



1985

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THESIS

IDENTIFICATION OF CASH MANAGEMENT
OPPORTUNITIES IN THE NAVY INDUSTRIAL FUND

by

Clement H. Ward

and

Mark W. Balmert

June 1985

Thesis Advisor:

Joseph G. San Miguel

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T227311

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM						
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER						
4. TITLE (and Subtitle) IDENTIFICATION OF CASH MANAGEMENT OPPORTUNITIES IN THE NAVY INDUSTRIAL FUND		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis June 1985						
		6. PERFORMING ORG. REPORT NUMBER						
7. AUTHOR(s) Clement H. Ward and Mark W. Balmert		8. CONTRACT OR GRANT NUMBER(s)						
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93943-5100		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS						
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93943-5100		12. REPORT DATE June 1985						
		13. NUMBER OF PAGES 147						
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report)						
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE						
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution is unlimited.								
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)								
18. SUPPLEMENTARY NOTES								
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)								
<table> <tr> <td>NIF</td> <td>Navy Industrial Funds</td> </tr> <tr> <td>Cash Management</td> <td>Working Capital</td> </tr> <tr> <td>Industrial Funds</td> <td>Revolving fund</td> </tr> </table>			NIF	Navy Industrial Funds	Cash Management	Working Capital	Industrial Funds	Revolving fund
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Industrial Funds	Revolving fund							
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Numerous opportunities, not presently included in existing Federal cash management programs, were observed which would enable the NIF to better manage its cash. Eight specific opportunities are identified, explored and recommendations provided to improve the NIF's cash position.

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**Identification Of Cash Management Opportunities
In The Navy Industrial Fund**

by

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Submitted in partial fulfillment of the
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MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
June 1985

ABSTRACT

The Navy Industrial Fund is a revolving fund used to provide working capital for industrial and commercial-type activities in the Department of the Navy. At the present time there are 49 NIF activities with a combined annual revenue projected to be \$14.5 billion for FY 1985.

The authors researched the background of the NIF and its management, focusing on the organizational structure and policies affecting the Navy Industrial Fund's cash position. The purpose of this thesis is to identify cash management opportunities for the NIF.

Numerous opportunities, not presently included in existing Federal cash management programs, were observed which would enable the NIF to better manage its cash. Eight specific opportunities are identified, explored and recommendations provided to improve the NIF's cash position.

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I. INTRODUCTION

Until fairly recently the topic of cash management within the public sector was a subject of interest only to a few individuals--primarily, those involved with cash matters on a daily basis. However, beginning in the late 1970's a distinct change in the attitudes of all Federal managers has transpired. In the past seven years or so, Federal cash management has become widely recognized as an essential element in the effective management of government.

What has generated this recent involvement? Early on in this period soaring interest rates, at one point over twenty percent, made money much more "expensive" than any prior period in history. More recently with interest rates lower and more stable, and inflation slowing, Federal managers have been preoccupied dealing with government-wide cash flows exceeding a trillion dollars annually in FY 1985, a public debt of \$180.4 billion and the interest financing this debt amounting to an estimated \$116.1 billion for FY 1985 [Ref. 1]. With dollar figures like these facing government managers and the potential for savings inherent in cash flows of this magnitude, it is little wonder that cash management has become a lively issue.

What actually is effective cash management, its real objective, and what have this country's lawmakers and administrators done to underscore its importance? First, the specific objective of effective cash management is simply to optimize the time-value of money, Federal and private funds alike. The payoff from deriving the maximum benefit from cash resources within the public sector results in an increased availability of funds to the Department of the Treasury. This directly impacts the amount of Federal

borrowing to finance deficits or liquidity shortages and provides for increased earnings from the investment of temporarily excess funds. Charged with the primary responsibility for the overall cash management posture of the Federal Government, Treasury has promulgated extensive guidance on the subject. In particular, Treasury's Circular 1084, issued in December 1976, provided comprehensive policy guidance. Chapter 8000, entitled "Cash Management", of Part 6, Volume I of the Treasury Fiscal Requirements Manual was released in March 1978 and provided the detailed fiscal instructions for implementing Circular 1084's provisions.

When President Reagan came to Washington, he promised the American people a more responsive, more economical, more efficient, and less wasteful form of government [Ref. 2]. Numerous laws under his administration have continued the trend in emphasizing the efficient handling of money. These laws include: The Prompt Payment Act of 1982 (P.L. 97-177), The Debt Collection Act of 1982 (P.L. 97-365) and The Federal Managers' Financial Integrity Act of 1982 (P.L. 97-255). Specific Office of Management and Budget (OMB) guidance addressing the cash management issue is contained in OMB Circulars A-123, "Internal Control Systems"; A-125, "Prompt Payment" and more recently, OMB Bulletins 83-06, "Cash Management" and 83-11, "Debt Collection". Federal agencies have taken this guidance and promulgated tailored guidance for their individual needs. For example, the Department of the Navy's (DON) general fiscal policy guidance is contained in the Navy Comptroller's (NAVCOMPT) Manual while cash-specific initiatives are consolidated in a DON Cash Management Action Plan (CASHMAP).

The fundamental cornerstones of cash management are billings, collections, deposits and disbursements. Performing each of these in a timely and efficient manner so that funds can be put to work or remain working to

Treasury's advantage is the common thread for effective cash management throughout the public sector. This thesis will review one aspect of the Department of the Navy's financial operations, the Navy Industrial Fund (NIF), in terms of that fund's cash management posture. Selection of this particular financial entity was prompted based upon the magnitude and significance of its fiscal transactions. In total revenue (\$14.04 billion) [Ref. 3] it would have ranked twenty-first behind International Telephone and Telegraph in 1984 [Ref. 4]. The objective of this thesis is to identify cash management opportunities for the NIF. In addition to reviewing and assessing the fund's effectiveness in achieving the above noted cash management fundamentals, this thesis examines the NIF, exploring unique opportunities to enhance cash management.

II. THE NAVY INDUSTRIAL FUND CONCEPT AND BACKGROUND

This chapter discusses the theory and principles behind The Navy Industrial Fund (NIF), including its legal and regulatory background, and changes in the fund's methods of operation since its inception in 1949.

A. THE NIF CONCEPT

Industrial Funds in the Department of Defense (DOD) were authorized by Title IV of the National Security Act Amendments of 1949. The first industrially-funded activity in the Department of the Navy was the Defense Printing Service which was converted to NIF operations on November 1, 1949. At the present time there are 49 NIF activities. (See Table I)

The creation of industrial funds in DOD can be directly attributed to this country's experiences during World War II and the nation's climate immediately following the hostilities. Total mobilization of our industrial base had, of course, been necessary for the successful war effort. This commitment clearly resulted in the total dedication of our industrial capacity and the unrestrained consumption of the nation's natural resources. However, with the war's cessation came demands throughout the country for the consumer goods foregone on behalf of the conflict. National emphasis shifted towards cutting what had become extravagant military expenditures. Economy and efficiency became the watch words of the times. During the Senate Armed Services Committee hearings incident to the 1949 Amendments it was stated that studies made prior to 1949 of industrial and commercial activities of the military departments had shown a lack of

TABLE I

Navy Industrial Fund Activities as of 1 January 1985

<u>ACTIVITIES</u>	<u>NUMBER</u>
Shipyards	8
Aircraft Rework Facilities	6
Ordnance Activities	10
Military Sealift Command	1
Base Services	8
Research Activities	12
Printing Service	1
Data Automation Command	1
Avionics Center	1
Air Engineering Center	1

	49

Source: U.S. Department of the Navy, Office of the Comptroller

adequate cost accounting in such activities and had indicated the need for some means of accurate, yet simple, cost determination. While appropriation accounting appeared satisfactory for purely administrative or military-type functions, it was not felt to be adequate or desirable for industrial and commercial type activities. Rather it was

believed that government could successfully benefit from adopting scientific management techniques, and the accounting and budgeting techniques employed by American business enterprises for years.

Under the then existing Federal budget and appropriation structure, projects or programs undertaken by military activities required financing from several individual appropriations. Generally, the appropriations were controlled and accounted for by organizational divisions which were not only widely scattered geographically but were also unrelated, except with regard to administrative purposes. This was felt to be both uneconomical and inefficient. The concept of the industrial fund as a funding medium was developed. By design, such a fund, once established by Congress and provided with an initial cash allocation, called a "corpus", would become self-sustaining. The fund would finance one complete cycle of operations by a member activity. The cash available in the corpus would be used initially to fund the costs of producing goods or services ordered by "customers". A customer could be: a Systems Command, or any department thereof, an Operating Force Command, other governmental elements, or selected private sector parties. The proceeds from the sale of these goods or services through reimbursement by the customer would be deposited back into the industrial fund account to finance subsequent activity. Thus, the creation of the industrial fund would eliminate the need for several appropriations to finance the daily operation of an activity. [Ref. 5]

The authors note that the word "fund" has a special technical meaning in government accounting:

A fund is defined as an independent fiscal and accounting entity with a self-balancing set of accounts recording cash and/or other resources together with all related liabilities, obligations, reserves, and equities which are segregated for the purpose of carrying on specific activities or attaining certain objectives in

accordance with special regulations, restrictions, or limitations. [Ref. 6]

This definition highlights the meaning of the word "fund" as a separate accounting entity, created by law and governed by specific regulations.

The Navy Industrial Fund, the largest of five established DOD Industrial Funds, is a "revolving or working capital fund" [Ref. 7]. Table II provides the production costs of each of DOD's Industrial funds for FY's 1984-1986 and clearly highlights the NIF's eminence.

TABLE II
DOD Industrial Funds Production Costs

(\$ in thousands)

<u>Industrial Fund</u>	<u>1984</u>	<u>1985 (est)</u>	<u>1986 (est)</u>
Army	3,321,165	3,364,894	2,804,500
Navy	13,696,885	14,835,316	14,634,500
Marine Corps	90,611	92,190	85,400
Air Force	6,876,777	6,872,989	6,737,500
Defense	1,022,436	1,117,342	1,214,800

Source: The Budget Of the United States Government,
Fiscal Year 1986

It is utilized to provide the working capital (cash and capitalized fixed assets) necessary to finance the operations of selected Navy industrial and commercial-type activities. The Navy considers industrial activities to be:

Those activities engaged in production or construction, modification, conversion, alteration, renovation, or rehabilitation, overhaul and maintenance of ships, aircraft, guided missiles, other weapons, ammunition, vehicles, and equipment of all kinds, and other military operating supplies, including components and spare parts of such items. [Ref. 8]

Commercial-type activities are defined to be:

Those activities that perform or provide such services as transportation and port terminal services, base services, printing, research, development, and evaluation, engineering and logistics support, and automated data processing services. [Ref. 8]

In theory, an industrial or commercial activity financed by a working capital fund and using standard, accepted, and proven commercial practices of cost accounting should lead to greater efficiency, economy and accountability. As such, the management of each activity would:

1. Become directly responsible for accounting for funds and the costing of the operations.
2. Be encouraged to reduce operating costs.
3. Have the opportunity to compare costs and develop a spirit of cost competition with activities of a similar nature. [Ref. 5]

B. LEGAL BACKGROUND

The establishment of working capital funds in the Department of Defense was authorized by Public Law 216, Eighty-First Congress, Section 405 (The National Security Act Amendments of 1949) [Ref. 9]. The section covering working capital funds (Section 405) has been incorporated into the United States Code as 10 USC 2208, Working Capital Funds. Paragraph 2208 provides the broad general guidelines for the establishment and operation of working capital funds. Particular sections of paragraph 2208 are worthy of

note. Section 2208(a) of Title 10, USC, allows the Secretary of Defense to establish such funds in the Department of Defense to:

1. Finance inventories of such supplies as he may designate; and
2. Provide working capital for such industrial type activities that provide common services within or among departments or agencies of the Department of Defense as he may designate.

Section 2208(f) prohibits customers of working capital funds from buying goods or services for which the customer does not have specific funds or appropriations available. Section 2208(i) requires that annual reports shall be made to the President and to the Congress on the condition and operation of working capital funds established under this particular section. Further, it is provided in 10 USC 2208(h) that the Secretary of Defense shall prescribe regulations governing the operation of activities and use of inventories authorized by this particular section. [Ref. 10]

C. REGULATORY BACKGROUND

The detailed guidance concerning industrial funds is contained in Department of Defense Directive 7410.4, entitled "Regulations Governing Industrial Fund Operations." DOD Directive 7410.4 provides regulations governing each of the five established working capital funds, known as (1) the Defense Industrial Fund, (2) the Army Industrial Fund, (3) the Navy Industrial Fund, (4) the Marine Corps Industrial Fund and (5) the Air Force Industrial Fund.

Each industrial fund consists of the undisbursed balance with the Treasury, accounts receivable, inventories of materials, supplies, work in process, and all other assets pertaining to or acquired in the operations of the activities financed under the fund subject to all liabilities incurred in connection with such operations. [Ref. 11]

Part V.A of DOD Directive 7410.4 states that industrial funds are designed to:

1. Provide a more effective means for controlling the costs of goods and services required to be produced or furnished by industrial and commercial type activities, and a more effective and flexible means for financing, budgeting and accounting for the costs thereof;
2. Create and recognize contractual relationships between industrial and commercial type activities and those activities which budget for and order the end product or services, in order to provide management advantages and incentives for efficiency and economy;
3. Provide to managers of industrial and commercial activities the financial authority and flexibility required to procure and use manpower, materials and other resources effectively;
4. Encourage more cross-servicing among the military departments and among their operating agencies, with the aim of obtaining more economical use of facilities;
5. Support the performance budgeting concept by facilitating budgeting and reporting for the costs of end products, and thus underlining the cost consequences of decision making, including choices between alternatives in such terms.

