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REPORT BY THE

Comptroller General

OF THE UNITED STATES

Full Potential To Achieve Savings By Investing In Fast Payback Productivity Enhancing Capital Equipment Not Realized

More savings could be realized in the Department of Defense's fast payback investment program.

Increased savings could be realized from the fast payback productivity program. Defense should place more management emphasis on identification, justification, and post analysis of investment opportunities.

GAO's review was made in response to an August 16, 1977, request from the Chairman of the Senate Committee on Banking, Housing, and Urban Affairs.

FGMSD-78-44

JULY 25, 1978

COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-163762

The Honorable William Proxmire
Chairman, Committee on Banking,
Housing, and Urban Affairs
United States Senate

Dear Mr. Chairman:

In response to your request of August 16, 1977, we are reporting on the Department of Defense Fast Payback Productivity Enhancement Program.

The purpose of the program was to provide funds for relatively small value, quick return on investment opportunities which were frequently lost due to the long leadtime needed for them to go through the budgetary review process, or the competition from higher priority mission requirements. The principal difference between the fast payback program and other procurement programs was that the items of equipment were not justified in advance and subject to the regular budget review process.

Although the Congress made available $19.3 million for the program in fiscal year 1977, funding was not extended in fiscal year 1978 for a variety of reasons, including concern by the House Appropriations Committee that the procedure circumvented the executive and congressional budget justification process. However, Defense officials have informed us that $13.5 million for the program is included in their fiscal year 1979 budget request.

Our review included discussions with logistics and financial management personnel of the Office of the Secretary of Defense and the Departments of the Army, the Navy, and the Air Force. In addition, we performed work at numerous commands and field activities within Defense. Our efforts were concentrated on investments made in the areas of supply, maintenance, and base support. A complete listing of the commands and field activities visited during our review is shown in appendix II.

Based on our review of the program, we concluded that:

--The basic concept of the program is sound and should be supported. The program enables Defense to finance productivity-enhancing investment opportunities that may otherwise not be funded because they were not provided for in the budget and, if not obtained quickly, could result in a significant loss of savings.

--The program did not realize its full potential to achieve savings. Although some of the investments made have resulted in better productivity by reducing operating costs, others have not and appear to be for equipment that was just "nice to have."

--There are a number of improvements that are needed for the program to achieve its full potential. These include greater management emphasis to

--insure maximum identification of profitable investment opportunities;

--improve the investment justification, review, and approval process; and

--insure timely and adequate post-analysis followup evaluation of the acquisitions. (See app. I.)

This report contains recommendations to the Congress and to the Secretary of Defense to continue the program and to undertake several actions to strengthen it and give it credibility. (See app. I, pp. 11 and 12.)

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report. At that time, we will send copies to interested parties and make copies available to others on request.

As requested by your office, we did not obtain written comments on our findings and recommendations. We did, however, discuss our findings with Defense officials and included their comments where appropriate.

Sincerely yours,

Elmer B. Staats

Comptroller General
of the United States

GENERAL ACCOUNTING OFFICE

REPORT ON DEFENSE'S

FAST PAYBACK PRODUCTIVITY ENHANCEMENT

CAPITAL INVESTMENT PROGRAM

Our review of the Department of Defense (DOD) fast payback productivity enhancing capital investment program was made in accordance with a request of August 16, 1977, from Senator William Proxmire, Chairman of the Senate Committee on Banking, Housing, and Urban Affairs. The Chairman asked us to determine whether the program has been successful and to make recommendations for its future. (See app. V.)

WHY CAPITAL INVESTMENTS ARE NEEDED

In recent years, productivity of the American economy has become a matter of national concern. American industry's productivity growth rate has declined over the past 10 years. The Bureau of Labor Statistics reports that while output per hour grew at an annual rate of 3.2 percent from 1947 to 1967, the rate of increase from 1967 to 1977 was only about 1.6 percent. These measures do not include Government; however, Federal productivity measures over the past few years have shown an annual rate of increase similar to that of the private sector. Increases in our standard of living are largely dependent on our ability to improve national productivity; that is, unless productivity grows, any increases in income will be absorbed by higher prices. Congressional concern over the declining rate of productivity increase led to the National Productivity and Quality of Working Life Act of 1975, which has as a purpose the provision of a national policy for productivity in the Government as well as the private sector.

