Paul Czysz, former NASP chief scientist for McDonnell Douglas, confirmed the report.

Czysz, who has formed a company called Hypertech Concepts which aims to link western companies in joint ventures with Russian engineers, says, "Here we are [in the U.S.] trying to get data on a supersonic flow ramjet and there's [already] one flying. Why aren't we first in line?"

Probably because that position is already held by Europeans.

One flight actually was witnessed by Marcel Pouliquen, director of new programs at the French engine maker Societe Europeenne de Propulsion (SEP). The Russian program is headed by Aleksandr Rudakov at Moscow's Central Institute of Aviation Motors (CIAM).

Pouliquen has discussed Russian flight programs with Czysz, who has evaluated the program — and the prospects for joint research and development with the Russians — for the European Space Agency. Czysz says designs Rudakov has presented in papers to the Society of Automotive Engineers and the International Astronautical Federation over the last year are "as good as anything else I've ever seen. At low Mach [speed], it beats anything the Japanese have by a factor of two."

Rudakov is developing a liquid air cycle engine (referred to as LACE) — a very-high performance single-engine concept for a complete ascent trajectory. That's the same kind of engine the U.S. program aims to use on an X-30.

Czysz cautions that the whole LACE isn't what flew in December. As he explains the achievement, "it's a dual-mode ramjet able to fly in two modes — subsonic flow in the combustor and supersonic flow in the combustor. The ramjet ignites off the rocket booster at between Mach 2 and 3. And it stays lit — the velocity picks up to Mach 7 or 8.... What they've done is demonstrate in public the first supersonic diffusion ramjet ever flown."

Two flights documented from Baikonur

The pilotless, experimental craft took off from the Yubilee Runway, originally built for the Soviet space shuttle, located at the Baikonur Cosmodrome in Kazakhstan.

The aircraft has made at least two flights, in November and December of last year. On the second, it reached speeds between Mach 7 and Mach 8, and successfully made the transition between ramjet and scramjet propulsion, Rudakov claims.

Military involvement in the former Soviet project includes the N.E. Zhukovskii Central Aerohydrodynamics Institute, the Flight Research Institute in Zhukovskii, and the P.I. Baranov Central Institute of Aviation Motors in Moscow, along with several aerospace design bureaus.

Concerned that military funding will be withdrawn from the program, Russian engineers involved in the former Soviet project, have acknowledged the flights in an effort to find development partners.

The republic plans to declassify the project if it loses government support, and wants the U.S. to unveil all the details of its work on "Aurora." Reports of a classified Air Force program by that name, which allegedly is test-flying hypersonic successors to the SR-71 at Nellis AFB,

said Aleksei Obukhov, an arms-control expert at the Russian Foreign Ministry. "That would constitute a major contribution to stability."

Washington believes that sea-launched missiles contribute more to stability than land-based missiles; they are harder for an aggressor to find and destroy. But Yeltsin isn't likely to be pushed offshore. "Your definition of what's most stable is influenced by whether you have three warm-water coasts or nine time zones on land," says Jack Mendelsohn, deputy director of the Washington-based Arms Control Association. In the end, Bush and Yeltsin will probably negotiate a trade-off: so many Soviet ICBMs in exchange for so many U.S. Trident submarine warheads.

One catch is that Bush cannot be entirely sure Yeltsin speaks for the other three former Soviet republics where strategic missiles are deployed: Ukraine, Belarus and Kazakhstan. He said his proposals are based on "constant interaction" and "agreements" with the other republican leaders. But there are many points of friction between Russia and its partners. Early last week Yeltsin snubbed the Japanese foreign minister and skipped the Moscow session of the Mideast peace talks in order to visit the Black Sea, where the Ukrainians claim control of the former Soviet fleet. Despite such problems, nuclear weapons are under unified commonwealth command, which Yeltsin effectively dominates. "We think Yeltsin can deliver," says a senior U.S. official, "but of course it's something we have to watch."

If Bush and Yeltsin can reach agreement, verification is not likely to be the problem it has been before. This time, the Russians want technical and financial help from the United States in dismantling their weapons. "In the past, we sought an intrusive verification system so that we could see what was going on," says a senior aide to Secretary of State James Baker, who visited Moscow last week. "Here's a case where they're coming to us and saying, 'We'd like to go through with this destruction process, and we need your help to do it.' So we're partners in the exercise."

Sharing technology: Yeltsin's proposal to enlarge the U.S. Strategic Defense Initiative (SDI) scored a neat rhetorical point. In 1983, Ronald Reagan offered to share SDI technology with the Soviets—a promise that some U.S. officials aren't eager to keep. Pressing his case at a news conference in New York, Yeltsin said Moscow had its own plans for a missile shield, and he stressed that Russia has extensive experience in space. At Camp David, Bush expressed "a lot of interest" in Yeltsin's proposal and said it would be discussed by experts from both sides. "There are a lot of practical problems, of course," said a senior U.S. official, "but there are also new political reasons to take a good hard look at it."

But a power struggle at home could thwart Yeltsin's disarmament plans. With prices soaring as a result of his economic reforms, his government has only about a 10 percent approval rating in opinion polls. He has come under increasingly sharp at-

Dina Rasor, the founder and former director of the Project on Military Procurement, who also helped get the 1989 law passed. "I've seen a lot of battered bodies on the landscape."

Rasor paraphrases a favorite saying of the late Admiral Hyman Rickover: "If you must sin, sin against God, not against the bureaucracy. God will forgive you but the bureaucracy never will."

A case in point is Pentagon whistle-blower Ernie Fitzgerald, who in 1969 testified in Congress about enormous added costs on the C-5 transport plane. He was fired from his job after Richard Nixon was recorded telling his associates to get rid of that "son of a bitch."

It took him 14 years and \$1 million in legal fees to get something approximating his old job back. "Since then, they have been chipping away at my functions and responsibilities to keep me from doing what the taxpayers want me to do," said Fitzgerald, who has the title of management systems deputy in the U.S. Air Force.

Fitzgerald said that Biddle would not have had to file his suit forcing the government to investigate the claims if it had not stalled on investigating Stanford.

He said federal employees ideally should not need financial incentives to disclose wrongdoing. "But if you can motivate other people who are not as strongly motivated as Paul Biddle, it might help, because we all agree that the federal bureaucracy needs as much motivation as possible."

Arthur Williams, an Air Force attorney, discovered a number of Japanese companies rigging bids on telecommunication contracts with the U.S. government. The government eventually won a \$34 million settlement against the Nippon Electric Co. after Williams filed suit, but he did not get a penny.

Instead, according to Jerry Werfel, his attorney, the Air Force wanted to take disciplinary action against him, and he retired in 1989.

It is almost certain that the law will be amended, but just how much is still an open question.

Representative Howard Berman, D-Los Angeles, another key player in the controversy, said that although he supports a change in the law, he would not go so far as to prohibit federal employees from benefiting financially under every circumstance. He said they should be allowed to file suit only when they have done "everything humanly possible" to bring wrongdoing to the government's attention.

