

increased 85 percent since 1980. If the Administration's plans were carried out, budget authority for procurement in 1988 would be 382 percent greater (198 percent in real terms) than in 1980.

The Congress could direct a more moderate increase in the purchase of new combat systems. Such an alternative could take several distinct forms, including:

- o Canceling selected weapons programs that are experiencing development problems or failing to meet program expectations;
- o Continuing modernization programs, but at a slower pace;
- o Redirecting preliminary development efforts to emphasize longer-term systems intended for the 1990s.

As noted above, cuts in procurement programs offer relatively small outlay savings in the first year of the cuts but much larger savings in future years, thereby easing the task of meeting lower future spending targets. Although such cuts do not immediately affect readiness, they may have a long-term impact on combat effectiveness.

Cancel the F/A-18, Buy A-6Es as Substitutes. The F/A-18 is a dual-purpose fighter and bomber, to be deployed with the Navy and the Marine Corps. It was originally intended to be a lower-cost (and less capable) complement to the more expensive and capable F-14 fighter/interceptor. The Navy expanded its mission, however, making the F/A-18 a primary light attack bomber designed to replace the A-7 currently in the inventory. The Navy now intends to buy the F/A-18 primarily as an attack bomber, with the F-14 being purchased as the Navy's fighter for the future. 3/

In the attack role, the F/A-18 would have some definite advantages over other attack planes the Navy could buy. It can fly at supersonic speeds and it would generally be able to carry as much or more ordnance at short ranges. It is designed to be more reliable, which could help hold down peacetime operating costs and improve wartime operations tempos. And it can be flown as a fighter; this dual-mission capability is something no alternative aircraft could offer.

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3. The Marine Corps will use the F/A-18 as a fighter, and the Navy will buy a small number to use as fighters on two older aircraft carriers physically incapable of operating the F-14.

Recent Navy evaluation tests found, however, that without further modification the F/A-18 could not perform important combat missions specified in Navy requirement documents. Earlier last year, the Secretary of the Navy had suggested terminating the F/A-18 program because of substantial increases in the cost of the aircraft, buying instead the Navy's most capable attack bomber, the A-6E, for all attack squadrons. The Secretary recently restated his support for the F/A-18, even though its costs beyond 1983 have not been reduced. Indeed, recent press reports suggest that last year's actions did not stem the cost rise of the F/A-18 and that further program cost increases may be expected. It is now substantially more expensive than the A-7 it is to replace, and might even be as expensive as the A-6E were the Navy to purchase the A-6E at economic rates. Unlike the F/A-18, the A-6E is an all-weather day-night attack bomber. The Navy is considering a program to upgrade the A-6E to a new F model, which would then be the premier bomber until the turn of the century. CBO analysis has shown that, in addition to the advantages of all-weather day-night operations, the A-6E can carry substantially more ordnance than the F/A-18, especially at long range. ^{4/}

The Congress could reduce the cost of modernizing carrier-based aircraft by terminating the F/A-18 as an attack bomber and choosing the more capable A-6E, as previously suggested by the Secretary of the Navy. The Navy would continue to develop the A-6F as the improved attack bomber for the future. This alternative would not only enable purchase of a more capable bomber aircraft, but also would provide budget savings of \$8.4 billion over the next five years (see Table II-4). These savings reflect a gradual phasing out of the F/A-18 program over four years. Those F/A-18 aircraft currently in the inventory, and those purchased during the wind-down stage, would serve as fighter aircraft for the Marine Corps; they would also provide fighters for two older aircraft carriers incapable of supporting the larger F-14. The savings shown in Table II-4 are net of the increased purchases of A-6Es. An additional advantage of this option is that, at higher production rates, the A-6E can be purchased at substantially lower unit costs, which would also help to hold down the cost of the new A-6F.

The five-year savings in Table II-4 are caused by purchasing fewer aircraft, and, as such, overstate the long-run savings. Because the F/A-18 program would be phased out more quickly than production of A-6Es could be increased, this alternative would buy 242 more A-6E/Fs than the Administration plans over the next five years, and 397 fewer F/A-18s. Buys

4. See Congressional Budget Office, Costs of Expanding and Modernizing the Navy's Carrier-Based Air Forces (May 1982).

of A-6Es would have to continue in later years to make up this difference. Moreover, costs in Table II-4 reflect those for the A-6E, not those for an A-6F which could be more expensive.

Cancel the Division Air Defense Gun. The Army's Division Air Defense Gun (DIVAD) is primarily designed to attack enemy helicopters and low-altitude aircraft that are within four kilometers of the DIVAD. It is also capable of attacking lightly armored vehicles and trucks. Mounted on an M48A5 tank chasis, this twin 40mm gun system relies upon a sophisticated radar, similar to that on the F-16 aircraft. The system has a rapid-fire capability; after it identifies a target, DIVAD can position and fire its gun within ten seconds. The DIVAD will replace the existing Vulcan 20mm gun system. Vulcan has an effective range of two kilometers, and--because it lacks a sophisticated radar--has limited effectiveness in the inclement weather common in Europe.

