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NAVAL POSTGRADUATE SCHOOL

Monterey, California

A MANAGERIAL ASSESSMENT OF THE

PRODUCTIVITY INVESTMENT FUND

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The Productivity Enhancement Capital Investment (PECI) program is a funding program administered by the Defense Productivity Program Office (DPPO). The program was established in 1979 to improve the capital stock of Department of Defense activities. It is designed to enable managers to make timely investments in equipment and facilities which increase outputs of an organization in relationship to inputs.

The program has separate funding sources depending upon the cost of investment. Projects costing less than $100K are eligible for "fast payback" funds which are allocated by the respective military departments. The departments evaluate projects for investment criteria and dispense funds according to available resources and productivity strategies. Funding may be received within six months of a request.

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Projects costing more than $100K are eligible for the Productivity Investment Fund (PIF) which is administered by DPPO. There is a competitive review of projects submitted by the military departments and defense agencies prior to funding. There is a two year time lag between submission and funding.

The productivity program has been operational for eight years and has been evaluated by GAO (1981, 1987), Whipple and LaPatra (1983), and Turke (1986). Most of these reports focused on the fast payback portion of the PECI program and concluded PECI is a valuable contribution to DoD productivity improvement.

The present report examines the Productivity Investment Fund from the viewpoint of participating organizations. Specific interest is directed towards the program activities of document preparation, project selection, fund obligation and accountability, and alternative sources of funding. The purpose of this research is to define and evaluate factors which facilitate or impede full participation in the Productivity Enhancing Capital Investment program.

A Managerial Assessment of the Productivity Investment Fund

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Preface

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Introduction

The research described below was conducted for the Defense Productivity Program Office to examine the Productivity Investment Fund from the viewpoint of program users. Specific interest was directed toward documentation, project selection, funding, obligation, accountability, and alternate sources of productivity funds. Information was obtained from program managers at headquarters, major command, and local activity levels; over 40 interviews were conducted with both active and inactive program users. Interviews were conducted through on-site visits and by telephone. Activities participating in this research are listed in Appendix A.

This report is organized into six chapters. The first chapter is a general introduction to the development of productivity enhancing investment programs in the Department of Defense. The second through fourth chapters are descriptions and analyses of the programs in the Departments of the Army, Navy, and Air Force. The fifth chapter summarizes and discusses the findings of the study. The sixth chapter provides conclusions and recommendations.

History of Productivity Enhancing Investment Programs

The US economy was at a critical juncture in 1970: unemployment rose to six percent, a rate not seen in over 30 years; the Gross National Product showed no growth; imports

totalled more than exports; and productivity became a major concern of the business community and Congress. The Department of Defense responded quickly to the challenge for increased productivity within the Department of Defense. A productivity program was established in August, 1973, under the Assistant Secretary of Defense for Installations and Logistics with the express purpose to:

- Promote productivity improvements at all levels of responsibility throughout the Department.
- Foster the development and use of productivity measurements.
- Establish a working environment giving full consideration to meaningful and mature worker/manager relationships in which both can fully participate and realize mutual benefits.

In addition to focusing attention on productivity through increased awareness, productivity measurement, and improved human relations in the workplace, the Defense Department reemphasized the use of capital investments to improve productivity. In Fiscal Year 1973 the Army Materiel Command (AMC) experimented with a capital investment program that made available a pool of funds which could be drawn upon to purchase equipment without requiring a lengthy approval process for each project. Within the first six months of the program, over 60% of the projects had paid back their investment costs. This successful test program was the precursor of the fast payback programs which are

cornerstones of defense capital investment programs.

The appealing feature of the AMC test program for both Congress and defense managers was the fast payback provision for capital investments. In the normal procurement cycle there is a two year time lag between the requirement for capital equipment and the appropriation of funds for purchase. Fast payback programs avoid this delay by enabling a manager to receive monies as soon as two months after a request. Fast payback programs made it possible to purchase equipment before it became outdated through technological change. The ability of the budget process to contribute to productivity was obvious to all parties. In 1975 Congress gave approval to implement a productivity enhancing capital investment program throughout DoD; Fiscal Year 1977 was the first year of the program.

Productivity Enhancement Capital Investment Program

The Productivity Enhancement Capital Investment (PECI) program that developed from the earlier experimental programs was formally inaugurated in 1979 with DoD Directive 5010.31, 1979, updated by DOD 5010.36, 31 Dec 80. This directive establishes that the main objective of PECI is to "provide for capital investment in equipment and facilities which will increase outputs of an organization in relationship to inputs." Specific objectives are to:

1. Improve the efficiency and effectiveness of defense organizations and activities by encouraging the application of capital equipment and facilities to improve methods of

operation.

2. Increase the level of consciousness among defense managers of the potential for productivity improvement through capital investments.
3. Promote the substitution of capital for labor as a means of optimizing the output of the defense work force.

Four different types of funds are available for PECI projects, but provisions on some of the funds restrict their use:

1. **Productivity Enhancing Incentive Funds (PEIF).** This fund was inaugurated in 1977 to finance projects under $100,000 that have a minimum payback period of less than two years. This is the original PECI fund and is often referred to as the "Fast Payback Fund."
2. **Productivity Investment Funds (PIF).** This fund was created in 1981 and provides a source of funds that are "fenced" by OSD to finance competitively selected proposals of a more expensive nature, i.e., greater than $100,000, that have expected payback periods of four years or less.
3. **Component Sponsored Investment Programs (CSIP).** This fund was initiated in 1981 and provides money to fund PECI's of particular concern to the individual services.
4. **Asset Capitalization Program (ACP).** This program, started in 1983, replaced the earlier Industrial Fund Fast Payback (IFFP). Asset capitalization provides for financing of capital investments by passing costs on to customers through work surcharges. ACP is not considered part of the PECI

program and in fact removes industrially funded activities from using PECI funding for equipment purchases. Industrially funded activities are permitted to use PIF funds for facility construction funds so industrial activities do maintain a nominal involvement in the PECI program.

Whipple and LaPatra (1983) note that PEIF and PIF programs have great potential for improving productivity in the armed services because of the complementary nature between the amount of money requested and the length of reaction time between request and approval. As stated above, PEIF funds are available for projects costing less than $100,000. Money is drawn from a pre-established "pool" set up by the Office of Secretary of Defense (OSD) at each of the component services to fund projects which meet productivity criteria.

Productivity projects costing more than $100,000 are funded with the Productivity Investment Fund, but the appropriation process has a long reaction time. Service components submit proposals to the Defense Productivity Program Office which performs a competitive review of all projects against specific criteria, e.g., amortization period, internal rate of return, and net present value. Following successful review the proposals are forwarded to Congress with notification to the component to include the project as a line item for the following Fiscal Year budget. Financing is appropriated from the productivity fund set aside by the Office of the Secretary of Defense.

To summarize, PEIF is a funding source which is immediately available to purchase new technology but has a ceiling on expenditures. PIF, on the other hand, does not limit the amount which can be expended for productivity enhancing capital but has a slow reaction time since projects become line items in the normal appropriation cycle.

The complementary nature of PEIF and PIF can greatly assist in the design of a capital investment program aimed at productivity enhancement. Equipment which improves productivity of individual employees can usually be purchased using PEIF, while PIF can be applied towards projects which improve the productivity of entire work units. With these funding tools the defense manager can plan for both short-term and long-term capital investments that increase unit efficiency by reducing labor costs and, ultimately, manpower requirements. The potential exists within the purview of these programs to significantly impact productivity of the armed services (Whipple and LaPatra, 1983).

Given the theoretical potential of the PECI program the obvious question is whether the program structure actually encourages capital investment. An integral feature of the PECI program is a cost-benefit analysis that documents net costs, sources of savings, and applications of savings for each proposal. Essentially, savings must pay back investment costs within a specified period of time, two years for PEIF and four years for PIF.

Savings are generated by either hard savings, cost-avoidance savings, or opportunity trade-off savings. These types of savings are defined as follows:

Hard Savings: benefits that can be precisely measured, quantified, and placed under management control at the time of realization. Hard savings normally are applied as specific reductions in manpower and budget dollar requirements.

Cost-Avoidance Savings: benefits from actions that obviate the requirements for an increase in future levels of manpower or costs that would be necessary if present management practice were continued. The effect of cost-avoidance savings is the achievement of a given level of readiness at less staffing cost or the absorption of a growing workload at the same level of staffing cost.

Opportunity Trade-Off Savings: benefits that occur as a result of selecting the least-cost alternative from among alternative choices. The savings occur by avoiding the loss of an opportunity to enhance productivity and accrue benefits by choosing one course of action over another.

