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TOUGH CHOICES AND THE DEFENSE BUDGET

Members:

This newsletter, prepared by Associate Director for Strategic Weapons Policy Thomas K. Longstreth, is designed especially as a way of pinpointing some military programs for which, potentially, a broad consensus could exist for cuts. FAS Members may find it interesting, among other things, to see the choices faced by Congress on defense programs.

Whether or not they are interested in this level of detail, members are encouraged to send this newsletter, or a photocopy, to their representative or senators with a view toward ensuring maximum Congressional attention to these defense budget issues. ■

—Jeremy J. Stone

On February 9, President George Bush announced to a joint session of Congress what had been rumored for some time—that the new Bush-Quayle Administration would limit its request for Pentagon spending in 1990 to its 1989 level plus inflation, or zero “real” growth.

Before leaving office in January, Ronald Reagan had sent his final Department of Defense (DoD) budget request to the Congress. Reagan’s request for FY 1990 of \$306 billion in budget authority would have represented an increase over the final 1989 level approved by the Congress of about 2% more than estimated inflation. National defense spending, which includes spending for Department of Energy (DoE) nuclear warhead production, civil defense and other non-DoD defense activities, would also have risen 2% to \$315 billion.

Going from 2% to zero real growth in 1990 will require a cut of about \$6.3 billion from the Reagan request for the Pentagon. In FY ‘91 Bush plans to request only 1% real growth, instead of the 2% Reagan had planned—a difference of about \$10 billion. Over the five year period of 1990-94, for which Reagan forecast steady growth of 2% in real terms, the difference between the Reagan and Bush projections for national defense spending, even if one assumes a return to 2% real growth in both FY 93 and 94, is almost \$60 billion. [See budget chart]

But even Bush’s revised defense budgets are overly optimistic—he will be lucky to achieve zero real growth in defense spending over the next several years, given the federal budget crisis. A more graphic example of the shortfall that military planners may face over the next five years is a comparison of the 1988 Reagan five-year forecast for

spending with a projected budget of zero nominal growth (no adjustment for inflation.) Should the Pentagon not even get an increase to account for inflation, the gap would be \$262 billion!

President Bush has directed the Pentagon to come up with the cuts to meet his new budget targets for both 1990 and 1991 by April 9. The heads of the military services are already meeting in an attempt to find the needed cuts in defense programs.

The potential problem of squaring defense budgets with the Gramm-Rudman-Hollings deficit reduction law is even more worrisome. As House Armed Services Committee Chairman Les Aspin put it, “The major impact this year will come from the budget deficit.”

If the Congress takes Gramm-Rudman seriously and does not, as it has in the past, alter the law or perform some other budget sleight-of-hand in order to fulfill the letter of the law as painlessly as possible, Gramm-Rudman could force a much more severe cost cutting process in defense spending in 1990, 1991 and later years. [See page 2]

Making Tough Choices

After the final Reagan DoD budget request was released, Pentagon officials stressed that they had been able to meet the 2% real growth target without hurting the nation’s defenses: no major “stretchouts” of weapons production, no cancellation of major new weapons about to come on line, and no cuts in the force structure beyond those already programmed. But a closer look at the budget request reveals a different picture.

(Continued on page 3)

DEFENSE BUDGET GAP

Department of Defense Budget Authority, not including DOE and other defense related activities (In billions of dollars).

	FY:1990	1991	1992	1993	1994	Total	Change
1988 Reagan 5 Year Plan*	\$ 307.3	324.3	342.0	360.3	379.1	1,713.0	—
1989 Reagan 5 Year Plan**	305.6	320.9	335.7	350.7	365.6	1,678.5	- 34.5
Bush Plan***	299.3	311.0	322.0	335.9	351.0	1,619.2	- 93.8
Zero Real Growth	299.3	307.9	315.6	323.5	331.6	1,577.8	-135.2
Zero Nom. Growth	290.2	290.2	290.2	290.2	290.2	1,451.0	-262

*Submitted February 1988.

**Submitted January 1989.

***Announced February 1989. Assumes 2% Real Growth in FY 1994.

GRAMM-RUDMAN-HOLLINGS AND THE DEFENSE BUDGET

The Balanced Budget and Emergency Deficit Control Act of 1985, commonly named Gramm-Rudman-Hollings after its Senate sponsors, mandates annual decreases in the federal budget deficit and specifies measures to achieve those reductions.

As revised in 1987, the legislation established ceilings of \$136 billion in FY 89, \$100 billion in FY 90, \$64 billion in FY 91, and zero by 1993. If the projected deficit breaches the statutory ceiling, Gramm-Rudman automatically triggers sequestration—a uniform cut in spending across most programs (social security, veterans' benefits and some others are exempted). The defense budget is required to absorb half of all cuts. And because reducing the deficit requires cutting actual outlays and not just the Pentagon's *authority* to spend, a sequestration would force bigger cuts in areas of the defense budget that spend out quickly: e.g., new procurement and operations and maintenance.

The Act requires both the Congressional Budget Office (CBO) and the President's Office of Management and Budget (OMB) to submit projections of the coming year's budget deficit. However, CBO's role is only advisory—OMB has the final responsibility for estimating the deficit and triggering sequestration.

On August 25, OMB issues its deficit report to the president and the Congress. If the projected deficit exceeds the target, then OMB estimates the spending cuts necessary to reach the target. In FY 90 through FY 92, Gramm-Rudman allows a \$10 billion cushion. Thus, if the OMB predicts a deficit above \$110 billion for FY 90, the president would issue an initial order, based on OMB's calculations, reducing federal spending to meet the \$100 billion target.

On October 16, OMB issues its report on any revisions in its initial estimate and the president issues his final order. The president can choose to exempt military personnel accounts from sequestration by notifying Congress. He may also propose changes to protect certain programs, as long as the difference is made up by cuts in other defense programs. However, the Congress must affirm these proposals by a joint resolution.

A sequester was narrowly averted in FY 89 when OMB's projection came in at \$144 billion—barely within the \$10 billion margin allowed above the \$136 billion target. CBO's estimate was higher, at \$159 billion.

The CBO and OMB are also in sharp disagreement over future deficits. In the absence of any spending cuts or new taxes, CBO, which anticipates higher inflation and interest rates over the next several years, predicts a deficit in 1990 of about \$146 billion, declining to \$135 billion by 1993. OMB projects a deficit of \$126 billion in FY 90, dropping to \$36.9 billion by FY 93. If Congress enacts the Administration's proposed cuts, then OMB projects a deficit of \$92.5 billion in FY 90 and an actual budget surplus of \$2.4 billion by 1993. ■

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Stretchouts Won't Solve the Problem

"You've got a lot of commitments from the past years that are coming due . . . slowing down and stretching procurement won't be enough."

- Former Secretary of Defense, Harold Brown, quoted in the *Wall Street Journal*, Dec. 2, 1988.

"We've started far too many programs to complete . . . It is monumentally inefficient to stretch out the production lines."

- Senate Armed Services Committee Chairman Sam Nunn, quoted in *Congressional Quarterly*, Dec. 17, 1988.