Although the DIVAD offers significant improvements relative to the Vulcan air defense system, the latest version of the Soviet attack helicopter--the Hind E--reportedly has an effective range of eight kilometers, twice as great as that of the DIVAD gun. Were the Warsaw Pact to field the attack helicopters at rates consistent with recent historical experience, by the end of the decade almost 50 percent of the helicopter fleet could fire its ordnance beyond the range of DIVAD. Further, the active radar, which is critical to DIVAD's accuracy, could become vulnerable to Soviet missiles that "home in" on the radar beam, increasing DIVAD's vulnerability to enemy helicopters at extended ranges. Moreover, some have expressed concern that DIVAD's sophisticated radar would be difficult to maintain during ground combat.

Nonetheless, the Army plans to procure 472 DIVAD systems in 1984-1987, at a total program procurement unit cost of \$6.5 million each. To date, the Army has been authorized to order 146 units.

The Congress could choose to cancel the DIVAD program, directing the Army to develop a system less vulnerable to countermeasures, and capable of defeating Soviet systems projected for the future. In the interim, the Army would rely on the existing Vulcan air defense gun, as well as already-planned buys of the Stinger air defense missile currently being deployed in the Army. The Stinger is a shoulder-fired missile that homes in on a heat source. Its primary mission is to attack low-altitude aircraft and helicopters.

Eliminating DIVAD would result in net savings of \$934 million in 1984 and a total of \$2.8 billion over the five years (see Table II-4).

Cancel the Army Helicopter Improvement Program. The Army Helicopter Improvement Program (AHIP) is designed to provide a more capable scout helicopter by the mid-1980s through modification of the existing OH-58 helicopter. Scout helicopters have no weapons; their primary mission is to acquire and designate targets for both the attack helicopters and the artillery. Relative to the current scout helicopter, the AHIP improves the acquisition of targets at nighttime and the operational capability of the helicopter in the Southwest Asia environment. 5/

While the modification program would enhance the OH-58 helicopter, the Army considers it only an interim solution for the scout mission. 6/ At present, the Army is developing a new fleet of helicopters to perform the scout/observation mission and complement the new Apache attack helicopter. This new fleet of scout helicopters is planned for production in the early 1990s. Nonetheless, the AHIP program for 1984-1988 would improve 328 scout helicopters; the total program would modify 578 scout helicopters.

The Congress could cancel the AHIP program, saving an estimated \$0.2 billion in 1984 and \$1.8 billion over the next five years relative to the Administration's program (see Table II-4). This would require the Army to rely upon the current OH-58 scout helicopter until the new fleet of scout helicopters is deployed in the early 1990s. Some of the target acquisition and designation mission could be offset by the new Apache attack helicopter and by the new Ground Laser Locator Designator (designed for the artillery). Both of these new systems are now in production, and each contains highly sophisticated acquisition and designation capabilities.

Cancel MX, Rely on Trident II. Increasing concern over the last decade regarding the survivability of land-based intercontinental ballistic missiles (ICBMs) has prompted DoD to develop a new missile, the MX, and to

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5. The former improvement results from the incorporation of the Mast Mounted Sight that contains a forward-looking infrared sensor and a laser rangefinder. The latter is achieved through the substitution of a four-blade main rotor for the existing two-blade main rotor, and improvements in the engine and transmission. No improvements are currently planned for the OH-58 airframe, however.
 6. Originally, the Army had proposed the procurement of a new scout helicopter, called the Advanced Scout Helicopter. The Congress deleted the funds in 1977 and endorsed the modification program.

try to find a way to base it so that it can survive a Soviet nuclear strike. 7/ The MX missile is scheduled for flight tests in 1983. Capable of delivering 10 to 12 high-yield nuclear warheads and weighing nearly 100 tons, MX would be the largest and most accurate ballistic missile in the U.S. arsenal. The Administration has proposed the procurement of 226 MX missiles to support an operational deployment of 100.

In November 1982, the Administration proposed to base the MX missile in the so-called "Closely Spaced Basing" (CSB)--or "Dense Pack"--mode. This approach would cluster the missiles in superhardened capsules spaced about 1,800 feet apart in a narrow array about 14 miles long to take advantage of so-called "fratricide," in which incoming warheads--arriving closely behind their exploding predecessors--would themselves be destroyed or thrown off course by the nuclear effects of the detonations. The Administration estimates the total cost of the MX missile and basing system at \$32.7 billion. Nearly \$4.4 billion has already been spent, primarily in developing the missile. Deployment in CSB could begin in late 1986.