Leading economists have concluded that capital investment and improved technology have been the major sources of productivity growth. Some economists have estimated that capital investment in industry contributes as much as 42 percent to the growth in productivity. Similar potential may exist in DOD. Operations Research, Incorporated, prepared a report in August 1975 for the Defense Manpower Commission stating that capital investment for productivity enhancement in DOD is essential for reducing staffing costs and to maintaining current levels of performance, thereby offsetting continued personnel salary increases and inflation.

According to Bureau of Labor Statistics data for two-thirds of the Federal work force, productivity of the Federal Government is increasing at an average annual rate of 1.2 percent. An increase of 1 percent in this rate could save $500 million annually, based on a total fiscal year 1977 Federal work force cost of over $50 billion. Department officials have estimated that for DOD alone, a well-integrated and dynamic program of productivity enhancement, including capital investment as a major element, can result in estimated savings of $200 million for each 1-percent increase in DOD productivity.

A 1973 capital investment study made jointly by us, the Office of Management and Budget (OMB), and the Civil Service Commission (CSC) concluded that the full benefits of capital equipment investments are not being realized in the Federal Government. Among those factors commonly cited as contributing to an inability to realize the full benefits were a lack of available funds and the long approval leadtime associated with existing annual budget review processes. Also cited was a need to increase the competitive position of productivity increasing capital investments relative to other funding requirements in the annual budget process.

WHY FAST PAYBACK PROGRAMS ARE NEEDED

The DOD fast payback program, which was started by the Army in 1973, was an attempt at (1) improving the fairness with which relatively low value productivity enhancing equipment competes for public funds and (2) eliminating the long approval leadtime associated with the annual budget review process. This program was started to take advantage of the relatively low value investment opportunities that were being lost because no provisions were made to fund them as they occurred. Under the program, productivity enhancement investments are separated from others for special consideration and qualified investments are to be financed quickly.

Large projected annual savings on investments made by the Army during the initial years of their fast payback program was instrumental in DOD recommending a DOD-wide program in 1975. This program called for making funds available within 60 days for investments in equipment which would pay back within 2 years. The DOD-wide program became operational in fiscal year 1977. For fiscal year 1977 the Congress made available about $19.3 million specifically to fund fast payback capital investments.

The $19.3 million fast payback productivity enhancing capital investment funds were nonreplenishable appropriated funds. These funds were not perpetuated by capturing savings from the investments they financed. Savings were to be realized through appropriate reductions in future personnel authorizations and operating and maintenance budgets. Program criteria required that the investments produce "hard savings" reflected by reduced operating costs.

However, field managers were allowed to share in savings produced through fast payback investments by using the savings generated to finance other unfunded requirements within the same appropriation.

DOD requested $30.2 million for fiscal year 1977 to finance the nonreplenishable appropriation fast payback capital investment program. The House Appropriations Committee, however, was concerned that the funds circumvented the executive and congressional budget justification process so the original request was reduced. The amount of $19.3 million was ultimately made available for allocation among the Army, the Air Force, and the Navy. No funds were authorized for other DOD agencies; however, DOD allowed the Defense Logistics Agency to reprogram $993,000 of its appropriated operating funds to support the program in fiscal year 1977. (See app. III.)

In its fiscal year 1978 budget submission, DOD requested $25.1 million for the fast payback program. However, the Congress did not approve any funds for fiscal year 1978 for the same reason it reduced the fiscal year 1977 request--concern over circumvention of the budget process. However, DOD officials have informed us that $13.5 million for the fast payback program is included in their fiscal year 1979 budget submission.