(Continued from page 1)

The final Reagan defense budget request would, in fact, have required stretching out production of a number of important weapons—like the F-16 and F-18 combat aircraft, M-1/A-1 tank, Bradley Fighting Vehicle, and Tomahawk and HARM missiles—below minimum rates of efficient or economical production. Early indications are that the Bush Pentagon will continue to use this means of trimming the budget—which will lead to further inefficiencies in production.

The Pentagon should not be allowed to steer through the current budget storm without making tough choices among programs. The emerging "bow wave" in new weapons programs slated to enter production in the 1990's will create further pressure on defense planners and limit the choices that can be made to meet budget reduction targets.

Below, several programs are described that could be cancelled or deferred in the near term to head off future budget problems. It is not intended to be a comprehensive list but rather an illustrative guide to some of the more obvious cuts. There are also suggested changes in the military infrastructure to prevent a return to the "hollow forces" that some have complained existed in the 1970's.

None of the following will be easy—all will require sacrifice and will meet with strong opposition from individual services, members of Congress from states where the weapons are manufactured, and defense contractors who depend on these new procurement programs for their livelihood. But such tough choices are a better alternative than the "business as usual" approach of production stretchouts, cuts in operation and maintenance accounts, and other budget-cutting measures that harm national defense.

STRATEGIC PROGRAMS

During the Reagan Administration, the number of operational strategic warheads rose from 9,000 in January 1981 to about 13,000 today—a jump of almost 50 percent. Even if the US and USSR sign and implement a START Treaty, the reductions called for will only return their strategic forces to the levels they were at when Ronald Reagan first became President.

Over this same period, the US spent some \$300 billion

on new strategic nuclear weapons. While it is often claimed that spending on strategic forces accounts for less than 15% of the defense budget, these estimates fail to include such costs as nuclear warhead testing and production, satellite and other intelligence gathering, theater nuclear systems like the ground- or sea-launched cruise missiles, and personnel costs. Moreover, many of the strategic weapons pushed by the Reagan Administration—like the B-1 bomber, M-X missile, advanced cruise missile, and others—have been plagued by technical problems and cost overruns.

Nor does this disproportionate investment in nuclear forces show any sign of slowing down. Many additional systems are in production, in development, or on the drawing board. But given the budget crisis at hand, policymakers must give closer scrutiny to new nuclear programs in the 1990's than they did in the 1980's.

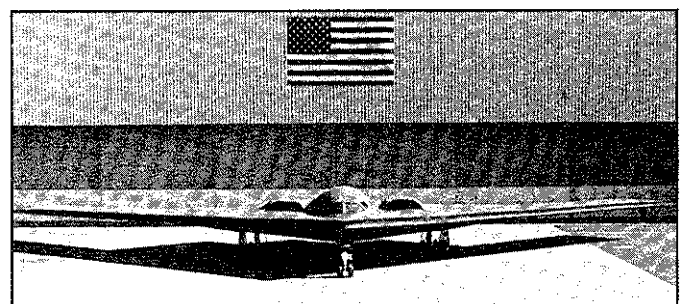
RECOMMENDATION: Defer production of the B-2 Stealth Bomber

The B-2 "Stealth" bomber now under development is intended to be the next generation long-range strategic bomber which will carry nuclear weapons to targets inside the Soviet Union. As has been discussed in the press, the B-2's unique shape, composite materials, specially designed engine inlets and other characteristics give it an extremely small radar profile which makes it more difficult for Soviet radars to detect than current US bombers.

The first B-2 is scheduled to arrive at Whiteman Air Force Base, Missouri, in mid-1991, with initial operation of the first squadron in 1992. Three to four squadrons are planned at different mid-western bases. The US will then begin phasing out B-52H and FB-111 bombers and B-1 bombers, which now carry only nuclear bombs, will begin carrying air-launched cruise missiles (ALCMs).

The B-2 is enormously expensive. Due to a wing redesign and other technical problems, the total cost of the bomber program has risen dramatically and is now estimated at about \$70 billion for development and procurement alone of the planned 132 bomber force.

The B-2 bomber is redundant. Other strategic bomber programs, either completed or under development include: the deployment of the B-1 bomber, modifications to existing FB-111 and B-52G and H strategic bombers, the ALCM, the Advanced Cruise Missile (ACM), and the Short-Range Attack Missile II (SRAM II). The total cost of all of these efforts devoted to one leg of the triad is well over \$100 billion.



B-2 Stealth Bomber

The Air Force continues to claim that the B-1, first deployed only three years ago, is the most advanced bomber in the world and fully capable of its strategic mission. The ALCM, ACM and SRAM II will enhance its effectiveness. The Congress and Pentagon planners must ask: How many different strategic bomber programs do we need?

The Air Force continues to fudge the question of what vital and identifiable mission the B-2 is to perform to justify its enormous expense. At times, the Air Force has emphasized the B-2's principal mission as attacking relocatable targets, such as mobile ICBMs. At other times, it has stressed the need for the B-2 to destroy deeply buried Soviet command bunkers. Recently, it has begun touting the B-2's possible role as a conventional bomber.

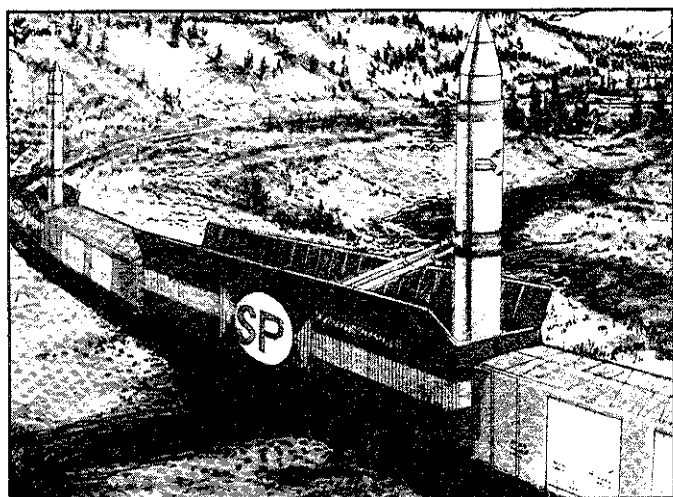
There are serious doubts about the wisdom of using the B-2 for any of these missions. The Air Force has stepped back from earlier claims of the B-2's ability to seek out and destroy mobile targets in the Soviet Union. Even if it can be made to perform that mission, it makes little sense to spend ever increasing sums of money in an effort to destroy Soviet SS-25 mobile ICBMs—their least-provocative and most stabilizing strategic forces.

If deemed a vital mission, attacking deep underground bunkers could be done more efficiently with earth penetrator warheads carried on ballistic or cruise missiles. And how much sense does it make to use a bomber worth \$600 million per copy to attack Colonel Quaddafi's tent?

Production of the B-2 bomber should be deferred. Estimated savings: \$10-12 billion in FY 1990-91. \$30 billion over five years.