Part V.B further lists 12 specific objectives:

1. To furnish managers of industrial and commercial type activities with management tools comparable to those utilized by efficient private enterprises engaged in similar types of activities;
2. To provide an incentive for managers of industrial fund activities to improve cost estimating and cost control through the use of cost standards by requiring a contractual relationship between producer and ordering agencies;
3. Require alert, forward looking financial planning at industrial and commercial activities by making them dependent financially on reimbursements received for goods and services furnished in fulfilling orders from customers;
4. Impel producers of goods and services to coordinate labor forces and inventories with workload generated. It is recognized that statutory and executive restrictions on the level of employment and the additions or reductions of personnel frequently limit flexibility and make difficult effective control over employment in relation to workload. However, producers must avoid the tendency to maintain a labor force without regard to workload levels, taking into consideration the balancing of skills to meet the anticipated workload;
5. To coordinate the financial aspects of detailed estimation and planning for job performance in terms of material requirements and labor operations,

production scheduling and control, and procurement and inventory control, with budgeting and cost control;

6. To establish and use realistic cost standards as targets rather than detailed cost limitations;
7. Require ordering agencies to budget, control and account for the cost of all goods and services ordered rather than allow them to obtain goods and services free. Conversely at the industrial fund activity the objective shall be pursued of reducing the amount of goods and services not paid for from the industrial fund. Taken together these two statements establish the objective that the industrial funded activity will neither furnish nor receive "free" goods and services, nor will the activity enter into arrangements to "offset" services received and services furnished. This requirement is designed to instill in the officials of these agencies a greater sense of responsibility and self restraint in limiting their orders, and balancing the costs of specific goods and services to be ordered against the benefits and advantages of their procurement, especially in light of alternative or competing demands;
8. To place ordering agencies in the position of critic of purchase prices (i.e., costs of performing activities) as well as quality and delivery speed of the goods and services ordered in consideration of relative costs of similar performing activities and outside agencies;
9. Provide meaningful bills to ordering agencies, clearly relating the goods and services furnished by a performing activity to the charges rendered, causing the ordering agencies to assess their procurement practices and specifications in full awareness of the costs involved;
10. Enable ordering agencies to budget and account on an "end-product" basis (the same as when buying from commercial contractors), simplifying budget presentations, budgeting control, and accounting procedures for both producers and ordering agencies;
11. To establish, wherever feasible, predetermined prices (tariff schedules, price lists, fixed price orders) for goods and services furnished by industrial fund activities, thus setting standard prices on performance and enabling ordering agencies to plan and budget more confidently;
12. To encourage management of ordering agencies to improve program planning and scheduling, in response to producers efforts to negotiate for orders as far in advance as possible.

DOD Directive 7410.4 further specifies that customers of an industrial activity may be:

1. Operating force commands, or mission units thereof, operation agencies, commodity commands, inventory control points, weapons system or project managers, or any Department of Defense components having missions and responsibilities separate from management and operation of the industrial fund activity;

2. Military personnel, private individuals and concerns, and other government agencies as authorized. [Ref. 11]

The directive also clearly states that the management of each industrial fund activity shall be held accountable for the control of cost performance in line with customers' orders or approved price schedules. A management agency or command, defined in the Navy Comptroller's Manual as an "administering office", shall be designated responsible for effective management of each industrial fund activity. Table III lists the management agencies and the industrial activities for which each agency is responsible. [Ref. 12]

The directive requires that reimbursement for the cost of work and service will normally be made on a progress payment basis. It specifies that billings and collections for progress payments will be accomplished at least monthly.

For the non-Department of Defense customers (who represent less than 0.5 percent of the customer order dollars in the 1986 budget [Ref. 13], the directive requires that they shall be charged at prices or rates determined to secure reimbursement for total costs, including unfunded costs, or the fair market value of the product or service, whichever is higher. [Ref. 11] Examples of goods and services provided to non-Department of Defense customers are:

1. The utilities and building rental fee of a civilian bank branch located on a Navy base;
2. Utilities provided to a civilian contractor performing work on a Navy base;
3. The use of equipment belonging to a Public Works Center by a contract or working on a Navy base.

D. RECENT DEVELOPMENTS IN NIF OPERATIONS

With the exception of two significant policy changes, one in 1976 and a second in 1983, the Navy Industrial Fund remains remarkably similar in appearance as when it was conceived in 1949.

TABLE III

NIF Activities and Management Agencies

<u>INDUSTRIAL FUND ACTIVITY</u>	<u>AGENCY</u>
Naval Research Laboratory, Washington, D.C.	ONR
Naval Avionics Facility, Indianapolis, IN	NAVAIR
Naval Air Rework Facility, Alameda, CA	
Naval Air Rework Facility, Norfolk, VA	
Naval Air Rework Facility, Cherry Point, NC	
Naval Air Rework Facility, Jacksonville, FL	
Naval Air Rework Facility, Pensacola, FL	
Naval Air Rework Facility, San Diego, CA	
Naval Engineering Center, Lakehurst, NJ	
Naval Air Test Center, Patuxent River, MD	
Naval Air Propulsion Test Center, Trenton, NJ	
Naval Missile Center, Point Magu, CA	
Navy Publications and Printing Service	NAVSUP
Norfolk Naval Shipyard, Portsmouth, VA	NAVSEA
Philadelphia Naval Shipyard, Philadelphia, PA	
Portsmouth Naval Shipyard, Portsmouth, NH	
Charleston Naval Shipyard, Charleston, SC	
Long Beach Naval Shipyard, Long Beach, CA	
Mare Island Naval Shipyard, Vallejo, CA	
Puget Sound Naval Shipyard, Bremerton, WA	
Pearl Harbor Naval Shipyard, Pearl Harbor, HI	
Naval Ordnance Station, Indian Head, MD	
Naval Ordnance Station, Louisville, KY	
Naval Weapons Station, Yorktown, VA	
Naval Torpedo Station, Keyport, WA	
Naval Weapons Station, Charleston, SC	
Naval Weapons Station, Concord, CA	
Naval Ammunition Depot, Crane, IN	
Naval Ammunition Depot, Earle, NJ	
Naval Ammunition Depot, Hawthorne, NV	
Naval Ammunition Depot, McAlester, OK	
Naval Weapons Station, Seal Beach, CA	
Naval Ship Missile Systems Engineering Station, Port Hueneme, CA	
Public Works Center, Norfolk, VA	NAVFAC
Public Works Center, Pearl Harbor, HI	
Public Works Center, Guam, M.I.	
Public Works Center, Subic Bay, Luzon, R.O.P.	
Public Works Center, San Diego, CA	
Public Works Center, Pensacola, FL	
Public Works Center, Great Lakes, IL	
Public Works Center, San Francisco, CA	
Civil Engineering Laboratory, Naval Construction Battalion Center, Port Hueneme, CA	
Military Sealift Command	MSC

Table III
NIF ACTIVITIES AND MANAGEMENT AGENCIES (cont'd)

Naval Ship Research and Development Center, Washington, DC	CNM
Naval Coastal Systems Laboratory, Panama City, FL	
Naval Weapons Center, China Lake, CA	
Naval Air Development Center, Johnsville, Warminster, PA	
Naval Underseas Research and Development Center, San Diego, CA	
Naval Electronics Laboratory Center, San Diego, CA	
Naval Surface Weapons Center, Silver Springs, MD	
Naval Underwater Systems Center, Newport, RI	
Navy Regional Data Automation Centers	NAVLAC

1. Rate Stabilization

Prior to 1976, NIF activities were permitted to adjust the rates charged their customers on a quarterly basis to account for cost increases. Since the customer had to budget for this work as much as two years in advance of it actually being performed, cost increases by NIF activities simply translated into program reductions or requests to Congress for additional funds. Given that the latter alternative was less palatable than the first, customers routinely were forced to cut or delay planned programs.

Rate stabilization was implemented at all NIF activities during Fiscal Years 1976 and 1977 as a modified method of charging customers total cost. Under this revised method the NIF activity establishes a customer price or "rate" two years in advance of when the service will be performed or the goods delivered. This concept enables the customer to plan on firm prices for the work to be accomplished as customer budgets are constructed and defended.

NIF activities initially absorb the difference between the cost of the product or service and the price charged to the customer. These gains or losses are accumulated and subsequently charged to customers in the next budget cycle by adjusting the stabilized rate to be charged in that upcoming budget year, two years in the future. Stabilized rates are a policy statement to Congress and a tool by which the budget is made to work. Rate stabilization will be discussed in greater detail in Chapter VII.

2. Fixed Asset Capitalization

At the end of FY 1981, NAVCOMPT directed all NIF activities to capitalize into the NIF the estimated book value of all plant property, equipment or other fixed assets. Procedural guidance was provided in NAVCOMPT Instruction 7600.27, Capital Investment Program for Industrial Fund Activities which has since been incorporated into the NAVCOMPT Manual, Vol 5. Prior to this action all NIF's fixed assets had been financed directly by headquarters-level and customer procurement appropriations and "loaned" or contributed to the NIF for use without charge. The NIF had operated under the assumption that if the fund's accumulated financial operating results approached zero, given NIF's no-profit objective, its cash balance, being equal to its corpus, was acceptable.

NAVCOMPT's action set the stage for inclusion of customer-funded depreciation in the FY 1982's stabilized rates and the authorization for the NIF to begin procurement of its "own" assets commencing in FY 1983. Coincident with NAVCOMPT's policy change in regards to depreciation was the establishment of a several new ledger accounts. One such equity account, entitled "Assets Capitalized, Contributed Fixed Assets" was created as a means to maintain the asset and equity accounts in balance. A direct result of

accounting for this depreciation expense was an increase in the applied charge to the customer in the form of higher stabilized rates. Another new account created entitled "Equity Reserves" provided the NIF a means to reduce and better control its cash account rather than transfer all of its revenue into Accumulated Operating Results (AOR) from which it is distributed back to the customers. This account is used as an accounting tool to earmark cash to (1) procure new capital equipment, (2) develop management information systems and (3) accomplish minor construction projects.

E. PREVIOUS EFFORTS TO IMPROVE CASH MANAGEMENT

The search for opportunities to improve cash management has been underway in the Federal Government since the 1970's. This effort has resulted in the identification of several specific areas which could improve the cash position at the Treasury Department, and appropriate action has been taken to implement these ideas. Primarily, the studies and actions to date have focused upon optimizing the timing of operations such as billing, collecting, depositing, and disbursing cash. While these actions obviously apply to operations at the NIF, to date no study has been completed with the specific goal of improving NIF cash management.

In the process of researching this topic, the authors reviewed numerous theses on the subject of the Navy Industrial Fund held at the Naval Postgraduate School. These studies included a general overview of the NIF organization, a description of the NIF operation, and an explanation of the workings of stabilized rates, but did not specifically address NIF cash management.

Additionally, the authors referred to several Naval Audit Service reports on various NIF financial operations. These audits reviewed NIF adherence to existing regulations

and did not attempt to identify any new areas for improving cash management.

Finally, during the course of background research, the authors were informed that a private sector study, commissioned by the Office of the Secretary of the Navy, was underway with the purpose of reviewing the entire NIF operation. This study will not be completed for some time and thus the findings will not be available prior to the completion of this thesis.

III. THE NIF CASH MANAGEMENT CHALLENGE

The efforts toward optimizing the use of the Federal Government's cash have resulted in a series of legislative acts, regulations, policy memoranda, and other documents which address the subject of cash management. The objective of these actions is to minimize the cash held outside of the cash account of the Treasury, and thereby unavailable for use and to accelerate amounts due the Federal Government. For most agencies, this objective translates as a policy to optimize the timing of the flow of cash in the areas of billings, collections, disbursements, and deposits. For the Navy Industrial Fund, operating as a revolving fund, this objective offers the added challenge to develop programs which optimize cash position as well as cash flow.

The interest in cash management was not always shared by all parts of the Federal Government. It began in the 1970's at the Treasury Department, which has historically maintained a close watch on government-wide cash balances, and slowly spread to other departments and agencies. In 1971 the Division of Banking and Cash Management was created at the Treasury in order to manage government money more effectively and provide cash management guidelines for other agencies to follow. Another major milestone occurred in FY 1978 with the issuance of a Presidential memorandum which required follow-on cash management internal reviews by Federal agencies.

The current list of directives on the subject of cash management is extensive. Table IV provides a listing of those items which most influence NIF operations. The Federal cash management position is stated in Treasury Circular 1084 of December 1976 and specific regulations for billings, collections, deposits, and disbursements are

TABLE IV
Federal Cash Management Documents

Legislative Acts:

- Budget and Accounting Act of 1921
- Budget and Accounting Procedures Act of 1950
- Debt Collection Act of 1982
- Prompt Payment Act of 1982
- Federal Managers' Financial Integrity Act of 1982
- Federal Claims Collection Act

Treasury Department Financial Manual, Volume I:

- Part 2, "Central Accounting and Reporting"
- Part 4, "Disbursing Regulations"
- Part 5, "Deposit Regulations"
- Part 6, Chapter 2000, "Cash Advances Under Federal Grant and Other Programs"
- Part 6, Chapter 8000, "Cash Management"

Treasury Department Circulars:

- 176, "Depositories and Fiscal Agents"
- 830, "Disbursing Officers"
- 945, "Central Accounting for Revenues and Outlays and Related Assets and Liabilities"
- 965, "Reporting Year-End Status And Closing of Appropriation and Fund Accounts"
- 1075, "Cash Advances"
- 1076, "Payments to Financial Organizations"
- 1083, "Use of TPCS"
- 1084, "Cash Management"

Treasury Department Bulletins:

- 82-10, "Agency Deposit Transactions"
- 82-18, "Report on Status of Accounts/Loans Receivable Due From the Public"
- 82-22, "Deposits-In-Transit"
- 83-14, "TPCS Payments"

Office of Management and Budget Financial Management and Accounting Guidelines

Office of Management and Budget Circulars:

- A-011, "Annual Budget Estimates; Preparation of"
- A-034, "Budget Execution"
- A-112, "Monitoring Federal Outlays"
- A-123, "Internal Control Systems"
- A-125, "Prompt Payment"

Office of Management and Budget Bulletins"

- 83-06, "Cash Management"
- 83-11, "Debt Collection"
- 83-21, "Credit Reporting"

General Accounting Office/Department of Justice "Federal Claims Collection Standards"

General Accounting Office Policy and Procedures Manual

NAVCOMPT Manual

detailed in the Treasury Fiscal Requirements Manual, Volume I, Part 6, Chapter 8000, issued in March 1978. Each Federal agency is required to follow these guidelines so as to maximize the amount of cash available to the Treasury Department and thus preclude unnecessary borrowing. The Department of the Navy applies these regulations as part of its Cash Management Action Plan (CASHMAP). This plan includes milestones for bringing Navy disbursement and collection programs into conformance with Federal requirements, attempts to consolidate Navy cash management policies, and sets a goal for increased use of electronic funds transfer (EFT) and locked boxes.