The incentive of the PECI program is that productivity savings remain within the command. Disposition of savings is accomplished by either reapplying the savings within the program element generating the proposal, reprogramming saved requirements to other areas within the command, or reducing specific budget requirements. As an example, when a piece of equipment

purchased with PECI funds performs a job with fewer personnel, "saved" personnel requirements can be reassigned within the command.

The obvious benefit of the PECI program is that needed equipment can be procured without using local resources, and the savings can be reinvested in the local command. The negative aspect of PECI is that proposals require extensive documentation both during the initiation stage and after the equipment is installed. Our data indicate that this justification places a demand on resource managers that influences program usage. Cost-benefit analyses are costly, time consuming, and often confusing to persons unfamiliar with the procedures. Further, post investment analyses require cooperation from equipment users who tend to forget about reporting usage after the equipment is installed. Thus, managers are faced with balancing the benefits and costs of the PECI program against a selection process that is very competitive, especially for PIF projects.

Typical PIF projects often cost millions of dollars, so it is not unusual for up-front documentation costs to exceed $10,000. These are sunk costs for both approved and non-approved proposals, but when there is an indication that a project will not be selected for funding there is a natural reluctance to invest resources in the proposal process. There is stiff competition among DoD Components for the Productivity Investment Fund with certain components more successful in receiving funds. Previous research (Turke, 1986) has indicated Army and Air Force

have robust PECI programs while Navy participation has dwindled in recent years. Other research indicates a wide variety of factors can facilitate or impede program use, e.g., local management practices (Marshall, 1985; Moe, 1985), organizational mission (Badger, 1985), and alternate funding sources which preclude PECI funding (Wolfe, 1985).

The Defense Productivity Program Office has expressed interest in determining whether elements of PECI are unduly influencing program involvement. Specifically, DPPO has tasked the Naval Postgraduate School to research the impediments to PECI participation by interviewing program managers at each component level. Elements of concern are documentation, selection, fund obligation, post investment analyses and alternate sources of investment funds. The following chapters report the results from program managers at headquarters, major commands and local activities for Army, Navy, Marine Corps, and Air Force.

ARMY

The Army manages PECI with three programs administered through the Office of the Comptroller (DACA-RPM). The fast payback fund is named Quick Return Investment Program (QRIP), the component sponsored fund is named Productivity Enhancing Component Investment Program (PECIP), and the Productivity Investment Program is named OSD-PIF. The implementing regulation is AR 5-4. Operationally, QRIP funds are pre-positioned at the major commands (MACOMS) which approve the productivity requests of their respective local activities and release funds on an as-needed basis. PECIP is managed at Headquarters, Department of the Army, where the Office of Comptroller evaluates and approves capital investment for projects costing more than $100K, which most likely would not favorably compete with other OSD-funded productivity projects. Candidates for OSD-PIF funding also pass through the Office of the Comptroller which reviews submissions for completeness and forwards all proposals to the Defense Productivity Program Office in the Office of Secretary of Defense.

Without question Army is the most active participant in the PIF program. In FY88-89, 229 projects were submitted to OSD which represented a 50% increase over FY87. Approval was received on 95 projects totalling $96.6M for FY88 and 54 projects totalling $67.7M for FY89.

With the Productivity Enhancement program located in the Office of the Comptroller there is a high level of visibility and good communication channels between Headquarters, MACOMS, and local activities. The project director at headquarters consults frequently with requestors about pending OSD-PIF proposals and, consequently, is well-known throughout the Army. The Comptroller also takes responsibility for training personnel about PECI procedures and cost-benefit analysis and informs MACOMs about impending due dates; the whole process flows smoothly.

The centralization of Army's program and the smooth working relationship between Headquarters and the MACOMs is probably a central reason for Army's success in obtaining PIF approvals. According to the project director, PECI was "sold" to the commands in the first years of the program with a subsequent "snowball" effect that has resulted in increasing submissions over the past five years. The program has increased on the average of 30% per fiscal year from FY82 to FY88.

The selection process, detailed in AR 5-4, emphasizes hard savings and cost avoidance. Projects are ranked at headquarters on three dimensions: internal rate of return (IRR), saving to investment ratio (SIR) and rate of investment per manpower space (RIMS). A composite rank is formed from the three rankings. Special consideration is given to projects "improving readiness and 'freeing up' manpower spaces." The proposals are sent on to OSD in both hard copy and computer diskette form.

The proposals submitted by Army in 1987 fill volumes. The

number and success rate of Army proposals indicate a vigorous capital investment program is operating at headquarters. The ironic consequence of this is that the volume is so great that DPPO's resources are strained trying to process Army proposals. Turke (1986) has recommended that Army adopt OSD's ranking criteria to facilitate processing Army proposals, but some major commands disagree about changing procedures. Army regulations require post-investment analysis (PIA) not later than six months after the actual operational date; this requirement has been relaxed recently to one year. Unforeseen operational delays must be explained to DACA-RPM. Only one PIA is required; however, an audit trail must be maintained for one complete fiscal year beyond amortization.

The information required for post-investment analysis does not reflect actual productivity savings. Users report operating costs before investment and after investment on the same documentation forms used to request OSD-PIF funding. The PIA is often a photocopy of the original requesting documentation rather than an accounting of actual savings generated by the investment. It is impossible to determine whether the investment meets original saving projections. The data simply are not available.

Major Command: Army Materiel Command (AMC)

The Army Materiel Command (AMC) is the most active user of the PECI program. AMC has a historical familiarity with PECI since they initially tested the feasibility of a fast payback program in 1974. The program is run on a timetable that is a

model of efficiency. Local commands are notified well in advance of deadlines to examine their requirements and apply for OSD-PIF funds. In FY87 AMC had 47 OSD-PIF submissions; in FY88-89 they submitted 125 proposals. The packages were well-documented and arrived on time at headquarters.

AMC has automated their PECI program so they are able to monitor the status of all projects. Suspense files are maintained for obligation of funds and for post-investment analyses. By tracking obligations AMC knows how much money has been expended on a project and what monies can be called back. In general AMC manages the PECI-PIF program so that it works for the user and for headquarters.

AMC had its highest first quarter obligation rate of 25% in FY86 which is a significant improvement over a 2% first quarter rate in FY85. This rate was accomplished by instructing field activities to begin their contracting of approved capital investment projects after program budget decisions (PBD) had been received from OSD but before Congressional approval. Contract negotiations are conducted "subject to final award," which means that there is a risk the funds may be withdrawn. The AMC has experienced problems with this practice, however, because Congress often does not approve full funding for Research, Development, Test, and Evaluation (RDTE) projects which are probably the most common in AMC. In the past, short-falls have been covered by redirecting funds from QRIP and PECIP. In FY87, however, Congress reduced AMC's program budget decision from $39M

to $9M. This $20M differential has forced AMC into a policy of eliminating some projects to cover the $20M differential. The overall effect of unstable funding on PECI activity is uncertain at this time.

Local Activity: Laboratory Command. Laboratory Command (LABCOM), a sub-command of AMC, is the single most active participant in the entire PIF program. In 1981 Army Labs were exempted from Industrial Fund requirements which allowed them to compete for OSD-PIF funds. Since that time LABCOM has used OSD-PIF monies to completely modernize laboratory facilities. In FY87 LABCOM submitted 29 projects totalling $44M and 52 projects for FY88 totalling $54M. According to LABCOM personnel OSD-PIF has played a significant role in the upgrade in quality of LABCOM facilities and their ability to attract high caliber scientists.

One reason for LABCOM's success is the enthusiasm of the local management resource team for OSD-PIF. They actively solicit RDTE requests and then prepare all documentation. The program is well known in LABCOM both for its potential to provide equipment and the skill of the management team in justifying requests.

Savings are usually justified as a reduction in costs charged to the customer. Savings are documented comparing the "Old Way with the New Way" of providing the service. LABCOM also pre-obligates in the sense that activities are instructed to begin contracting subject to final award.

Major Command: Finance and Accounting Center, Fort Benjamin

Harrison, IN

The Finance and Accounting Center (FAC) uses QRIP and PECIP to fund PECI projects, but does not submit a OSD-PIF proposal. Most projects are not costly enough to satisfy OSD-PIF requirements, but PECIP is also perceived as providing funds more quickly than OSD-PIF.

The user prepares all documentation, while the management resource team insures the proposals are properly documented. Finance and Accounting Center has a one-year post-investment analysis requirement, and savings are generally applied against unfunded requirements or cost reduction. There is a general avoidance of the use of PECI funds if the savings may result in a loss of billets.

Major Command: Forces Command (FORSCOM)

Forces Command (FORSCOM) submitted 37 PIF projects to OSD in FY88 and FY89 for a total of $42M. Almost 80% of the projects were approved with most funding earmarked for office automation projects. A sizable amount of money was also budgeted for "state of the art" investments such as flight training systems, video teleconferencing, and communication systems. A large MILCON project for a Helicopter Refueling Facility has also been approved.