Pentagon Fights Bill on Panama Canal Control

By TIM SHORROCK

Journal of Commerce Staff

WASHINGTON — The Department of Defense is fighting legislation supported by the maritime industry to replace military control of the Panama Canal Commission with civilian leadership.

"I think some people (at the defense department) just don't want to give up their power and ability to give up all their votes" on the canal commission, said Rep. Jack Fields, R-Texas, the author of the legislation.

The canal legislation will transform the commission, now controlled by the Department of Defense, into a civilian agency modeled on the Saint Lawrence Seaway Corp., which manages U.S. seaway interests.

Currently, the commission's chairman is appointed by the secretary of defense, who also controls the votes of the five U.S. members of the board.

A wide segment of the U.S. maritime industry favors the bill because it was crafted to ensure civilian control when Panama takes over the waterway on Dec. 31, 1999.

In its zeal to block the bill, the Pentagon has exceeded Bush administration and State Department policy, alienating some of its staunchest supporters on Capitol Hill.

In its zeal to block the bill, the Pentagon has exceeded Bush administration and State Department policy, alienating some of its staunchest supporters on Capitol Hill.

The House Merchant Marine and Fisheries Committee last week voted unanimously to send the bill to the House.

But one day before that vote, Terrence O'Donnell, the general counsel to the defense department, wrote the committee that the Bush administration "opposes legislative action at this time to change the management structure" of the commission.

"We presently have no clear picture as to the best approach to ensure efficient and effective management of the waterway after the turnover of the canal," Mr. O'Donnell's letter said.

Until the governments of Panama

and the United States complete studies of the canal's future, "Changes to the supervisory board are premature, at best," he concluded.

A U.S. government official, who asked not to be identified, said the letter did not represent official policy on the legislation and had not been cleared with the State Department.

"We were surprised to see that go over" to the committee, the official said.

The Bush administration had formed an interagency committee to formulate its Panama policy, the official said.

Until last week, "the only agreed-upon expression" of administration policy was a statement by the current chairman of the commission, Army Secretary Michael P.W. Stone, the U.S. official said.

In that testimony last September, Mr. Stone said the legislation would be premature until the Panamanian government had studied the issue.

Since that time, a government commission in Panama has issued an interim report that endorses the creation of a "completely autonomous administrative agency, independent of partisan policies" to run the canal.

Rep. Fields is a conservative Republican who calls himself one of the "most defense-minded" people in Congress. In an interview from Houston, he said he has "gone as far as he can in compromising with the Defense Department. I don't think they want to compromise," he said.

His bill was modified to reflect Pentagon concerns. It now provides a permanent seat on the commission to the Department of Defense and requests a study, to be conducted jointly by State and Defense, on alternative structures to the present commission.

An administration official downplayed the differences between State and Defense. "It's more a question of style... and our approach to Congress," he said.

SCRAMJET...from Pg. 7

Nev., have begun to leak into the press.

CIAM engineers believe the reports and are briefing westerners on the U.S. black-world program in an effort to maintain state funding for their own project.

Funding uncertain for U.S. plane

Meanwhile, budget cuts have delayed plans for the first flight of the U.S. NASP from 1997 to the turn of the century. The Air Force and NASA requested \$304 million for NASP for fiscal year 1992, but Congress slashed the amount to \$205 million, with just \$5 million of that coming

from NASA.

President Bush has requested \$80 million for NASA and \$180 million for DOD to continue work on the program next year (see story, p. X).

It will cost anywhere from \$5 billion to \$10 billion to develop and test two X-30 NASP test vehicles, Barthelmy estimates.

The General Accounting Office is examining those cost estimates for three congressional subcommittees.

A GAO official says a report on hypersonic technology efforts in Russia, the Ukraine, and Kazakhstan has been postponed until that analysis is delivered in April.

ARMS...from Pg. 7

tack from conservatives, including his own Vice President Aleksandr Rutskoi, and the chairman of the Russian parliament, Ruslan Khasbulatov. Looking to the outside world for politically helpful economic assistance, Yeltsin compared the commonwealth to "a baby in diapers. You don't want to drop it," he said.

Ironically, some American officials are just beginning to approve of Yeltsin. Long suspicious of his emotional stability and his devotion to democracy, they are beginning to respect his skills. When Baker and his aides discussed arms control with Yeltsin last week, they were surprised by the improvement in his grasp of detail. "He knew it, he knew it cold," said one U.S. official. "And it was very, very, very technical. It was really impressive." At Camp David, Yeltsin revealed that he and Bush are on a first-name basis. "We say 'Boris,' we say 'George,'" he told reporters. The question is whether Yeltsin can hang onto power long enough to cash in on all the dividends of peace.

RUSSELL WATSON with MARGARET GARRARD WARNER, JOHN BARRY and CLARA BINGHAM in Washington, CARROLL BOGERT at the United Nations and FRED COLEMAN in Moscow

NAVY TIMES

Feb. 10, 1992

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Marines to provide \$28 million in early-out incentives

By Deborah Schmidt
Times staff writer

WASHINGTON — The Marine Corps' 1993 manpower budget includes \$28 million to cover exit bonuses next year for officers and enlisted members.

Thirteen hundred enlisted and 265 officers are expected to choose either the voluntary separation incentive or the special separation bonus, said Maj. David Salter, a budget officer in the programs and budget section at Headquarters Marine Corps.

That is 600 more enlisted members, but the same number of officers, as are being offered early-out incentives in 1992.

Many details of the Corps' budget had not been released at press time because, officials said, all figures

were tentative until the commandant presented final force structure changes to Congress during the first week of February.

But the Corps' active force will drop by about 6,000 people to 181,900 in 1993. The reserve will be reduced to 38,900.

The Corps' overall manpower budget for next year is \$6.1 billion, up only \$100 million from the 1992 budget. That includes money to pay a 3.7 percent pay raise, bonuses and increased funds for unemployment benefits.

The largest chunk goes to enlisted pay and allowances, \$4.4 billion. Included in that is \$23 million for selective reenlistment bonuses. The Corps expects 3,300 to take bonuses in 1993, compared with 3,400 this year.

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AVIATION WEEK & SPACE TECHNOLOGY

Feb. 3, 1992

Pg. 17

JERRY RALPH CURRY'S NOMINATION to be FAA Administrator has become embroiled in yet another dispute with consumer advocates. The nomination, on hold in the Senate since late November, has now run afoul of the Center for Auto Safety. The center alleged in a letter to the Senate Commerce Committee that Curry, the National Highway Traffic Safety chief, has a conflict of interest because a company he worked for in 1987 is in a contract fight with the FAA. Curry counters that he fully disclosed his relationship with the company, Systems Management American Corp., Norfolk, Va., in his NHTSA confirmation in 1989. He said the FBI cleared him of involvement in the company's "irregularities or financial problems." But consumer advocate Ralph Nader is pressing the Commerce Committee to hold hearings on the matter.

WASHINGTON STAFF

Agency requested the point of progress to rescind last year's appropriations for a number of weapons programs.
And on the slump in New Hampshire, Sen.