FULL POTENTIAL OF FAST PAYBACK PROGRAM NOT REALIZED

While there has been considerable improvement in DOD's capital investment programs since we, OMB, and CSC made our joint study, the full potential for achieving savings through investment in capital equipment with fast payback is not being realized. Although some investments made through the fast payback program have resulted in better productivity by reducing operating costs, others have not and appear to be just "nice to have" equipment. Also, in many instances we were unable to determine the validity of investments because of a lack of documentation to support workload and other factors used to determine costs and savings. Although time did not permit us to analyze every capital equipment investment made, we evaluated several examples of both good and bad investments.

The following examples illustrate the types of benefits that can be achieved when investments are properly made in productivity enhancing capital equipment.

--A supply activity acquired two stock selector trucks for $24,750 which will result in annual savings of $16,100 and payback in 18 months by reducing the need for one employee.

--A maintenance activity acquired a vertical band saw for $52,500 which will result in estimated annual savings of $47,050 and payback in 1.12 years by increasing productivity of the machine shop and reducing overtime payments.

--A maintenance activity acquired a chrome plating machine for $96,520 to refinish worn transmission parts instead of buying new parts which will save an estimated $966,337 in the first year of operation. Savings of $325,871 are expected during the second year of operation and every subsequent year for the 10-year economic life of the equipment.

The following examples illustrate capital investment justifications that did not reduce operating costs or have supporting documentation.

--A justification for two power sweepers at a supply activity with estimated annual savings of $33,736 and a 2-month payback was based on a savings of about 50 staff-hours weekly. However, the sweepers were only being used to clean designated areas within two warehouses with no reduction in personnel. Consequently, the sweepers will not pay back the investment costs.

--A justification for a line printer at a maintenance activity with estimated annual savings of $6,100 and a 1.3-year payback period was based on releasing a computer aide to do more work. Our examination showed that the aide was working in the same functional area as before the investment was made. Consequently, operating costs were not reduced and documentation was not available to support any increased production.

--A justification for replacing a bit grinder at a maintenance activity with estimated annual savings of $27,980 and a 3-month payback was based on reducing labor, material, maintenance, and utility costs. Documentation was not available to support the assumptions made and the factors used to arrive at the estimated savings.

PROBLEMS IN THE PRESENT FAST PAYBACK PROGRAM

For the fast payback program to achieve its full potential, management needs to (1) insure maximum identification of investment opportunities, (2) improve the investment justification and approval process, and (3) insure adequate post-analysis/followup evaluations. Specifically

--insufficient priority had been assigned to the identification of capital investments;

--managers were reluctant to utilize the fast payback program because of lack of incentives for managers to improve productivity;

--investment justifications were invalid and unsupportable due to erroneous, incomplete, and undocumented economic analyses;

--investment justifications lacked independent review prior to approval; and

--savings were inadequately monitored and inaccurately reported.

Insufficient priority given to identification

For the fast payback program to be successful, an active aggressive program of identification with strong management emphasis is essential for assuring that worthwhile projects are identified.

Our review showed that management at some of the activities reviewed was not assigning a high priority to identification of capital investments. At two activities, the personnel designated to identify capital investment opportunities spent little or no time searching for investments. One of these activities did not fund any fast payback investments during fiscal year 1977 and the other funded only one.

There were strong indications that additional worthwhile opportunities to use fast payback funding would materialize if management placed greater emphasis on identifying capital investments. This is illustrated by the following comparison of the number of investment opportunities identified during fiscal year 1977 by four activities. Two activities emphasized identification and two did not.

Activities With Emphasis

Activity	No. of projects	Cost	Annual savings
A	18	$324,212	$349,148
B	8	233,171	348,868

Activities Without Emphasis

Activity	No. of projects	Cost	Annual savings
C	0	$ -	$ -
D	1	13,500	19,800

According to an Army management engineering team, there is a high potential for additional worthwhile fast payback investment opportunities which are now being lost because of the low level of management emphasis in the program. At our request, the team visited two activities to test for additional worthwhile investment opportunities. At one installation, the team recommended acquiring a carton-sealing machine costing $5,000 that would save $8,560 during the first 2 years of operation. The team also believed that additional items of equipment (e.g., flap folder, plastic stretch wrapper) were potential cost-reducing capital investments. However, they did not collect sufficient data to evaluate these items because of time constraints.