FORSCOM is very positive about OSD-PIF. They have only limited Other Procurement, Army (OPA) funds and view OSD-PIF as a relatively stable funding source for investment projects. FORSCOM reorganized the program in FY86 to emphasize the command

benefits of productivity investment, and this generated considerable program interest. PIF proposals increased from four in FY87 to 37 in FY88, an 825% increase.

FORSCOM has designed program management to facilitate local usage. Management resource teams work closely with requestors to simplify the documentation. A handbook was distributed to local resource managers which provides block by block details for completing paperwork along with the rationale for the required information. In addition to an aid this is a good training tool. Also, to facilitate involvement, savings are reprogrammed at the lowest possible level in the command so that requestors experience the benefits of the program and are motivated towards continued use.

Contracting is initiated by FORSCOM only after funding authorization is received via a cite number. Activities submit a post-investment analysis one year following installation. Travel budget permitting, Forces Command has plans for field reviews of local project installations and PIA. Most savings are applied against work-year equivalents, but there are also hard savings generated by lease buy-outs, cost reductions and space reductions.

Local Activity: Fort Lewis, Washington. Fort Lewis has been successful with OSD-PIF submissions in FY86 and FY87 although none of their FY88-89 projects were approved. Past successes include recirculating water pumps which retard the deterioration of hot water boilers and warehouse modernization

devices which reduce energy loss. Paybacks are often achieved within the first quarter after installation.

Documentation is generally prepared by the user with the management resource team serving as consultants. Three-quarters of the projects originate in the engineering division which experiences no difficulty with documentation. Some projects are assigned to interns as a practicum.

Obligation has been a problem at times. Fort Lewis found it necessary to turn back a $180K project because they could not obligate funds before the end of the fiscal year.

Accountability is accomplished with a one year PIA mailed to FORSCOM. It consists of a comparison of "New Method vs. Old Method of Operations," but there is no documented check on actual equipment usage. Hard savings are often reported because of energy reduction; other savings are realized through reduction in man-year equivalents. One problem with the accountability process is that it is often difficult to collect information from the user because of a tendency to ignore reporting requirements after the project is installed.

Major Command: Hospital Service Command, San Antonio, TX

Hospital Service Command (HSC) is an active user of QRIP but submitted only one OSD-PIF project in FY88-89. The lack of involvement with PIF stems from HSC's medical mission which requires equipment that primarily addresses patient medical needs rather than command productivity needs. Thus, HSC often purchases very expensive medical equipment that improves surgical

procedures but will not have a payback schedule that meets OSD criteria. In general mission requirements do not permit favorable PIF competition.

HSC does use QRIP to fund desktop computers and other administrative equipment. There is a 45 day turn around for QRIP funds, and savings are usually applied against multiple man-year equivalents.

Local Activity: Blood Bank, Fort Ord, CA. The single OSD-PIF project in HSC originated at Ft. Ord. It is an innovative system to coordinate regional blood supply at three inter-service hospitals (Silas B. Hayes, Ft. Ord; David Grant, Travis AFB; and Oakland Naval Hospital). Savings are realized as a cost reduction in the purchase of blood supplies from public blood banks; savings are considerable. The impetus for this project was a single individual who prepared all documentation and lobbied for the project. Without doubt this individual's motivation accounts for the approval of this project.

Documentation was prepared by the user in this case with consultation from HSC; the local Controller provided little assistance. It is estimated that over 300 hours of personal time went into the preparation of this project. Since the project has only been approved for FY88 funding no information is available about obligations or accountability.

Major Command: Training and Doctrination Command (TRADOC)

Training and Doctrination Command (TRADOC) maintains an active productivity program with high visibility. Local

activities are tasked yearly with specific productivity goals. The activity with the highe t amount of savings is awarded a $1 million dollar bonus which is added to the winning command's budget. The award, officially known as Systematic Productivity Improvement Review in TRADOC (SPIRIT), is a powerful incentive; in FY85 TRADOC was first in the Army in productivity gains.

Local commands use all of the PECI programs to achieve their SPIRIT goals. TRADOC has funded over 250 PECI projects although only two OSD-PIF were funded in FY88-89. As a general policy for projects costing more than $100K, PECIP is used to fund automatic data processing projects, while military construction projects are targeted for OSD-PIF.

TRADOC has submitted few OSD-PIF projects in the past few years. Only four proposals were submitted for FY88-89. This selective participation is due to the perception that OSD-PIF is too competitive for most TRADOC projects. Many have low savings to earnings ratios (SIR) which meet minimum requirements but fall below historical OSD requirements. Resource managers tend to use PECIP to fund projects costing more than $100K. There is an informal cut-off so that projects between $100K and $250K are submitted under PECIP while larger projects enter as OSD-PIF.

Post-investment analyses (PIA) are performed yearly to qualify for the end-of-year SPIRIT report. QRIP and PECIP are monitored at the local level while TRADOC audits PIF projects. Savings are usually applied against unfunded requirements, borrowed military manpower, or multiple manhours to reduce

backlog. Hard savings accrue through lease buy-outs and utility conservation.

Local Activity: Fort Benjamin Harrison, Indianapolis, IN. TRADOC at Fort Benjamin Harrison is responsible for Adjutant General schooling. While most of the PECI projects involve QRIP there are two OSD-PIF projects in the works: a warehouse costing $2M and a consolidation of teaching facilities costing $1M. Both projects are justified by cost reduction.

The management resource team is determined to meet TRADOC SPIRIT goals, even though there is limited command support. The team does an up-front marketing job and tries to teach managers to think about future needs. The team works closely with the user and prepares the documentation. On the average it takes 60 days to complete paperwork on projects costing over $100K.

OSD-PIF is selected as the funding source when the project's payback period is less than 32-36 months and the savings to investment ratio is less than 10. Otherwise PECIP is used for projects costing less than $250K.

The resource team for TRADOC at Ft. Harrison has stringent internal controls. They require monthly accounting starting 90 days after installation for all PECI projects, QRIP, PECIP and OSD-PIF. Savings on QRIP and PECIP are reported to TRADOC at the end of the FY. A post-investment analysis is performed on OSD-PIF projects one year after installation. All PECI savings qualify for the SPIRIT award.

Local Activity: Fort Lewis, Washington. TRADOC at Fort

Lewis is involved with Reserve Training. Participation in PECI is limited to QRIP with no OSD-PIF. Current projects include a software package for desktop computer training. Savings are justified as a cost reduction from off-site training. The resource manager assists users with documentation and prepares the one year PIA. Accountability relies on the same documentation submitted to justify the proposal, and the internal review of actual usage tends to be informal.

This activity was an early user of QRIP, using the fund to purchase graphic printing devices. One user observed the current documentation is less cumbersome than before but plans to purchase peripheral equipment using funds available through Army Defense Engineering Agency (ADEA). This individual stated ADEA has ample resources, few requirements and a user-friendly contracting office. The relative ease of obtaining and obligating ADEA funds was far more attractive than QRIP.

Major Command: Western Command (WESCOM)

WESCOM has had only moderate success in receiving funding for OSD-PIF projects. Prior to FY88-89 WESCOM had only one project approved of seven submissions. In FY88-89 two projects have received approval. The resource manager states the reason for the low approval rate is that the projects have a low Return on Investment (ROI) and that savings are difficult to determine because the readiness arena is not amenable to measurement. Savings are generally justified as cost reduction against lease buy-outs and partial manpower reduction. WESCOM's one funded

project has not yet been procured so OSD-PIF accountability practices have not been tested.

NAVY AND MARINE CORPS

In the Navy, program responsibility for productivity enhancing capital investment resides with the Assistant Secretary of the Navy for Shipbuilding and Logistics (ASN,S&L). Program management is shared by Chief of Naval Operations (CNO) and Navy Comptroller (NAVCOMP). NAVCOMP is responsible for financial management while administrative management is assigned to Deputy Chief of Naval Operations (Logistics), also known as OP-04. The Navy productivity funds are known as Productivity Enhancing Incentive Fund (PEIF) for fast payback and Productivity Investment Fund (PIF) for OSD funded projects costing more than $100K. The component sponsored investment fund is known as Cost of Ownership Reduction Investment (COORI); no funds have been expended under COORI since FY 1983.

Navy's participation in PIF has resulted in some innovative technology, but the record for Other Procurement or military construction is undistinguished compared to the other military departments. Program awareness of PECI is confined to a few personnel in comptroller and supply functions, and only the fast payback portion of the program is fully implemented by Navy instructions. Finally, post investment analyses are few in number because many projects have not been operational for the requisite time period prior to analysis.

