CONGRESSIONAL BUDGET OFFICE REVIEW

OF

OPERATING AND SUPPORT COSTS FOR ARMY MODERNIZATION

Statement of

Alice M. Rivlin, Director

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Mr. Chairman, I appreciate the opportunity to testify on the operating and support costs associated with the Army's modernization program. At the request of this Committee, the Congressional Budget Office (CBO) has analyzed this important subject, and my testimony today presents the results of our inquiry. The Army is modernizing its force with more than 180 new systems, many of which are substantially more sophisticated than today's versions. Our analysis has emphasized six of these systems, representing the primary new combat systems that the Army is fielding and the ones for which detailed data were available. The analysis suggests that their operating and support costs will exceed those of antecedent versions by 45 to 70 percent in constant dollars. Indeed, there are indications that operating costs could increase substantially more, especially costs associated with the reserves and costs for spare parts and equipment overhauls.

The combat units operating these systems account for only 12 percent of the total operating and support budget. Thus, the increased costs of these particular systems can be readily funded within the growing Army budget, if other costs do not rise sharply. But if costs of other systems and support categories do also grow sharply, the Army could have trouble paying the full bill for operating and support costs in the 1980s. Problems could be especially acute if, at the same time, available funds are cut in an attempt to hold down federal budget deficits.

Our study points to a more fundamental problem, however. We found that, while the Army is hard at work implementing a highly sophisticated modernization program, it still lacks the techniques to project comprehensive estimates of future operating and support costs for a modernized Army. This is a critical problem, since the introduction of new systems today will lock the Army into a pattern of higher operating costs well into the next century.

The Congress could judge major new investment programs far better if it had the means to assess the implications of early design and program decisions for future operating and support costs. I shall conclude my testimony by outlining several methods that this Subcommittee might adopt to enhance Defense Department management and Congressional oversight of these important matters.

ARMY MODERNIZATION PROGRAM

Army modernization consists of the purchase of more than 180 new systems, ranging from the M1 tank and Bradley Fighting Vehicle to trucks and communication gear. Most of the new systems will replace older ones used by active-duty forces, with the older equipment then going to the reserve forces.

Because time and data were limited, CBO concentrated on six major systems listed in Table 1. We estimated the operating costs for a battalion (or company or battery where appropriate) rather than for individual

TABLE 1. ARMY MODERNIZATION SYSTEMS ANALYZED BY CBO AND PROJECTED INCREASES IN UNIT OPERATING COSTS

Organizational Unit	Number and Type of Weapons per Unit		Percentage Increase in Unit Operating Costs
	Premodernized	Modernized	
Tank Battalion	58 M60A3	58 M1	69
Mechanized Battalion	76 M113	60 FVS	45
Air Defense Artillery Battalion	24 Vulcan	36 DIVAD	49
Multiple Launch Rocket System Battery	N.A.	9 MLRS Launchers	N.A.
Attack Helicopter Battalion	21 AH-1S	18 AH-64	60
Combat Support Aviation Company	23 UH-1	15 UH-60	46

N.A. = Not applicable.

systems because the Army is sometimes replacing older systems with fewer of the new systems. We assumed that battalions of both old and new weapons were structured according to the latest Army plan (the so-called

Division 86 plan), in order to eliminate the effects of organizational changes.

Modernization of battalions containing these systems will be under way in 1984 in many cases, but will not proceed at an equal pace for all systems. To provide a complete picture, CBO estimated costs at four stages: before any modernization, in 1984, in 1988, and at the completion of all modernization.

INCREASED OPERATING AND SUPPORT COSTS

The operating and support costs of fully modernized battalions of these six systems will be substantially higher than those of current battalions. In terms of fiscal year 1984 dollars, increases will range from a low of 45 percent for mechanized battalions (where the new Fighting Vehicle System replaces the old M113) to 69 percent for tank battalions (where the M1 replaces the M60A3). One of the systems analyzed, the Multiple Launch Rocket System, has no comparable antecedent system.

Total operating and support costs for the systems analyzed would have been $3.8 billion before any modernization (see Table 2). They will be $4.3 billion in 1984, rising to $5.4 billion by 1988 and $6.0 billion when all modernization is complete. Any inflation after 1984 would, of course, add

to these figures. Tank battalions, mechanized battalions, and attack helicopter battalions will contribute by far the largest dollar increases because they are the most numerous.

TABLE 2. OPERATING AND SUPPORT (O&S) COSTS FOR A MODERNIZING ARMY
(In millions of fiscal year 1984 dollars)

Organizational Unit	Number of Units a/	Premodernization Costs	1984 Costs	1988 Costs	Costs at Completion
Tank Battalion	74	1,470	1,640	2,030	2,300
Mechanized Battalion	46	900	1,000	1,150	1,240
Air Defense Artillery Battalion	14	250	260	340	360
Multiple Launch Rocket System Battery	22	0	30	140	140
Attack Helicopter Battalion	67	750	750	1,020	1,300
Combat Support Aviation Company	61	480	650	700	620
Total		3,800	4,300	5,400	6,000
Increase over 1984			--	1,100	1,600

NOTE: Totals may not add because of rounding.

a/ In numbers of equivalents.