MILITARY SPACE

Former Soviet military flies first scramjet

Russian engineers working on a military-funded project have stunned aerospace experts by flying the world's first dual-mode ramjet-powered aircraft, *Military Space* has learned.

The hypersonic aircraft, fitted with a variable-cycle ramjet/scramjet propulsion system, made its first flight in Kazakhstan Dec. 15, according to the Russian engineer heading the project and a French engineer who witnessed one flight.

Many U.S. government officials expressed strong reservations about the reported breakthrough. "Up until this point, nobody that I know of has tested a scramjet engine," said the official, who asked not to be identified.

The director of the U.S. National Aero-Space Plane (NASP) program, Robert Barthelemy, referred all questions to the U.S. State Department and the Pentagon. No U.S. officials agreed to comment on the record.

But one prominent American engineer, Paul Czysz, former NASP chief scientist at McDonnell Douglas, confirmed the report.

Commenting on the apparent foot-dragging of U.S. officials, Czysz said, "Here we are [in the U.S.] trying to get data on a supersonic flow ramjet, and there's [already] one flying. Why aren't we first in line?"

Despite the reticence of U.S. officials, the flights also were confirmed by eyewitness Marcel Pouliquen, director of new programs at the French engine-maker Societe Europeenne de Propulsion. The Russian program is as far as we can go. If you add a nicked, it's pork. If you cut a nickel, it's subversion.

SLANT... FROM Pg. 10

typical expression of Democratic thinking is that it adds up to only a lousy \$100 billion or so. Moreover, it looks as if the administration's planned cuts will be better thought out and possibly go deeper.

Lots of Democrats speak of big defense cuts, but with the notable exception of Rep. Les Aspin, chairman of the Armed Services Committee, they seem not to have done much homework. That leaves them vulnerable to the administration's predictable counterargument: We have done a historic drawdown. It's still a dangerous world. We have cut

Aspin, reputed by many colleagues to have been too clever by half in some past budget deals, has done far-fetched work this fall, expressed in speeches on aid to Somalia, devaluing nuclear weapons, and planning the mix of weapons and troops in reconfigured armed forces. And on the rollover model, too. Other Democrats would do well to look at his speeches over. Bush and Cheney have, and it shows.

Ronald Reagan is a member of the globe staff.

nearly every major contractor has announced major across-the-board reductions. United Technologies Corp., maker of military helicop-

Jan. 27, 1992

headed by Aleksandr Rudakov at Moscow's Central Institute of Aviation Motors (CIAM).

CIAM's hypersonic flight project includes a liquid air cycle engine called LACE, a extremely high-performance single-engine system designed for a complete ascent trajectory. This is the same kind of engine the U.S. program plans to use on a NASP test vehicle, dubbed the X-30.

Concerned that military funding will be withdrawn from the program, Russian engineers are seeking international partners to keep the project afloat.

Funding shortfalls also are threatening progress in the NASP program. An official at the General Accounting Office said that a planned report on hypersonic technology efforts in Russia, the Ukraine, and Kazakhstan recently was postponed because lawmakers have ordered a new report on NASP cost and schedule estimates (see story, page 8).

The pilotless Russian craft took off from the Yubilei Runway, originally built for the Soviet space shuttle, located at the Baikonur Cosmodrome in Kazakhstan.

The aircraft has made at least two flights, the second reaching speeds between Mach 7 and Mach 8, and has successfully made the transition between ramjet and scramjet propulsion, Rudakov claims.

Czysz explained that the Russian craft is "a dual-mode ramjet able to fly in two modes — subsonic flow in the combustor, and supersonic flow in the combustor. The ramjet ignites off the rocket booster at between Mach 2 and 3, and it stays lit. The velocity picks up to Mach 7 or 8.

"What they've done is demonstrate in public the first supersonic diffusion ramjet ever flown," Czysz said. He cautions that the entire LACE wasn't part of the flight test.

The republic plans to declassify the project if it loses military funding and wants the U.S. to unveil all the details of its highly classified "Aurora" program. Sketchy reports of an Air Force program by that name that is test-flying hypersonic successors to the SR-71 at Nellis AFB, Nev., have begun to surface.

In an interesting post-Cold War twist, Moscow engineers are briefing westerners on the highly classified U.S. program in an effort to maintain state funding for their own project.

Czysz now heads a company called HyperTech Concepts, which wants to link western companies in joint ventures with Russian engineers. He has evaluated Rudakov's technical papers and says the designs are "a

Jack Dillon, vice president for business de-

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fourth-largest army in a matter of days.

The foreign sales, however, never departed. The dismantling of the Soviet Union removed any remaining threat to European and Asian allies, while Middle East sales ran into strong opposition from Congress and the State Department.

Then, last weekend, Cheney seemed to reverse course when he said in two television appearances that a 25 percent cut in military personnel was the maximum that U.S. forces could sustain, and any further savings would have to come out of the Pentagon's \$100 billion weapons budget.

"That message represents a 180-degree turnaround from a year ago," said Gordon Adams, director of the Defense Budget Project. "Back then, the idea was that we would bring down our forces but that technology would be our hedge against the future. Now, if I read it correctly, hardware will have to carry the burden of any further budget cuts."

At the Pentagon, meanwhile, Cheney has bypassed the Army, Navy and Air Force bureaucracies in the budgeting process, working instead through Comptroller Sean O'Keefe and the highly secretive planning operation of the Joint Chiefs of Staff.

"The service secretaries aren't deciding which programs will take the hits," said the Washington representative of one of the nation's biggest

purchase 72 F-15 planes at this time." Metzbaum wrote Bush on November 7, 1991, saying that any major sale of weapons to the Middle East would be "ill advised" for the foreseeable future. However, that letter was not delivered to the President because of Prince Bandar's assurance that the Saudis no longer sought the sale.

"Nothing has changed in the world situation that would justify an arms sale to the Saudis," Nancy Coffey, Metzbaum's press secretary, said yesterday. "It would not be a politically wise thing to do."

Metzbaum is seeking to send a letter to Bush signed by a majority of the Senate. Levine is confining signatories to members of the House Foreign Affairs Committee.

The danger of the reported F-15 sale, according to Levine, is an acceleration of the Middle East arms race. "First, the F-15E is an offensive, not defensive, weapon. Secondly, the F-15E class of aircraft has never been sold to a Middle Eastern country and, in fact, represents a significant technological escalation of the regional arms race," Levine wrote in the draft.

Once the Administration makes the decision, Congress has 30 days to reject the sale.

contractors. "They are being told what the decisions are."

This tightly centralized process has left the defense industry's once-influential Washington operations in the dark.

"Normally, the people in the service bureaucracies are the moles for industry," explained Battista, who once headed the staff of the House Armed Services Committee. "But now they don't know what's going on."

Recently, for example, top executives from the major contractors on the B-2 program flew to Washington to meet with Air Force Secretary Donald Rice to make one last push against capping the program at 20 to

25 planes, as has been widely rumored.

After it was over, the top lobbyist for one of the companies said he and his colleagues sat around and "joked about what a waste of time it was dealing with Rice."