The present focus of Federal cash management initiatives is on billing, collecting, depositing, and disbursing funds in a timely manner. Certainly, the efficient flow of cash is a sound cash management practice and allows cash to work better either by earning interest or repaying (short term) debt and thus eliminating or reducing interest payments.

In addition to optimizing the flow of cash, certain organizations in the Federal Government have the opportunity for enhanced cash management through other actions which are unique to their type of business. For example, actions which reduce the costs of conducting business (i.e. overhead costs) certainly save the Treasury Department money by reducing the amount the government borrows. Any reduction in the level of cash held outside the Treasury and at a particular activity (i.e. inventory) also improves the Treasury Department's cash position. For the activity groups of the Navy Industrial Fund the ability to maintain a proper level of cash and to forecast a future cash position have proven to be significant challenges. Table V and Figure 3.2 show the wildly fluctuating Treasury cash positions of the three largest NIF activity groups, as well as the total NIF cash position, for fiscal years 1975 through 1984.

TABLE V
Treasury Cash Balances for Selected NIF Activity Groups

(\$ in millions)

<u>FY END</u>	<u>SHIPYDS</u>	<u>NARF's</u>	<u>MSC</u>	<u>NIF TOTAL</u>
1975	21.1	8.0	74.7	106.4
1976	52.4	6.4	130.4	385.5
1977	40.0	-2.2	156.8	387.5
1978	68.0	-4.1	108.9	315.3
1979	116.3	64.1	34.9	378.2
1980	66.0	8.3	44.6	307.3
1981	92.8	23.1	124.8	461.1
1982	128.3	21.4	78.2	386.5
1983	116.6	-42.6	101.8	345.3
1984	50.4	-197.2	356.9	130.5
	27.2	-247.0	716.2	807.9

These cash account balances represent the amount of NIF cash presently at the Treasury. By law (Title 31, U.S. Code, Sections 1341 and 1517) this amount is not allowed to be overdrawn (become negative) for the NIF as a whole, and theoretically should average at a level equal to the dollar amount of the corpus. Figure 3.1 depicts the total NIF cash position in relation to the corpus for fiscal years 1975 through 1984. Activity Groups are presently not required by law to maintain non-negative Treasury cash positions, but their positions do directly effect the total NIF cash position. Of greatest significance today is the negative cash position of the Naval Air Rework Facilities (NARF's) and the high cash position of the Military Sealift Command (MSC).

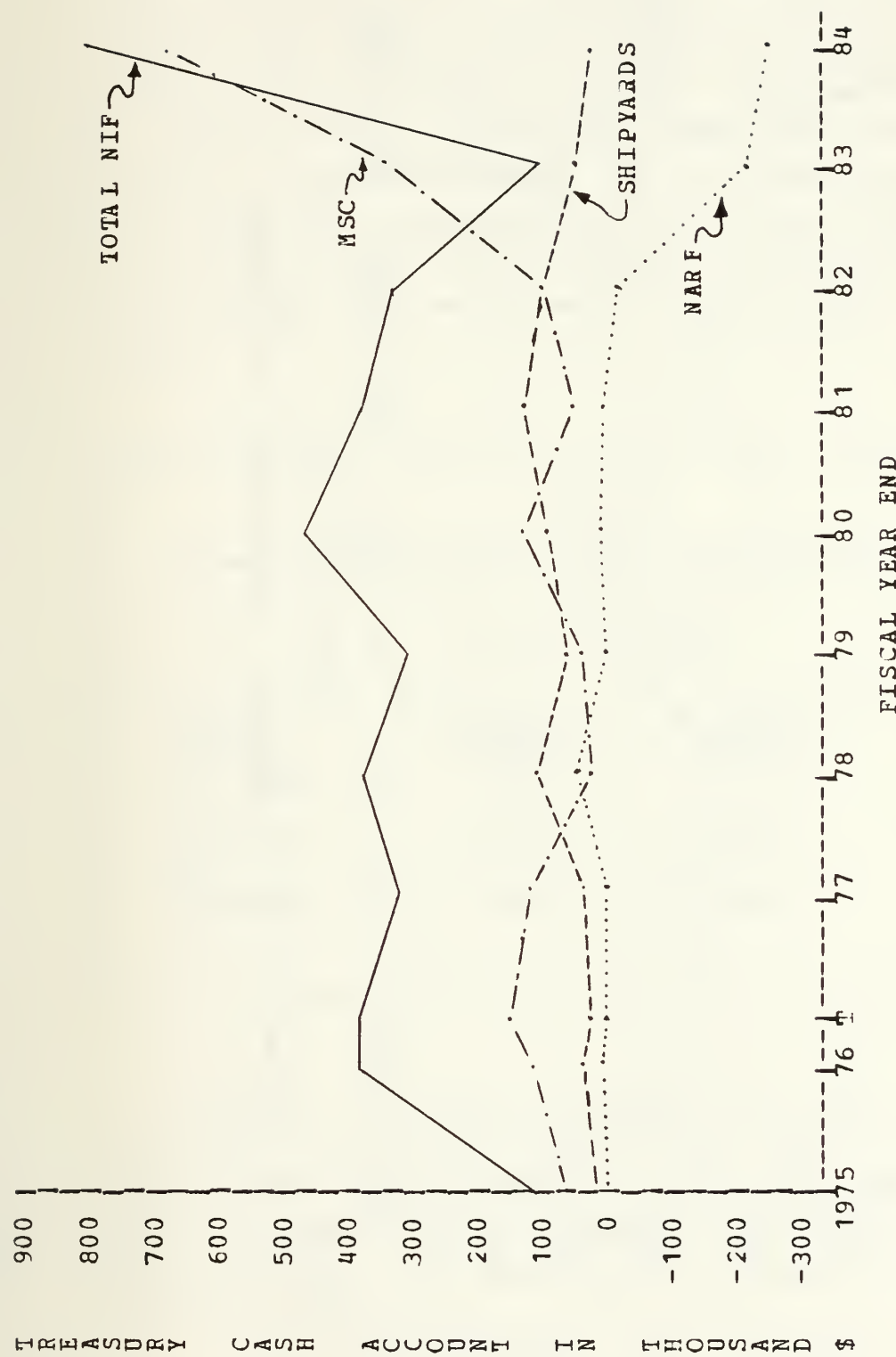


Figure 3.1 Treasury Cash Trends for Selected NIF Activity Groups.

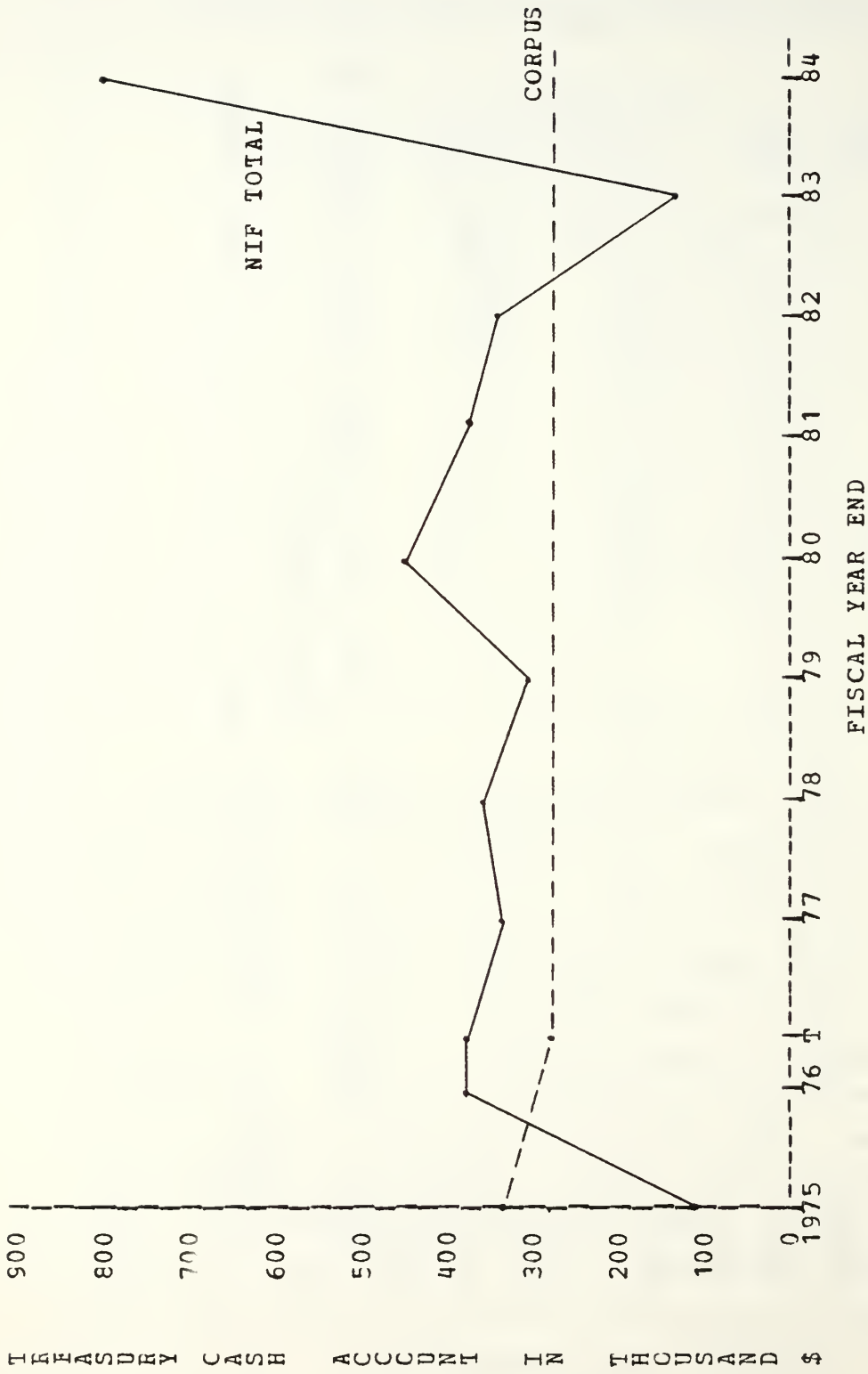


Figure 3.2 NIF Treasury Cash Position vs NIF Corpus.

The perturbations in the cash positions of the NIF activity groups have the potential to impact upon the solvency of the NIF. Compounding this problem is the difficulty experienced in projecting these fluctuations. Treasury cash account balance predictions, made by individual activities during the budget process and referred to as "planned cash", experience a very high degree of variability. This variability, the difference between planned and actual cash expressed as a percentage of planned cash, is referred to as "cash variance". Table VI depicts the FY 1984 year-end cash variances for several major NIF activity groups.

TABLE VI
Treasury Cash Variances for Selected NIF Activity Groups

(\$ in millions)

<u>ACTIVITY</u> <u>GROUP</u>	30 SEP 1984 <u>PLANNED</u>	30 SEP 1984 <u>ACTUAL</u>	VARIANCE (<u>PERCENT</u>)
SEIPYARDS	-143.3	27.2	119.0
NARFs	-289.3	-246.9	14.7
MSC	646.5	716.2	10.8
TOTAL NIF	-543.3	-807.9	-48.7

As shown, the cash variance for the Naval Shipyards was 119 percent for fiscal year 1984 while the entire NIF experienced a cash variance of almost 50 percent. These high variances are significant since they reflect an inability of the NIF activities to achieve a cash position previously forecast.

The inability to accurately forecast cash positions is undesirable for several reasons. First, it has the potential to impact upon the level of funding an activity receives. For example, an organization which routinely experiences high cash variances may require a higher level of working capital in order to cover the range of these variances. Second, if high variances become the norm, then actions taken which may have not optimized the use of cash may be masked within this variance and remain undiscovered. Finally, activities may make unwise management decisions in an effort to reduce this variance while the real problem could be poor forecasting. Table VII shows cash variances for the Naval Shipyards and NARFs which were based upon revised projections made at the start of the fourth quarter of FY 1984.

TABLE VII
Treasury Cash Variances Based Upon Revised Projections
(\$ in millions)

ACTIVITY <u>GRCUP</u>	30 SEP 1984 <u>PLANNED</u>	30 SEP 1984 <u>ACTUAL</u>	VARIANCE <u>(PERCENT)</u>
SHIPYARDS	-83.2	27.2	132.7
NARFs	-305.3	-246.9	19.1

As seen in Table VII, even shortening the time horizon did not correct the problem of these high cash variances. In fact, the cash variance for the Naval Shipyards was 164 percent in the first quarter of FY 1985. The difficulty of making accurate cash forecasts continues.