Historically, Navy was slow to implement PECI. GAO singled

out Navy in a 1981 report for a lack of enthusiasm regarding the program and recommended that the Secretary of the Navy (SECNAV) request no further PEIF funds until an action plan was developed to improve program management. Shortly thereafter SECNAV issued SECNAVINST 5200.31A, dated June 1981, since superceded by SECNAV-INST 5200.31B, dated July 1984. The instruction was intended "to provide policy and guidance and assign responsibilities for the development, implementation, and administration of the (DON) Productivity Improvement Program."

Navy regulations are inadequate to implement the PECI program. SECNAV instructions had been supplemented by Naval Material Command (NAVMAT) Instructions 5200.42B and 5200.45 which provided specific guidance for the productivity enhancement program. Since NAVMAT was decommissioned in 1985 no replacement guidelines have been published, so there is no formal direction to the Navy's PECI program. To complicate matters further the only regulation which defines post-investment analysis requirements is NAVCOMPINST 7000.38A, which covers only the fast payback, or PEIF, portion of PECI and does not include PIF or COORI. Overall, formal Navy management of the PECI program is spotty; existing regulations are too general or incomplete and specific guidelines are no longer in effect.

Assistant Secretary of the Navy (Shipbuilding and Logistics)

The predominant perception of PECI at ASN(S&L) is that the program does not meet Navy needs for industrial productivity and is difficult to administer. At the user level program managers

at ASN stated that local commanders lack interest in the PECI program because local managers are motivated towards the replacement of worn parts rather than investment in productivity enhancing equipment. Under this scenario commanders perceive investment projects as taking too long before improvement occurs and consequently are reluctant to expend resources for projects that will not mature before their tour of duty is completed.

At the command level, ASN(S&L) personnel expressed concern that NAVCOMP places too many controls on the PECI program which cool local interest. For instance, NAVCOMP requires obligation schedules for PIF projects even before proposals are sent to OSD. Also projects which have received funding have seen NAVCOMP reprogram or withhold productivity funds depending on operational requirements. These actions tend to subvert the intention of productivity investment so the program stagnates.

ASN(S&L) personnel acknowledge that PIF program management needs improvement, and they have taken steps to correct the situation. The program is beginning to receive high level visibility and there is an effort to coordinate the process between OP-04J and NAVCOMP.

Deputy Chief of Naval Operations for Logistics (OP-04J)

The productivity investment fund is administered by OP-04J. This office operates as a program intermediary between the Systems Commands (SYSCOMS) which request funds and the Navy Comptroller (NAVCOMP), which charges projects against Navy requirements and delivers funds. In OP-04 management of the PIF

program is a collateral duty where the primary function is to ensure that projects are complete with properly prepared paperwork. Projects are ranked according to financial criteria and then sent on to NAVCOMP which may rerank the proposals before Navy's PIF projects are sent onto OSD. OP-04J does not decide which projects will be sent to DoD.

The biggest problem for OP-04J is the tardiness of many projects. In FY88 19% of Navy's PIF submissions were received after the 1 June cut-off date and there was considerable last-minute effort readying the Navy package for OSD.

Most Navy PIF projects are justified as cost reductions; when manpower savings are identified, they are applied against deferred requirements.

OP-04J does not require post investment analyses (PIAs) since accountability is a NAVCOMP responsibility. In actuality no PIA's have been performed in the Navy because no PIF projects have been installed for the requisite two years prior to a PIA audit.

The Navy has low obligation rates of Productivity Investment Funds. In mid fiscal year 1987 only 37% of FY85 and 30% of FY86 funds had been obligated and only 35% of 1985 and 15% of FY86 projects had funds obligated. Additionally, since NAVCOMP reprogrammed the PIF monies of FY84 for another purpose, funds for FY84 were still being obligated as late as FY86. The Assistant Secretary of the Navy for Shipbuilding and Logistics has taken an active interest in these low obligation rates and

has required quarterly status reports on PIF obligations. It is considered likely that ASN interest will greatly improve both obligation rates and progress participation.

Navy Comptroller

The Navy Comptroller checks PIF projects prior to submission to OSD to ensure projects satisfy both DOD criteria and Navy requirements. The review makes sure that the correct appropriation fund is requested and that duplication of equipment is avoided. In general the feeling at NAVCOMP is that the Navy does not have a productivity program. There has been no direction and there has been no documentation of savings. It is anticipated that changes at ASN(S&L) should remedy deficiencies.

Major Command: Naval Air Systems Command (NAVAIR)

NAVAIR is the most active SYSCOM in the Navy PIF program. In part this is because some personnel moved to NAVAIR from NAVMAT after it was decommissioned, although NAVAIR has always been the Navy's primary user of PIF.

NAVAIR differs from other users by using PIF funds in activities that normally use only Asset Capitalization Program (ACP) funds. That is, NAVAIR uses ACP to maintain capability, but uses PIF to increase capability. This policy has resulted in some exceptional projects that essentially reconfigure off-the-shelf equipment to develop new machines that increase manufacturing capacity.

Projects are requested during an annual data call in May.

NAVAIR ranks projects by payback period with most justification provided by cost avoidance. Projects are forwarded to OPNAV before 30 June. No projects have been operational for a sufficient period of time to initiate PIAs.

Local Activity: Naval Aviation Depot (NADEP), North Island, CA. NADEP, North Island has one of the more impressive PIF projects, but it is not operational even though it was funded over six years ago at a cost of $7M. This piece of equipment is an experiment in robotics. According to the project manager it was conceived during the early days of PIF, but has lost the interest of middle management. It has also lost its primary mission since the aircraft on which it was designed to work are being phased-out so the equipment may be domiciled at another activity.

Local Activity: Naval Aviation Depot (NADEP), Cherry Point, NC. NADEP, Cherry Point has a strong commitment to productivity and uses the Productivity Investment Fund in conjunction with other programs to meet mission objectives. The policy is to use PIF in situations where Manufacturing Technology Funds (MANTECH) or ACP are not appropriate. This occurs when an investment falls between equipment on the cutting edge of technology (MANTECH) and off-the-shelf items (ACP). When production savings can be generated by a large project, then productivity investment funds are sought.

PIF has funded some rework projects which repair previously scrapped parts, with large cost reduction savings. Also

equipment that greatly reduces inspection time for reworking aircraft has been purchased with PIF. However, mission requirements sometimes change after submission of a project so productivity gains are not realized on all projects. Hence, it is difficult to judge the long-term effects of the productivity investment.

Major Command: Naval Sea Systems Command (NAVSEA)

The general impression at NAVSEA is that the PECI program is poorly administered. There are memories that funding was sufficient in FY81 and 82 but became unreliable in FY84 with the ACP program. The concern is that when funds are unreliable the overhead expense of preparing documentation is not justified. Further, there is a sense the money is unprotected and is subject to political pressures and budget cuts.

The perception at NAVSEA is that the PECI program is a band-aid solution to the larger issues of productivity. Documentation requires too much time for the relative gain of PIF and only small projects can be programmed through ACP because customers cannot shoulder the additional burdens that would be forced on them to finance the large investments required to improve productivity. In sum, NAVSEA is of the opinion that productivity is achieved with large projects such as additional drydocks costing $25-30 million. When large projects were submitted in the past, they were turned back because of insufficient economic analysis. Consequently, NAVSEA has concluded OSD's commitment to productivity is shallow, the PIF program has little relevance to

NAVSEA's mission, and the unreliability of OSD funding does not justify the overhead costs of project justification.

Major Command: Naval Facilities Command (NAVFAC)

Most activities within the Naval Facilities Command (NAVFAC) are industrially-funded and tend to rely upon the Asset Capitalization Program for investment funding; however NAVFAC had experience with the Productivity Investment Fund in FY 1984 and finds fault with both program structure and management. The criticism is generally directed at Navy management although there is an overall complaint that the PIF budget cycle is not coordinated with the budgeting cycles of the Program Objective Memoranda (POM). Thus, a project which is not selected for Productivity Investment Funds during a certain fiscal year must wait an additional year for inclusion in the next POM. In an environment where technology already outpaces funding, waiting for an additional 12-month period tends to subvert the goals of productivity. By the time funds are appropriated the investment may be overcome by new technology.

NAVFAC has experienced problems with the PIF. In particular, NAVFAC personnel are of the opinion that CNO rejects the shore-based projects which are the trademark of NAVFAC in favor of fleet projects, and when a project such as overseas military construction is passed by CNO it is cut by Congress for political reasons.