RECOMMENDATION: Cancel the MX Rail Garrison System and halt MX deployment at 50

The Air Force wants to deploy 50 more ten-warhead MX ICBMs on special trains, beginning in 1992, with the first deployment to occur at F.E. Warren Air Force Base, Wyoming. Each train would carry two MX missiles. In peacetime, trains would be garrisoned at military installations at various locations in the west and southwest. During a crisis, the trains would disperse along commercial rail lines. Cost for production and deployment is estimated at \$16 billion.



Artist's drawing of MX Missiles on railcars

The US has been attempting for years, without success, to correct the problem of the theoretical vulnerability of its land-based missiles to increasingly accurate Soviet missiles. One crucial assumption that made the search for a survivable basing mode more difficult and more expensive was the requirement that any ICBM system must be able to survive with only "tactical" warning, that is, the warning from space-based and ground-based sensors that Soviet missiles were in flight and would land on American soil in a matter of minutes.

However, as newly-appointed National Security Adviser Brent Scowcroft and former Carter Administration Undersecretary of the Navy R. James Woolsey explained in their "American Agenda" report to President Bush on defense and arms control policy, MX missiles in rail garrison would have only limited mobility and "would require several hours of strategic warning, and a quick reaction to that warning, to make that mobility effective."

In addition, the proposed Strategic Arms Reduction Treaty (START) will place a premium on ballistic missile warheads. Under the START formula, the ten-warhead MX would account for a significant number of the allowed US warheads relative to its contribution to a survivable, effective US strategic deterrent.

Spending \$16 billion on a non-survivable MIRVed ICBM when the forthcoming START Treaty places a premium on ballistic missile warheads is a bad idea. The rail garrison program should be cancelled and MX deployment kept at its current level of 50.

Estimated savings: \$3-4 billion in FY 1990-91.

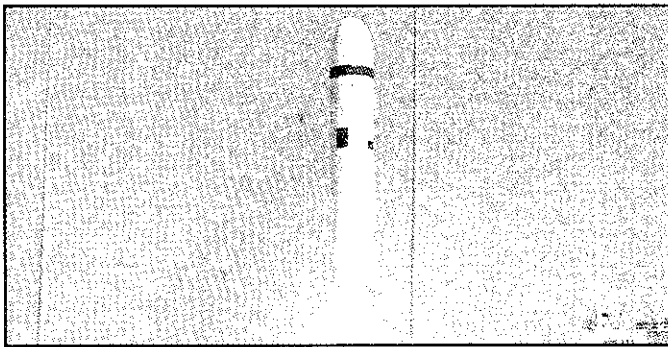
RECOMMENDATION: Defer production of the Trident II Missile

The Navy plans to spend some \$35 billion to deploy new Trident II D-5 missiles on Trident ballistic missile submarines and eventually to retrofit the D-5 onto older Trident subs. (This does not include the \$2-3 billion cost for each sub or the cost of the nuclear reactors and warheads). There are several reasons why all or part of this plan should be deferred.

The US presently has some 6,000 operational submarine-launched ballistic missile warheads on 256 Poseidon C-3 missiles and 384 Trident I C-4 missiles. The current SLBM force is the most survivable leg of the deterrent which, despite popular mythology, can strike a range of counterforce, military targets and is not merely capable of "city-busting."

Because of the Navy's confidence in the survivability of the Trident sub, it does not plan to take advantage of the D-5's larger size to increase its range to 6,000 miles (compared to 4,000 miles for the C-4). The D-5 will have the same range as the C-4. Thus, delaying the introduction of the D-5 would not endanger the survivability of US SSBNs at all. If the Soviets made dramatic advances in anti-submarine warfare (ASW), the US could move the Trident II (with longer range) into production to increase the Trident sub's area of operation or take other steps to enhance its survivability.

Instead of using the D-5's larger payload to increase



*Test launch of Trident II D-5 missile
from Cape Canaveral, Florida*

range, the Navy plans to put higher yield nuclear warheads on the D-5 in order to give it the capability to destroy Soviet missile silos, a questionable investment given the potential effect on stability.

Finally, since the proposed START Treaty will probably require substantial cuts in the size of the US SLBM force, embarking on a new multi-billion dollar missile program when START may require the removal of relatively new C-4s is inefficient and wasteful.

For all of these reasons, it makes sense to delay introduction of the Trident II and continue production of the Trident I missile for the foreseeable future. The Navy should also consider deferring production of the next Trident sub by one year.

Estimated Savings: \$4-7 billion in FY 1990-91 (DoD costs only).

DEFENSE AND SPACE PROGRAMS

RECOMMENDATION: Reduce significantly the budget for SDI research and testing

The Reagan Administration spent nearly \$20 billion over the past six years on ballistic missile defense research and testing, yet we are no closer to rendering nuclear weapons "impotent and obsolete" than when the Strategic Defense Initiative (SDI) was launched in 1983. The program has been continually restructured and SDI's rapidly changing mission and objective reflects the confusion and lack of consensus on what—if any—useful strategic mission a missile defense could perform.

Proceeding with advanced development and deployment of a partial anti-missile system, as the program is currently configured, would have only the objective of making our strategic offensive forces more survivable, something that can be done, if deemed necessary, more cheaply and simply by other means (e.g., ICBM mobility).

Even a partial system would cost tens of billions of dollars and provoke Soviet deployment of an anti-missile defense that would reduce our confidence in the ability of our own nuclear deterrent to attack Soviet targets. A race to deploy limited ABM systems would also make the completion of a START agreement cutting strategic offensive arsenals in half virtually impossible.

The SDI organization's (SDIO) total budget should be reduced to a level (about \$1 billion annually) commensu-

rate with a long-term research effort that continues to provide a hedge against possible Soviet breakout from the ABM Treaty. Programs such as the Advanced Launch System (ALS), space-based interceptor (SBI), and Zenith Star space-based chemical laser weapon should be eliminated because they are either wasteful or geared toward premature deployment of a missile defense system. Most funding for testing of nuclear directed energy weapons (NDEWs) should be eliminated, as well.

Estimated Savings: \$9-11 billion in FY 1990-91. \$30 billion over five years.

RECOMMENDATION: Delete funding for Anti-Satellite (ASAT) Weapons

Both the US and USSR have previously developed and deployed anti-satellite (ASAT) weapons to shoot down each other's satellites. The USSR has maintained a limited-capability ASAT system at its Tyuratam space launch facility since the early 1970's, although it has carried out a moratorium on any flight tests of the weapon since 1982. The US, which had a nuclear-armed ASAT deployed in the 1960's and early 1970's, began development and limited testing of a Miniature Homing Vehicle (MHV) ASAT, launched from an F-15 aircraft, in the early 1980's.

Because of the Reagan Administration's resistance to negotiations on limiting ASATs, Congress attached a ban on any tests of the MHV against targets in space to the 1986 defense bill. That ban remained in effect until the end of 1988 when, because of Congressional opposition and budgetary constraints, the Pentagon cancelled the MHV program.