The Navy Industrial Fund faces cash management challenges in two areas. First, the NIF must properly manage the fundamental areas of efficient cash flow. Second, the NIF must search for unique opportunities which would optimize their cash position.

IV. METHODOLOGY

The authors of this thesis conducted their research in five phases: literature search, Washington D.C. interviews, research, interviews at individual activities, and findings.

The literature search phase involved the initial collection of information which included a review of previous theses and other study efforts, a study of pertinent Federal Government programs and policies, and a review of Navy Industrial Fund operations including regulations, guidelines, audits, and financial and operating reports. The identification of relevant material was performed through a comprehensive computerized data base search at the Naval Postgraduate School library using all terms likely to yield useful information. This material was then carefully screened and further sources identified through the references contained within this material. This work resulted in an initial identification of several areas of possible cash management problems and a determination of the scope of the desired follow-on research.

The second phase of thesis research involved a series of interviews in the Washington D.C. area with the following NIF higher commands:

Office of the Under-Secretary of the Navy
Office of the Comptroller of the Navy
Navy Accounting and Finance Center
Naval Material Command Headquarters
Naval Sea Systems Command Headquarters
Naval Air Systems Command Headquarters

These interviews were conducted with two purposes in mind. First, the authors desired to solidify their understanding of the NIF method of business, particularly at the Activity Group commands and up the chain-of-command. Additionally, the interviews at these commands provided the

authors an opportunity to observe the attitudes and ideas at these policy-making commands, particularly those personnel involved in the NIF financial management operation. The authors were able to gain an understanding of what these commands believed to be the financial condition of the Navy Industrial Fund and also to gain an appreciation for what these commands believed could and would be done to alter this financial position.

The next phase of study, the research phase, included a thorough review of information collected during the first two phases of study. This information was assembled and sorted, assisting the authors in their development of several hypotheses to be further investigated. These ideas were tested against the information collected to date and requirements for additional information were then identified. The additional data were then collected and the hypotheses refined. The refined ideas were presented, in the form of telephone interviews, to selected personnel encountered in previous interviews.

The authors next visited two west coast NIF activities, the Naval Air Rework Facility at Alameda, California and the Puget Sound Naval Shipyard in Bremerton, Washington. The purposes of these visits were to gain an appreciation of the working relationships between individual NIF activities and their respective higher authorities and to obtain the views of local commands on the cash management issue.

The final phase of study involved the listing of all cash management opportunities identified throughout the research. These ideas were then explored and possible alternative actions identified and discussed. Finally, the authors identified areas which they believed held the greatest opportunities for enhanced cash management and follow-on research.

V. PREVIOUSLY IDENTIFIED CASH MANAGEMENT OPPORTUNITIES

A. SUMMARY

Varicus programs have been designed with the intention of improving Federal cash management. These programs, focusing on the areas of billings and collections, disbursements, deposits and forecasting, each have application to the NIF. The intent of each of these programs is to minimize cash held outside of Treasury. This chapter summarizes these existing initiatives.

B. OVERVIEW

During the decade of the 1970's, there evolved within the Federal Government an interest in the subject of cash management at the department and the agency level. The Department of the Treasury has been in the business of managing the government's money for nearly 200 years. Only recently, however, has it become obvious that there is a need to share concern for, as well as expertise in, the management of cash with and by other departments and agencies.

One of the earliest efforts in this area occurred in 1971 when the Department of the Treasury created the Division of Banking and Cash Management. Its mission included coordinating and assisting in the design of program agency activities which affect government cash flow to ensure that the government's money is effectively managed. Additionally, this division was responsible for issuing policy guidelines and procedural instructions to facilitate Federal agencies in managing cash. Not surprisingly, various studies conducted during the mid-1970's revealed

that there was much room for improvement in the entire realm of public sector cash management. During the ensuing period, a number of notable initiatives in cash management appeared due primarily to the efforts of Treasury, the Office of Management and Budget and the Government Accounting Office (GAC).

The most noteworthy of these initiatives began with the issuance of Treasury's Circular Number 1084 issued on December 29, 1976. The objective of this circular was to broaden Treasury's overview of other agencies' cash management practices and to establish requirements so as minimize the government's cash held outside of the cash account of the Treasury. Government-wide policy guidance was provided in the fundamental cash management areas of billings and collections, deposits, and disbursements.

The signing into law of the Prompt Payment Act of 1982 (Public Law 97-177) and the Debt Collection Act of 1982 (Public Law 97-365) provided two important pieces of legislation to strengthen the control of Federal funds. The Prompt Payment Act of 1982 requires Federal agencies pay their bills on time, pay interest penalties when payments are late, and take discounts only when the payments are made within the discount period. The Debt Collection Act of 1982 authorizes Federal agencies to assess interest, penalties and administrative costs on delinquent debts.

The Office of Management and Budget amplified and implemented each of these laws with the issuance of OMB Circular A-125 "Prompt Payment" and Bulletin 83-11 "Debt Collection" respectively. As a result of these new laws and OMB's actions, Treasury promulgated a revised Chapter 8000 of Part 6, Volume I of the Treasury Financial Treasury Financial Requirements Manual (IFRM) on May 12, 1983.

A third piece of legislation, The Deficit Reduction Act of 1984, added to the earlier emphasis in managing cash.

This act authorizes the Department of the Treasury to provide the mechanism to be used by Federal agencies to collect receipts and the time frames for deposit of funds.

Armed with this elaborate framework of legislation, Treasury has continued to enhance cash management. Various sophisticated fund transfer systems have been developed and are available for agencies' use in collecting or disbursing funds. These systems include:

- Treasury Financial Communications System (TFCS)
- Lockbox
- Automated Clearing House System
- Cash Concentration System

Each system will be discussed in a subsequent section. The responsibility now rests with the individual agencies to explore and implement the most efficient mechanism to facilitate the collection and disbursement of funds.

The fundamental objective of government cash management is to ensure that the government receives full value for the money which it owns or controls. The key to all of cash management is control--you cannot manage cash which you do not control.

The following sections of this chapter discuss each cash management fundamental and its applicability to the NIF.

C. BILLINGS AND COLLECTIONS

1. Background

The first aspect of cash management deserving special attention by Federal managers at all levels is billings and collections. By accelerating these fundamental elements of cash management, the Federal Government's cost of borrowing money can be minimized.

The overview discussed the various pieces of policy guidance and regulations encompassing this area. These

documents are designed primarily to ensure government agencies develop effective cash management procedures. Specifically, billings are to be prepared and transmitted promptly. Likewise an agency's collection system must include procedures which provide for the prompt and continuing action to collect its receivables.

Included in the revised TFRM Chapter 8000, is specific guidance concerning the timeliness of billings and collection. Treasury has established a standard that each invoice for goods or services furnished to individuals and organizations outside the U.S. Government be effectuated within one working day after the billing office is advised that the services have been completed or the goods released for shipment. Additionally the payment date for these goods and services will not be more than 30 days from the date of the invoice.

Treasury guidance also stipulates that contracts under which goods and services are sold outside the U.S. Government must include payment terms and provisions that include as a minimum the following:

- Specify when the payment will be due.
- Require that payment be received no later than the due date.
- Provide for payment by wire, where applicable.
- Provide that charges be applied, accrued and collected for payments received after the due date in the form of interest, penalty and administrative charges.

In the event that payments owed the U.S. Government are not made in accordance with the payment schedule stipulated in the contract, it is the Federal Claims Collection Act (31 USC 3711), as amended by the Debt Collection Act of 1982 that governs the application of the above noted "late" charges. This latter piece of legislation provides even more stringent guidance in this area. For example, Federal

agencies are now authorized to refer information on delinquent debts to consumer reporting agencies and to use private contractors to service and collect government debts.

The procedures used for collecting funds for credit to the account of the U.S. Treasury are left to each responsible agency to establish. In developing these procedures a wide range of options is available including centralization/decentralization, lockboxes, wire funds transfers and particularly the Treasury Financial Communications System (TFCS). The TFCS provides for the transfer of funds through an electronic medium between the Department of the Treasury and the banking community. Since funds are wire transferred, checks and the accompanying collection time are completely eliminated, and funds are available on the actual day of payment. The system offers those agencies responsible for the receipt of large payments, either periodic or a one-time remittance, a viable means to credit the Treasury's account. The specific procedures developed should have as their primary goal the minimization of total cost to the government as a whole.

2. Potential for Saving

The acceleration and aggressive management of billings and collections can save the Federal Government a significant amount of money. What is the NIF's role in this area in view of the fact that the vast majority of their customers are DOD? Although non-DOD customers have historically represented only 0.5 percent of the customer order dollars, even this business segment involves substantial sums of money. For example, non-DOD customer work amounted to \$75 million in FY 1984 and is projected to account for \$55 million in the President's FY 1986 budget.

Clearly, NIF activities must provide management attention to the prompt preparation and transmission of

billings. Procedures must be established and monitored to ensure this occurs. Activities must also aggressively manage the collection of their receivables. Despite the somewhat marginal impact of non-DOD customer dollars in the total NIF financial picture, NIF managers cannot ignore this aspect of cash management.

D. DISBURSEMENTS

1. Background

Disbursements is the second fundamental element of cash management. To place disbursements in a proper perspective consider the following. In FY 1977, 600 million checks were issued by Treasury; 100,000 vouchers were paid by Federal Reserve Banks under letter of credit; and 65 million payments were processed by wire. The timing of many of these payments is established by law or regulations and as such allows little management discretion with respect to payment date. It is estimated that approximately 50 percent of the dollar volume of all government disbursements is subject to some degree of control with respect to timing. A GAO survey conducted in 1978 estimated that nearly 30 percent of the Federal Government's bills (about 18 percent of the dollar value) were paid late and about 45 percent paid early. [Ref. 14] Clearly, such performance was costing the Federal Government money.

The overview discussed the recent policy guidance to correct such problems in this area. Most noteworthy, of course, were the Prompt Payment Act and OMB Circular A-125. Revised Chapter 8000 of the IFRM stipulates specific procedures to be followed in regards to disbursements. In particular, payment terms are to be included in any contract or other procurement arrangement for the purchase of goods or services from any organization outside the U.S.

Government. An agency's payment system must be designed to provide for scheduling the issuing and mailing of checks for receipt coincident with the invoice's due date. Additionally, the system must incorporate procedures that will automatically take advantage of cash discounts when it is in the government's interest to do so.

Simply stated, Treasury advocates positive management control of disbursements, paying bills when due, not early or late. Payments continually made early increase the government's overall costs and provide little incentive for discounts. Late payments advertise governmental inefficiency, destroy public confidence and perpetrate criticism of the Federal sector.

2. Potential for Savings

Improved management of disbursements offers the NIF, and in turn Treasury, an opportunity to save money. The authors' research revealed that the NIF has historically experienced difficulty in two specific aspects of disbursements. The NIF, until 3 years ago, utilized a cumbersome mechanical system for paying vendor bills. In 1982 a computer tape system was introduced to facilitate this process, however as of this writing only 14 NIF activities, less than 30 percent of the total NIF, are participating in this program. Section C of Chapter VII discusses this problem in greater detail. The second problem area for the NIF has been one of duplicate payment of bills. Section D of Chapter VII discusses the impact of duplicate payments particularly as it applies in the issue of unreconciled cash. Correction of the existing weaknesses in both of these areas will serve to improve the NIF's disbursement posture and ultimately save the NIF cash.

E. DEPOSITS

1. Background

Another means of minimizing the Federal Government's cost of money is the expeditious deposit of funds for credit to the account of the Treasury Department. Treasury Circular Number 1084 and TFRM Chapter 8000 include guidance on the matter of fund deposits. Included in the procedures stipulated in these documents is the requirement that government agencies develop systems which allow for the prompt deposit of funds. These processing systems should include an early separation of payments received from the accompanying accounting documents, facilitating the prompt deposit of these checks and money orders.

The Treasury Department has also established requirements for the frequency of deposits, based upon the daily dollar value of funds received by the depositing organization. These basic requirements are:

- Receipts of \$1,000 or more will be deposited daily.
- Receipts less than \$1,000 may be held until a total of \$1,000 is reached but must be deposited at least weekly regardless of the total.

Additionally, the Treasury's regulations stipulate requirements on the timeliness of deposits. These regulations attempt to have funds deposited in a manner which maximizes the amount an organization deposits each day, while still making the deposit as early in the day as practical. It further establishes guidelines for dispatching deposits which are to be mailed. Several services are available to assist organizations in expediting their deposits. These include depository bank accounts, lock-boxes, and electronic funds transfers.

The Treasury Department's depository bank accounts are part of the Treasury General Account (TGA) system.

Here, collections are deposited by government officers throughout the country either directly at the Federal Reserve Bank and branches or through "flow through" accounts maintained by commercial depositories. The expansion of this system to include selected commercial institutions in addition to the 37 Federal Reserve Bank depositories assists in accelerating the availability of funds to the Treasury Department. The financial institutions that accept government deposits for credit to the TGA act primarily as conduits, accepting and processing deposited items for collection and then transmitting them via the TGA cash concentration network to a Federal Reserve Bank depository. The commercial depositories are often in closer proximity to the agencies, thus providing greater convenience and reducing the "bank float."

The Treasury's nationwide lockbox system enables remittances to be mailed directly to a bank while also providing the necessary accounting data to meet the agency's needs. The lockboxes, which are simply locations in post offices to which mail is sorted for pickup by a depository, are strategically located for the collection and processing of agency receipts. This system reduces mail, processing, and collection time while still providing timely accounting documentation. The system minimizes the amount of check handling done by an agency and improves both the audit trail and internal controls.