The CSB basing proposal engendered substantial controversy in the closing days of the 97th Congress. Funding for the first production missiles was denied. At the direction of the Congress, the Administration will reconsider the missile and basing system, reporting to the Congress no earlier than March 1, 1983. At that time, the Administration will either resubmit its proposal to place MX in CSB or propose an alternative. For purposes of discussion, this study assumes that the Administration again proposes basing 100 MX missiles in CSB, and that the missile would be survivable. 8/

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7. CBO analysis indicates that by the mid-1980s the Soviets could destroy up to 90 percent of the existing force of Minuteman missiles.
 8. These estimates assume that MX survives in substantial numbers (roughly 60 percent) long enough to retaliate. Substantial technical doubts have been raised regarding the survivability of MX even in CSB. Press reports suggest that specialists believe that Soviet planners could defeat the system by introducing very large warheads, as well as other adjustments, to destroy very hard silos, although the technology to do this is not fully developed. The Administration believes that MX in CSB is likely to be survivable through this decade, and DoD has identified additional methods to improve survival prospects. These include further increases to capsule hardness, additional arrays for deceptive basing, ballistic missile defense, and deep underground

If it is survivable, MX in CSB would maintain the diversity inherent in a triad of strategic forces able to survive a Soviet first strike. The diversity of the triad would provide insurance against a Soviet technological breakthrough that might threaten one or more legs of the triad. It would also force the Soviets to mount research and development efforts against three types of U.S. strategic forces, each of which must be countered with a different system.

The Administration has also argued that continuing development and deployment of the MX would show U.S. resolve and provide a "bargaining chip" for use in strategic arms reduction talks.

Moreover, MX could be superior to other strategic weapons in its ability to destroy Soviet targets hardened against nuclear effects and do so promptly. Ballistic missiles, especially land-based missiles, can retaliate promptly because of their speed of delivery and rapid command and control. Submarine-launched ballistic missiles (SLBMs), while sharing the speed characteristics of ICBMs, pose greater command and control problems. Bombers, by contrast, take hours to reach their targets. This prompt, hard-target kill capability of ICBMs and especially of the MX could be particularly important in a limited nuclear war featuring a series of exchanges, when it would be critical to destroy Soviet targets promptly before they could launch another attack. In 1990, MX would contribute almost all of this country's survivable prompt, hard-target kill weapons. By 1996, the contribution of MX would range from 17 percent to 70 percent, depending on whether Trident II (D-5) submarine-launched ballistic missiles (SLBMs) are credited with a prompt-kill capability.

Based on broader measures than prompt, hard-target kill, however, the percentage contribution of the MX missile to U.S. strategic capabilities would be much smaller. By 1996, when the modernization program is completed, the contribution of the MX would range from about 5 percent of those capabilities to about 13 percent, depending on the measure of capability chosen, the scenario assumed for the nuclear exchange, and assumptions about arms control. If there was warning of an attack, the MX would contribute 5 percent of all U.S. warhead inventories likely to survive a Soviet first strike, and it would provide 7 percent of those surviving warheads capable of destroying Soviet targets hardened against a nuclear

basing of additional missiles. Some of these options require the further development of technology; some of them can fairly be characterized as new basing modes; all of them would require substantial additional investment.

blast. Were a Soviet attack to occur as a total surprise--destroying U.S. bombers not on alert and submarines in port--the MX in 1996 could provide 7 percent of all surviving warheads and 13 percent of hard-target inventories. The contribution of MX would be larger in 1990, before the buildup of other forces is complete.

Under Administration plans, the primary capability against hardened targets in the future would be provided not by MX but by the Trident II (D-5) SLBM and the upgraded bomber force. The Trident II SLBM will be in operation by 1989, and will have counterforce capability roughly comparable to the MX. ^{9/} Trident II will be deployed on Trident submarines, which today are widely considered invulnerable when at sea and likely to remain so for the foreseeable future. While the present B-52 bomber force is not likely to continue to function successfully against improving Soviet air defenses, the new bomber force is likely to be successful until the end of the century, although not equal in promptness to the Trident II and the MX.

In light of the relatively modest quantitative contribution of MX to total U.S. strategic capabilities, together with the difficulty of developing a reliably survivable basing system, the Congress could choose to cancel the MX system, placing primary emphasis on the Trident II for future strategic missile modernization. Such a course would entail a shift in U.S. strategic force plans to a survivable "dyad" of forces rather than a triad. The present ICBM force would continue to provide limited deterrence (for example, a credible threat to launch under attack) as well as potential use in limited nuclear operations.

Dropping the MX in favor of Trident II would offer substantial budget savings: \$27.8 billion in budget authority and \$23.2 billion in outlays during the next five years (see Table II-4). If the Congress chose to continue emphasis on ICBMs, it could direct that some of the savings from canceling MX be used to develop a new, small road-mobile ICBM, considered by some to be the only option for a survivable land-based ICBM. The Congress could also initiate compensating investments--such as improved guidance systems--for the Minuteman ICBM force. The costs of these actions have not been deducted from the savings shown in Table II-4.

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9. Counterforce capability refers to characteristics such as yield and accuracy that enable nuclear weapons to destroy hardened military and command facilities as well as softer industrial/economic recovery targets. Promptness refers to the rapidity with which a response can be made. Counterforce weapons on ballistic missiles are prompt; those on bombers, which take hours to reach their targets, are not.

Scale Back Purchases of F-15s. The F-15 is the Air Force's front line air superiority fighter, widely regarded as the most capable fighter in the world. It is also a very expensive weapon system--so expensive that the Air Force developed a companion F-16 that, though less capable in many ways, is approximately 40 percent less expensive, so that DoD might purchase sufficient numbers of aircraft to modernize its air wings. Until two years ago, the Air Force intended to purchase a total of 729 F-15s and 1,388 F-16s. By 1982, DoD had largely completed purchases of the F-15 and was beginning to build up production rates of the F-16.