Operating and support costs are funded by the Congress under three appropriations (see Table 3). Most of the increases would come in the

operation and maintenance appropriation. Between 1984 and 1988, costs for operation and maintenance would increase by 78 percent. Procurement costs associated with the operating and support budget would increase by 42 percent. Military manpower costs would go up only 1 percent, suggesting that the six systems will not require any substantial increases in uniformed personnel.

TABLE 3. RECURRING O&S COSTS OF MODERNIZATION BY APPROPRIATION (In millions of fiscal year 1984 dollars)

Appropriation Account	Pre-Modernization Costs	1984 Costs	1988 Costs	Costs at Completion
Operation and Maintenance	550	860	1,520	1,900
(Percent above 1984)			(78)	(120)
Procurement	660	850	1,200	1,380
(Percent above 1984)			(42)	(63)
Military Personnel	2,630	2,630	2,650	2,700
(Percent above 1984)			(1)	(2)
	3,800	4,300	5,400	6,000

NOTE: Totals may not add because of rounding.

These costs capture most types of operating and support expenses. They include all direct costs for maneuver battalions such as purchase of repair parts, fuel, and training ammunition, in addition to costs associated with military personnel in those units. Our estimates also include costs for

depot maintenance, which is a particularly important component because of the more complex equipment being fielded today. The estimates do not include operating and support costs that could not be related to the weapons, such as costs of training and base operations. In addition, other costs that are indirectly caused by modernization--such as redistributing displaced equipment to reserve forces--were not included.

FURTHER INCREASES POSSIBLE

Our analysis suggests that cost increases beyond those in Table 2 are quite possible for the six systems. One source of further increases could be older equipment going to the reserves. The Army does not have data indicating operating tempo by type of equipment for the reserves. Nor are there publicly available plans indicating how many of the older weapons provided to reserve units will replace still older equipment, though planned expansion in the reserves suggests that most will supplement rather than replace items currently in the inventory. Given the absence of public data, no firm estimates could be made of increased operating costs for the reserves. CBO did, however, estimate the increases of depot-level overhaul costs for the six types of new equipment going to the reserves, assuming that all of it augmented current numbers and that overhaul cycles were similar to those for active forces. By 1988, under these assumptions, added costs could be $560 million beyond the $1.1 billion shown in Table 2.

Other cost increases could occur for replenishment spares--that is, the primary subcomponents used in major weapons, such as engines, transmissions, and gear boxes which are purchased through the procurement appropriation. The Army is planning for increases in replenishment spares to accommodate its more sophisticated gear, but it lacks a specific accounting method for projecting the requirements of weapon systems. If costs of replenishment spares rise in proportion to those for procurement, they could add another $600 million a year by 1988. Moreover, the shortfall could be even larger because the CBO estimate does not include requirements generated by aging equipment.

Depot maintenance costs could also be higher than those incorporated in Table 2. Major repair and overhaul of most items of equipment and primary subcomponents (such as engines) are accomplished in the extensive depot maintenance facilities operated by the Army and in commercial facilities under contract to the Army. The Army originally projected, using engineering estimates, that depot maintenance requirements for the M1 tank would be about 370 percent higher than those for the older M60 tank, but recently it has revised the projection to over 1,100 percent (see Table 4). This is a potential cause for alarm since the Army continues to budget depot maintenance requirements for other systems on earlier engineering estimates. Engineering estimates for the Fighting Vehicle System (FVS), for example, show an increase of 238 percent over the older M113. If

experience with the M1 is a guide, however, eventual depot maintenance requirements for the Fighting Vehicle System, and possibly other new systems, which are significantly more sophisticated than their antecedents, could well be substantially higher than those now anticipated.

TABLE 4. POTENTIAL UNDERSTATEMENT OF DEPOT MAINTENANCE BURDEN FOR SOME NEW SYSTEMS

Weapon System	Percent of Inventory Through Annual Overhaul	Annual Maintenance Manhours Per Weapon	Percentage Increase from Premodernized to Modernized System
M60 Tank	2	2,024	
M1 (Engineering Estimate)	5	3,830	373
M1 (Latest Estimate)	13	3,830	1,130
M113 Armored Personnel Carrier	7	830	
FVS (Engineering Estimate)	4	4,917	238

NOTE: The latest estimate of the depot maintenance burden for the M1 tank shows a significant increase over the engineering estimate. The engineering estimates of other new systems, such as the FVS, might possibly be understated as well.