Electronic funds transfers (EFT) made through the Treasury Financial Communications System (TFCS) not only speed up the availability of funds to Treasury, but also simplify the accounting process. The TFCS, as a telecommunications network, permits the Treasury to send and receive EFT messages to and from any Federal Reserve Bank or financial institution which has access to the system. In addition to the benefits that the Treasury Department

derives from the instantaneous transfer of funds, the agency that specifies a TFCS payment receives an expedited processing of the documentation and gains the ability to interrogate the system on an on-line basis in order to confirm the transaction. In 1978 the Treasury Department estimated that on average it was saving interest costs of three days every time the TFCS was used.

2. Potential for Savings

It is obvious that the acceleration of deposits to a Treasury account can save the Federal Government a substantial amount of money. But what can the Navy Industrial Fund do to contribute to this effort? Attention to NIF payment processing, including a quick follow-up of late payments, certainly would assist. Beyond this, NIF should ensure that procedures for the prompt deposit of funds are a part of their cash management program.

While the NIF's cash managers should use Treasury services such as depository bank accounts and lockboxes wherever available, they must also optimize internal cash handling procedures. Unfortunately, the motivation to take the steps necessary to streamline these procedures is often lacking. Since a NIF activity receives no cost or benefit from the value of money held outside of Treasury, they have little incentive to add personnel or systems in order to streamline cash handling. While these actions may be cost-beneficial to the Federal Government, they may not be cost-beneficial to the NIF. The single existing motivator appears to be that the NIF use of Treasury services typically reduces an activity's accounting workload. For these reasons, the best method of expediting deposits appears to be through the use of government-wide regulations. These regulations have been and will continue to be tightened in this attempt to expedite the deposit of funds for credit to the accounts of the Treasury Department.

F. FORECASTING

1. Background

Planning is a fundamental element of every effective cash management program. The first step in this planning process is the forecasting of the flow of cash and the projection of a daily cash balance at an individual activity. If this can be done to a reasonable degree of accuracy, then the activity may establish a program which minimizes their daily cash holdings. This, in turn, contributes towards minimizing the cash held outside the Treasury Department.

The Federal Government's cash forecasting process is centralized in the Treasury Department under the direction of the Fiscal Assistant Secretary. Here, projections of the Government's daily cash flows and financing needs are made. In order to make its forecast the Treasury relies upon the following sources of information:

- Monthly tax receipt estimates.
- Monthly outlay plans developed by OMB.
- Estimates of international cash movements.
- Additional information from Federal Agencies and Departments.

The Treasury Department relies heavily upon OMB's Circular A-112 reporting process which requires departments and agencies to submit monthly outlay plans at the beginning of each fiscal year. These plans are then periodically updated. Unfortunately, their usefulness is often limited as a result of late submissions, lack of detail, and estimating errors. These problems are often a result of an agency's lack of manpower or technical capability for developing accurate forecasts.

The cost of developing a cash forecast, including the additional personnel and equipment required for the

forecasting process, must be absorbed by the agency. These are not normally cost-beneficial investments from the agency's point-of-view. The agency and their activities receive no direct benefit from reducing the government's cost of money. There is little, if any, financial incentive for activities to produce accurate, detailed outlay projections.

Since the forecasting of cash flows is universally recognized as an important aspect of financial management, financial managers should not need Federal Government incentives in order to improve their estimating procedures. Included in the benefits of a sound cash forecasting program are an improved information flow, enhanced accounting, better organizational planning and forecasting functions, and improved operational efficiencies.

2. NIF Forecasting

In support of the Federal Government's cash forecasting program, NAVCOMPT implemented the NIF Review and Analysis Program on 19 October 1983. This program requires a monthly and quarterly written analysis of variances from the budget phasing plan. While the monthly report addresses only variances in Accumulated Operating Results (ACR) and activity cash, the quarterly report also reflects variances in orders received and costs incurred.

NIF cash forecasting to date has not been very good. High variances between actual and planned cash, as reported in Chapter III, continue to be a problem. This variance was nearly 50 percent for all NIF activities during FY 1984; that is, total NIF cash was 50 percent higher than forecasted. Quarterly NIF forecasts have been no better. For example, the Naval Shipyards forecast for the last quarter of FY 1984 was off by 132 percent.

In addition to hampering the Treasury Department's cash management efforts, poor cash forecasts by the NIF also interfere with internal control of NIF activities. Cash projections, like other financial forecasts, provide useful information which can aid NIF management in their formulation of policy. Within the NIF, there exists an opportunity to better gather, report and employ available financial data.

3. NIF Reporting Systems

The financial reporting system of any business provides useful information which can aid management in their formulation of policy and control of the organization. The authors observed a lack of control within the Navy Industrial Fund in regard to the development of financial management information systems.

The NIF uses various financial management reporting systems to assist in matters such as headquarters' planning, structuring general ledger accounts, and accounting for costs. Various activity segments, even within the same NIF Activity Group, are developing customized systems. Although production and service processes vary across the NIF, the authors believe that a single financial management reporting system should be adopted.

NAVCOMPT operates the Navy Industrial Fund Reporting System (NIFRS) which receives individual NIF activity monthly reports. The system then summarizes the data and prepares the necessary reports to be sent to OMB. Additionally, NAVCOMPT, as the NIF manager, uses this system for budget input, development, and execution. NIFRS, while adequately serving NAVCOMPT, provides little benefit for the individual NIF activities and the Activity Group Commanders.

To serve their needs, many activities and Activity Groups have developed their own financial management systems. The result has been the creation of many, dissimilar systems including:

- NOMIS: Naval Ordnance Management Information System
- STAFS: Standard Automated Financial System
- NIFMS: NAVAIR Industrial Financial Management System
- Independent Shipyard Management Information Systems

Primarily, these systems maintain and report cost accounting information, formatted for specific general ledger accounts.

The problem with these dissimilar systems is that there is limited economies of scale realized. Modifications to NIF accounting procedures would require the expensive process of multiple program design changes. Additionally, activity group commanders have great difficulty getting one-time reports from these dissimilar systems.

Solutions to these problems are underway. NIFMS, NAVAIR's management information system, is being installed in order to provide commonality throughout the NARFs. At the same time, NAVCCMPT is sponsoring a similar program, designed to provide commonality throughout the NIF. Their system, STAFS, has already replaced the 14 separate systems previously installed in the NIF labs. Next, it will be installed in the ordnance facilities, replacing NCMIS. Eventually, it will even replace the not-yet installed NIFMS.

In conclusion, the authors believe that the NIF system, STAFS, will provide the commonality necessary for an effective financial management reporting system. Unfortunately, the implementation of this system will take an excessively long period of time. This time consideration enticed NAVAIR to implement their own system, adding to the fixed costs of NIF operations.

G. CONCLUSION

Billing, collecting, depositing, disbursing, and forecasting cash are fundamental financial operations. Within the Federal Government these financial operations directly impact upon the government's cost of money. If they are performed more effectively and efficiently, then fewer dollars will be held outside the accounts of the Treasury Department, thus minimizing government's borrowing.

In this chapter the authors have presented background material on the development of government-wide initiatives aimed at improving these cash management operations. For each of these operations the authors also examined the NIF interface with existing Federal programs. Surprisingly, the results of these examinations convinced the authors that there is little that the NIF can do to influence the effectiveness of these programs.

Central to this argument is the fact that more than 99 percent of NIF's business revenue is received via a transaction between Treasury accounts. The funds never leave the Treasury Department. While the authors support NIF efforts aimed at optimizing billing procedures, insuring all collections are made, and stressing the importance of timely deposits of funds received, it must be noted that relatively small amounts of money are involved. The real savings opportunities exist elsewhere.

In the area of disbursements, existing requirements such as The Prompt Payment Act provide the necessary guidance to insure NIF actions support the Federal Government's needs. Even cash forecasts, identified as unsatisfactory, are getting NIF management attention. The authors believe that NIF fundamental cash management actions, although not optimal in every regard, are fully supportive of the government's efforts toward minimizing the cash held outside of the Treasury's accounts.

The authors further believe that the Navy Industrial Fund can indeed make significant contributions toward reducing the amount of cash held outside the Treasury. The greatest opportunities for these contributions are not the cash management fundamentals discussed in this chapter, but rather opportunities that are unique to the nature of NIF business. These opportunities are identified and discussed in the following chapter.

VI. IDENTIFICATION OF UNIQUE CASH MANAGEMENT OPPORTUNITIES

A. NIF REORGANIZATION

1. Summary

Indications are that NIF cash could be managed more effectively and efficiently if the activities which comprise the NIF were reorganized under a single command. The study identified and explored the organizational alternatives of remaining under the present system, abolishing the NIF system, and reorganizing the NIF under a single command.

2. The Organization of the NIF

The present structure of the NIF organization reflects the original concept that this system was developed as a fund rather than an industrial organization. Figure 6.1 depicts the present relationships of the various commands which contain NIF activities. Note that the Office of the Secretary of the Navy (SECNAV) is shown as the lowest common point in the NIF chain-of-command. Approximately 80 percent of revenue dollars of the NIF activity groups are under the Naval Material Command (NAVMAT) which, in turn, falls under the command of the CNO. Note also that the Office of the Comptroller of the Navy (NAVCOMPT), acting as OP-92, is shown as having a staff function at the CNO command. However, the relationships among the commands containing NIF activities are not necessarily the same as the relationships among the activities. The actual distribution of power is quite different from what one would interpret from this diagram.

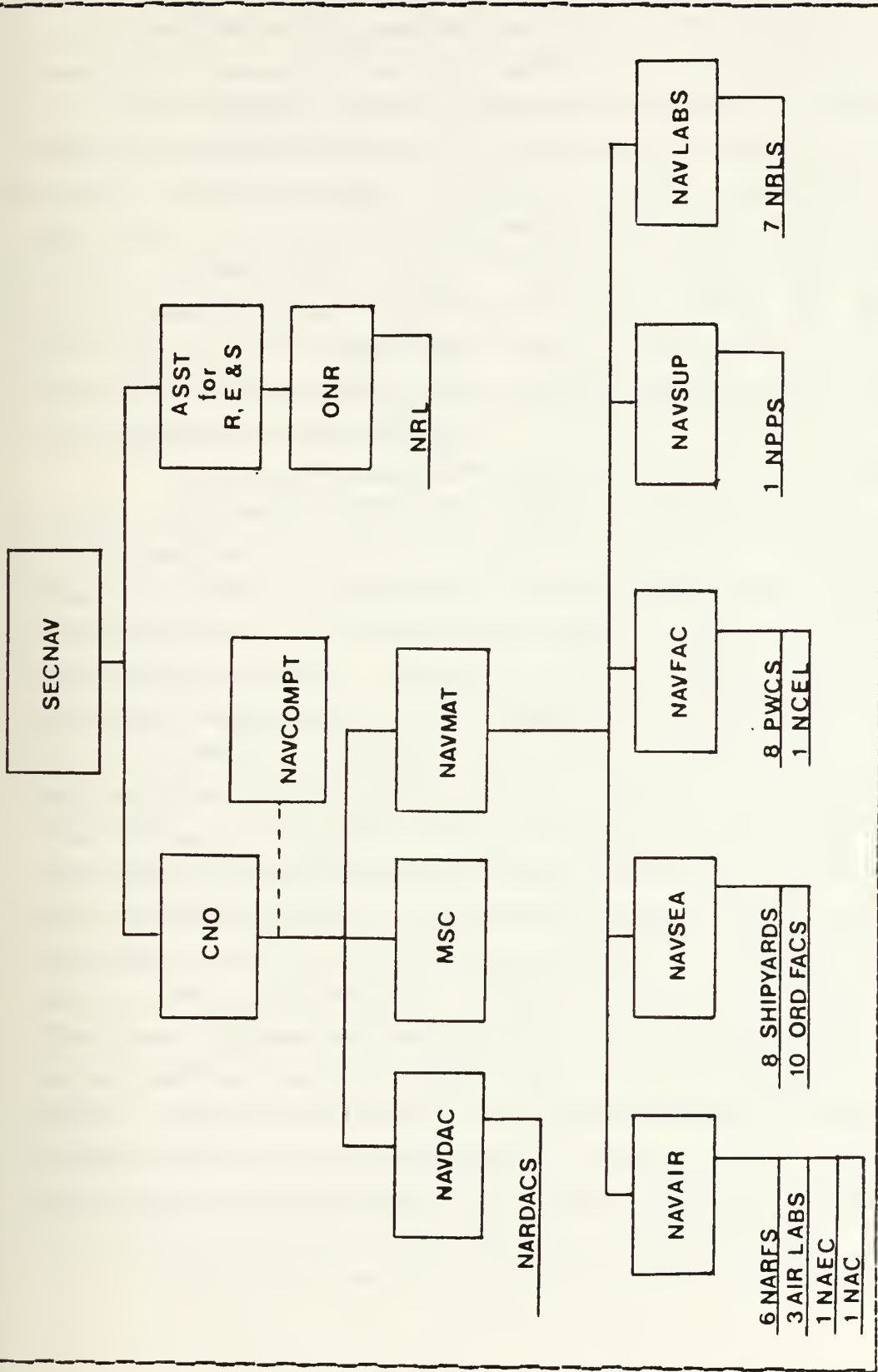


Figure 6.1 Organizational Relationships of the NIP Activities.

Viewing Figure 6.1, it would appear that the management of the entire NIF organization is controlled at the SECNAV level. This, in fact, is far from correct. Overall management of the 49 activities which comprise the NIF is presently provided by NAVCOMPT. NAVCOMPT derives its power from both the ability to control budget development and execution and its acceptance under Title 31, U.S. Code, Sections 1341 and 1517 (formerly R.S. 3679) of the responsibility to avoid over obligation of the NIF corpus. In theory, a violation of this law would occur if the NIF Treasury Cash account balance ever went negative. Accepting this responsibility equates to accepting responsibility for the financial results of NIF management actions.