The uncertainty of the selection process is compounded by unstable funding by the Navy Comptroller. Productivity funds

have been diverted in the past to satisfy other requirements which has left the distinct impression that productivity funds are the first to go when resources are tight. The consequence is that when activities do not see the results of productivity requests they do not bother with the necessary paperwork. This distress has been exacerbated with the Navy Comptroller's requirement for quarterly reports on the obligation of productivity funds. The costs simply outweigh the benefits.

Major Command: Pacific Fleet (PACFLT), Pearl Harbor, HI

Among Navy operational activities the Pacific Fleet (PACFLT) is an active participant in productivity enhancing capital investment using both the PEIF and PIF programs. There have been few problems with PEIF but PIF funding was unstable during FY84 which affected program interest. In the past, investments which had been approved by CNO and OSD for productivity investment funds would ultimately receive funding through other sources, e.g., OPN, because the PIF funding was erratic. Again, this funding instability has been attributed to some practices of the Navy Comptroller which are no longer followed. In general the PIF process now appears on track. The number of PACFLT projects selected for funding has increased, and funds are received in a timely fashion. PACFLT has had twice as many projects selected for funding in FY86 and FY87 as in FY84 or FY85 even though the total number of PACFLT proposals declined by 50% between FY84 and FY86.

Local Activity: Shore Intermediate Maintenance Activity

(SIMA), San Diego, CA. This activity has had negative experiences with the PIF program and generally questions the usefulness of the program as currently administered. Two PIF projects were submitted for FY85 and FY86. The project for FY85 became lost in the system and had to be resubmitted in FY86, while the FY86 project was approved but funding was not received until FY87.

Personnel responsible for documentation have had no formal training in cost-benefit analysis and find the paperwork intimidating. They express a need for clear guidelines. Finally, funds available from other sources are considerably less encumbered and more reliable than productivity investment funds. Measured against these negative experiences, this activity continues to submit PIF projects with an attitude of hopeful pessimism.

Local Activity: Naval Air Station (NAS), Alameda, CA. The Productivity Investment Fund is not widely used at the Alameda Naval Air Station for two reasons. First, the operating budget precludes projects costing more than $100K. Secondly, program knowledge is limited to a few individuals in the Comptroller and Supply functions. These knowledgeable persons think the program is excellent but is often forgotten as an investment resource. Further, most local personnel were unable to perform the analyses. NAS Alameda did submit one PIF project for FY88 which passed the Navy selection process but was not approved by OSD.

Marine Corps

There is not a great deal of use of PECI by the Marine Corps, but when PECI funds are expended the program is managed in textbook fashion. The PECI program is administered through the Commandant Marine Corps (CMC) with financial management provided by NAVCOMP.

The USMC has a high success ratio with PIF projects for two reasons. First, they seldom request PECI funds. Secondly, NAVCOMP and OSD generally accommodate Marine Corps requests.

One notable feature of USMC management of PECI is the accountability process. Audits begin six months following installation and continue until payback is satisfied. There is a determined effort to meet the payback target; consequently, if equipment is underutilized the situation is immediately corrected and monitored until payback is achieved.

Local Activity: Marine Corps Air Station, Kaneohe Bay, HI. This activity has been the most active USMC participant in the PECI program, although there have been no PIF projects. All equipment requests are matched against PECI criteria for applicability.

Interest in PECI has cooled since FY84, however, since it has been difficult to account for manhour savings of military personnel. PECI requests had been justified against military manpower assigned to temporary duty, but CMC ordered that billet reductions must be demonstrated. The base situation did not allow for billet reduction because of the high number of

temporary personnel, so interest in PECI has tailed off. On the other hand projects justified through cost reductions have fared very well but are few in number.

As indicated above, internal review procedures are very stringent at this activity so accountability is maintained.

Air Force

The Air Force has placed primary responsibility for the PECI program with the Assistant Secretary of the Air Force for Financial Management. The Deputy Assistant for Management Systems is designated as Productivity Principal. Operationally, PECI is administered by the Directorate for Manpower and Organization (MPMZ) at Headquarters, Air Force. The governing regulation is Air Force Regulation (AFR) 25-3 which has been under revision for the past three years.

Air Force has a balanced application of PECI programs. The PIF program and CSIP are administered at Air Staff while the fast payback program, known as FASCAP, is administered by Air Force Management Engineering Agency (AFMEA), Randolph AFB. In general there is differential usage of the PECI programs by the different Major Commands (MAJCOMS). Air Force Logistics Command (AFLC) and Air Force Systems Command (AFSC) are consistently the most active users of PIF program, while Strategic Air Command (SAC) and Military Airlift Command (MAC) tend to use FASCAP for productivity investments. In FY 88-89 Tactical Air Command (TAC) was more active than in previous years accounting for 16% of Air Force PIF projects submitted to OSD.

Air Staff has an assiduous review process of PIF projects. Projects must first meet the qualifications for DoD 5010.36 and then pass a subsequent review by operations, management, and

budget. Worthy projects which do not satisfy OSD criteria are selected for CSIP funding at this stage. Air Staff makes a determined effort to achieve hard savings. The general philosophy is that hard savings have a more beneficial near-term effect. Thus, PIF submissions with hard savings are double weighted during Air Staff review. The total package submitted to OSD contains a mixture of hard and soft savings.

Air Staff usually submits a number of Military Construction (MILCON) projects for PIF monies. MILCON projects are usually more costly and have a longer life cycle than other projects, consequently life cycle savings are much higher. This results in higher rankings for MILCON projects. The negative effect is that the budget is exhausted more rapidly, so that equally valuable PIF projects are by-passed.

The manpower directorate responsible for productivity capital investment keeps a close watch on manpower savings. Projects justified by manpower savings are audited following installation. The recipient is decremented the appropriate manpower savings which are then reapplied within the command. These auditing practices result in a perception that productivity enhancement projects result in a loss of personnel, but in practice savings are applied against unfunded requirements so that actual loss of manpower is seldom realized.

Purchasing and acquisition (P&A) procedures within the Air Force tend to result in low obligation rates. First, Air Staff does not permit contracting to begin prior to receipt of monies.

Secondly, new purchases must have an equipment authorization number. However, PECI equipment purchases do not have a number because the equipment is new to the inventory. Consequently six to 12 months can pass between funding authorization and obligations waiting for a stock number. It is generally conceded that P&A procedures account for the most significant bottleneck in the PECI program.

Air Force Management Engineering Agency (AFMEA), Randolph AFB, San Antonio, TX

The Air Force Management Engineering Agency (AFMEA) manages the Fast Capitalization (FASCAP) program with an ease and sophistication that is appreciated by all participants. They dispensed $10 million in FY86 and $12 million in FY87. There is so much interest in FASCAP that the FY87 monies were already expended by February of 1987. The FASCAP program is highly visible in the Major Commands (MAJCOMS). AFMEA sponsors yearly conferences about FASCAP and also schedules regular learning sessions for operational personnel.

Procedurally, AFMEA prepositions money at each of the MAJCOMs. When FASCAP projects are approved the MAJCOM is authorized to commit money to the project. If a command shows low activity with FASCAP the monies are simply shifted to more active commands. This seems to stimulate interest in the program. In an 18 month period one MAC base submitted 40 projects for more than $1.5M.

AFMEA performs a single project analysis in 4 1/2 days.

Submissions are evaluated against manpower or cost savings which are documented historically. Partly because of the streamlined review process 30% of FASCAP projects are operational within 6 months and 60% within 18 months.

In the past FASCAP monies have been invested in office automation, especially the purchase of desktop computers. Recently, attention has shifted to other areas, e.g., investments in medical equipment. The current funding breakdown for FY 1987 shows that Personnel and Administration received 32% of FASCAP funds, Medical 28%, and Supply, Transportation, and Military Police a combined total of 40%.

AFMEA keeps close track of FASCAP projects. Information is maintained in a data base which is used to track reporting dates for fund obligation, post-investment analysis (PIA), and amortization. PIA is required six months after installation with six month follow- on reports until the project amortizes.

When payback is attained the receiving command is decremented the appropriate manpower requirements; consequently AFMEA is sometimes perceived as "black hats." This perception does not limit program activity, however, since the opportunity to purchase equipment without using procurement (3080) or operating (3010) funds is very appealing to the MAJCOMs. AFMEA manages the FASCAP program with tangible results, the program appears to be appreciated throughout the Air Force.

Major Command: Air Force Systems Command (AFSC)

AFSC is an active participant in the Productivity Investment

Fund program. In FY 88-89 five of seven projects were approved by OSD for a total of $24.8 million; AFSC was second behind AFLC for total dollar amount in submissions and approvals.

Part of AFSC's high success rate can be attributed to the expertise at Headquarters, AFSC. Individuals who manage the program have been responsible for the revision of AF Regulation 25-3; they are aware of the purpose of the program and manage it accordingly.