The same executives later put their case with Brent Scowcroft, the president's national security adviser.

"I've not seen as close a hold on a budget process like this in my 25 years," said the lobbyist of another big defense firm who, like his colleagues, insisted on anonymity. "I've got three stars [generals and admirals] telling me they expect to find out what happens to their programs when they watch the president's speech along with everybody else."

The only way to stop the process, several executives argued, would be for Cheney and Colin Powell, chairman of the Joint Chiefs, to articulate a clear set of military threats and outline the mixture of planes, ships, missiles and other weapons necessary to meet them. But in an interview published last week in the New York Times, Powell said the world situation remains so volatile that such planning is not possible.

"Unless there is a good military strategy behind it, the defense budget becomes a sitting duck," said William D. Merrill, vice president for government operations for Hughes Aircraft Co.

INDUSTRY...Pg. 14

SCRAMJET...from Pg. 11

good as anything else I've ever seen. At low Mach [speed], it beats anything the Japanese have by a factor of two."

The European Space Agency has paid Czyst for a study on the

potential benefits of cooperating with the Russians on hypersonic projects.

Military involvement in the former Soviet project includes the N.E. Zhukovskii Central Aerohydrodynamics Institute and the Flight Research Institute in Zhukovskii, and the P.I. Baranov Central Institute of Aviation Motors in Moscow, along with several aerospace design bureaus.

January 30, 1992

Scott;

As you know the Russian's have been conducting research, development, and testing in hypersonics for decades. Much of their work originates from TsAGI and TsIAM. According to Paul C. and Marcel Pouliquen (a French propulsion engineer quoted in a recent issue of Military Space) the Russian's last year conducted three flight tests of a subscale SCRAM jet attached to a rocket booster. The engine is described as a hydrogen fueled, dual mode SCRAM jet. The first two tests were nonburning but the last, which occurred in December 1991, was a successful full system test. Pouliquen claims to have been an eye witness to one or more of these tests which were overseen by Alexander Rudakov who is Director of Hypersonics (at TsAGI I believe). The next test is scheduled for February and Paul C. plans to attend.

That's all I've been able to dig up so far. Let's stay in touch on this issue. There is a great deal of interest in the subject. If you're interested in learning more on the Russian hypersonic program let me know and I can make arrangements with my home agency.

Rich E Gennuzzi

P.S. I've not yet seen the Military Space article. I'll FAX you a copy when one is located.

Former Soviet military flies first scramjet

Russian engineers in Kazakhstan have stunned world aerospace experts by flying the world's first dual-mode ramjet-powered aircraft.

The hypersonic aircraft, fitted with a variable-cycle ramjet/scramjet propulsion system, made its first flight Dec. 15, claim the top Russian engineer on the project and a French SEP engineer who witnessed one flight.

A few U.S. government officials expressed surprise at the report. "Up until this point, nobody that I know of had tested a scramjet engine," said one official, who asked not to be identified.

Questions to Robert Barthelemy, director of the U.S. National Aerospace Plane (NASP) joint program office, were referred to the Air Force and the State Dept. for comment, and remained unanswered two weeks later.

But one prominent American engineer Paul Czysz, former NASP chief scientist for McDonnell Douglas, confirmed the report.

Czysz, who has formed a company called Hypertech Concepts which aims to link western companies in joint ventures with Russian engineers, says, "Here we are [in the U.S.] trying to get data on a supersonic flow ramjet and there's [already] one flying. Why aren't we first in line?"

Probably because that position is already held by Europeans.

One flight actually was witnessed by Marcel Pouliquen, director of new programs at the French engine maker Societe Europeenne de Propulsion (SEP). The Russian program is headed by Aleksandr Rudakov at Moscow's Central Institute of Aviation Motors (CIAM).

Pouliquen has discussed Russian flight programs with Czysz, who has evaluated the program — and the prospects for joint research and development with the Russians — for the European Space Agency. Czysz says designs Rudakov has presented in papers to the Society of Automotive Engineers and the International Astronautical Federation over the last year are "as good as anything else I've ever seen. At low Mach [speed], it beats anything the Japanese have by a factor of two."

Rudakov is developing a liquid air cycle engine (referred to as LACE) — a very-high performance single-engine concept for a complete ascent trajectory. That's the same kind of engine the U.S. program aims to use on an X-30.

Czysz cautions that the whole LACE isn't what flew in December. As he explains the achievement, "it's a dual-mode ramjet able to fly in two modes — subsonic flow in the combustor and supersonic flow in the combustor. The ramjet ignites off the rocket booster at between Mach 2 and 3. And it stays lit — the velocity picks up to Mach 7 or 8.... What they've done is demonstrate in public the first supersonic diffusion ramjet ever flown."

Two flights documented from Baikonur

The pilotless, experimental craft took off from the Yubilee Runway, originally built for the Soviet space shuttle, located at the Baikonur Cosmodrome in Kazakhstan.

The aircraft has made at least two flights, in November and December of last year. On the second, it reached speeds between Mach 7 and Mach 8, and successfully made the transition between ramjet and scramjet propulsion, Rudakov claims.

Military involvement in the former Soviet project includes the N.E. Zhukovskii Central Aerohydrodynamics Institute, the Flight Research Institute in Zhukovskii, and the P.I. Baranov Central Institute of Aviation Motors in Moscow, along with several aerospace design bureaus.

Concerned that military funding will be withdrawn from the program, Russian engineers involved in the former Soviet project, have acknowledged the flights in an effort to find development partners.

The republic plans to declassify the project if it loses government support, and wants the U.S. to unveil all the details of its work on "Aurora." Reports of a classified Air Force program by that name, which allegedly is test-flying hypersonic successors to the SR-71 at Nellis AFB,

SCRAMJET...Pg. 8

said Aleksei Obukhov, an arms-control expert at the Russian Foreign Ministry. "That would constitute a major contribution to stability."

Washington believes that sea-launched missiles contribute more to stability than land-based missiles; they are harder for an aggressor to find and destroy. But Yeltsin isn't likely to be pushed offshore. "Your definition of what's most stable is influenced by whether you have three warm-water coasts or nine time zones on land," says Jack Mendelsohn, deputy director of the Washington-based Arms Control Association. In the end, Bush and Yeltsin will probably negotiate a trade-off: so many Soviet ICBMs in exchange for so many U.S. Trident submarine warheads.

One catch is that Bush cannot be entirely sure Yeltsin speaks for the other three former Soviet republics where strategic missiles are deployed: Ukraine, Belarus and Kazakhstan. He said his proposals are based on "constant interaction" and "agreements" with the other republican leaders. But there are many points of friction between Russia and its partners. Early last week Yeltsin snubbed the Japanese foreign minister and skipped the Moscow session of the Mideast peace talks in order to visit the Black Sea, where the Ukrainians claim control of the former Soviet fleet. Despite such problems, nuclear weapons are under unified commonwealth command, which Yeltsin effectively dominates. "We think Yeltsin can deliver," says a senior U.S. official, "but of course it's something we have to watch."