Lack of incentives to utilize fast payback program

Supervisory personnel were reluctant to utilize the fast payback program because they viewed the program as having built-in disincentives. Projects using nonreplenishable appropriated funds must be justified wholly or partly on the basis of work-force savings which reflect reductions in full staff year allocations. Savings claimed must be supported by an actual reduction in operating costs in the functional area in which the project is implemented (e.g., elimination or reallocation of one employee authorization, energy conservation savings, or elimination/reduction of contract costs). This criterion acts as a disincentive causing supervisors to not identify projects. According to a report by Operations Research, Incorporated, for the Defense Manpower Commission, Civil Service guidance for the grade structure of supervisors is based on the number of employees supervised. Therefore, if an innovative application of equipment reduces the number of employees involved in the function, the grade structure of the supervisor may be reduced even though the application results in personnel savings and still retains the same or higher levels of work output and quality. Our review showed that this continues to be a major concern to many supervisory personnel.

The lack of incentives also causes supervisory personnel to be reluctant to track savings and maintain records for later analysis. Supervisors believe that this analysis subjects them to "having someone check on them" and possible criticism if actual results are not favorable. Personnel at one activity informed us that they identified five items that qualified for fast payback funding but because of the requirement to track savings, they did not purchase the equipment with fast payback funds. At another activity, we were informed that initial enthusiasm disappeared when personnel realized that they were required to track savings. Consequently, this activity identified and funded only one fast payback investment during fiscal year 1977.

Therefore, an effort is needed to provide incentives before a fast payback program can be utilized to the maximum extent. In our opinion, one way to achieve this would be to provide rewards tied to demonstrated savings achieved, thereby giving managers and employees the incentive to identify those investments which will produce savings. These rewards could take the form of cash awards, special recognition, or bonuses.

Invalid and unsupportable justifications

Sound investment justifications are essential to establishing a program's credibility. Investment decisions depend largely on the adequacy of project justifications which, in turn, depend on good cost-benefit analyses. Properly done, these analyses provide the assurance that investments will meet the required 2-year payback period of the program.

We reviewed justifications for 40 fast payback investments costing $5.8 million with reported annual savings of $6.1 million. Although we found instances where the justifications were valid and contained adequate data, 31 of the 40 (78 percent) showed savings that were invalid or unsupportable. Our review disclosed mathematical errors; incorrect descriptions of operating procedures; incorrect labor rates being used; and no consideration given to related costs, such as maintenance, utility, relocation of personnel, and severance pay.

Eighteen of the 40 investment justifications involving costs of $2.1 million with reported annual savings of $2.5 million were invalid because they did not meet the program's criteria which required that operating costs be reduced or that revenues be increased. Furthermore, 13 of the 40 investments having estimated savings of $2.3 million were unsupportable because various costs were not considered or documentation was not available to substantiate estimates used in developing the cost and savings figures of the analysis. (See app. IV.)

Inadequate review of justifications

In many cases justifications for investments were not independently reviewed prior to approval. In other cases, only the mathematical calculations of cost-benefit analyses were verified. The activities we reviewed did not verify the validity of data in the justifications to basic source documents or studies. For example, the reviewer at one activity did not realize that a justification he approved compared a 5-year cost for the old method to a 1-year cost of the proposed new investment because cost figures were not verified to source documents.

At least 5 of the 40 justifications we reviewed had not been independently verified prior to approval by the activity, and at least 5 others were not adequately reviewed. The estimated savings attributable to all 10 of these investments were invalid or unsupportable.

Due to the inadequate review of justifications, investments have been financed with fast payback funds that do not meet the program criteria. In fact, as shown by the following examples, some investments have been financed that have actually increased operating costs.

--Justification for an automatic floor sweeping and scrubbing machine costing $13,500 with estimated annual savings of $19,849 and an 8-month payback period was based on reducing a two-employee sweeping operation to a one-employee operation. We found that instead of reducing the need for a janitorial employee, an additional janitor was required to operate the new machine.