AFSC promotes the PIF program from the command level through close coordination with Management Engineering Teams (MET) at the local activities. Suggestions for capital investments are solicited and coordinated at the local level, and economic analysis is certified by the local comptroller. It is acknowledged that PIF documentation involves considerable effort, but it is perceived as no more demanding than normal budgeting for the POM and has become easier over the years. The average PIF project takes 30 months from initiation to installation.

The projects that AFSC selects for Air Staff consideration rely on proven technology and avoid risk taking. AFSC favors the replication of successful prototypes. AFSC bases project selection on IRR and projected savings. In FY88-89 they submitted two MILCON and 5 equipment projects; both MILCON projects were approved.

The biggest funding problem for AFSC is a traditional reduction of RDTE funds by Congress; usually OSD approved RDTE projects are reduced by 50%. Resource managers at AFSC must then

decide which projects to fund. Often the strategy is to cancel a single project so that resources can be spread across other projects. This results in some difficult decisions.

Obligation rates are low, but this tends to be a function of the type of purchases involved in PIF projects. PIF projects often reconfigure off-the-shelf technology to satisfy specific needs. Negotiations on specifications alone can take over two years. Further, AFSC will not pre-commit funds based on past experience with Congressional reductions. Consequently, fund obligation takes much longer than the normal procurement process.

Major Command: Air Force Communications Command (AFCC)

Air Force Communications Command uses the PIF program as a last resort for the procurement of high cost equipment. The general objection at AFCC is that program documentation is formidable and outweighs program benefits. The staff is relatively inexperienced with the Productivity Investment Fund and the program is one of many duties, so they feel overwhelmed by the documentation requirements. The staff briefs PIF participants on how to prepare cost-benefit justification but there are still many rewrites. There is hope the new AFR 25-3 will provide guidance for the documentation. In all the PIF program is perceived as demanding considerable paperwork for limited gain.

In FY88-89 AFCC submitted 8 PIF projects anticipating approval of three to four projects. Ultimately only one project was approved by OSD for a total of $4.1 million. When compared

with the quickness and convenience of FASCAP, PIF is held in low regard by AFCC.

Major Command: Air Force Logistics Command (AFLC)

Air Force Logistics Command (AFLC) is the most active AF Major Command in the PIF program. For FY 88-89 AFLC submitted projects totalling $72.7 million of which $56.6 million were approved by OSD. The largest amounts were awarded for MILCON projects; four of five projects were funded for $55.3 million. Out of the total AFLC package 99% of the funding was directed to 4 MILCON projects. PIF MILCON projects are important to AFLC because the funding is seen as a resource that frees up other MILCON funds.

The initiative to pursue PIF funds originates with General Staff at the Major Command level. Local activity commanding officers, comptrollers, and management *engineering teams* (METS) are tasked to develop productivity investment fund submissions. The irony of AFLC's participation in PIF is that aside from the large dollar amount MILCON projects there is limited involvement with other OSD productivity programs, e.g., FASCAP. Thus the productivity initiative is somewhat specialized.

Projects are selected by MAJCOM staff based on historical analysis of OSD funding of PIF. Factors are analyzed according to knowledge of the current OSD budget and the payback periods, IRR's, and manpower savings of projects funded in previous years. As mentioned elsewhere, MILCON projects compare favorably on these variables, and AFLC targets these projects to achieve a

high selection rate.

Obligation rates are low at AFLC but the difficulties are not unique to PIF. Funds are often received six months after the start of the fiscal year leaving little time to complete purchasing and acquisition during the fiscal year for which funds are appropriated. MILCON projects have an additional source of delay because construction planning must be coordinated with the Regional Civil Engineering Authority. This adds to the obligation time although Congress does allow additional obligation time for military construction projects. To achieve better obligation rates AFLC attempts to complete actions such as preparing specifications and contracts prior to final obligation. This facilitates the process but the rate remains low.

Accountability is managed by the local METs. PIAs are required 180 days after installation. Manpower authorizations are removed one year after installation.

Local Activity: Air Logistics Center, Sacramento (ALCS). The Air Logistics Center, Sacramento at McClellan AFB is very knowledgable about the PIF program. They hosted an AF Logistics Command conference on productivity during the course of this study which included productivity enhancing capital investment. Yet, ALCS seldom applies for PIF monies. In part this is attributed to the fact that ALCS does not perform production work so there is not a free-flow of productivity ideas. However, another important reason concerns manpower levels. At ACLS assigned strength is greater than authorized strength so the

perception of PECI is that capital investments would eliminate positions now occupied by overstrength personnel. There is no interest in taking these positions away from either the defense managers or the jobholders. Generally, the procurement funds are requested from sources other than the productivity investment fund.

By way of illustration, ALCS is listed by OSD as receiving funds in FY84 for a "Modal Analysis System." The project manager had requested funds through two channels, one of which was PIF. Funding was received from the alternate source and ALCS declined the OSD funds. There were a variety of reasons for accepting the alternate source: faster funding and installation, and no manpower loss.

An accounting issue arises with this case because there seems to be no clear record of the disposition of the OSD funds. Air Logistics Center, Sacramento shows the funds were turned back yet OSD shows the equipment was funded by PIF. The disposition of the monies was not followed.

Major Command: Strategic Air Command (SAC)

Strategic Air Command has had moderate success with the PIF program. Three of five projects were approved by OSD for FY 87-88, but the dollar amount was small compared with other MAJCOMS. The general feeling at SAC Headquarters is that certain features of the productivity investment fund program act as disincentives for program usage. The practices specifically mentioned are the competition of military construction projects with other

investment projects for PIF funds and the long time frame before projects become operational.

The MILCON projects not only shrink the pool of money available for productivity investment, but also major commands lose control over funded MILCON projects. That is, when MILCON projects are approved the monies are assigned to the regional engineers, not the MAJCOM, and are no longer subject to MAJCOM control. The MAJCOMS perceive it to be unfair for them to make the front-end investment by positioning resources and not be able to control the resource. Program managers at SAC strongly urged that a separate productivity investment fund for MILCON fund be established.

The time frame of PIF projects is also perceived as a program disincentive. The originator of a project is usually transferred before it becomes operational so there is little project ownership. Furthermore, the two year PIF cycle makes other productivity funds more attractive. For instance, a worthy FASCAP project from a single activity was expanded to include a dozen activities. Rather than combining the projects into a single PIF submission each package was submitted through FASCAP. This provided for a timely procurement which was not possible with PIF.

Funding of PIF projects is also perceived as taking too much time. Monies are usually not received until second quarter of the fiscal year. Obligation usually occurs within the fiscal year, but the acquisition and procurement process can be slow.

The negative perceptions of the PIF program by SAC should be weighed in light of their active involvement in productivity investment through the FASCAP program. SAC is constantly a front runner in FASCAP productivity projects. In FY87 SAC funded more than 350 projects that accounted for over 30% of Air Force projects. SAC has an active suggestion program. They continually advertise for productivity ideas and cross-feed ideas between activities. SAC has an obvious commitment to productivity, but is reluctant to constrain productivity investment within a two year planning and budgeting cycle. The emphasis is on timely investments.

Local Activity: 2048th Wing Headquarters, Carswell AFB, TX. The SAC Wing Headquarters at Carswell AFB uses FASCAP to fund productivity investments. They submitted two PIF proposals for FY87-88, but neither project was approved by OSD presumably because the payback periods were over three years, and the returns on investment were not competitive. There is a general resistance at Wing Headquarters to both PIF and CSIP because of the two year time frame so the tendency is to use FASCAP for productivity investments.

Wing Headquarters has an effective advertising campaign to generate productivity investment. Briefings are given to local managers every six months using a well-executed slide presentation. The base billboard and base newsletter are also used to inform personnel that FASCAP is available to fund equipment.

The MET team prepares documentation for first-time requestors to train them in the paperwork. On subsequent submissions the requestor is responsible for documentation. Projects are usually justified through grade reductions or cost avoidance. The general policy is to lower wage grade requirements at one work center and apply the savings as an upgrade of an unfunded requirement.

Accountability is handled by the MET team. Reports satisfy the 180 day post-investment analysis requirement. The MET team provides only enough justification to satisfy payback criteria, so strict accounting is not required. For example, a reduction in rating from E5 to E3 is all that is reported in a PIA, not actual equipment usage.

Major Command: Military Airlift Command (MAC)

Military Airlift Command has little involvement with the PIF program. They submitted only one proposal for FY 88-89 for $330K which was approved by OSD. MAC devotes most of its productivity resources to FASCAP with which they have extreme success. As reported previously, one MAC Base received $1.5M in 18 months for 40 projects. The emphasis in MAC is to pursue monies that are immediately available. FASCAP meets that objective; PIF does not.