The interface between NAVCOMPT, the NIF Activity Groups, and the individual NIF activities exists in both budget development and budget execution. In fact, the individual activities have unique budgets which are not simply a portion of an Activity Group budget. While the control of budgetary decisions is a great source of power in any organization, it is even more so in the NIF. This is a result of the financial impact that the setting of work norms and stabilized rates has upon the performance of an activity. Without using the correct figures for inflation, recoupment, payback and other key factors that are built into the rates that are charged to the NIF customers, it is unlikely an activity can achieve the stated objective of zero accumulated operating results. Therefore, the ability to control the setting of these factors, which are part of the budget, essentially is control of the operation of the activity concerned. While not in direct control of the daily NIF operational decisions, NAVCOMPT's authority in the preparation of the NIF budget and their responsibility under Title 31 place them firmly in control of steering the NIF.

In an organizational sense NAVCOMPT's control can be described as vertically centralized and horizontally decentralized. Vertical centralization exists since little power has been dispersed down the chain-of-command. The controlling actions of establishing standards, measuring performance, and particularly taking the responsibility and authority for directing corrective actions are centered within the NAVCOMPT office. This is unusual since, generally, comptrollers are responsible only for the design and operation of a system which collects data and reports information to line managers, who are responsible for the actual control of the organization.

Extreme horizontal decentralization is in place as a result of the control being shifted from organizational line positions to the staff position filled by NAVCOMPT. The cause of this decentralization apparently rests with the establishment of an industrial fund rather than an industrial organization. The bottom line is that NIF, in actuality an organization, is managed by nonmanagers.

It is apparent that the task of reviewing both performance and decision-making within the NIF has never been clearly assigned. While activity financial results are reviewed by NAVCOMPT and adjusting actions are implemented by the same office, the process of then reviewing NAVCOMPT's decisions has never been formalized, a problem which dates back to the creation of The Navy Industrial Fund. While Congress and various governmental audit services may periodically review particular actions, no one seems to be monitoring the routine actions of NAVCOMPT. Particularly, there appears to be no line review of the day-to-day actions taken by NAVCOMPT in their usurped role as the NIF manager.

3. Alternative Organizations

What organizational choices exist? Certainly it may be argued that the present system is adequate. After all, it has been in place for more than thirty-five years, delivering a product to its customers and adjusting as necessary to continue to pass the solvency litmus test. During this time revenues have soared from \$26 thousand to \$14 billion. Yet is survival sufficient? The preceding paragraphs have pointed out some weaknesses that appear to be inherent to this organizational design. Control of this organization seems misplaced and performance results have been very inconsistent.

The most drastic change to the NIF system would be a legislative act abolishing the use of a revolving fund as a way of operating industrial facilities. This would be a case of the cure being worse than the illness. The reasons for creating a revolving fund operation are still valid. The buyer-seller relationships which exist, the motivation towards efficiency, and an incentive towards minimizing costs continue to be sound principles upon which to build an economical, in-house industrial organization. The present difficulties in the NIF are not inherent to the use of a revolving fund but instead derive from problems in the execution of this industrial operation. These problems can be resolved without abolishing the NIF.

A reorganization of the activities which comprise the NIF could be accomplished while both maintaining the revolving fund concept and preserving the commendable goals associated with this concept. Although this regrouping could take many forms, reorganizing under a single command is the most attractive option and offers the chance to realize numerous benefits. Primarily, reorganization of the activities under a single command would accomplish a much

needed shift towards recognizing the industrial activities as an industrial organization rather than considering them only as a unique financial system. Once this mind-set has been eliminated, the NIF can move towards a corporation-like existence, and derive further benefits associated with being grouped together.

The activities of the NIF share the common objective of providing products without profit. The activities compete for limited resources and face similar threats. It seems logical then that these activities work together to develop a strategic plan for reaching their common objective. As a single command, formalization of relationships would be facilitated. Each command which reported to the same higher authority would be placed on the same management level. Staff and line functions could be more clearly defined and control could be vertically dispersed to the point that each command would have authority to the extent that its decisions affected the workings of other commands.

Development of an organizational manual providing guidance on matters such as objectives for each command and job descriptions would assist in clearly defining responsibilities, authorities, and accountability. A single command, organized by task, would better coordinate actions between divisions within the NIF. The resulting consistencies between divisions would then enhance efficiencies in cash-related actions. Cash accounts could be better managed and cash transactions monitored more effectively.

The reorganizational choices that have been discussed cover a wide range of possibilities. These possibilities have been narrowed down to a recommendation of organizing all NIF activities under a single command. A new NIF command could be established as this single command, but far less bureaucratic measures could achieve these same results. The recently announced plan that eliminates the

Naval Material Command and establishes a new Vice Chief of Naval Operations for Material position would put in place an excellent framework for establishing a line management scheme for NIF operations.

B. STABILIZED RATES

1. Summary

A primary objective of rate stabilization was to provide improved planning and budgeting to both the customer and the individual NIF activity. While the customer's budget process has been facilitated, the NIF has suffered a deteriorated financial control posture. The study identified and explored the procedural alternatives of remaining under the present system, eliminating stabilized rates, and modifying the existing process to a concept of flexible stabilized rates.

2. Background

As discussed briefly in Chapter II, prior to the implementation of the rate stabilization program, most NIF activities developed and revised their rates charged to customers on a quarterly basis. Under a zero profit objective the rates were devised to return to customers any profits previously made by the NIF activity or to recover any losses experienced by the activity with the objective of achieving a zero accumulated operating results account balance at the end of the following quarter. However, given the structure of the government's budget process, the customer had to budget his work as much as two years before its accomplishment. Increases in industrial fund rates due to cost increases at the activity level often made it necessary for customers to reduce their programs to remain within their appropriated fund availability. These reductions, in turn, created further imbalances within the NIF. These imbalances would continue to compound themselves as their consequences were ultimately passed back along to customers.

What were the principle causes behind the changes in an activity's stabilized rate schedule? Three factors

contributed to the rate schedule changes. First, and foremost, was the rapidly increasing inflation rate during the early 1970's. The materials and utilities employed by the NIF activities were most severely affected. The following quote clearly highlights the magnitude of the inflation problem as it was experienced by the customers of one activity group, the Naval Shipyards.

"In FY 1977... we have budgeted for 105 ship overhauls, but, because we are unable to budget for inflation, we are estimating that we will be able to accomplish only 90 overhauls."--Secretary of the Navy, J. William Middendorf before the House Appropriations Committee, Defense Subcommittee, February 10, 1976 [Ref. 15].

The second factor involved rising labor costs, which in the seventies accounted for approximately 50 percent of the costs incurred by an industrial-type activity. The activity commander had no direct control over the wage rate paid to his employees as these rates were set outside the realm of his command and planning for future or anticipated wage raises was tenuous. General Schedule (GS) employees' salaries were established by Congressional law while administrative action at ECD set the Wage Grade (WG) salaries.

Additionally, this NIF manager had virtually little flexibility in controlling the size of his permanent work force. Congress maintained direct control over this aspect through personnel ceilings and constraints upon the reduction of personnel. Activity commanders did achieve some degree of flexibility in manpower planning by the hiring and firing of temporary workers.

The third factor, although not receiving much management attention prior to rate stabilization, was that of inefficiency within an activity itself. Because an activity could periodically adjust its rates, there was little incentive to measure, or be accountable for

efficiency. Inefficiencies were simply passed along to the customer.

As such it became evident to those at the Office of the Secretary of Defense (OSD) and DON levels familiar with the NIF mechanism that a change to the NIF-customer relationship was imperative. NAVCOMPT NOTE 7111 of 10 June 1975 announced to Navy activities the DOD requirements for the establishment of stabilized rates, and set target dates for their implementation. Stabilized rates have been in effect for all NIF activities since the start of FY 1977.

Subsequent amplifying guidance was provided in NAVCOMPT Instruction 7600.23B, which, in turn, was superseded and incorporated in the NAVCOMPT MANUAL, Vol. 5, Chapter 2, Part F. In particular, guidance on the development of stabilized rates is:

The development of stabilized rates will adhere to the principle of aligning rates to recover operating costs. Each activity should develop a sufficient number of rates to ensure that the rate system is a reasonable model of the actual cost of performing the various categories of work or services covered by the rates. Stabilized rates submitted by the activities will be reviewed by the management command and adjusted to offset any prior year gains or losses. As a result of these adjustments a break-even position in the Accumulated Operating Results (AOR) account of the activity group should be achieved. With the exception of shipyards, gains or losses normally will be fully offset during the second year following their occurrence.

Rates established for NIF activities are expected to remain in effect for the entire fiscal year. Shipyards and NARFs, however, will use the approved rate to bill overhaul, repair and alteration starts throughout the entire period of the execution of the reimbursable order, regardless of the fiscal years involved. Simply stated for the shipyards and the NARFs, that rate once started in a fiscal year remains in effect throughout the duration of the work accepted. Rate changes during a fiscal year are expected to be rare,

and may be made only upon approval of the Assistant Secretary of Defense (Comptroller).

3. Budget Process

Before proceeding further a brief review of the budget process and the NIF interface is considered necessary. NIF customers and their Major Claimants utilize the Planning, Programming and Budgeting System (PPBS) process to obtain approval and financial support of their programs in the form of Congressional appropriations. This process routinely encompasses more than a two year period of time from the commencement of planning of a program to the ultimate budget execution for that program. For example, customer planning for the FY 1986 budget began at least by October 1983. Programming followed planning and began in May 1984. Budgeting commenced in September 1984 and completed to support submission of the President's budget to Congress in January 1985.

The NIF budget, called the A-11 Budget, is included as a portion of the President's budget. Under the rate stabilization concept, rates charged for services by NIF activities are based upon the President's budget. Thus, for example, during the summer and fall of 1984, NIF activities, Activity Group Commanders, NAVCOMPT, DOD and OMB reviewed and submitted a budget for the NIF for FY 1986. Moreover, the rates established reflected actual and/or projected performance through FY 1984 and FY 1985 and were intended to achieve a zero AOR balance for the fiscal year ending in 1986. Since numerous factors impact unfavorably on the NIF achieving a zero AOR, a recoupment factor is incorporated in the follow-on years stabilized rate to drive the AOR toward zero. This recoupment or "payback" factor is applied on an activity group basis and is a budgeting attempt to dampen the oscillations which occur from year to year. The factor

may be either positive or negative depending upon whether that Activity Group had experienced a loss or a profit. The customer's appropriated account is simply credited or debited, as appropriate, to adjust to the Activity Group's recoupment factor.

4. Inherent Problems

What then are the problems with stabilized rates? There are three major pitfalls in the existing concept of stabilized rates. The first weakness is one of timing, namely the timing of the development of the rate schedules vis-a-vis the development of the customers' budgets. As noted above individual NIF activities constructed their FY 1986 budget submissions during the spring of 1984 and submitted these inputs, together with proposed rates to their Activity Group Commanders at that time. These inputs were reviewed and adjusted by the Activity Group during the May/June 1984 timeframe and submitted to NAVCOMPT in June 1984. NAVCOMPT adjusted the entire NIF budget during the summer months and submitted a consolidated Navy budget to DOD on 15 September 1984. DOD then reviewed and made additional adjustments right up to the end of December 1984 at which point they were incorporated into the President's Budget for FY 1986.

In order for the actual FY 1986 rates to be consistent with the estimates contained in the President's FY 1986 Budget, the original rates proposed by the NIF activities (in the May 1984 timeframe) require modification to incorporate the changes levied by Activity Group Commanders, NAVCOMPT and DOD. Under the present system this update is normally accomplished in the early spring of the year following original budget submission. Consequently, NIF FY 1986 stabilized rates were announced to NIF's local customers during the period of April/May 1985. Since Navy

customer budgets are priced from the "bottom up" in the budget process, the NIF rates (for the President's fiscal year budget) are not available to the customer at the time of his preparation of inputs to the President' Budget. Rather the rates are actually available a year later, in time for the customers construction of the follow-on fiscal years budget (FY 1987). In effect, although the program stabilizes rates almost two years ahead of time, it is actually happening about a year later than is necessary to accomplish its goals at the local customer activity level.

Although NAVCCMPT attempts to balance the customer and NIF funding in the President's Budget, the process invariably results in imbalances within the NIF. Due to the existing timing process in the development of stabilized rates, two major factors contribute to these imbalances within the NIF. The first factor manifests itself due to the existing process of applying a "directed" escalation rate to a prior year stabilized rate. This is commonly referred to as "under-escalated" rate stabilization. By applying an escalaticn rate to a prior year stabilized rate, rather than to actually experienced costs, under-escalation results, and builds in a NIF loss. This has also been called "bottom-lining", that is setting rates to achieve a certain bottom line figure, without regard to what the actual costs had been. This practice impedes the breakeven concept of the NIF by not allowing adjustments for previous losses in formulating its rates. The second factor results from incorrect assumptions being incorporated into the rate development. This problem is particularly sensitive to actual price increases in material and labor. The stabilized rate is developed using 2-year old prices plus an escalation factor. Should prices increase dramatically, as has been the NIF's experience with material in the early 1980's, the stabilized rates have a built-in loss incorporated into them.