But, despite this clear-cut Congressional guidance, the Pentagon has not given up on its attempt to deploy an ASAT weapon—it has only changed its budget strategy. The outgoing Reagan Administration budgeted almost half a billion dollars for development of various ASAT weapons in FY 1990, with the money to be divided up among the Army, Navy, Air Force and SDI organization.

The Army will continue to take the lead on testing the Exoatmospheric Reentry Vehicle Interception System (ERIS), currently under development within the SDI program. The Navy will examine adapting ERIS for mobile, sea-based use to attack Soviet satellites that it claims are capable of targeting carrier battle groups.

The other major program would be in the directed energy area. The Air Force will test a ground-based chemical laser (MIRACL) based in New Mexico, which had previously been used by the SDIO and the Navy for various experiments, as a possible ASAT weapon. Development of the free-electron laser, which is also largely funded within the SDIO budget, will also continue.

Many of the same objections that previously applied to the MHV also apply to these systems. While the current Soviet ASAT does not threaten vital US communications and early warning satellites in higher orbits, Soviet and American deployment of advanced ASATs capable of destroying both low and high altitude satellites could have a harmful effect on strategic and crisis stability and would accelerate an expensive and dangerous arms race in space.

Moreover, advanced ASATs are the single most potent threat against any future space-based missile defense system, giving the USSR every incentive to develop them if the US shows no restraint.

From a management standpoint, the proposed division of ASAT funding and responsibility among different military branches is a classic case of allowing all the services a role in a mission that, if it should exist at all, should properly be the responsibility of only one. Shifting the lead on ASAT from the Air Force to the Army, while the Navy claims the principal need for the system, represents flawed policy-making and management.

The Congress should delete any funds in the 1990 request for a new ASAT. Any funds should go toward preserving and enhancing the survivability of essential US military satellites.

Estimated savings: \$1.1 billion in FY 1990-91. \$3 billion over five years.

RECOMMENDATION: Delete funding of the National Aerospace Plane

The National Aerospace Plane (NASP) is a joint DoD/NASA program to build an experimental, hypersonic aircraft capable of taking off and landing horizontally and flying both in the atmosphere and in space—a transatmospheric flight vehicle. The goal is for a system that could fly at speeds of Mach 16-25 and reach any point on the globe within two hours.

The NASP program was first announced publicly by former President Reagan in his 1985 State of the Union message—when he described it as a space-age “Orient Express.” The program was formally initiated in October 1985 and is now in its second developmental phase.

Although the NASP’s earlier optimistic development schedule has already been pushed back, the X-30 experimental vehicle is now expected to have its first flight in early 1995 with its first orbital flight coming in 1996.

There are a number of reasons to scale back or cancel this program. The first is the cost. The total cost of designing and building the X-30 is estimated at over \$3.3 billion. However, the X-30 is not an actual prototype of a NASP but is simply an experimental flight vehicle to investigate the advanced technologies required for some future NASP fleet. The cost of developing such a fleet of NASPs has been estimated at about \$15 billion.

The Air Force is now the lead agency within DoD on the NASP, and funding will take up a large and growing share of the Air Force’s overall advanced technology research budget. While NASA is supposed to be sharing the development cost, Congress complained that NASA was not paying enough of a share (only about 20%). So Congress directed NASA to pay a larger share of the cost of the X-30, which means that the NASP program will consume a larger chunk of NASA’s limited R&D budget that could be better spent on NASA science programs of higher priority.

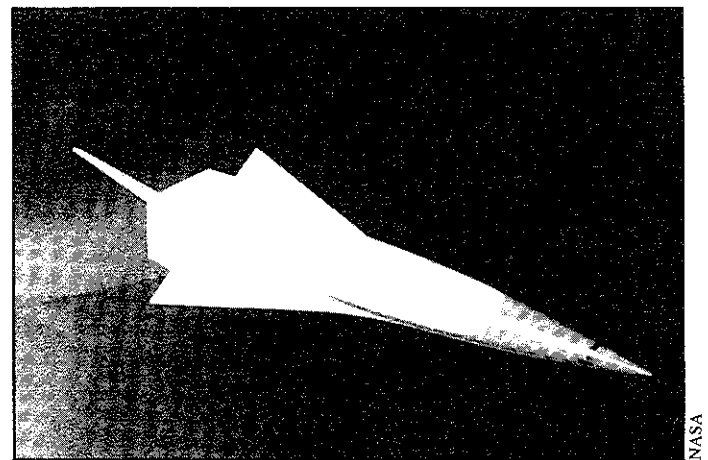
Secondly, the NASP does not have any clearly defined military or civil mission. It has been vaguely identified as a possible replacement for the Shuttle in the early 21st century.

Committing well over \$3 billion to this technology, without a significant investment in alternative technologies, is placing too many eggs in one basket. Moreover, major increases in the demand for launch services would be needed to justify the very large investment in developing the NASP, but such growth in demand is very unlikely.

Nor does the NASP have any clear civil transport application. While the NASP program is supposed to have the goal of reducing payload to orbit costs by at least an order of magnitude, there is good reason to be skeptical of this objective, since it was originally promised for the Shuttle program as well. And while the NASP was unveiled as an “Orient Express” passenger transport, NASA studies of high speed commercial transport options for the 21st century eliminated NASP-type technologies from consideration, citing their very high cost and marginal contribution to operating economies.

Finally, a 1988 Defense Science Board (DSB) report concludes that “early estimates of vehicle size, performance, cost, and schedule were extremely optimistic.” Increasing funding now for a program with so many unanswered questions about its mission and cost is a mistake.

Estimated savings: \$700 million in FY 1990-91 (DoD funding only).



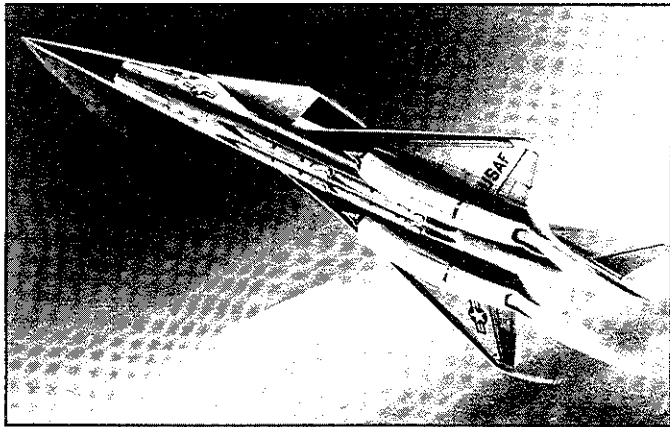
*Model of National Aerospace Plane
X-30 Flight Test Vehicle*

TACTICAL PROGRAMS

Development and acquisition of a new generation of fixed and rotary wing tactical combat and transport aircraft in the 1990’s represents a potential expenditure of hundreds of billions of dollars. The five year defense plan, even assuming some modest growth, will be incapable of sustaining sufficient funding for all the aircraft the services want at efficient production rates. Hard choices can and should be made.