--Justification for four push-pull attachments to forklift trucks costing $25,455 showed estimated annual savings of $52,134 and a 6-month payback period. This investment resulted from a laboratory study which recommended the field testing of slip sheets instead of using wooden pallets for cargo shipments. The field test showed that using slip sheets was not feasible; therefore, no savings would be realized by using the push-pull attachments. Based on the criteria of the program, the attachments should never have been procured with payback funds in the first place because their capabilities had not been proven.

<u>Failure to adequately monitor and accurately report savings</u>

Followup evaluation of capital investments serves as a check on whether the planned benefits are being realized after purchased equipment becomes operational. The feedback of information on implemented investments provided by post-analysis can be an effective tool for managing capital expenditures and an effective means for identifying corrective action needed to realize the full potential of investments. Also, with a clear demonstration of the benefits of capital investments, management and labor are more likely to support the program.

At three activities we reviewed, no followup evaluations of investments after implementation were made. DOD officials stated that due to the newness of the program, postpurchase evaluation was not always possible. However, we found that activities did not maintain records needed to determine savings; therefore, verification will be impossible when and if attempted.

Although activities periodically report actual savings on fast payback investments, many reports contained estimated and/or invalid savings. One activity's report cited actual savings of $22,993 through fiscal year 1977 for six investments costing $43,732. However, our examination showed actual savings of only $486. Another activity reported actual savings of $33,210 on two investments that were not even procured under the fast payback program.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

There is significant potential in DOD to achieve savings through increased productivity from capital equipment investments as demonstrated by the significant savings achieved on some of the investments reviewed. The fast payback program provides a funding mechanism whereby savings can be achieved by investing in relatively low value equipment which returns the initial cost quickly.

The basic concept of the fast payback program is sound because it enables DOD to finance productivity enhancing investment opportunities that could be lost if purchasing activities have to wait for a long budgetary process. In this regard the program allows immediate funding and avoids the long wait for budget approval.

The setting aside of funds for financing quick payback productivity enhancing capital investments is needed and should continue. However, some changes must be made in the existing DOD program if the full potential of such a program is to be realized. These improvements include:

--Greater management involvement is needed to insure maximum identification of profitable investment opportunities. Although many installations that we visited identified opportunities, such identification appeared to be more sporadic than systematic. Identification of fast payback opportunities should be part of an overall systematic program of evaluating productivity equipment investments. The success of any productivity enhancing capital investment program is dependent on an active and aggressive identification function. The establishment of this function should be given strong management emphasis to assure that the most worthwhile projects are identified.

--The investment justification review and approval process should be improved. Each installation visited had an analysis staff or the capability of providing independent review of investment justifications. However, this was not being done. The lack of proper justification and the significant number of errors noted in the justifications are caused by failure to independently review proposed investment decisions.

--Followup evaluations should be made an integral part of the program. Adequate post analysis of investments by an independent group is especially important because fast payback funds are justified by prior accomplishments as opposed to the normal budgetary process of justification. By verifying and documenting the results of implemented fast payback items, management can clearly demonstrate the benefits of such investments to the Congress. Such analysis is absolutely essential to demonstrate the credibility of the fast payback program.

--Disincentives which prevent manager and employee from actively seeking out projects or using the fast payback funds appear to be caused primarily by a lack of rewards to the innovative manager or employee who identifies a good investment. Incentive programs should be used to reward managers and employees for identifying good investments.

Recommendation to the Congress

We recommend that the Congress reauthorize a fast payback capital investment program and provide the funds requested by the Department of Defense for its implementation for a 1-year period. We further recommend that the Congress direct the Secretary of Defense to take action to correct the problems we have identified.

Recommendations to the Secretary of Defense

We recommend that the Secretary of Defense emphasize (1) the importance of identifying worthwhile fast payback investments and (2) the need for program credibility.