If Bush and Yeltsin can reach agreement, verification is not likely to be the problem it has been before. This time, the Russians want technical and financial help from the United States in dismantling their weapons. "In the past, we sought an intrusive verification system so that we could see what was going on," says a senior aide to Secretary of State James Baker, who visited Moscow last week. "Here's a case where they're coming to us and saying, 'We'd like to go through with this destruction process, and we need your help to do it.' So we're partners in the exercise."

Sharing technology: Yeltsin's proposal to enlarge the U.S. Strategic Defense Initiative (SDI) scored a neat rhetorical point. In 1983, Ronald Reagan offered to share SDI technology with the Soviets—a promise that some U.S. officials aren't eager to keep. Pressing his case at a news conference in New York, Yeltsin said Moscow had its own plans for a missile shield, and he stressed that Russia has extensive experience in space. At Camp David, Bush expressed "a lot of interest" in Yeltsin's proposal and said it would be discussed by experts from both sides. "There are a lot of practical problems, of course," said a senior U.S. official, "but there are also new political reasons to take a good hard look at it."

But a power struggle at home could thwart Yeltsin's disarmament plans. With prices soaring as a result of his economic reforms, his government has only about a 10 percent approval rating in opinion polls. He has come under increasingly sharp at-

ARMS...Pg. 8

Dina Rasor, the founder and former director of the Project on Military Procurement, who also helped get the 1989 law passed. "I've seen a lot of battered bodies on the landscape."

Rasor paraphrases a favorite saying of the late Admiral Hyman Rickover: "If you must sin, sin against God, not against the bureaucracy. God will forgive you but the bureaucracy never will."

A case in point is Pentagon whistle-blower Ernie Fitzgerald, who in 1969 testified in Congress about enormous added costs on the C-5 transport plane. He was fired from his job after Richard Nixon was recorded telling his associates to get rid of that "son of a bitch."

It took him 14 years and \$1 million in legal fees to get something approximating his old job back. "Since then, they have been chipping away at my functions and responsibilities to keep me from doing what the taxpayers want me to do," said Fitzgerald, who has the title of management systems deputy in the U.S. Air Force.

Fitzgerald said that Biddle would not have had to file his suit forcing the government to investigate the claims if it had not stalled on investigating Stanford.

He said federal employees ideally should not need financial incentives to disclose wrongdoing. "But if you can motivate other people who are not as strongly motivated as Paul Biddle, it might help, because we all agree that the federal bureaucracy needs as much motivation as possible."

Arthur Williams, an Air Force attorney, discovered a number of Japanese companies rigging bids on telecommunication contracts with the U.S. government. The government eventually won a \$34 million settlement against the Nippon Electric Co. after Williams filed suit, but he did not get a penny.

Instead, according to Jerry Werfel, his attorney, the Air Force wanted to take disciplinary action against him, and he retired in 1989.

It is almost certain that the law will be amended, but just how much is still an open question.

Representative Howard Berman, D-Los Angeles, another key player in the controversy, said that although he supports a change in the law, he would not go so far as to prohibit federal employees from benefitting financially under every circumstance. He said they should be allowed to file suit only when they have done "everything humanly possible" to bring wrongdoing to the government's attention.

Pentagon Fights Bill on Panama Canal Control

By TIM SHORROCK

Journal of Commerce Staff

WASHINGTON — The Department of Defense is fighting legislation supported by the maritime industry to replace military control of the Panama Canal Commission with civilian leadership.

"I think some people (at the defense department) just don't want to give up their power and ability to give up all their votes" on the canal commission, said Rep. Jack Fields, R-Texas, the author of the legislation.

The canal legislation will transform the commission, now controlled by the Department of Defense, into a civilian agency modeled on the Saint Lawrence Seaway Corp., which manages U.S. seaway interests.

Currently, the commission's chairman is appointed by the secretary of defense, who also controls the votes of the five U.S. members of the board.

A wide segment of the U.S. maritime industry favors the bill because it was crafted to ensure civilian control when Panama takes over the waterway on Dec. 31, 1999.

In its zeal to block the bill, the Pentagon has exceeded Bush administration and State Department policy, alienating some of its staunchest supporters on Capitol Hill.

In its zeal to block the bill, the Pentagon has exceeded Bush administration and State Department policy, alienating some of its staunchest supporters on Capitol Hill.

The House Merchant Marine and Fisheries Committee last week voted unanimously to send the bill to the House.

But one day before that vote, Terrence O'Donnell, the general counsel to the defense department, wrote the committee that the Bush administration "opposes legislative action at this time to change the management structure" of the commission.

"We presently have no clear picture as to the best approach to ensure efficient and effective management of the waterway after the turnover of the canal," Mr. O'Donnell's letter said.

Until the governments of Panama

and the United States complete studies of the canal's future, "Changes to the supervisory board are premature, at best," he concluded.

A U.S. government official, who asked not to be identified, said the letter did not represent official policy on the legislation and had not been cleared with the State Department.

"We were surprised to see that go over" to the committee, the official said.

The Bush administration had formed an interagency committee to formulate its Panama policy, the official said.

Until last week, "the only agreed-upon expression" of administration policy was a statement by the current chairman of the commission, Army Secretary Michael P.W. Stone, the U.S. official said.

In that testimony last September, Mr. Stone said the legislation would be premature until the Panamanian government had studied the issue.

Since that time, a government commission in Panama has issued an interim report that endorses the creation of a "completely autonomous administrative agency, independent of partisan policies" to run the canal.

Rep. Fields is a conservative Republican who calls himself one of the "most defense-minded" people in Congress. In an interview from Houston, he said he has "gone as far as he can in compromising with the Defense Department. I don't think they want to compromise," he said.

His bill was modified to reflect Pentagon concerns. It now provides a permanent seat on the commission to the Department of Defense and requests a study, to be conducted jointly by State and Defense, on alternative structures to the present commission.

An administration official downplayed the differences between State and Defense. "Its more a question of style... and our approach to Congress," he said.

SCRAMJET...from Pg. 7

Nev., have begun to leak into the press.

CIAM engineers believe the reports and are briefing westerners on the U.S. black-world program in an effort to maintain state funding for their own project.

Funding uncertain for U.S. plane

Meanwhile, budget cuts have delayed plans for the first flight of the U.S. NASP from 1997 to the turn of the century. The Air Force and NASA requested \$304 million for NASP for fiscal year 1992, but Congress slashed the amount to \$205 million, with just \$5 million of that coming

from NASA.

President Bush has requested \$80 million for NASA and \$180 million for DOD to continue work on the program next year (see story, p. X).

It will cost anywhere from \$5 billion to \$10 billion to develop and test two X-30 NASP test vehicles, Barthelemy estimates.

The General Accounting Office is examining those cost estimates for three congressional subcommittees.

A GAO official says a report on hypersonic technology efforts in Russia, the Ukraine, and Kazakhstan has been postponed until that analysis is delivered in April.

ARMS...from Pg. 7

tack from conservatives, including his own Vice President Aleksandr Rutskoi, and the chairman of the Russian parliament, Ruslan Khasbulatov. Looking to the outside world for politically helpful economic assistance, Yeltsin compared the commonwealth to "a baby in diapers. You don't want to drop it," he said.