RECOMMENDATION: Defer the Advanced Tactical Fighter

The Air Force wants to spend \$64 billion on its new air superiority fighter, the YF-22A/23A Advanced Tactical Fighter (ATF), as well as another \$15 billion to build an attack version of its current fighter, the F-15, that would



Boeing concept for Advanced Tactical Fighter

strike ground targets well behind enemy lines. It has also spent billions, in secret, over the past decade on a first generation "Stealth" attack plane, designated the F-117A, which it now wants to modify at additional cost. Yet the Air Force is simultaneously cutting back production of the less expensive F-16 fighter/attack aircraft and is neglecting its critical close air support (CAS) mission for ground forces.

The ATF, which would press the technological state of the art in avionics, materials, and propulsion, has already encountered problems, especially in its ambitious avionics suite. As competing contractors work on its design, the weight and cost of the ATF continue to grow above the 50,000 lbs. weight and \$35 million cost per copy (FY 81 dollars—\$45 million in FY 89 dollars) targets that the Air Force claimed were firm.

The Air Force has pushed back development of the ATF by two years to accommodate technical challenges and shrinking defense budgets. Because other Air Force programs are more pressing, and US qualitative superiority can be maintained for the time being with modifications to existing aircraft and the weapons and sensors they carry, full-scale development of the ATF should be deferred indefinitely and its budget curtailed significantly.

Estimated Savings: \$3 billion in FY 1990-91.

RECOMMENDATION: Defer the LHX helicopter

The Light Armed Scout Helicopter (LHX) is an Army program to develop a single type of light helicopter for scout and some attack missions to replace various existing helicopters. Full scale development is currently scheduled to begin in FY 1991, with the first prototype to fly in 1993.

Originally, the Army proposed building about 5,000 LHXs at a cost of some \$70 billion. It was to be kept simple and light-weight, with only one crew member, the pilot, in order to keep the program's cost down. But because the LHX was to be a "multi-mission" aircraft replacing a number of different types of helicopters, its size, weight, and complexity increased. This, of course, started driving up the cost. Also, the air-to-air combat mission grew in importance as the LHX development progressed. The focus on an all-weather, night attack capability led the Army to increase the size of the LHX flight crew from one to two—although it had previously specified a one man crew as a

critical goal.

Because of design changes, cost concerns, and Congressional resistance, the Army decided in 1988 to drastically alter the program. It now proposes to build 2,100 LHX aircraft at a total cost of over \$40 billion, which will mean a significantly higher cost per helicopter. It has cancelled the utility version and established a new lower empty weight ceiling for each helicopter of 7,500 lbs. Initial operation has slipped from 1994 to late 1996 or early 1997.

In order to protect the LHX in its 1990 and 1991 budgets, the Army plans to cut back production of AH-64 Apache, UH-60 Blackhawk and other helicopters prematurely. The LHX represents yet another example of a military service prematurely cutting back or terminating production of existing systems in order to fund the next generation of more exotic weapons.

The LHX program continues to have problems. Recently, the Congress' General Accounting Office (GAO) issued a report concluding that LHX faced "significant technical hurdles" and "the likelihood of increased costs."

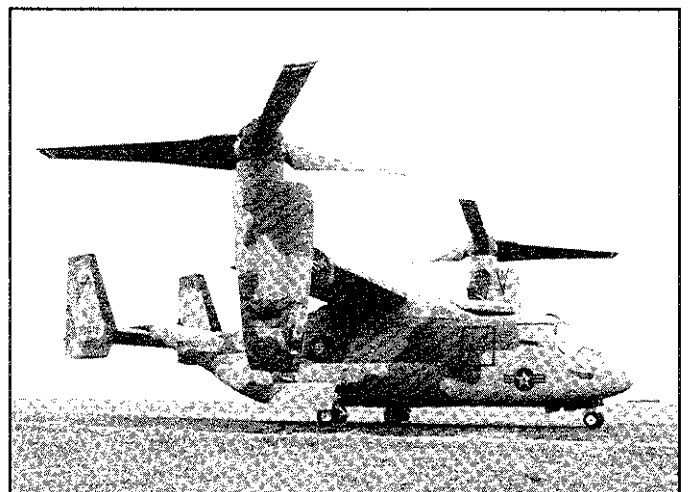
Production of LHX should be deferred in order to maintain adequate production of other Army helicopters at efficient rates.

Estimated Savings: \$700 million in FY 1990-91. \$2.5-3 billion over five years. Total program cost = \$33 billion.

RECOMMENDATION: Cancel the V-22 Osprey

The V-22 Osprey is a tilt-rotor, vertical take-off and landing aircraft being developed for joint service use. The V-22 is designed to take-off and land like a helicopter but fly like a fixed-wing turbo-prop airplane at speeds of up to 350 mph. The current plan is to buy 657 V-22 aircraft at a total cost of \$30-35 billion. The first V-22s would be operational in 1994.

While the Marine Corps has the biggest stake in the program, the V-22 is a "joint" development effort that was originally planned for purchase by all the services. But some services have begun dropping out as budgetary pressures increased. The Army, which had planned to buy 231 V-22s, was the first to drop out, citing other, higher budget priorities. Then the Navy, which procures aircraft for both itself and the Marine Corps, scuttled plans to buy about



V-22 Osprey

300 V-22s for anti-submarine warfare (ASW) operations and, more recently, responded to FY 1990-91 budgetary pressures by stretching out V-22 procurement for both services. The Air Force claims to be still on board the program, but is only planning to buy about 50 V-22s for its special operations forces.

As a result of these changes, the cost of each V-22, currently estimated at \$35 million each, is expected to rise sharply. The V-22's principal contractors, Bell helicopter and Boeing Aerospace, recently informed Navy officials of an anticipated 15% increase in the overall program cost.

Moreover, technical delays with the high tech program have delayed its first flight almost a year. It is now scheduled to occur sometime in March 1989. Finally, Bell has filed suit with a subcontractor, alleging delivery of faulty test equipment.

While the tilt-rotor concept is an interesting prospective technical innovation in military aircraft, the V-22 is simply too ambitious and expensive a program to move into production in a time of budget austerity. Procurement should be cancelled and the program kept in limited R&D.

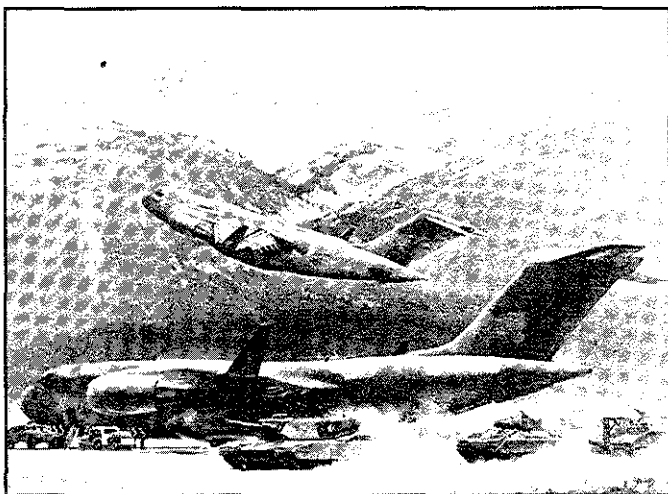
Estimated savings: \$3.6 billion in FY 1990-91. Five year savings of \$22 billion.