Specifically, the Secretary should

--assign a higher priority to identifying investment opportunities by instructing the military departments to develop a systematic approach to identifying fast payback investments;

--establish an awareness program to provide managers and employees knowledge of the benefits of productivity improvement in general and the role of capital equipment investments in achieving improvements;

--assure sound economic justification of investments by requiring independent reviews prior to approval of investments;

--assure systematic feedback, independently verified on benefits realized from investments;

--establish a procedure to assure that management decisions and employee proposals are rewarded when capital investments that result in productivity improvements are identified; and

--include in the budget justification for continuing the program, an audited accounting of savings produced by the program and a listing of related specific investments which resulted in productivity savings.

LISTING OF COMMANDS AND FIELD ACTIVITIES VISITED

Army:

U.S. Army Materiel Development and Readiness Command, Alexandria, Va.

U.S. Army Depot Systems Command, Chambersburg, Pa.

Anniston Army Depot, Anniston, Ala.

New Cumberland Army Depot, New Cumberland, Pa.

Tobyhanna Army Depot, Tobyhanna, Pa.

Sharpe Army Depot, Calif.

U.S. Army Forces Command, Fort McPherson, Ga.

XVIII Airborne Corps and Fort Bragg, Fort Bragg, N.C.

Navy:

Navy Material Command, Washington, D.C.

Naval Air Systems Command, Washington, D.C.

Naval Air Rework Facility, Norfolk, Va.

Naval Air Rework Facility, North Island, Calif.

Naval Supply Systems Command, Washington, D.C.

Naval Supply Center, Norfolk, Va.

Headquarters, Commander in Chief, Atlantic Fleet, Norfolk, Va.

Commander Naval Surface Force, Atlantic Fleet, Norfolk, Va.

Shore Intermediate Maintenance Activity, Little Creek, Va.

U.S.S. Vulcan

Air Force:
Air Force Logistics Command, Wright-Patterson Air Force Base, Ohio

San Antonio Air Logistics Center, Kelly Air Force Base, Tex.

Air Training Command, Randolph Air Force Base, Tex.

12th Flying Training Wing, Randolph Air Force Base, Tex.

Air Force Management Engineering Agency, Randolph Air Force Base, Tex.

Air Force Commissary Service, Kelly Air Force Base, Tex.

SUMMARY OF DOD FAST PAYBACK FUNDS FOR FISCAL YEAR 1977

Service/ agency	Fast payback program funds Amount requested	Appropriated	Reprogramed funds
Navy	$10,200,000	$ 6,700,000	$ -
Air Force	10,000,000	6,500,000	-
Army	10,000,000	6,100,000	-
Marine Corps	-	-	-
Defense Logistics Agency	-	-	993,000
Total	$30,200,000	$19,300,000	$993,000

SUMMARY OF FAST PAYBACK INVESTMENTS EXAMINED

	No. of projects	Cost	Estimated annual savings	Estimated annual savings: Valid	Invalid	Unsupported
	9	$ 381,984	$1,279,207	$1,279,207	$ -	$ -
	19	2,085,744	2,548,556	-	2,548,556	-
	13	3,314,577	2,273,463	-	-	2,273,463
Total	41	$5,782,305	$6,101,226	$1,279,207	$2,548,556	$2,273,463

United States Senate

COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS
WASHINGTON, D.C. 20510

August 16, 1977

The Honorable Elmer Staats
Comptroller General
General Accounting Office
Washington, D.C.

Dear Elmer:

As you know, I've long been interested in measuring and increasing productivity in the federal government. Your office has been of very great help in this matter and has helped to develop both measurement and programs to improve productivity throughout the government.

The Defense Department has had a capital investment program where funds have been provided for investment opportunities with possibilities for major producitvity improvements.

For a variety of reasons the funding was not extended this year.

I would like to ask the GAO to examine the program to tell us whether or not it has been successful in the past and have your recommendations for the future.

As there has been some question raised about it and it has not been funded for next year, I would like to ask you to examine it critically so we can have a recommendation for its future.

With best wishes.

Sincerely,

William Proxmire, U.S.S.

WP:hse

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