Last year, however, DoD announced plans to continue production of the F-15, proposing to buy 666 more (for a total of 1,395) at a total additional cost of \$25.1 billion. DoD plans to request 48 F-15s in 1984; 72 in 1985; and 96 in 1986 and beyond. Those plans were criticized last year in the Congress. The House Armed Services Committee, noting "uncertainties regarding the affordability of the F-15 program expansion . . . and the absence of a comprehensive well-defined continental air defense program," scaled back the DoD request for 1983 from 42 to 30.^{10/} In final Congressional action, 39 F-15s were authorized in 1983, and long-lead funds were cut back by half.

In light of continuing questions of cost, the Congress could choose to limit production of the F-15, holding purchases to 30 per year beyond 1984. This would hold open F-15 production facilities at minimally efficient rates, and would provide procurement beyond DoD's previously stated goal of 729 to assure attrition replacements. This would also offer substantial savings during the next five years relative to Administration plans, reaching \$0.7 billion in 1984 and \$9.9 billion over the coming five years, as shown in Table II-4, though it would raise unit costs by at least 4 percent in 1984.

Limiting F-15 production could jeopardize Air Force plans for air wing expansion and could delay modernization of continental air defenses. The Air Force pressed for further purchases of the F-15 as part of a plan to improve the U.S. air defenses against Soviet strategic bombers attacking the United States. Though current Soviet bombers have only a limited ability to conduct such attacks, the Soviets are thought to be developing a more capable bomber, perhaps similar to the B-1B.

On the other hand, slowing the F-15 buildup would give time to assess Soviet bomber developments without foreclosing the option of buying more

10. Department of Defense Authorization Act, 1983, H. Rept. 97-482, 97 Cong. 2 sess. (1982).

later. It would also give the Air Force time to test and develop the new Advanced Medium Range Air to Air Missile (AMRAAM) which will be fitted on both the F-15 and the F-16. Under current plans, AMRAAM-capable F-16s will be available by 1985, though AMRAAM itself might not be fielded until 1986 or 1987. If successful, this missile would give much of the interceptor effectiveness of the F-15 to its less expensive counterpart, the F-16.

Limit Tanker Re-Engining, Supplemented by Less Expensive Alternative. The Strategic Air Command (SAC) operates 615 KC-135 aircraft (an early version of the Boeing 707) that serve as tankers to extend the range of bomber and other military aircraft. In recent years, the Air Force has contended that current tanker resources are inadequate for two reasons. First, a far larger number of military aircraft are potential users of aerial refueling today than in the past, when only bombers were likely users. The Air Force, for example, foresees substantial aerial refueling requirements for fighters or transports in the event of a NATO conflict or of a need to project forces to a distant theater such as the Persian Gulf. Second, current Air Force plans to introduce the B-1B and to modify B-52s to carry cruise missiles will increase tanker requirements. To satisfy all such demands, the Air Force has indicated that as many as 1,000 KC-135 tankers or their equivalent will be needed into the mid-1980s.

To meet that shortfall, the Air Force has proposed to install new-generation CFM-56 engines on existing KC-135 tankers. With these more powerful and more efficient engines, the tankers could carry greater fuel payloads while using less fuel for their own operations.

In recent years, an alternative re-engining program was proposed that would install on the KC-135s older engines currently used on 707s that are being retired from commercial service. These older engines (designated JT3Ds) would be thoroughly overhauled and checked before installation. The JT3D does not match all the performance characteristics of the CFM-56, but is substantially better than the KC-135's existing engine. CBO analysis using Air Force performance data indicates that the JT3D engine is an effective substitute for the CFM-56 on a large number of SAC refueling missions. It is dramatically more attractive on acquisition cost grounds: whereas the CFM-56 re-engining would cost approximately \$22 million (in fiscal year 1984 dollars) per aircraft, the JT3D modification would cost \$8 million.

For two years, the Air Force has requested funds exclusively for the CFM-56 modification program, only to have the Congress cut back the size of the request and add funds to purchase the less expensive JT3D engine to be used in National Guard and Air Force Reserve units. The Air Force has

again this year requested procurement of only the CFM-56 modification. Previous CBO analysis indicated that, at one-fourth to one-third the cost, a JT3D force could provide about 95 percent of the refueling capability of the Administration's program through the 1980s, when demands will be at their highest. 11/

The JT3D-modified tanker would not equal the full potential performance of the CFM-56, however, and on certain missions their performance differences are substantial. Thus, the CFM-56 provides more flexibility of response to possible changes in missions. The CFM-56 is also about half as noisy as the JT3D, which in some areas near cities may be an important feature.

Reflecting these pros and cons, the Congress could direct the Air Force to hold down production of the CFM-56 re-engining program to its lowest economic production rate of three per month, and continue the JT3D modification program at a rate of three per month. Such an alternative would save an estimated \$1.2 billion over the next five years (see Table II-4). A mix of re-engining programs would provide some CFM-56 aircraft, enabling the Air Force to take advantage of their capability on certain missions, but would also buy some of the cost-effective JT3D aircraft. Moreover, this alternative would provide re-engined tankers to National Guard and Air Force Reserve units, which otherwise would have to continue to operate the outdated KC-135s until near the end of the decade when they too might be re-engined with the CFM-56 engines.