Ironically, some American officials are just beginning to approve of Yeltsin. Long suspicious of his emotional stability and his devotion to democracy, they are beginning to respect his skills. When Baker and his aides discussed arms control with Yeltsin last week, they were surprised by the improvement in his grasp of detail. "He knew it, he knew it cold," said one U.S. official. "And it was very, very, very technical. It was really impressive." At Camp David, Yeltsin revealed that he and Bush are on a first-name basis. "We say 'Boris,' we say 'George,'" he told reporters. The question is whether Yeltsin can hang onto power long enough to cash in on all the dividends of peace.

RUSSELL WATSON with MARGARET GARRARD WARNER, JOHN BARRY and CLARA BINGHAM in Washington. CARROLL BOGERT at the United Nations and FRED COLEMAN in Moscow.

NAVY TIMES

Feb. 10, 1992

Pg. 6

Marines to provide \$28 million in early-out incentives

By Deborah Schmidt
Times staff writer

WASHINGTON — The Marine Corps' 1993 manpower budget includes \$28 million to cover exit bonuses next year for officers and enlisted members.

Thirteen hundred enlisted and 265 officers are expected to choose either the voluntary separation incentive or the special separation bonus, said Maj. David Salter, a budget officer in the programs and budget section at Headquarters Marine Corps.

That is 600 more enlisted members, but the same number of officers, as are being offered early-out incentives in 1992.

Many details of the Corps' budget had not been released at press time because, officials said, all figures

were tentative until the commandant presented final force structure changes to Congress during the first week of February.

But the Corps' active force will drop by about 6,000 people to 181,900 in 1993. The reserve will be reduced to 38,900.

The Corps' overall manpower budget for next year is \$6.1 billion, up only \$100 million from the 1992 budget. That includes money to pay a 3.7 percent pay raise, bonuses and increased funds for unemployment benefits.

The largest chunk goes to enlisted pay and allowances, \$4.4 billion. Included in that is \$23 million for selective reenlistment bonuses. The Corps expects 3,300 to take bonuses in 1993, compared with 3,400 this year.

MARINES...Pg. 10

AVIATION WEEK & SPACE TECHNOLOGY

Feb. 3, 1992

Pg. 17

JERRY RALPH CURRY'S NOMINATION to be FAA Administrator has become embroiled in yet another dispute with consumer advocates. The nomination, on hold in the Senate since late November, has now run afoul of the Center for Auto Safety. The center alleged in a letter to the Senate Commerce Committee that Curry, the National Highway Traffic Safety chief, has a conflict of interest because a company he worked for in 1987 is in a contract fight with the FAA. Curry counters that he fully disclosed his relationship with the company, Systems Management American Corp., Norfolk, Va., in his NHTSA confirmation in 1989. He said the FBI cleared him of involvement in the company's "irregularities or financial problems." But consumer advocate Ralph Nader is pressing the Commerce Committee to hold hearings on the matter.

WASHINGTON STAFF

NASP STEERING GROUP MEETING
JAN. 13, 92
Room 3D1019, THE PENTAGON

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NASP SUMMARY CHART

NASP RESOURCE SUMMARY

- NASP BUDGET FROM JANUARY 2, 1991 NSpC MEETING*

	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
DoD	233	180	100	100	100
NASA	72	120	145	175	200
TOTAL	305	300	245	275	300

* DoD FY94-96 FIGURES WERE PLACE HOLDERS

- CURRENT NASA BUDGET REQUEST AT OMB*

	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
NASA	--	80	120	150	175

* DoD BUDGET TBD BUT IT APPEARS THAT THEY WILL TAKE A PROPORTIONATE REDUCTION IN FY 93 TO \$120 MILLION.

- "FISCALLY UNCONSTRAINED" PROGRAM "A" NASP FUNDING PROFILE*

	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
TOTAL	N.A.	N.A.	1,200	1,600	1,700

* PROGRAM A: TWO SSTS A/C, TOGW=325K LBS, FIRST FLIGHT IN 2000, SSTS IN 2002/2003, COST EST. \$10.9B (FY92\$).

- PROPOSED NASP "IMPLEMENTATION STRATEGY"

	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
TOTAL	205	N.A.	350	425	500

NASP STEERING GROUP PREBRIEF

(EDITED AND REORDERED TO REFLECT STEERING GROUP'S TENTATIVE AGENDA)

**For Dr. D. Allan Bromley,
Director, OSTP**

8 January 1992

**Ming H. Tang
NIO - Pentagon
Vincent L. Rausch
NASP Directorate, NASA HQ**

PHASE 2D RESTRUCTURE

QTR CH28, 1/5/92

PHASE 2D RESTRUCTURE

BACKGROUND

- CAUSED BY REDUCTION OF FY92 BUDGET FROM \$303.8M TO \$205M
- NASA REPROGRAMMING NOT IN BASELINE
- FY93 BUDGET ASSUMED TO BE REQUESTED \$263M
- FY92 RESTRUCTURING RESULTS IN
 - EXTENSION OF PHASE 2D THROUGH FY93
 - SLIP OF PHASE 3 START FROM APR 93 TO OCT 93
 - DEFERRAL, REDUCTION, OR ELIMINATION OF IMPORTANT DESIGN, TECHNOLOGY, AND FACILITY EFFORTS

PHASE 2D RESTRUCTURE

BUDGET IMPACT

ACTIVITY	FY91 BUDGET	FY92 PLAN	FY92 BUDGET	FY93 PLAN	FY94 PLAN	TOTAL
PHASE 2C CONTRACT	51.7	0	0	0	0	51.7
PHASE 2D CONTRACT	143.1	201.8	134	150	61	488
GOV WORK PACKAGES	25	36.9	30	23	8	86
TEST OPERATIONS	11.7	16.8	12	10	6	43
TEST FACILITIES	21.8	15.8	12	5	6	40
SUPPORT	16.4	11.5	10	10	10	45
SDB	1.6	1.7	1	1	1	5
PHASE 3 PLANNING	4	4	2	3	2	11
ASSESSMENTS	7.2	10	4	7	11	29
RESERVE	0.4	5.3	0	10	20	30
PROP HYP TEST FAC	0	0	0	44	40	84
PHASE 3	0	0	0	0	185	185
TOTAL	282.9	303.8	205	263	350	1101

PHASE 2D RESTRUCTURE

CONTRACT IMPACT

- **DESIGN**
 - SIGNIFICANT REDUCTION OF DESIGN EFFORT (30% IN FY92)
 - REDUCES SUBSYSTEMS, VMS DESIGN TO MARGINAL LEVEL
- **TECHNOLOGY**
 - ELIMINATES LARGE SCALE TANK EFFORT
 - REDUCES FUSELAGE STRUCTURES EFFORTS
 - REDUCES VMS, SIMULATOR EFFORTS
 - REDUCES TURBOMACHINERY EFFORT
 - REDUCES SLUSH EFFORTS
- **MANAGEMENT**
 - SIGNIFICANT REDUCTION IN PROGRAM MANAGEMENT AND SYSTEMS ENGINEERING