The impact of both of these factors was highlighted recently as the result of an audit conducted in the NARFs by the Naval Audit Service. The cumulative Treasury cash balance for all six NARFs as of 30 September 1983 was a negative \$197.2 million of which a loss of \$154.6 million was incurred in FY 1983 alone. Of this figure, it is estimated that the application of a directed escalation rate alone accounted for \$67.1 million. As far as unanticipated material price increases, NARF FY 1983 material costs were based on FY 1981 standard prices plus escalation factors of 8.4 percent for FY 1982 and 10.9 percent for FY 1983. Actual material purchases at the NARFs in FY 1983 netted a 22.2 percent increase over FY 1982 prices for a built in loss of 11.3 percent over the FY 1983 escalation guidance of 10.9 percent. For example, NARF Norfolk experienced material prices in FY 1983 that were 51.3 percent over FY 1982 prices while NARF Jacksonville experienced an increase of nearly 30 percent. It is estimated that actual material increases over material escalation guidance allowed accounted for \$28.6 million, or nearly 19 percent, of the NARFs FY 1983 loss. [Ref. 16]

5. Recoupment

NAVCOMPT's method of compensating for these "old errors" is the recoupment factor. As discussed above the factor is applied on a group basis rather than on an individual activity basis. Different Activity Groups receive different rates. As such, for the shipyards a single payback factor is applied across all eight shipyards combined while in the case of the Naval Air Rework Facilities an entirely different factor is applied across the six NARFs. Then within each Activity Group, each individual activity applies the same factor.

Computation of this group payback factor is straightforward. For the shipyards, the Activity Group's total AOR is divided by the direct labor mandays in the next year's program to produce a positive or negative factor. The NARF's computations are similar, substituting simply direct labor manhours rather than mandays as the divisor. This factor is then added to, or subtracted from, the stabilized rates developed to arrive at the rate which will actually be charged to the customer.

For example, a recoupment factor of 30.7 percent was incorporated into the NARF's stabilized rates for FY 1985 to remedy that Activity Group's significant negative cash position at year ending FY 1983. This approach in attempting to bring AOR to a zero value has received wide spread criticism from the GAO and at the individual activity level. The criticism centers on the point that the group payback factor stifles the initiative of the individual activities' Commanding Officer and restricts his control of his own operating results.

A significant change to the existing payback concept is planned commencing in FY 1986. For those activity groups having a positive AOR at fiscal year end, the AORs will be aggregated and spread across the entire NIF. The objective will be to bring any activity group with a negative AOR to a zero value. Any AOR remaining after "zeroing out" all Activity Groups will be paid back in a lump sum to a customer's account. In the event that total NIF AOR were to go negative, an infusion of cash would be necessary. Such an infusion would be provided the NIF in the form of a supplemental appropriation requiring Congressional approval.

The second weakness in the existing concept of stabilized rates involves the lack of any adjustment mechanism within the NIF to compensate for customer changes to previously planned workload levels. Customer program

reductions and work withdrawals severely impact upon the NIF's cash position. The underlying principle is that an activity's stabilized rate is set to cover both fixed and variable costs at a specific volume to breakeven. Fixed costs, of course, remain, even at volume levels lower than planned. With no mechanism to adjust to this dilemma, the NIF absorbs the loss in AOR.

Customer program reductions are common. One such case occurred recently at NARF Alameda. That activity's FY 1985 budget was developed predicated upon customer loading of 4556 million man-hours of work. The A-11 Budget set NARF Alameda's workload at 4334 million man-hours. However, due to program reductions that activity is now only funded for 4058 million man-hours, a man-hour reduction of 11 percent below the level included in the development of their stabilized rates. Such reductions result in an automatic loss to the NIF activity unless the activity can effect fixed and variable cost reductions or improve labor productivity or both.

Finally the third major problem resulting from rate stabilization is the frustration and rather substantial loss of autonomy experienced by the individual NIF activities. These aspects are a direct outgrowth of the existing process whereby the rates charged represent modifications by the Activity Group Commander, NAVCOMPT and the Office of the Secretary of Defense to those proposed by the individual NIF activity. As a result of this centralized decision making, individual NIF activity commanders do not directly determine the final rates or have the authority to change the rates when assumptions vary. In essence the key issue is one of controllability. These individuals are no longer in control of the inflow of resources to their command and cannot control the most significant factor which drives profit or loss for a particular period. The activity's cash balance

is also largely beyond their control. In spite of the lack of this aspect of control, the NIF activity commander is evaluated with the financial position of the individual activity as a significant factor. In fact, NARF Commanding Officers are presently evaluated on five key financial indicators: (1) Activity Cash, (2) Treasury Cash, (3) AGR, (4) Inventory and (5) Productivity Ratio. In the case of the shipyard Commanding Officer, delivering a quality product, on time to the customer is more important than his activity's financial position.

6. Alternatives

What management alternatives exist in regards to rate stabilization? Of course it may be argued that the present system is adequate. After all it has been in effect throughout the NIF for eight years with comparatively few changes. Despite the weaknesses discussed in the previous paragraphs, most observers would agree that it has served its principal purpose-- enhanced customers support. Most importantly, fleet readiness has improved. Ship overhauls and aircraft reworks that are planned are being accomplished. From this viewpoint the Navy's image before Congress has improved. It is rare that the Navy has to report incomplete programs which require additional funding to bring to a conclusion. The Navy is now able to show Congress that the programs that are planned, and which they have authorized, are being executed in a timely manner.

The most radical choice is the elimination of stabilized rates. If this alternative was pursued, there is little doubt that everyone involved, NIF activities and customers alike, would be thrust into a pre-1976 position. Flexibility in the NIF's financial management posture would be enhanced, however, at the serious detriment of the customer.

The remaining alternatives center on modifying the present system in some manner. One such choice would be to impose a straight-forward penalty to the customer for workload changes. This concept would entail the NIF activity and the customer entering into what in essence would be a "contract" for a projected, firm workload prior to the activity's development of its rates. Subsequent changes to this contracted workload for any reason, whether it be customer initiated or Congressionally-driven, would incur a penalty. The penalty, a lump sum differential, would be paid from the appropriate customer account (O&M,N etc.) This approach would shift the planning risk toward the customer. However, given the existing budget process, particularly its final sensitivity to political influences, this alternative appears unattractive and would unfairly penalize the customer for workload changes beyond his control.

A second modification variation could involve the NIF utilizing a flexible stabilized rate approach. Based upon the customer's initially planned workload, the activity could establish a specific rate, much like what occurs presently. However, the activity would take the process one step further and develop and provide the customer additional rates based upon the impact of potential program reductions or additions. A zero AOR could theoretically be achieved for any work level selected by the customer. The customer would then have a series of rates with which to develop and defend his budget. As the customer's budget is reviewed and potential changes considered, knowledge of the appropriate rate which will be charged for any activity level being evaluated will facilitate budget decisions by those in the review process. Depending upon the final activity level established for the customer's budget, application of the appropriate stabilized rate will provide a program's

ultimate budget cost. The onus would be placed where it clearly belongs, on the customer, to optimize his needs for services and products against available funds. The customer will be required to become more conscious of financial management matters as they affect the NIF and the NIF will no longer be expected to absorb the large annual fluctuations currently being experienced. Congress would get a more accurate picture of what program results they are actually achieving and the true cost to Treasury of these programs.

Subsequent to the execution of the budget, the process of workload changes could be handled in one of two methods. The concept of flexible rates could be extended to cope with customer workload reductions thereby providing the NIF with a protective mechanism. In the event of program additions, as was the case of NARF Alameda in late FY 1983 with the additional customer input of 13 S-3 aircraft, the flexible stabilized rate concept could also be utilized, however the authors see little advantage here. Rather, for program additions, utilization of the stabilized rate stipulated at budget execution would suffice as long as the NIF activity was provided additional customer funding. In NARF Alameda's case, no additional funding was provided thereby contributing to that activity's \$30 million loss in FY 1983.

A third modification variation could involve utilizing stabilized rates for only direct labor and factory overhead. These two elements have historically been more predictable and subject to better planning and control than direct material. Material prices would be based upon the most current prices available. Adopting this approach to the development of stabilized rates would necessitate a more complex process yet minimize yearly fluctuations by eliminating that cost element most sensitive to unanticipated market changes. This approach could be utilized on a

"stand-alone" basis, that is maintaining the fundamentals of the existing stabilized rate program, excepting material, or it could be further refined and tailored to interface with the concept of flexible rates.

The procedural changes that have been discussed span a wide range of possibilities. Any change will require OSD support and approval. The alternatives have been narrowed to a recommendation of performing budget development employing the flexible stabilized rate concept and budget execution using a single, fixed rate "contracted" fcr at execution. It is the authors' opinion that this alternative would still provide the primary objective of rate stabilization, improved customer planning and budgeting, while minimizing the yearly fluctuations in NIF cash.

C. MODIFICATION OF THE CORPUS

1. Summary

The size of the corpus has decreased significantly since that originally appropriated by Congress in FY 1950 while the number of NIF activities and their annual volume of business has dramatically increased. The study explored the appropriateness of corpus size in terms of its purpose in supporting the NIF's planned level of operations.

The corpus provides that source of funds by which the NIF, as a revolving fund, can meet its operating expenses incurred during the performance of assigned work. Reimbursement of the depleted corpus is achieved by billing the customer, most commonly accomplished on a progress payment basis.

2. The Appropriated Corpus

The NIF's initial capitalization occurred in FY 1950 and was provided by Congress in an appropriation slightly in excess of \$480 million. Since that original appropriation the size of the corpus has decreased to its current FY 1985 size of just less than \$284 million. While the corpus has experienced a reduction by nearly half, the number of NIF activities has steadily increased to the current 49 activities. Simultaneous with the fund's expansion to include more industrial and commercial-type activities, the NIF's annual revenues have grown dramatically from a meager \$26,000 in FY 1951 to over \$14 billion in FY 1984. Table VIII provides a history of the corpus size and annual revenue of the Navy Industrial Fund from its inception.

As indicated in Table VIII the greatest amount of corpus reduction occurred between Fiscal Year 1956 and Fiscal Year 1970. In particular, during the period 1956 through 1968 over \$294 million was transferred out of the

TABLE VIII
NIF Corpus and Revenue History

(\$ in millions)

<u>Fiscal Year</u>	<u>Corpus</u>	<u>Revenue</u>
1950	\$480.1	Not Available
1951	—	\$.026
1952	—	665.
1953	—	833.
1954	—	859.
1955	—	1,116.
1956	440.1	1,323.
1957	388.1	1,438.
1958	318.1	1,475.
1959	303.1	1,522.
1960	—	1,590.
1961	—	1,629.
1962	307.1	1,889.
1963	280.4	2,154.
1964	190.4	2,146.
1965	—	2,073.
1966	—	2,585.
1967	—	3,132.
1968	185.8	3,704.
1969	—	4,375.
1970	—	4,683.
1971	343.8	4,232.
1972	—	5,264.
1973	—	4,888.
1974	—	4,857.
1975	323.8	5,209.
1976	—	5,699.
1977	283.8	1,552.
1978	—	6,184.
1979	—	6,766.
1980	—	7,214.
1981	—	8,227.
1982	—	9,391.
1983	—	11,122.
1984	—	15,374.
1985	283.8	14,037.
		14,500. (est)

Source: The Budget of the United States Government, U.S. Government Printing Office, Washington, D.C., for the Fiscal Years 1952-1985.

fund of which \$197 million was transferred to the Military Personnel, Navy appropriation. During this same period of time, the number of NIF activities and the NIF revenue were increasing, generating a need for more working capital rather than less. The end result was a serious cash flow problem which peaked in FY 1964. Compounding the the problem was another reduction to the corpus in 1964, on this occasion to \$190.4 million. The ensuing cash flow problem resulted in a significant change to the NIFs operating procedures. Beginning in FY 1964 the NIF terminated the concept of progress payments and went to a system of customer prepayments.

Under the earlier progress payment system the customer had been billed for the product or service by the NIF activity as work progressed and was ultimately completed. Under the new prepayment concept the customer paid in advance for any work or service. This cash-in-advance method of doing business quickly solved the NIF's cash flow dilemma and provided the fund with more working capital than it had since its inception. The NIF's cash position ballooned to more than one billion dollars shortly after the prepayment system was adopted.

However, while the prepayment system eased the cash flow problem, it created several significant inefficient management practices which were to cause further problems for the fund.

The first inefficiency observed was that NIF activity inventories were drastically increased. For example, from 30 June 1963 to 31 December 1967, NIF activities increased their raw material inventories from \$109 million to \$223 million, over a 100 percent increase in a four and one-half year period. The second inefficient management practice noted was that NIF activities slackened control of their billings. Having a large amount of working

capital available led activities to not expedite customer billings. For example, billings during this same period averaged approximately 28 days. [Ref. 17]

As a result of the impact of these two practices the NIF returned to progress payment procedures on 31 May 1968. The immediate effect of going back to progress payments, however, was a reduction in working capital. In order to avoid placing the fund in the same cash flow situation as had been experienced in FY 1964, \$158 million was transferred into the NIF corpus in FY 1971 from DOD Stock funds. Progress payments remain today as the primary method by which nearly all NIF activities bill their customers.

3. Allocation of the Corpus

The total NIF corpus is initially allocated within Navy by NAVCOMPT to the individual Activity Groups. This allocation is further subdivided within an Activity Group and distributed to each individual activity based upon NAVCOMPTs and the Activity Group Commanders forecast of each activity's volume of business. Table IX provides the corpus breakdown in FY 1985 on an Activity Group basis and Table X provides an example of the further sub-allocation of the corpus within one particular Activity Group, the Naval Shipyards.

4. The Perceived Corpus

Whereas the previous section discussed the history of the NIF's appropriated corpus and its current fiscal year size of \$283.8 million, the actual NIF cash position as of 30 September 1984 was \$807.9 million. This significant difference between corpus size and the actual cash on hand has resulted from OSD-directed guidance to NAVCOMPT and has led to a false perception on the part of many as to the NIF's actual working capital condition.