Redirect Preliminary Development Efforts, Emphasizing Longer-Term Systems

DoD is currently developing several major new weapons systems designed to complement existing weapons. The new systems will incorporate improvements but will not be appreciably better than those currently in the inventory. At the same time, promising new technologies are emerging that could be important for the 1990s. The Congress could choose to terminate further work on certain current development efforts, emphasizing instead alternative approaches that incorporate newer technologies or satisfy unmet requirements.

11. See Congressional Budget Office, Aerial Tanker Force Modernization (March 1982).

Restructure Naval Surface Combatant Procurement Programs. The Navy has launched an aggressive program to expand both the size and the effectiveness of its current fleet. While primary attention has gone to prominent programs, such as purchase of new aircraft carriers or nuclear attack submarines, about half of Navy spending on shipbuilding over the next decade will go for surface combatants. Three surface combatant programs are now ongoing:

- o FFG-7-class frigates, with 50 ships built or under construction;
- o CG-47-class cruisers, with 10 ships authorized and 17 more currently planned by the Navy; and
- o DDG-51-class destroyers, now being designed for procurement beginning in 1985, with a total procurement of 63 currently planned by the Navy.

The DDG-51-class is the largest of the three programs in terms of budget requirements and number of ships. It will be similar to the CG-47 but less capable in some areas; it will not, for example, have helicopter support facilities and will carry 25 percent fewer missiles than the CG-47. Although the Navy is making a strong effort to hold down the cost of the DDG-51, it will still be an expensive ship. The cost goal is 75 percent of the cost of a CG-47-class ship for the average production ship, or over \$800 million in 1984 dollars. Navy warships, however, have almost invariably experienced cost growth between the preliminary design stage--where DDG-51 is now--and actual construction. Recent reports suggest the Navy is considering even more stringent cost goals. Even if the Navy achieves its cost goals with the DDG-51, however, the total program cost for 63 ships would exceed that of any other Navy program.

The DDG-51 is a conservatively designed ship, with most of its features only marginally different from those used in earlier classes. New technical developments are emerging, however, that could have important implications for future warship design, capability, and costs. These include basic changes in design practice such as the Ship System Engineering Standards (SSES) technique and distributed combat system architecture, as well as changes in individual ship components that would permit ships to be rapidly modified in response to changing threats or improved technology. Incorporating such features would probably extend considerably the design and testing period required for a new surface combatant. At issue, therefore, is whether the Navy should redirect current design efforts to incorporate newly emerging technologies. The DDG-51 is projected to be the most numerous class of surface combatants since World War II; its

construction program would continue into the 1990s and would be the most expensive procurement program currently contemplated by DoD.

The Congress could cancel further development of the DDG-51, directing the Navy to initiate longer-term development of a new surface combatant that would incorporate modular design with rapid refit capability. In the meantime, procurement of CG-47-class ships would continue, with CG-47 production expanded to compensate for those DDG-51s not funded during the next five years. This could be an important step in ensuring adequate production rates for the CG-47, now that annual ship orders will be split between two producers.

Specifically, this option would drop the nine DDG-51s and add three more CG-47 combatants to the Administration's program over the next five years. The current DDG effort would be redirected toward a less expensive, more flexible design, as discussed above. Authorization of the lead ship for this new class would take place in 1987 with long lead funds for four more ships in 1988. Development and design funds now programmed for the DDG-51, about \$600 million through 1988, would be reallocated to this effort, including the SSES program and other efforts to develop modular sensors and weapons systems. Near-term savings in fiscal year 1984 from this option would be modest. Over the five-year period, however, this course would save about \$6.2 billion in budget authority and \$800 million in outlays.

The most significant savings, however, would be those realized beyond these five years if reductions can be made in procurement and life-cycle costs by a new design effort. With a unit cost now projected at more than \$800 million per ship (considerably more in inflated dollars), and the total buy projected at 63 ships, the total cost of the DDG-51-class would exceed that for any class of warships ever procured at any time by any navy. ^{12/} Lowering the procurement and life-cycle costs of these ships would be an important step in holding down the cost of future naval forces.

Cancel the C-17, Restructure Program to Modernize Tactical Airlift Forces. In 1978, President Carter, responding to the need to establish a

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12. The 63 projected ships of the DDG-51 would cost at least \$54 billion in terms of 1983 dollars even if there was no further cost growth during design and construction. By comparison, the six Nimitz-class carriers, including ships built, building, and authorized, would cost about \$21 billion at 1983 prices, and the 10 Trident submarines built or authorized to date would cost about \$15 billion at 1983 prices.

Rapid Deployment Force (RDF), directed the Air Force to expand its airlift resources to deliver such a force. The Air Force launched the CX program, designed to develop a new transport aircraft that could carry the bulky, heavy cargo typical of Army equipment and operate in areas with few, sparsely equipped airports. Shortly after the Reagan Administration took office, the Air Force held a competition and selected a winning design for the CX--the C-17 designed by the McDonnell Douglas Corporation. The Administration indicated, however, that it did not feel obligated to develop and field the C-17, and in January 1982 Secretary Weinberger announced his intention to satisfy the need for more airlift resources by buying updated versions of the C-5 transport now in the inventory.