PHASE 2D RESTRUCTURE

GOVERNMENT WORK PACKAGE IMPACT

- ALL AIRFRAME DESIGN RELATED EFFORTS DELAYED OR CANCELLED
- ALL VMS EFFORTS DELAYED OR CANCELLED
- TMC PILOT PLANT EFFORT DELAYED
- INSTRUMENTATION EFFORTS SEVERELY REDUCED
- CFD EFFORT GREATLY REDUCED
- OVERALL
 - .. 5 EFFORTS CANCELLED
 - .. 18 EFFORTS POSTPONED UNTIL FY93
 - .. 16 EFFORTS SEVERELY REDUCED
 - .. 46 EFFORTS NOT IMPACTED

PHASE 2D RESTRUCTURE

SUMMARY

- \$99M FY92 BUDGET REDUCTION RESULTS IN 6 MONTH PROGRAM STRETCH AND TECHNOLOGY IMPACTS
- REPROGRAMMED NASA FUNDS CRITICALLY NEEDED
- ASSUMPTIONS IN FY93 BUDGET CONSERVATIVE
- CRITICAL ENGINE AND DESIGN EFFORTS WERE NOT RESTRUCTURED
- MANY IMPORTANT EFFORTS WERE DELAYED OR POSTPONED TO FY93
- PHASE 2 EXIT CRITERIA CAN BE MET BY END OF FY93 (IF FY93 REQUESTED BUDGET IS APPROPRIATED)

X-30 PROGRAM STUDIES

X-30 PROGRAM STUDIES

REFERENCE PROGRAMS

- REPRESENT THE NASP PROGRAM
AS IT WAS ORIGINALLY ENVISIONED
- TWO SLIGHTLY DIFFERENT PROGRAM VARIATIONS



- TWO SSTO AIRCRAFT IN EACH PROGRAM
- FLIGHT DATES
 - .. FIRST FLIGHT - 2000
 - .. SSTO DEMO - 2002/3
- COST ESTIMATES (FY92\$)
 - .. PROGRAM "A" - \$10.9B
 - .. PROGRAM "B" - \$12.4B

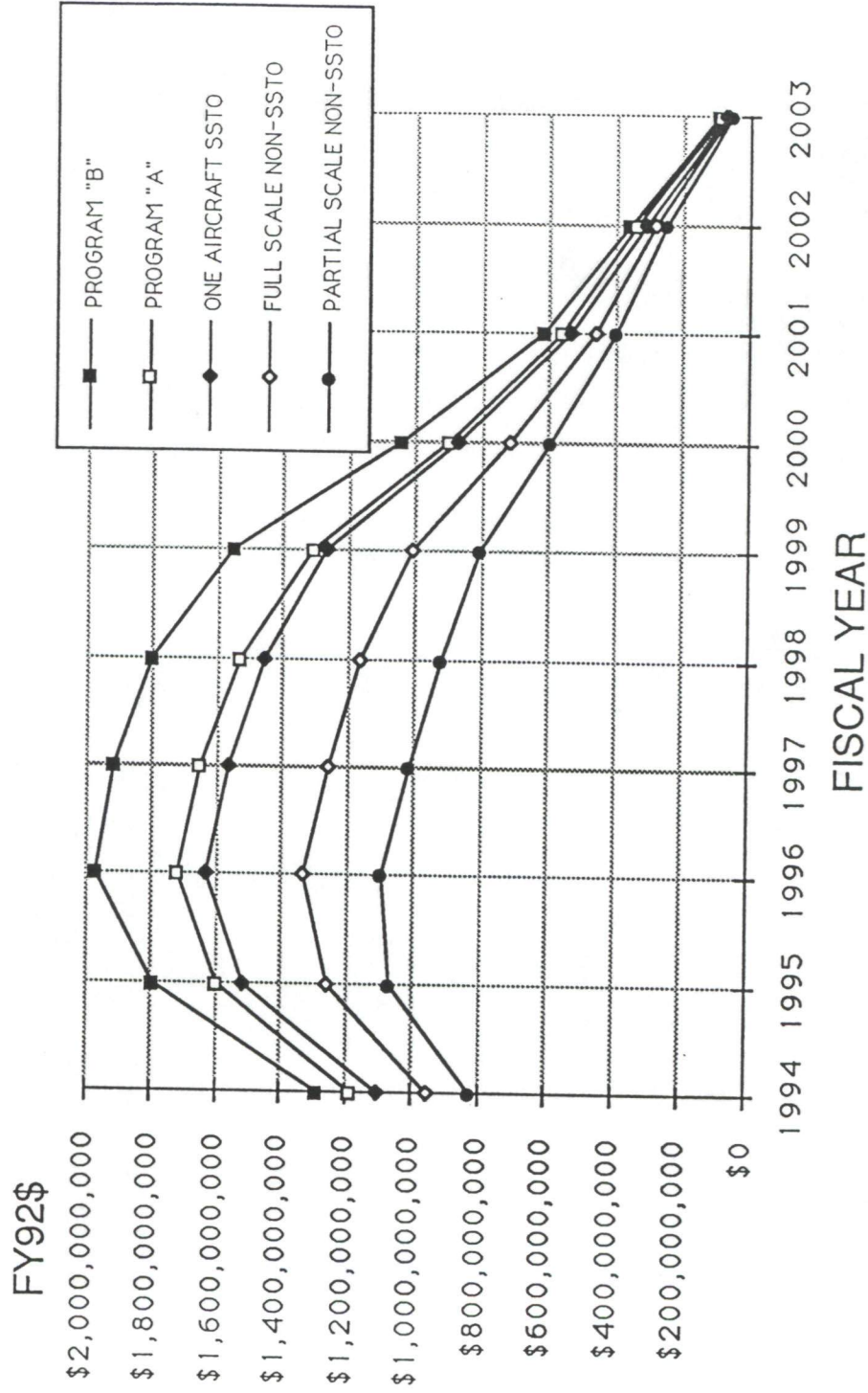
X-30 PROGRAM STUDIES

OPTIONS

ONE AIRCRAFT SSTO PROGRAM	FULL SCALE NON-SSTO PROGRAM	PARTIAL SCALE NON-SSTO PROGRAM
SSTO DESIGN ESSENTIALLY A ONE AIRCRAFT PROGRAM "B" 3 FULL SCALE SSTO ENGINES ALL SSTO FEATURES DEMONSTRATED FLIGHT DATES FIRST FLIGHT - 2000 SSTO DEMO - 2002 COST ESTIMATE \$10.3B (FY92\$)	MACH 18+ DESIGN SAME SIZE AS PROGRAM "A" BUT NOT AS CAPABLE 3 FULL SCALE SSTO ENGINES MOST SSTO FEATURES DEMONSTRATED FLIGHT DATES FIRST FLIGHT - 1999 MAX MACH FLIGHT - 2001 COST ESTIMATE \$8.5B (FY92\$)	MACH 15+ DESIGN SMALLER VEHICLE THAT DEMONSTRATES RAM/SCRAM ENVELOPE 2 FULL SCALE SSTO ENGINES MANY SSTO FEATURES DEMONSTRATED FLIGHT DATES FIRST FLIGHT - 1999 MAX MACH FLIGHT - 2001 COST ESTIMATE \$7.0 (FY92\$)