RECOMMENDATION: Defer the C-17

The Air Force plans to build 210 C-17 air transport planes during the 1990's to move combat troops and equipment overseas during hostilities. Initial operation of the C-17 is currently scheduled for FY 1992. Total program cost is currently estimated at \$37 billion, but there are already delays expected in the first flight, currently scheduled for August 1990, and the cost of the C-17 is expected to grow.

The C-17 is designed to carry the amount of cargo of about three smaller C-130s but less than that of the giant C-5B transport. However, it is also designed to land on shorter airstrips than the C-5 or C-141 transport and off-load troops and equipment more quickly. In addition, it is to have a range of about 2,400 miles, allowing it to fly to distant trouble spots without refueling.

The Air Force has completed numerous studies to justify why its need for the C-17, claiming a chronic shortage of



Artist's drawing of C-17

The Need to Cancel Weapons

"We're going to have to cancel some weapons, but we're not going to say which ones now and get all their constituencies lined up against us."

- Unnamed senior defense official
quoted in *The Washington Post*,
March 1, 1989.

airlift capability. But US airlift capability has actually increased by 70% since 1981 as a result of buying more C-130s and C-5Bs, as well as improving the civilian reserve air fleet (CRAF) program. The airlift goal appears to be continually increased, so that the Air Force always claims a shortfall.

Dedicated airlift is a very expensive way to transport combat forces and the C-17 would be the "Rolls Royce" of air transports. While there are different ways to measure the relative cost of transport aircraft (cost per sortie, operational and support costs per hour, etc.) the GAO estimates the C-17's per unit cost will be about \$170 million, which is already higher than the cost of the larger C-5B and would buy 10 C-130s. Moreover, the \$170 million estimate (which the Air Force disputes) assumes a full buy of 210 aircraft received on schedule—any delay or reduction in the total buy for technical or budget reasons would drive up the unit cost.

Meanwhile, the US is grossly underfunding fast sealift, which is a more economical and efficient way to transport personnel and equipment. And the pre-positioning of supplies and equipment overseas in order to alleviate the need for both sea and airlift in times of crisis—through the POMCUS program and other initiatives—remains short of requirements established years ago.

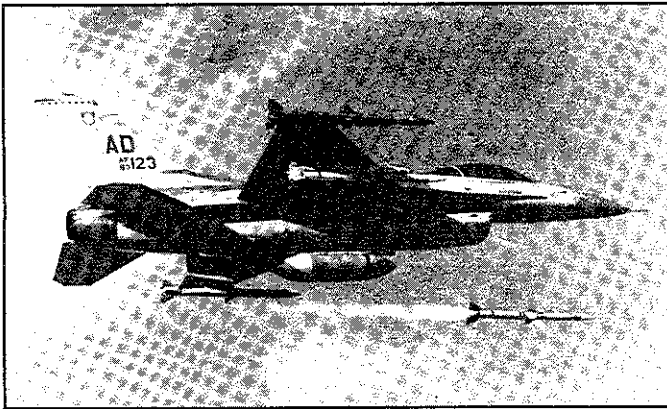
Production of the C-17 should be deferred. Estimated savings: \$6 billion in FY 1990-91.

RECOMMENDATION: Defer production of the AMRAAM Missile

The Air Force and Navy are jointly developing the Advanced Medium-Range Air-to-Air Missile (AMRAAM) to replace existing air-to-air missiles on their fighter aircraft in the 1990's.

AMRAAM would be a radar-guided missile that would have a "fire and forget" capability, that is, it would have its own active terminal seeker that could "lock on" to an enemy aircraft's electronic emissions from many miles away, thus permitting the aircraft that launches it to turn away after the missile is fired without having to guide the missile with its own combat radar and expose itself to the other aircraft's air-to-air missiles.

While such "fire and forget" missiles are a tremendous advance in technology and offer a number of advantages to the fighter pilot, they also have disadvantages. Shooting at aircraft from "beyond visual range" forces pilots and their weapons officers to rely on electronic systems to distinguish between friendly and hostile aircraft. Such "Identification Friend or Foe" (IFF) systems are often unreliable,



Hughes

F-16 Launching AMRAAM Missile

leading to increased risk of shooting down friendly aircraft by mistake.

And there have been many problems with development of AMRAAM itself. The missile was originally to go into production in 1985, but that was delayed several years after test problems occurred. Last year, the GAO reported to Congress that, despite extensive testing, "the combat performance of missiles to be produced for inventory is uncertain." GAO also noted that "tests have not yet demonstrated AMRAAM's operational effectiveness in some areas." The Pentagon's own office of test and evaluation said last September that AMRAAM was not yet ready for full-scale production because of both hardware and software problems. The Air Force is continuing to conduct tests, a number of which have ended in failure, but the first production missile came off the line last October.

AMRAAM is a very large program: over 24,000 missiles are to be produced during the 1990's at a cost of \$11.2 billion (then year dollars.) The cost of the missile has risen sharply because of the delays and technical difficulties.

Originally the Air Force said that AMRAAM would cost about the same as the Sparrow missile it would replace. Although the Congress imposed a cost cap of \$359,000 per missile, cutbacks in total production have driven up AMRAAM's cost to about \$500,000 per copy—and they could reach \$1 million each! This is seven times the cost of the Sparrow. And, while the Air Force claims that AMRAAM will be more reliable and easier to maintain than Sparrow, this appears unlikely, given AMRAAM's complexity.

It makes no sense to proceed with production of AMRAAM while cutting off production of other air-to-air missiles until the Congress and the Pentagon are totally convinced that it is a reliable, effective weapon. That can only be accomplished through additional realistic testing and, if necessary, further modifications.

Potential savings: \$2.4 billion in FY 1990-91.

FORCE STRUCTURE CHANGES

RECOMMENDATION: Implement in full the Ribicoff Panel's Base-Closing Plan.

In December 1988, the Defense Secretary's Commission on Base Realignment and Closure or Ribicoff-Edwards

Panel released its report on proposed military base closures and realignments around the United States in order to consolidate operations and save money.

Closing redundant military facilities is always difficult and, although the Ribicoff plan is quite modest in scope, it is a step in the right direction. The charter and law that established the commission specifies that the plan must either be accepted in full or rejected by March 15, 1989. Neither the Secretary of Defense or the Congress can modify the base closure plan, which proposes closing 86 facilities and bases. Acceptance could pave the way for further elimination of redundant and costly military facilities that add nothing to national security.

The Congress should accept the Ribicoff plan. The Commission estimated annual savings of \$700 million and a net savings of \$5.6 billion over 20 years. However, a recent CBO analysis suggests that the Commission's estimate may be too high.

RECOMMENDATION: Early retirement of the Aircraft Carriers USS Enterprise and USS Coral Sea

One of the big winners in the Reagan defense spend-up was the United States Navy. By establishing a requirement for a 600 combat ship navy built around 15 carrier battle groups, 4 battleship groups, and 100 attack submarines in order to implement the offensively-oriented "maritime strategy," the Navy convinced Congress of the need for a greatly increased ship-building program but successfully thwarted its attempts at looking too closely at the fine print.