Despite the selection of the C-5, the Air Force intends to continue development of the C-17, with the goal of fielding substantial numbers of the aircraft in the 1990s. It would replace the existing, smaller C-141 transport that complements the C-5 as the primary U.S. intertheater transport aircraft. The C-141 would be assigned to National Guard and Reserve units. The C-17 would be available as a backup if unexpected problems developed in fielding the C-5. The Congress appropriated \$60 million in 1983 for continued development of the C-17, but directed that all but \$1 million of that amount be taken from other lower-priority Air Force programs.

The C-17 should be a very capable aircraft. There is, however, probably a more pressing need in the future for a new aircraft designed primarily as a tactical airlift transport. Tactical transports are designed to move cargo within a war theater rather than between the United States and a theater. The existing fleet of C-130 tactical transports is capable but limited in abilities to carry the full range of Army equipment. The C-130 was designed in 1951 and, because of its small size, is unable to move most of the Army's modern combat vehicles. Although the C-17 was designed to have many of the features desired in the C-130 replacement, its primary design emphasis was on strategic airlift missions rather than tactical operations. As such, the C-17 may be larger than necessary and could be too expensive (at over \$100 million each) to buy in large numbers, thereby limiting its suitability as a replacement for some or all of the fleet of over 500 C-130 transports.

The Congress could choose to cancel further development of the C-17, in view of the plans to proceed with the C-5. This would offer savings estimated at \$3.5 billion over the next five years, as shown in Table II-4. Larger budget savings would occur later in the decade, when the majority of C-17s are planned for purchase. The Congress could also direct the Air

Force to study tactical airlift requirements for the 1990s and begin to develop a replacement aircraft for the C-130s. 13/

Impose Modest Force Structure Cuts and Rely on Allies to Provide Greater Contributions

Modest reductions in the size of U.S. forces would offer significant near-term savings in the fast-spending personnel and operating accounts. Those savings would be sustained if the force structure cuts were permanent. This would be at the expense of combat effectiveness, however. If the Congress selected such an approach, it might want to stress areas in which U.S. allies could take offsetting action.

The United States spends considerably more on national defense--as a percentage of gross national product--than its allies. Defense spending by the NATO allies averaged 3.8 percent of GNP in 1981; Japan's spending on national defense averages less than 1 percent a year. By contrast, in 1981 the United States spent 5.8 percent of its GNP on defense and is likely to spend about 7 percent by the mid-1980s. If the other countries could be persuaded to increase their contributions, the Congress could make corresponding cuts in U.S. forces. It is important to acknowledge the risk in such an approach, since there is no guarantee that U.S. allies would assume greater financial burdens.

Deactivate One Army Division. The U.S. Army consists of 16 active divisions and 8 reserve divisions. Of the active units, 4 are stationed in Europe, 1 in Korea, and 1 in Hawaii. The remaining 10 active divisions, and all reserve units, are stationed in the continental United States. While U.S. forces would be used worldwide should circumstances dictate, the primary emphasis in recent years has been on the reinforcement of NATO in the event of conflict with the Warsaw Pact. Consistent with the NATO Long-Term Defense Program, the United States could provide a total of ten divisions in the first ten days after mobilization.

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13. In the early 1970s, the Air Force developed four prototype aircraft (two each of two different designs) under the Advanced Medium Short-Takeoff-and-Landing Transport (AMST) program. That aircraft proved too expensive in the judgment of DoD and was not pursued at that time. A key element in the development effort should likely be "affordability."

Recently, some Members of Congress have expressed concern that the NATO allies are not contributing their share of resources to the defense of Europe. The Administration has indicated that it will continue U.S. policy commitments to reinforce NATO, but that the level of those commitments may be reduced. ^{14/} The Administration objected, however, when the Senate Appropriations Committee recommended that one combat brigade be withdrawn from Europe, and that the Army's end strength be reduced accordingly. Though the committee receded from that position, the Congress directed that U.S. forces in Europe not be expanded.

The Congress could direct the Army to deactivate one combat division--possibly withdrawing it from Europe--and reduce its active-duty end strength by 20,000 personnel, approximately the number of persons in a division and its immediate support. Table II-4 shows the savings associated with a reduction of one division of troops from the active Army, phased in over two years. Savings would total \$200 million in 1984 and \$2.4 billion over five years, from reduction in operating expenses as well as in pay and allowances for troops no longer in the Army. The division's current equipment would be redistributed to other units. Beyond the five-year period, an additional \$1.9 billion (in fiscal year 1984 dollars) would also be saved by avoiding the purchase of new equipment to modernize the division. If a division was withdrawn from Europe, additional long-term savings could result from reduced lease costs for facilities returned to Germany. ^{15/}

Withdrawing a division from Europe would alter U.S. commitments to NATO. The Administration has stated that it intends to provide ten divisions within ten days after mobilization, but this would be jeopardized if a division was withdrawn. Cutting a U.S.-based division instead would reduce the impact on combat readiness in Europe, though it would still affect reinforcement potentials.