Local Activity: 22nd Air Force, Travis AFB. This activity submits approximately 10 FASCAP projects per year. They actively publicize the program through the base newspaper, daily bulletins and recognition certificates. They regularly brief local

managers and also receive unqualified support from the Wing Commander.

FASCAP is used for unfunded requirements which arise between funding cycles. When a need is identified it is evaluated for FASCAP funds. If a request is for previously authorized but non-procured equipment FASCAP funding is inappropriate. Thus, FASCAP is dedicated to capital investments which have been identified since the last budget cycle.

Ironically, since FASCAP is used for nonstandard equipment there are difficulties with contracting. As discussed previously the Air Force requires stock numbers before contracting can commence. Since productivity investments are often for new equipment which has not been stocked, there is a protracted discussion between the base and the supply depot before a stock number is obtained. Consequently, obligations rates are low, and there is frustration with the lack of coordination. In some cases it has taken longer to purchase productivity items than other items of similar value.

Major Command: Pacific Air Forces (PACAF)

Pacific Air Forces (PACAF) does not use the PECI program for capital investment. The major impediment is a perception that PECI funding would result in a manpower loss which PACAF can ill afford. The manpower issue is twofold. First, the command is organized into small detachments. Second, PACAF does not have a significant unfunded requirement to absorb manpower decrements. The problem becomes one of scheduling resources. With small

detachments, when a space is lost to a PECI investment, staffing becomes an insoluble problem because there are no offsetting unfunded requirements that would prevent the loss of a billet. PACAF anticipates that manpower requirements will increase and will become unfunded requirements against which PECI criteria can be applied to fund capital investments. However, as of this study PACAF had not submitted any PECI proposals.

Summary and Discussion

This research was undertaken to identify factors which facilitate or impede full participation in the PIF portion of OSD's PECI program. Research focused on the military departments because of their substantial use of the program. Elements which received in-depth examination were documentation, project selection, funding, accountability, obligation and alternative sources of productivity funds.

An overall description of factors which facilitate or impede use of the PIF program is complicated. Two sets of variables affect program usage: program management and program elements. Program management includes factors such as command interest as well a user requirements, resources, and program knowledge. There is wide variation both between and within the services on these factors. The program elements of documentation, selection, etc. also contains variables which affect PIF usage. The complexity arises because of the multiple interactions between program factors and management factors. There is neither a single nor a simple interpretation of users perspectives of the PIF program.

Program Management

The service differences in program management are very clear-cut. Army has a large commitment to PIF, command support is strong at all levels. Headquarters keeps the program visible

and smooths over rough spots. Personnel are available to consult, educate, and generally assist users. Major commands are also distinguished by the use of incentive programs (TRADOC) and simplification of administration (AMC). Finally, local resource managers market the program and provide consultation and training in documentation. In short, Army has a fully integrated program management so that PIF has "snowballed" into a significant funding program.

Air Force receives far less funding from the Productivity Investment Fund than Army, but the program is managed efficiently with a balanced approach to all PECI funds. Air Force financial managers seem very adept at analyzing OSD selection criteria and documenting PIF projects to maximize funding; PIF is used most often for MILCON projects. Air Force is also notable for using CSIP to fund projects which are do not meet OSD criteria. Finally, fast payback funds are centrally administered and tend to be used by some commands to offset the long time period of PIF. Thus, while the dollar amount of the Air Force PECI program is modest, the program is managed for high effectiveness.

Navy participation in PIF is difficult to characterize. While program usage is much smaller than Air Force or Army, a head to head comparison is unfair because of the absence of NAVMAT. The large users of PIF traditionally have been the service materiel commands. When Navy disestablished this command, there was a general halt to PIF participation; regulations were no longer applicable, and program knowledge was

disbursed. Disregarding NAVMAT, other management aspects affect Navy participation. The program is spread across three different offices which not only makes coordination difficult but also diffuses program responsibility. The program is not well known throughout the Navy, and users are untrained in technical aspects of the program. In general Navy has a limited commitment to PIF.

It is interesting to contrast Navy program management with the Marine Corps. Although the USMC seldom requests PIF funds, program management is well defined. Responsibility is centralized at Commandant, Marine Corps and implementation instructions are explicit. Additionally, internal review practices result in the most accurate accountability data of all PECI participants.

Across the services a direct relationship is evident between command interest and program involvement, and the higher the command level expressing interest the greater the involvement. Thus, the strength of Army's program is partly attributable to the interest of the staff in the Office of the Comptroller. A commitment to productivity by major commands and local activities can also greatly influence PECI participation. The SPIRIT program in TRADOC is a prime example of a major command dedicating resources to productivity. Naval Aviation Depot, Cherry Point stands out as a local activity that vigorously pursues productivity.

A distinctive feature of the successful productivity programs is the creative application of funding. The PECI

program with its separate levels of funding is one of many tools managers use to fund capital investments. Thus, a project that competes favorably on OSD selection criteria may be submitted for PIF, while another project may be broken up into smaller projects to qualify for Fast Payback funds. Other projects may be submitted through Asset Capitalization Program, Manufacturing Technology, or other funding sources. As a general statement, PIF is targeted to fund conservative rather than risky projects.

The trade-off between productivity and nature of the capital investment generates considerable comment by program users. Some argue that productivity is most enhanced through investment in technologies which may be unproven at the time of purchase. However, the risky nature of these investments is not amenable to the fine grained economic analysis required by OSD. Thus, the argument continues, the DPPO program is more a supplemental funding source than a productivity fund. This explains why PIF is often used to ease the strain on Other Procurement funds or to supplement large MILCON projects authorized in the POM. It is simply perceived as another source of funds that can be applied against requirements, provided payback and investment ratios meet OSD criteria.

Program Elements

PECI program elements which facilitate or impede utilization are easier to explain than management variables, but the two sets of variables are not independent. Management strategies are influenced by program characteristics, and program deficiencies

can be either intensified or eliminated through management practices. With this caution in place the discussion concentrates on specific elements of documentation, selection, funding, obligation, accountability and alternate sources of funding.

Documentation. Three areas of the documentation process tend to negatively affect program use: time frame, preparation, and justification. The time frame issue is the reluctance of potential users to adopt the necessary two year time perspective required for PIF proposals. The complaint most often expressed is that personnel turnover makes project ownership difficult so there is an absence of grass-roots level support for the program. In successful programs the turnover problem is avoided by periodic training by management resource personnel who emphasize the benefits of funding large investments with PIF and underscore the similarity of budgeting for PIF and budgeting for the POM.

Document preparation is a minor issue, which assumes greater proportions with persons untrained in cost-benefit analysis. In general, the complaint is that large project documentation entails considerable overhead costs and dedication of resources. Engineering activities tend to handle this problem by assigning PIF projects to interns. In activities where administrative support is unavailable, documentation can become a major irritant with overhead costs taken out of current resources. When this occurs project completion usually depends on the personal dedication of a single individual. Respondents in this situation

reported discouragement and frustration. It was not possible to ascertain how many worthwhile projects have slipped from view because documentation was perceived as onerous, but it was almost universally reported that the more frequently users worked with the documentation, the easier the process became. It is clear that training in cost-benefit analysis and document preparation has a high payoff in program image as demonstrated by the Army and Air Force productivity programs.

Project justification is an impediment to PECI use in a roundabout fashion. Managers avoid funding capital investments with PECI if the justification requires the elimination of actual manpower billets. Projects are justified with hard savings (e.g., reduction in energy costs), cost avoidance (e.g., reduction in pay grade), or applied against unfunded requirements, but no instance was reported of a project that was justified by the elimination of an occupied billet. At activities where the number of assigned personnel was greater than the number of authorized personnel, PECI was not considered a suitable funding source for capital investment, and one instance was reported where PECI funding was avoided because justification would have eliminated two personnel spaces. Thus, while the intent of PECI is to substitute capital for labor, managers will not apply for PECI funds in situations where occupied personnel spaces would be lost. It is erroneous to assume this resistance will disappear.

Selection. Selection issues which impede program

utilization are generally related to OSD selection practices. Managers are very knowledgeable of OSD's selection criteria and practices and accordingly screen out projects that are unlikely to be approved based on past experience. For example, the permissable payback period is four years, but projects with payback periods greater than two years are seldom funded. Thus, Air Force and Army managers tend to discourage applications for OSD funding for PIF-type projects with payback periods longer than two years; however, worthwhile projects which may be recommended for component-sponsored funds are not proposed for OSD funding. As a general rule, if a project does not satisfy past selection criteria, then local management resource personnel will recommend against further action.