X-30 PROGRAM STUDIES

FUNDING PROFILES SUMMARY



X-30 PROGRAM STUDIES

IMPLEMENTATION STRATEGY

BACKGROUND

- ALL PROGRAMS HAVE HIGH EARLY YEAR FUNDING REQUIREMENTS AND RAMP UP *(Now drop below #1 B at peak yr)*
- SINCE ADEQUATE NEAR TERM FUNDS MAY NOT BE AVAILABLE, AN IMPLEMENTATION STRATEGY WAS DEVELOPED WHICH HAS POSITIVE ASPECTS
 - .. PROGRAM RISK REDUCED
 - .. "PERCEIVED" FUNDING CONSTRAINTS SATISFIED
 - .. TRADITIONAL DEVELOPMENT PROCESS FOLLOWED (EARLY FOCUS ON ENGINE)
 - .. CRITICAL DEVELOPMENT ISSUES ADDRESSED
 - .. PROGRESS TOWARD BUILDING THE X-30 SHOWN
- HOWEVER, THIS STRATEGY DOES HAVE SOME NEGATIVE ASPECTS
 - .. SCHEDULE EXTENDED
 - .. TOTAL COSTS INCREASED
 - .. MOMENTUM REDUCED
 - .. EXPERIENCED PERSONNEL LOST

X-30 PROGRAM STUDIES

IMPLEMENTATION STRATEGY DETAILS

• ASSUMED AVAILABLE FUNDING (*Combined NASA/DOD*)

<u>FY94</u>	<u>FY95</u>	<u>FY96</u>
\$350M	\$425M	\$500M

- FY94 - FY96 PROGRAM CONTENT
 - COMPLETE ENGINE PRELIMINARY DESIGN
 - PREPARE REQUIRED ENGINE TEST FACILITIES
 - TEST A STRUCTURALLY CORRECT FULL SCALE FLOW PATH (POTENTIAL FLIGHT EXPERIMENTS)
 - COMPLETE OTHER TESTS IN SUPPORT OF ENGINE DESIGN
 - COMPLETE AIRFRAME/GROUND SUPPORT SYSTEM PRELIMINARY DESIGN
 - TEST SOME AIRFRAME DEVELOPMENT ITEMS WITH FINAL MATERIALS

• OVERALL ASSESSMENT

POSITIVE!!

PHASE 3 PLAN

PHASE 3 PLAN

PROGRAM STRATEGY

- ADOPT PROPOSED IMPLEMENTATION STRATEGY
- SCHEDULE X-30 PERFORMANCE DECISION TO COINCIDE WITH FINAL DOD/NASA DECISION ON FY94 BUDGET (JAN 93)
.. FY92 DESIGN ACTIVITY WILL SUPPORT THIS DECISION
- USE FOLLOWING BUDGET FOR INTERIM BUDGET SUBMITTAL
(AMOUNTS SHOWN ARE IN FY92\$)

FY94	FY95	FY96	FY97	FY98	FY99
350K	425K	500K	TBD	TBD	TBD

NOTE: NEED QTR GUIDANCE ON TBD AMOUNTS TO
BE PROPOSED TO STEERING GROUP!

PHASE 3 PLAN

OVERALL SCHEDULE

Activities (FY)	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
TECHNOLOGY DEMONSTRATIONS	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆												
CDE TESTS		◆◆◆◆◆◆◆◆◆◆													
PROPULSION DEVELOPMENT															
TEST FACILITY UPGRADES			◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆								
FULL SCALE FLOWPATH			◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆								
FLT TESTS (POTENTIAL)			◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆								
X-30 VEHICLE															
PERFORMANCE DECISION		◆◆◆◆◆◆◆◆◆◆													
PHASE 3 DECISION PROCESS		◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆
DESIGN		◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆
FLT ENGINE DEV						◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆
AIRFRAME/SYSTEMS DEV						◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆
AIRCRAFT FAB & ASSEMBLY						◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆
FLT TEST						◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆
BUDGET PROCESS															
DOD/NASA REQUEST	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆
CONGRESSIONAL APPROVAL	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆	◆◆◆◆◆◆◆◆◆◆
PROPOSED BUDGET (FY92\$)	205	263	350	425	500	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

Withdrawal/Redaction Sheet

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Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01. Notes	Talking Points for NASP Steering Group Meeting (2 pp.)	1/13/92	(b)(1)	

Collection:

Record Group: Bush Presidential Records
Office: Science and Technology Policy, Office of (OSTP)
Series: Bromley, D. Allan, Files
Subseries: National Security Files
WHORM Cat.:
File Location: [National Aero-Space Plane] [4 of 4] [1992]

Date Closed:	2/25/1991	OA/ID Number:	62072-002
FOIA/SYS Case #:	2005-0336-F	Appeal Case #:	
Re-review Case #:		Appeal Disposition:	
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AR Disposition Date:		MR Disposition Date:	

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Presidential Records Act - [44 U.S.C. 2204(a)]

P-1 National Security Classified Information [(a)(1) of the PRA]
 P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
 P-3 Release would violate a Federal statute [(a)(3) of the PRA]
 P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
 P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
 P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

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 (b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
 (b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
 (b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
 (b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
 (b)(9) Release would disclose geological or geophysical information



OFFICE OF THE DIRECTOR OF
DEFENSE RESEARCH AND ENGINEERING

WASHINGTON, DC 20301-3030

07 JAN 1992

MEMORANDUM FOR MEMBERS OF THE NATIONAL AERO-SPACE PLANE (NASP)
STEERING GROUP

SUBJECT: Steering Group Meeting, January 13, 1992

The subject meeting will be held in the Pentagon,
Room 3D1019, 1000-1200 hours, Monday, January 13, 1992. A
tentative agenda is attached. Please inform Mrs. Anita Gill
[(703)695-5036] of the names and SSNs of the staff members whose
attendance is necessary.

A handwritten signature in cursive script, reading "Dominic J. Monetta", is positioned above the typed name and title.

Dominic J. Monetta
Executive Secretary
NASP Steering Group

Attachment

cc: DDDR&E(S&TNF)

JAN 8 31 3:43 FROM OSD/DDR/KR/217
PAGE 000

NASP STEERING GROUP MEETING
JANUARY 13, 1992
ROOM 3D1019, THE PENTAGON

TENTATIVE AGENDA

1000	Opening Remarks	Dr. Reis Mr. Estess
1005	Minutes of Last Meeting	Dr. Dix
1010	Steering Group Decisions Desired/ Potential Issues	Dr. Dix
1020	Technical Status	Mr. Imfeld
1050	Phase II Restructure	Dr. Barthelemy
1110	Options for Phase III	Dr. Barthelemy
1140	Steering Group Discussion	Dr. Reis Mr. Estess
1200	Adjourn	

For Bank to the Administration
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