Boost Canadian Support of NORAD. Since 1957, the United States and Canada have collaborated through the North American Air Defense (NORAD) command against strategic nuclear attack. Those defenses consist of the Distant Early Warning (DEW) line of radars far north, the Cadin-

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14. See Secretary of Defense Caspar W. Weinberger, statement before the House Budget Committee, September 23, 1981.
 15. The return of these leased facilities to Germany could also require additional one-time costs. Without specific details concerning the facilities involved, estimates of costs and/or savings cannot be made.

Pinetree radars stretching across mid-Canada, and squadrons of interceptor aircraft. For several years, DoD has proposed upgrading the early warning radars. The Congress has rejected Air Force plans in the past, though the DoD has proposed this again in the 1984 budget.

The United States paid for the DEW line in its entirety and continues to pay all of its operating cost. It also paid for the installation of the Cadin-Pinetree line of radars and pays two-thirds of its operating cost, with Canada paying for the remainder. The Congress could insist that any upgrading of the DEW radar network be supported financially by the Canadian government and that Canada begin to pay one-third of current operating expenses. Details of a DEW radar upgrade were not available in time to provide an estimate of savings. Those savings shown in Table II-4--\$0.2 billion over the five-year period--represent current operating costs only.

While small in the scale of U.S. defense expenditures, these savings would represent a significant increase in Canadian defense spending. It is fair to add that at present Canada spends less than 2 percent of its GNP on national defense, roughly one-fourth of U.S. defense spending as a percentage of GNP. 16/

Press for Japanese Purchase of AWACS for Pacific Defense. The Airborne Warning and Control System is a sophisticated radar and command post installed on military versions of the commercial Boeing 707. The Air Force currently owns or has on order 34 AWACS and proposes to buy 12 more for continental air defense and other tactical applications. In addition, 5 AWACS aircraft are being sold to Saudi Arabia and 18 to NATO. The Japanese government has also expressed interest in AWACS, which is considered particularly well suited to Japan's interest in defensive forces and in sealane and airline surveillance.

The Congress could postpone additional purchases of AWACS for three years and direct the Administration to urge Japan to purchase six of the aircraft over that period. It would require six aircraft to keep one on continuous airborne alert. This would save \$960 million in defense budget authority through the next five years (see Table II-4). These savings could become permanent if DoD chose to limit AWACS purchases to the existing 34 aircraft.

16. In 1981, the United States spent roughly \$730 per person on defense, and Canada roughly \$211 per person (in U.S. dollars).

This approach would provide a specific basis for urging more Japanese spending, and on a mission appropriate to Japan's defensive interests. Though not under direct U.S. operational control, continuous AWACS capability in Northeast Asia by a U.S. ally would contribute to regional security and stability in a manner similar to the Administration's plans for the Saudi AWACS for Southwest Asia.

Delaying further U.S purchases of AWACS would postpone modernization of strategic air defenses for NORAD. However, some of the 34 AWACS currently in operation or on order could be pressed into service on an emergency basis to make up for the three-year delay in U.S. purchases.

Failing a Japanese response, this option might cause an expensive gap in AWACS production and lead to higher expenditures in the future if the United States had to pay to restart production facilities.

Limit Growth in Pay and Benefits

Over a third of DoD's 1983 budget authority is for compensation for military and civilian personnel, as well as retirement benefits for military retirees. (Civilian DoD retirees are covered under the Civil Service Retirement System, discussed in Chapter VIII.)

Reflect Savings in Outyears Created by 1984 Pay Freeze. In an effort to trim the 1984 defense budget request, the Administration has proposed no pay raise at all for military or civilian employees in 1984. This comes on top of last year's decision to limit pay increases to 4 percent, half of the amount requested by the Administration for military personnel.

When the freeze was announced, Secretary Weinberger stated his goal of requesting a catch-up raise in fiscal year 1985. A 6.1 percent pay raise has been programmed for 1985, which is estimated to be the percentage raise comparable to increases expected in the private sector for 1985. An Administration spokesman also indicated that DoD has programmed a "contingency" fund for a catch-up raise if the Secretary chooses to request such an increase next year.

If the Administration proposes a catch-up raise next year, there would be no longer-term savings associated with the decision to freeze pay in 1984. However, if future pay raises are limited to comparability adjustments, there might be significant longer-term savings. Sticking to comparability adjustments only in 1985 and beyond would save \$7 billion in military pay over the five-year period. (Savings from changes in civilian pay would also affect the defense budget; these are discussed in Chapter VIII.)

The limit on the 1983 pay raises, coupled with no pay raise in 1984, will save money but will also reduce the services' ability to attract and retain personnel. Recruiting and retention have been at historical highs in recent years; thus, these limits on pay raises will probably not jeopardize the services' ability to meet requirements in 1984. But the services could have difficulty attracting and retaining enough personnel with the desired skills and backgrounds in the mid-1980s. If so, a catchup pay raise may be needed, which would eliminate some or all of the savings from the 1984 freeze (shown in Table II-4). Alternatively, the Congress could increase bonuses to meet shortages in critical skills; this would offset adverse effects in these critical skills while holding down costs.