Another commonly voiced complaint is that the PIF criteria favor MILCON projects to the detriment of Other Procurement and RDTE projects. Generally, MILCON projects have such impressive savings ratios that the competition is considered unfair. The problem is compounded because high cost MILCON projects drastically shrink the pool of funds available to other projects. It has been suggested that PIF and MILCON be completely disconnected and that a separate, OSD-sponsored competitive fund be established for MILCON.

An ironic impediment to PIF utilization is competition with PEIF. The fast payback capability of PEIF is extremely attractive, and users will break up larger projects into smaller component projects in order to qualify for PEIF. The extent of

this practice is not known, but there were numerous suggestions that dollar limits for PEIF be increased to $200K. In sum, it appears that the high dollar threshold for PIF projects works against program utilization because PEIF can satisfy requirements with more immediacy.

Funding. Stability is the major issue with funding, but it is uncertain whether this constitutes a barrier to utilization. Undependable funding is everpresent with RDTE, and it is becoming a critical problem for certain activities (e.g., Army Material Command). The problem is that substantial cuts in RDTE by Congress entail dilution of the remaining projects or even the elimination of smaller projects. In the past shortfalls have been covered with other resources, but as cuts increase less coverage is available. The long term effects of these cuts are uncertain, but the problem bears watching.

Doubt was frequently expressed about Congressional resolve to continue the PECI program. Because of the climate of tight money, e.g., Gramm-Rudman-Hollings, there is general skepticism about the stability of productivity funds. Again, the result is uncertainty.

An issue particular to the Army is the association of "cost-sharing" with the PECI program. In the cost-sharing plan, hard savings from Army investment funds, i.e., PECIP, are to be accrued in an Army-wide revolving fund which will fund future investment. Managers are concerned this will remove the incentive for investment of savings within the command. The

potential effect of a mental association of this plan with PECI is that both will be viewed as a part of cost-sharing plan and participation will decline.

The long term effect of this Army policy should not be underestimated if Navy experience is an indicator. It may be a coincidental occurrence but Navy PIF participation declined dramatically following reprogramming of PIF monies. The delay in receiving funds for authorized projects resulted in confusion and disappointment with the PIF program. It is difficult to reinstitute commitment to the program.

Obligation. Obligation is not a problem which solely affects PECI; it is endemic with government procurement. An area where obligation can present a problem for PECI is the practice by some commands of pre-obligation of funds. If funds become undependable, managers may be forced to scale back or eliminate projects which have been primed for funding. If this happens it is likely to result in resentment and distrust of the PECI program. This has been only a minor problem as of this report, but the emphasis on higher obligation rates coupled with reduced funding makes this a more likely occurrence in the future.

Accountability. Accountability is weak for the PECI program. There are no accurate measures of savings. Each military department has different accountability practices both in how and when savings are measured. Some activities undercount savings, while others report savings without actually determining

equipment usage. Still other activities have such a long time period before requiring reports that the individuals responsible for the original project are no longer at the activity. The seriousness of this problem should not be dismissed. GAO has noted this as a problem area for DPPO.

Aside from these reporting problems, it is also extremely difficult to trace monies in the PECI pipeline prior to obligation. This is not a problem in every activity, but one instance was encountered where funds were transmitted to an activity and subsequently turned back. Yet, the funds were still carried by DPPO as obligated monies. It is unknown whether this is an isolated instance.

The departments are acting to remedy this deficiency and are requiring quarterly reports on fund obligation. There are also commands that are exemplary in their accounting practices (e.g., the Marines, Army Material Command and Air Force Management Engineering Agency). In some commands, records have been automated, so suspense files are available for obligations, accounting, and other housekeeping duties. These procedures should probably be adopted by all major commands.

Alternate Funds. Alternate sources of funding almost always are preferred to PECI when other funds available. Funds without justification requirements, competition, or accountability are more desirable, as are funds which can be received in a short time period. In general, most users are satisfied with PECI. The exception is some Navy activities which find PECI onerous and

will use it only as a last resort.

Conclusions and Recommendations

This report was undertaken to evaluate elements of the Productivity Investment Fund (PIF) of the Productivity Enhancement Capital Investment (PECI) program. The explicit objective of the PIF program is to improve productivity in the activities of the Department of Defense through capital investments that reduce labor costs. PIF funds are reserved by SECDEF to fund capital investment projects costing more than $100,000 and amortizing in less than four years. Funds are awarded following competitive review of financial benefits by the Defense Productivity Program Office (DPPO).

The research for this report concentrated on program elements of documentation and project justification, selection criteria, fund obligation, project accountability, and the relation of the PIF to alternate sources of procurement funding. Information was collected through interviews with program users at the levels of department, major command, and local activity.

The research indicates that program users have varying success with PIF depending on overall program knowledge and financial management skills. For example, during the 1980's the PIF funded modernization at the Army Laboratory Command (LABCOM) largely as a result of the skills of the resource management team. They were able to exempt laboratories from industrial

funding which enabled them to compete for the PIF. They also submitted carefully prepared project documentation packages that clearly defined financial benefits. The result of these efforts is a history of favorable competition for the PIF so that this single sub-command has received more PIF monies than entire military departments.

A problematic feature of the PIF program is that the selection criteria appear to favor inadvertently Military Construction (MILCON) projects to the detriment of other worthwhile capital investments. Life cycle savings figure prominently in DPPO's selection equation. Since MILCON projects have typical life cycles of 25 years and since the projects are so costly, the life cycle savings ratio for MILCON projects far exceeds the ratio for other types of capital investment projects. This has a twin effect of depleting the PIF fund and diminishing program interest for projects that may satisfy program criteria but not meet selection criteria, as implemented.

The weakest part of the PIF program is the uneven implementation of accountability requirements by the military departments so there are no accurate ex post measures of productivity savings. Post investment analysis is required after installation of PIF funded capital investments, but there is wide variability in reporting this information. Some activities monitor equipment usage every six months until payback is achieved, some activities undercount savings, others report savings without actually determining equipment usage, and other

activities wait two years before requiring information. There is no consistency to post investment analysis; consequently, reports of productivity savings are loose estimates. This is a deficiency which needs correction.

Overall, the Productivity Investment Fund has been beneficial to the Department of Defense. The fund has enabled managers to relax capital constraints and modernize the defense industry without increasing the requirement for other scarce resources, such as manpower. While some hard savings have accrued from the PIF program, most savings have been applied against unfunded requirements. In this fashion defense managers have been able to keep pace with increased output demands without requiring additional manpower. In the tight resource environment currently experienced in DoD, the PIF program is perceived as a valuable resource that enables commanders to supplement constrained procurement budgets. The PIF program is a useful and valuable program with only minor deficiencies which can be corrected with slight adjustments.

Specific recommendations offered to the Defense Program Productivity Office are the following:

-Publish selection criteria as part of DoD Directive 5010.36 so that resource managers can easily evaluate the probability of receiving PIF funding for a project. Currently, knowledgeable managers develop this information based on past decisions by DPPO. It would greatly simplify the process for new program users if this information was

readily accessible.

-Revise DoD Directive 5010.36 so that post-investment analysis is standardized across the service departments and the information is routinely available to DPPO. Without standard measures it will remain impossible to evaluate the productivity impact of projects funded among the various departments.

-MILCON projects should be separated from the PIF. They receive a disproportionate share of available funds because of their favorable competitive ratios which ultimately dilutes the effectiveness of the program. If MILCON projects are to continue in this fund, they should be subject to a separate evaluation to equalize the selection criteria across project types.

A separate recommendation is offered to the Navy to centralize PIF responsibility in a single office. As the program is now structured, PIF is spread across three different management functions of operations, comptroller, and logistics. This tends to create confusion for program control and responsibility which is not alleviated by coordination between the functions. Based on the other services success with a centralized PIF program, the Navy would likely benefit from a similar approach.

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Appendix A

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*Laboratory Command, Adelphi, MD.

*US Army Finance and Accounting Center, Ft. Benj. Harrison, Indianapolis, IN.

US Army Forces Command

*US Army Forces Command, Ft. Lewis, WA.

US Army Health Services Command

*US Army Blood Bank, Ft. Ord., CA

US Army Training and Doctrine Command

*US Army TRADOC, Ft. Benj. Harrison, Indianapolis, IN.

*US Army TRADOC, Ft. Lewis, Washington

US Army Western Command, Ft. Shafter, HI.

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Navy Comptroller

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Naval Sea Systems Command

Naval Facilities Command

*Commander in Chief, Pacific Fleet, Pearl Harbor, HI

*Shore Intermediate Maintenance Activity, San Diego, CA

*Naval Air Station, Alameda, CA

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Headquarters Air Force, Directorate for Manpower and Organization

*Air Force Management Engineering Agency, Randolph AFB, San Antonio, TX

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Air Force Logistics Command

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