Nor are these the only areas of possible increase beyond those estimated in Table 2. The frequency of overhaul for the M1 tank, and for some other weapons and components, has increased dramatically. This raises questions about whether enough transportation funds are available and

whether the Army has adequate stocks of spare systems to allow uninterrupted training.

IMPLICATIONS FOR THE ARMY BUDGET

What are we to conclude from these findings? To the extent that cost increases are limited to the six systems analyzed by CBO, there is no particular cause for alarm. The operation and maintenance (O&M) appropriation--which is the one most affected by the increases discussed in my testimony--would only have to grow by about 1 percent a year after inflation to fund the added costs associated with the six systems, if no other costs increased.

But other costs will increase, though CBO cannot estimate by exactly how much. Were operations and support costs for all items to grow at rates comparable to these six systems, the O&M appropriation would have to grow by about 5.4 percent annually after inflation. CBO projects that, under current Army budgetary plans, the O&M appropriation would increase an average of 5 percent annually, but the Congress clearly intends to provide a somewhat lower rate of growth for defense spending than that requested by the Administration. Indeed, the Senate version of the First Concurrent Resolution on the Budget calls for real growth averaging 5.5 percent in 1984-1986, compared with over 7 percent in the Administration's plan. At

this lower level of funding, the O&M appropriation for the Army would grow an average of 3 percent per year or less. These six systems alone will consume up to one-third of all real growth in the Army operations and maintenance account. Obviously, other systems will also entail higher operating costs, although we cannot conclude from our study whether the six systems analyzed represent a general trend. This points to a more fundamental problem that needs to be addressed.

IMPLICATIONS FOR CONGRESSIONAL ACTION

Our analysis has highlighted two areas in which we believe there is a significant need to improve current management procedures regarding Army modernization.

- First, the Army needs to develop the means to forecast a more comprehensive picture of likely future cost increases; and

- Second, attention needs to be given much earlier in the modernization and development process to the future operating and support cost implications of early design decisions.

CBO analysts have devoted a substantial amount of time during the past six months to working with Army representatives responsible for

various aspects of the modernization program. The Army is diligently trying to implement the best program possible. It has instituted several important new managerial procedures and tools to facilitate the modernization process. We found, however, that current accounting systems impede rather than facilitate the development of a comprehensive picture of future costs. For example, the Army lacks an accounting procedure to estimate procurement-funded replenishment spares for its major new weapon systems, which, as noted above, constitute a substantial component of higher future operating costs. Similarly, the impact of equipment redistribution on the costs of reserve component forces is not fully known.

The massive scope of modernization of more than 180 systems, together with the limits of current management tools, makes it difficult to develop a comprehensive picture of future costs. The Army has recognized some of these problems and is working to address them. In the interim, the Subcommittee might wish to direct the Army to develop a more comprehensive picture of likely increases in operating costs--for example, by using proxy measures such as the percentage increase in procurement costs--until more detailed forecasting methods can be developed.

The second major area that we feel presents a general need for improvement is in systematic reporting of projected operating and support costs associated with major new combat systems. At present the Congress

receives detailed information on major procurement items through the Selected Acquisition Reports (SAR). While this includes the development and procurement costs associated with new systems, it does not include the operating and support cost estimates for those systems. This is unfortunate since the operating costs of a system far outweigh the investment costs. For example, an M1 tank will cost $2.5 million in 1984, but it will entail $10 million in operating and support costs over the 20 years it will be in service. Obviously, it is important to estimate operating and support costs of major systems as early as possible, noting the impact that design changes and program changes might have on those operating costs. Small design changes could dramatically affect long-term costs, though at present there is no systematic way to evaluate those changes.

Should the Congress wish to follow this approach, it could direct the Department of Defense to incorporate an operating and support annex for each of the systems reported in the existing SAR entries. Such an annex should identify a baseline for major operating and support elements, such as the annual operating tempo, the concept and design goals for maintenance, projected annual stock-funded and procurement-funded spare parts requirements, projected annual depot maintenance requirements (in terms of miles or hours between overhauls and maintenance manhours per system), and so forth. Design changes that affect projected operating and support costs should be reported, just as are changes that affect procurement costs.

Such an approach would provide the Congress with an early benchmark for future operating costs and would highlight the issue of operating and support costs early in the design process for new systems. This information is developed in various forms by the services on an ongoing basis and reporting it to the Congress would not represent a significant burden on the Department of Defense. Should the Subcommittee adopt this approach, CBO would be pleased to assist in helping to develop the presentational framework for the operating and support elements.

Both of these initiatives would substantially improve the information provided to the Congress on this important issue. While both entail substantial work, we believe that the management attention that the Army devotes to these issues now and the time the Subcommittee invests in this important area will be repaid handsomely.