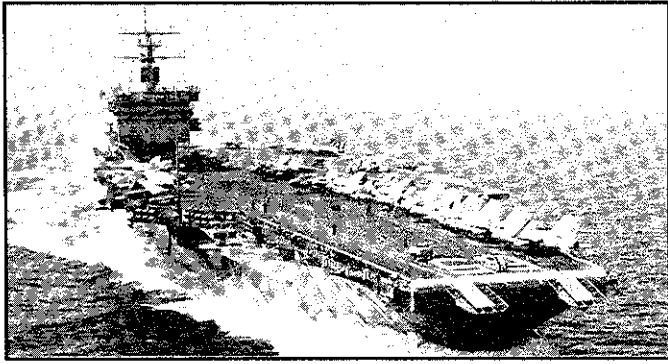
As a result, the Navy now finds itself still short of the 600 ship fleet and with a budget picture that is unbalanced. Most analysts predict that the Navy will not have enough manpower, aircraft or escort ships to support the new carriers it has funded. It will have to consider cuts in the force structure in the 1990's if it is to avoid aggravating these shortages.

In FY 1988, the Congress added funding for two more nuclear-powered Nimitz-class aircraft carriers (designated CVN-74 and 75). Currently, the US Navy plans to expand from 14 to 15 deployable carriers in the early 1990's when the Nimitz-class *USS Abraham Lincoln* (CVN-72) is commissioned. The Navy would remain at this level with deployment of the *USS George Washington* (CVN-73) and CVN-74 in the late 1990's, while retiring two older carriers, the *USS Coral Sea* and *USS Midway* in 1992 and 1997, respectively.

In a time of budgetary pressures, when all three services must make sacrifices, it makes no sense for the Navy to continue its plan to expand to fifteen carrier battle groups. This is particularly true given the fact that the Navy will have inadequate personnel, escort ships and aircraft to support this force expansion.

Unfortunately, most of the contracts for the two new carriers have been let and there would not be much savings in cancelling them. However, other carriers are aging and in need of expensive overhauls if they are to continue in service.

This is particularly true of the *USS Enterprise*, which is



US Navy

The aircraft carrier USS Enterprise

scheduled to begin an overhaul in 1991 to have its eight nuclear reactors re-built. Because of the reactors' unique design, this process will be long and costly. The Navy has not released a detailed estimate, but it is believed to exceed \$2 billion.

Another savings option is to retire early the aircraft carrier *USS Coral Sea*. Early retirement of the *Coral Sea* would save considerable funding and allow the Navy to fill out all of its deployable carriers with sufficient personnel, aircraft and escort ships.

The *USS Coral Sea* should be retired in 1990 or '91 instead of 1992. The *USS Enterprise* should be retired in 1991 instead of overhauled.

Estimated Savings: \$1 billion in FY 1990-91 in savings from cancelling the *Enterprise* overhaul. \$3-7 billion savings over five years from retiring *Enterprise* and *Coral Sea* early.

RECOMMENDATION: Eliminate two of the Army's Light Infantry Divisions

During the early 1980's, the US Army expanded its force structure from 16 to 18 active divisions. As part of this expansion, the Army also reorganized and established a requirement for new "light" infantry divisions.

The concept behind these light divisions is that they sacrifice size (10,000 versus 16,000 troops), firepower (no tanks or armored fighting vehicles) and tactical mobility in order to minimize the number of airlift "sorties" required to get them from the continental US to battle zones in far away regions. In theory, they could be airlifted much more quickly than other, "heavier" Army divisions.

While the Army had originally suggested that as many as fourteen light divisions might be created, plans were scaled down to five. Accordingly, the Army converted two active divisions (the 7th in California and the 25th in Hawaii) to light and planned to organize three more: the 6th in Alaska, the 10th in New York, and the 29th National Guard unit in Virginia.

Many defense analysts have questioned why new light infantry divisions were created, claiming that the Army already had enough to support probable contingencies. The issue revolves around the proper mix of "heavy" and "light" divisions in the Army's structure.

For example, isn't the purpose of the 101st air assault and 82nd airborne divisions and, for that matter, the entire US Marine Corps to deploy quickly to the battle zone? The

101st and 82nd are both part of the Rapid Deployment Force (RDF) which, as its name suggests, was created specifically to get US troops to a battle zone in far away regions rapidly.

In fact, the Army has had difficulty in these leaner budget times in filling its requirements for light divisions. Both the 6th and the 10th are far below their required combat strength, and are being filled out by reserve units. Neither would be ready to deploy immediately if war broke out, which is their ostensible mission. Other active divisions slated for rapid deployment, such as the 9th High Technology Motorized Division (HTMD) in Washington state, have had to convert part of their structure from active to reserve because of the Army's need to reduce troop numbers due to budget cuts.

Not surprisingly, there is a Congressional "pork barrel" angle to the light divisions. The 6th and the 10th divisions are located in Alaska and New York, respectively, and their activation was pushed strongly by their Congressional delegations. Activation of each division required enormous military construction expenditures.

In adjusting its force structure to a more austere defense budget, the Army should follow the Air Force's example and reduce its active forces to a level where units can be equipped, manned and maintained more efficiently and are better prepared for combat. For example, the 10th division could be converted to a reserve unit and the 6th back to an independent brigade.

Estimated Savings are difficult to determine and would depend on whether the Army reduces the number of active duty personnel or simply transferred personnel to other units, but could total hundreds of millions or even billions of dollars.

DEPARTMENT OF ENERGY NUCLEAR WEAPONS PROGRAMS

Funding within the Department of Energy for atomic energy defense activities accounts for about \$8 billion per year. Much of this goes toward the design, testing and production of new nuclear weapons.

Currently, the Department of Energy (DoE) is in the midst of an enormous scandal directly resulting from its negligence and mismanagement of the nuclear weapons production complex over decades.

Two principal problems exist. First, past production has left a legacy of huge amounts of radioactive and toxic waste in and around production sites at Fernald, Ohio; Hanford Reservation, Washington; Rocky Flats, Colorado; and elsewhere.

Secondly, as the production complex—much of which was built in the 1940's during the Manhattan project—started to age and production continued to expand, safety problems emerged. For years, these problems were played down or ignored by both the DoE and the contractors that manage the various production facilities. Finally, the DoE was forced to shut down production where problems persisted. As a result, the US has halted all production of plutonium and tritium, the main fissionable materials used in making

nuclear warheads, for the past seven months.

Recently, DoE unveiled a plan to build two new production reactors for tritium and other construction projects, including the SIS production facility discussed below.

Thus, DoE still has no coherent plan for cleaning up the current production and waste mess, yet wants to plunge ahead in constructing new production facilities. Out of a \$9 billion request for nuclear weapons programs in FY 1990, the DoE has allocated only \$315 million, less than 4%, for environmental cleanup.