Restructuring Military Retired Pay. The military retirement system currently provides substantial benefits for those who retire with more than 20 years of service, but no benefits for nondisabled persons who leave with fewer than 20 years of service. The cost of the system, \$15 billion in 1982, has been rising steadily because of increases in the number of retired personnel and changes in the price level.

For 1983, however, the Congress sought to limit these costs. The annual cost-of-living adjustment for all retirees below age 62 was limited to one-half of the increase in the Consumer Price Index; those 62 or older continue to receive full COLAs. ^{17/} Under current law, this half-COLA provision will remain in effect through 1985. ^{18/} In addition, the Congress extended the waiting period between receipt of COLA adjustments from 12 to 13 months in each of the next three years. Together, these changes should save an estimated \$830 million through 1985. These changes will, however, increase the number of career personnel who leave the military

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17. If increases in the CPI exceed those anticipated last year, then retirees under age 62 would receive a COLA equal to more than one-half the CPI.
 18. In its budget for fiscal year 1984, the Administration proposed permanent enactment of the half-COLA provision (with no floor) for retirees below age 62. The Administration's budget submission apparently has been adjusted to reflect those savings. As such, the savings from the CBO option shown in Table II-4 would be overstated, since the bulk of those savings--at least in the 1986-1988 period--come from the half-COLA provision, and have already been incorporated in the Administration's program.

before qualifying for retirement, especially if the half-COLA provision is retained beyond 1985 in order to ensure continued savings.

The Congress could restructure the military retirement system further in order to retain most of the cost reductions while also alleviating some of the adverse effects on retention. Such a continued restructuring could have several features:

- o Make the half-COLA provision for retirees under age 62 part of permanent law.
- o Provide a one-time "catch-up" annuity adjustment for retirees at age 62. This adjustment would raise annuities for those older than 62 to levels that would have been attained with full COLAs. Although it would not make up for reductions in retired pay before age 62, it would ensure higher benefits for older retirees, which may be viewed as equitable, and would mitigate the adverse effects on retention caused by making the half-COLA provision permanent.
- o Provide or "vest" some retirement benefits--beginning at age 62--for all military personnel who complete at least ten years of service. Earlier vesting should improve retention among trained personnel with between five and ten years of service, and thus offset still more of the adverse retention effects of the half-COLA provision.
- o Base military retirement pay on an individual's three highest pay years, phasing in the change over the next three years. Under current law, retirement pay would eventually be based on the three highest pay years, but the change would not be made until around the year 2000. This faster phase-in would save about \$590 million over the next five years and would help pay the costs of the catch-up adjustment and ten-year vesting.

Taken together, these changes should not reduce the costs of military retirement in 1984 but would save a total of \$1.9 billion over the five-year period. Proponents argue that these savings could be achieved while improving military manpower management, enhancing retention of junior personnel, and weakening the incentive to retire immediately upon completing just 20 years of service. CBO estimates that, under this approach, retention of career personnel (defined as those with more than four years' service) would be about 1 percent better by 1989 than if the current half-COLA provisions were continued indefinitely but about 3.5 percent worse

than under the retirement system in effect before passage of the half-COLA provisions.

Opponents of change in the military retirement system contend that such reductions in retired pay are tantamount to a breach of contract with current active-duty members and retirees, and thus will harm morale and risk making retention much worse than that estimated by CBO. Such adverse effects upon active-duty manpower could require increased outlays for other incentives--such as reenlistment bonuses--or special pay increases for personnel in key skills.

Limit Growth in Operations and Maintenance Accounts

Approximately 20 percent of current DoD budget authority goes to support operations and maintenance (excluding civilian pay) of existing plant and equipment. This includes maintenance of existing equipment, training activity, fuel and spare parts, and base operations, as well as many other things. Together these activities are commonly referred to as "readiness" spending since they contribute directly to the day-to-day capability of the military forces. Administration plans call for a 6.5 percent average real increase in annual funding for these readiness items over the next five years, with little change in the force structure. Presumably, higher funding will place current forces at a higher state of combat readiness and effectiveness.

Limiting growth in operations and maintenance (O&M) accounts would offer significant near-term savings, since operating accounts spend out quickly. Choosing this strategy would reflect a preference for retaining the scope of modernization and force build-up plans while accepting a somewhat higher risk if hostilities occurred in the interim.

In 1981 and 1982, the Congress appropriated increases in O&M spending that averaged 8.7 percent and 7.2 percent, respectively, on top of adjustments for inflation. Increases in 1983 were held to about 2 percent. The majority of these increases were used to buy additional readiness items, such as aircraft spares and war reserve munitions. The large increases in 1981 and 1982 were widely viewed as necessary to restore adequate levels of force training and operational capability. Between 1984 and 1988, the Administration plans to increase real O&M spending further by 8.4 percent in 1984, 7.6 percent in 1985, 6.4 percent in 1986, 5.9 percent in 1987, and 3.5 percent in 1988, or a compounded five-year increase of 36.1 percent in real terms.