The total cost of both cleaning up the existing waste and modernizing the complex will be staggering. The GAO recently reported to Congress an estimate of up to \$155 billion, and some outside analysts consider even that figure to be unrealistically low.

RECOMMENDATION: Cancel the SIS Facility

The DoE continues to press Congress for funds to build a special isotope separation (SIS) facility to upgrade or "purify" lower fuel-grade plutonium into weapons-grade plutonium. This facility would be built at the Idaho National Engineering Laboratory at a cost of some \$1.2 billion. Operating the plant over thirty years is expected to total an additional \$2 billion. The SIS facility would become operational in 1995.

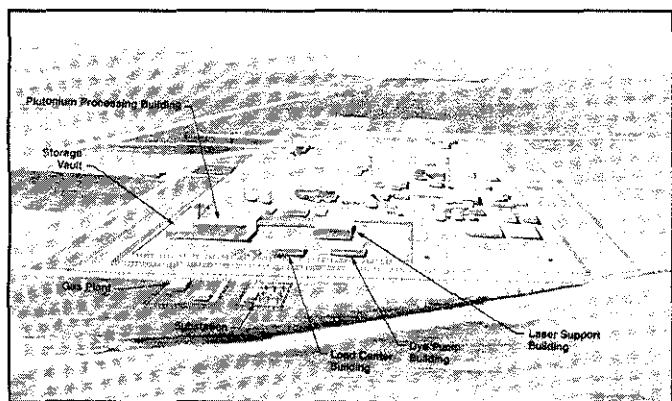
DoE officials admit that the US currently has a sizable stockpile of weapons-grade plutonium on hand. Then-Secretary of Energy John Herrington went so far as to testify before Congress in February 1988 that, "We're awash in plutonium. We have more plutonium than we need."

In addition, there is no demonstrated need for future plutonium production, particularly given the ability of the US to recycle plutonium from warheads being dismantled under the INF, SALT II and projected START Treaties.

Finally, the DoE's estimated cost for the SIS facility has increased by more than 250% since the program's inception, and the GAO, which has urged the Congress to re-evaluate the SIS project, recently warned that "huge cost overruns" may be on the horizon.

The SIS facility should be cancelled and any projected savings from these changes should be put into nuclear and toxic waste treatment.

Estimated Savings: \$260 million in FY 1990-91, to be re-programmed towards nuclear and toxic waste clean-up. □



SIS Facility

Dept of Energy



Ann Druyan

Personnel Notes

At the FAS annual council meeting **Ann Druyan**, member of the FAS Fund Board, was elected FAS Secretary by the Council, replacing **George Silver** who had served for 8 years. Druyan is a lecturer, t.v. producer (including a recent *Nova* on the life of George Kistiakowsky), and author, most notably the co-writer of the award winning 13 part t.v. series, *Cosmos*, and co-author of the best-seller, *Comet*. Of particular interest to FAS is her long-term commitment to reversing the nuclear arms race including organizing several of the most successful demonstrations at the Nevada Test Site in protest of continued US nuclear testing. FAS is indebted to Druyan in many ways.

Yale Professor of Economics, **Sidney G. Winter**, will be in residence from February through August 15 to work on the connection between defense reductions and mobilization bases. Winter, a summa graduate of Swarthmore College, is known for his work on defense and on the theory of the firm.

Daniel Hirsch, Director of the Program on Nuclear Policy at the University of California Santa Cruz, and Chairman of the Board of the Committee to Bridge the Gap, is in residence at FAS as the Bernard Schwartz Fellow in Energy and Environment. Among other things he is looking into environmental issues involved with the weapons production complex.

Former Ambassador of the Conference of the Committee on Disarmament (1974-77), **Charles Flowerree** is working with CBW staffer **Gordon Burck** on a book on the proliferation of chemical weapons. Burck is assisted in this and other matters by **Lora Lumpe**, who also serves to assist Matthew S. Meselson and Julian Robinson in producing the FAS publication *Chemical Weapons Convention Bulletin*.

Tom Zamora, formerly of the Union of Concerned Scientists, has replaced **Glenn Hecton** as assistant to both **Thomas Longstreth** and **David Albright** on the occasion of Hecton completing his requirements for a master's degree. □



FAS and GCS

FAS & GROUP OF CHINESE SCIENTISTS

In January, FAS reached agreement with a "Group of Chinese Scientists" (GCS) to hold annual meetings to exchange information and ideas and to cooperate in traditional scientific fashion" with a view to reaching a world in which "all states are secure from the threat of mass destruction."

FAS sees this group as comparable, in China, to the Committee of Soviet Scientists for Peace and Against the Nuclear Threat, currently chaired by Academician Roald Sagdeev. FAS is working to bring the three operations into contact with one another regularly.

FAS Fund Chairman Frank von Hippel was instrumental in getting the GCS a MacArthur foundation grant which, in turn, made possible their visit to FAS. The Chinese scientists spent a week in Washington talking to FAS specialists and, with our help, to a number of other organizations.

The Chinese scientists, led by Professor Hu Si De, Deputy Director of the Institute for Applied Physics and Computational Mathematics, included Professor Du Xiang Wan of the same institute and Professor Chen Xue Yin of the China National Nuclear Corporation, were pleased with the trip. They were accompanied by Dr. Chang Shu Wang who served as interpreter. □

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**A NEW INTERNATIONAL JOURNAL:
 "SCIENCE AND GLOBAL SECURITY"**

On November 21st, at the Hunan restaurant near FAS headquarters, Roald Sagdeev of the Soviet Space Research Institute, Harold Feiveson and Frank von Hippel held a press conference with Martin Gordon, Chairman of Gordon and Breach Science Publishers, to announce a new international journal, "Science and Global Security." The journal is to be published in both English and Russian starting this summer.

Feiveson is the editor and Sagdeev and von Hippel co-chair the editorial board. Other US members of the editorial board are: Herbert Abrams, M.D., Stanford; John Holdren, Berkeley; Tom Johnson, West Point; Frank Long, Irvine; Milo Nordyke, Lawrence Livermore; Ted Postol, Stanford; and George Rathjens, MIT. Other Soviet members are Vitali Goldanskii, Institute of Chemical Physics; Sergei Kapitza, Vavilov Institute of Physics; Andrei Kokoshin, Institute for the Study of US and Canada; Stan Rodionov, Space Research Institute; and Evgenii Velikov, Kurchatov Institute of Atomic Energy. We expect to add members from other European countries soon.

The journal is looking for scientific analysis relating to arms control or global environmental policy choices. If you are potentially interested in submitting such an article, write to Harold Feiveson at the Center for Energy and Environmental Studies; Princeton University; Princeton, NJ 08544; or call him at (609) 452-4696.

For a complimentary first issue and subscription information, write Gordon and Breach Science Publishers, Marketing Department; P.O. Box 786 Cooper Station; New York, NY 10276. □

APRIL ISSUE:

The next issue of the FAS Public Interest Report will feature a first-hand examination of relevant issues in Indochina by FAS President Jeremy J. Stone who is spending February in Vietnam and Cambodia. ■

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