TABLE IX
NIF Corpus Allocation by Activity Group

(\$ in millions)

<u>ACTIVITY GROUP</u>	<u>ALLOCATION</u>
Shipyards	\$67
NARFs	58
CNM labs	15
Air labs	7
Ordnance	45
PWC	16
Printing	2
MSC	4
NAVCOMPT	48
NRL	7
NCEL	1
NAC	3
NAEC	5
NARDAC	6
	\$284

Source: Department of the Navy, Office of the Comptroller, Navy Industrial Fund Reporting System, Period ended 31 December 1984.

The NIF's large cash position can be traced to CSD actions commencing in the early 1980's. In FY 1981 OSD directed that the NIF capitalize the fund's AOR. This action was the initial financial thrust in preparation for

TABLE X
Corpus Allocation Among Naval Shipyards

(\$ in thousands)

<u>SHIPYARD</u>	<u>ALLOCATION</u>
Portsmouth	\$7,600
Philadelphia	7,500
Norfolk	8,000
Charleston	5,500
Long Beach	4,600
Mare Island	7,800
Puget Sound	17,500
Pearl Harbor	8,500
	\$67,000

Source: Department of the Navy, Office of the Comptroller, Navy Industrial Fund Reporting System, Period ended 31 December 1984.

the NIF's asset capitalization program discussed in Chapter II. The action resulted in \$12.8 million being capitalized into a reserve account entitled 'Reserve for Fixed Assets'. In FY 1982 OSD's policy guidance to the NIF was to capitalize the AOR of any activity having a year ending positive AOR. Any negative AOR was passed along to the customer through the stabilized rate program. This policy provided the NIF \$300 million into the equity reserve account. CSD's guidance to the NIF was modified in FY 1983 when the NIF was again directed to capitalize its positive AOR, this time, however, at the Activity Group level. This action resulted in an additional \$200 million being capitalized into the

equity reserve account. Therefore, as of 30 September 1984, the NIF's equity reserve control account, General Ledger Account (GLA) 2970, contained \$552.3 million.

Herein lies the crux of the misunderstanding of the NIF's cash position issue. The cash identified in GLA 2970 as a result of the capitalization of AOR should be earmarked for specific purposes and not used to support the organization's operations. These operations are supported by the corpus. Yet, a review of GLA 2970 reveals the existence of inappropriate sub-accounts. In particular, the following sub-accounts comprise GLA 2970:

GLA 2971	Capital Equipment Purchases
GLA 2972	Backload of Major Maintenance & Repairs
GLA 2973	Minor Construction
GIA 2974	Cash Level Requirements
GLA 2975	Software Systems Development

As can be seen from the sub-account titles, the specific purposes identified for the cash in GLA 2970 include items directly associated with operations. For example, sub-account GLA 2974 is used to maintain a positive working capital at each activity. Additionally, the authors believe that the value of GLA 2970 is over stated as a sizeable portion of these funds have already been obligated. Furthermore, "counting" the cash provided for the asset capitalization program from capitalized AOR causes a distorted picture when evaluating the NIF's cash position. What is the cash in GIA 2970 being used for?

The authors' research has substantiated little connection between the AOR capitalized into the equity reserve accounts and the reality of the existing process by which the NIF is procuring replacement capital assets.

Rather the customer is still paying for these new assets through the stabilized rate. This is accomplished by including both depreciation charges on the "older" equipment and adding a reserve surcharge (allowance for inflation) in the stabilized rate, an action implemented by NAVCOMPT in FY 1985. This surcharge for future equipments is billed to all customers, except Foreign Military Sales (FMS) and private party customers. The result is an inflated stabilized rate paid by the customer.

In summary, the size of the Congressionally approved corpus, and the actual amount of available working capital are quite different. The authors therefore conclude that the program of capitalizing NIF profits really was a ploy to increase the corpus without requiring a Congressional appropriation.

5. The Optimal Ccrpus

Given this background on the NIF's cash posture the pertinent question remains: What is an appropriate size for the corpus? Before this question can be answered some fundamental issues must first be addressed. The first issue centers on the timing of NIF billing and the collection of payments for corpus reimbursement.

Theoretically, if billing and collection could be accomplished simultaneously, and payments cover all ccsts, there would be no need for the corpus. The Treasury cash account could be reduced accordingly thereby saving the government money. Of course, from a practical viewpoint we know that this is not feasible, at least not today.

Before exploring the nature of the billing process, the authcrs posed the more fundamental question as to how many days of cash shuld be on hand within the corpus with which to conduct business. Armed with the answer to this question the authcrs hoped then to evaluate the

effectiveness of the NIF's current approach to billing. However, no definitive standard could be found. The issue of exactly how much cash should be on hand at any given time has not been addressed. Rather the authors heard a variety of opinions from within the NIF management hierarchy ranging from a goal of 45 working days downward to 10-11 working days.

Exploring each of the alternatives suggested, the authors could find documentable support for only the 10-11 working day viewpoint. In 1969 a SECNAV Ad Hoc panel formed to assess the NIF's health recommended that this standard be established. Inherent in this recommendation was the NIF's billing system in place at that time, strictly mechanical in nature, and the connection of this timeframe to the NIF's two major, and occasionally three, monthly cash commitments for paydays for the workforce. [Ref. 18]

Accepting the 10 day objective for the moment and assuming a daily revenue of \$18 million in FY 1969, the corpus should have been approximately \$180 million in that year. A review of Table VIII reflects that in FY 1969 the corpus was \$185.8 million. Remember, however, that as previously discussed the NIF was about to return to a system of progress payments at this time. To avoid the impending cash flow dilemma which becomes evident in FY 1970, an infusion of \$158 million was appropriated for the NIF in FY 1971. As can be observed in Table XI this infusion provided the NIF a more than adequately sized corpus until FY 1978. The authors have previously discussed in Section 3 those actions implemented by OSD to deal with apparent corpus shortfalls commencing in FY 1981.

Since FY 1979 the NIF has experienced progressively larger and larger corpus shortfalls as annual revenues have risen. With an annual revenue of \$7,214 million in FY 1979, there existed an appropriated corpus shortfall of \$6.2 million. However, based upon the revenue projected for FY

TABLE XI
Ten-day Corpus Requirements

(\$ in millions)

<u>FY</u>	<u>Annual Revenue</u>	<u>Daily Revenue</u>	<u>Corpus size to support 10 days of business</u>	<u>The Appropriated Corpus</u>	<u>Corpus Excess/Shortage</u>
1968	\$3,704	\$15	\$150	\$185.8	\$35.8
1969	4,375	18	180		5.8
1970	4,683	19	190		-4.2
1971	4,232	17	170	343.8	173.8
1972	5,264	21	210		133.8
1973	4,888	20	200		143.8
1974	4,857	19	190		153.8
1975	5,209	21	210	323.8	113.8
1976	5,699	23	230		93.8
1977	6,184	25	250	283.8	33.8
1978	6,766	27	270		13.8
1979	7,214	29	290		-6.2
1980	8,227	33	330		-46.2
1981	9,391	38	380		-96.2
1982	11,122	45	450		-166.2
1983	15,374	62	620		-336.2
1984	14,037	56	560		-276.2
1985	14,500	58	580	283.8	-296.2

1985 of \$14.5 billion, this shortfall has ballooned to \$276.2 million. Distinguishing the NIF's cash between cash in corpus and cash earmarked for the asset capitalization program highlights this alarming trend.

6. Improved Billing Procedures

It must be emphasized, however, that the corpus shortfalls that began in FY 1979 and have continued until today are based upon the NIF's 10 working day mechanical billing cycle of the mid-1960's. As noted above this unwritten standard continues to prevail today due to the absence of any updated direction on this subject. One would hopefully expect current state of the art billing systems to be able to improve upon this thumbrule thereby reducing the level of cash required on hand. For the most part this has not been the case within the NIF. Although some strides have been made in this area, progress has been particularly slow throughout the NIF. One such program offering significant potential in this area but highlighting the resistance to changeover is the NIF's computer tape exchange program. Implemented nearly 3 years ago, the concept reduces the input time of the manual preparation of billings. When fully on line each NIF activity will simply prepare a computer billing tape with which to pay a vendor bill. The data contained on the tape is then automatically transmitted to the Financial Information Processing Center (FIPC) for processing. Prior to this program each FIPC manually reviewed hundreds of hard copy billings daily, extracted the data necessary, and finalized the billing process. As of May 1985, only 14 NIF activities have implemented this program. Table XII provides a summary of the status of this program NIF-wide.

The authors do not mean to blindly imply that all NIF activities should be utilizing the tape exchange

TABLE XII

NIF's Tape Exchange Program Status

<u>ACTIVITY</u>	<u>IMPLEMENTED</u>	<u>NOT IMPLEMENTED</u>
NARF CHERRY POINT		X
NARF ALAMEDA		X
NARF NORFOLK		X
NARF PENSACOLA		X
NARF NORTH ISLAND		X
NARF JACKSONVILLE		X
NAVAL AVIONICS CTR		X
NATC PAX RIVER		X
NAPC TRENTON		X
NAEC LAKEHURST	X	
PMTC PT. MUGU	X	
NADC WARMINSTER	X	
NCSC PANAMA CITY	X	
NCSC SAN DIEGO	X	
NSRDC CARDEROCK		X
NSWC SILVER SPRING		X
NUSC NEWPORT		X
NWC CHINA LAKE	X	
NRL WASHINGTON		X
CEL PT. HUENEME	X	
NPPS		X
MSC		X
FWC NORFOLK	X	
PWC PENSACOLA		X
FWC GREAT LAKES		X
PWC SAN DIEGO		X
FWC SAN FRANCISCO		X
PWC PEARL HARBOR		X
FWC GUAM		X
PWC SUBIC BAY		X
SPYD PORTSMOUTH		X
SPYD NORFOLK	X	
SPYD PEARL HARBOR		X
SPYD PHILADELPHIA		X
SPYD CHARLESTON	X	
SPYD LONG BEACH	X	
SPYD MARE ISLAND	X	
SPYD PUGET SOUND		X
NWS SEAL BEACH		X
NWS YORKTOWN		X
NWS CHARLESTON		X
NWS COLTS NECK		X
NSWSES PT. HUENEME	X	
NWSC CRANE		X
NCS INDIAN HEAD		X
NCS LOUISVILLE		X
NUWES KEYPORT	X	
NAELAC		X

program. The specific nature of each individual activity's business (volume, contractual arrangements and type of billing) must be evaluated. From this evaluation a cost-benefit analysis of a computer tape billing system should be performed prior to a final determination. The point, however, is that with less than 30 percent of the NIF activities currently participating in this program sizeable room for improvement and cash savings may exist. This program is but one example within the spectrum of billing which impacts upon the size of the corpus.

7. Conclusions

The ambiguities and misperceptions surrounding the NIF's corpus have been identified and addressed. Determining the optimal size of the corpus is a futile area warranting further research. Given the existing billing system and the philosophy underlying this aspect of the movement of cash, both into and out of the NIF, the authors conclude that the present corpus of \$283.8 million is inadequate to conduct business. Establishing two separate cash accounts within the NIF would highlight this point and facilitate enhanced management focus on this matter. Currently there is so much "leeway" in the asset capitalization program that optimizing the corpus size is simply overshadowed. However, it is OSD's present position of maintaining only one cash account within the NIF so as not to flag this issue to Congress. A re-evaluation of this policy is considered necessary.

The NIF's billing system also deserves further study. Many individuals within the NIF believe that the only matter that really counts is the amount posted in the Treasury cash account at the end of each month. Their logic then concludes that the NIF's existing concepts on billing are adequate. The authors do not concur with this

viewpoint. The potential to improve cash management in this area and optimize the size of the corpus clearly exists. Parochial thinking simply rationalizes away the NIF's impact upon Treasury's cash position.

D. REDUCTION OF UNRECONCILED CASH

1. Summary

The authors believe that reductions in an activity's unreconciled cash would result in cash savings for the individual activity, the entire NIF, and the Treasury Department. The authors further believe that these reductions could be brought about by a combination of heightened management attention, improved reconciliation procedures, and increased involvement by the finance activities.

2. What is Unreconciled Cash?

Unreconciled cash is, simply put, the difference between the amount of cash an individual NIF activity believes it has (termed activity cash) and the actual amount credited to that activity's cash account at the Treasury Department (termed Treasury cash). Although nearly all NIF activity cash receipts are transfers from other Treasury Department accounts, the size of the unreconciliation is very important. The law limits the NIF by allowing expenditures only of those funds available in their Treasury account. Additionally, unreconciled cash could include erroneous or illegal transactions.

While the Treasury Department monitors only the total NIF cash account balance, the Navy Accounting and Finance Center (NAFC) more closely monitors and reports each individual NIF activity's allocated share of this Treasury Department cash balance through the Centralized Expenditure/Reimbursement Processing System (CERPS). Although there is an unavoidable time lag between actual changes to the Treasury cash account and the recording of these changes in CERPS, for the purposes of this discussion it is safe to refer to the CERPS balance as Treasury cash. Thus, unreconciled cash is the difference between activity

cash and Treasury cash and CERFS is the system the Navy uses to track its components.

3. Sources of Unreconciled Cash

Unreconciled cash has numerous causes. Primarily, activity cash exceeds Treasury cash because of charges made against the account of a particular activity within the preceding 30 days for which the activity has no knowledge. These transactions are termed "undistributed disbursements" and are by far the largest component of unreconciled cash. Since the processing of an individual NIF activity's routine cash transactions are accomplished by finance centers there is a time lag between the actual payment/collection and the receipt of the related documentation by the concerned activity. Until these documents are processed and forwarded to the individual activity, the activity will have no knowledge of the transaction has been completed. Thus, undistributed disbursements are created. While this situation is considered an unfortunate consequence of this particular business practice, the problem has been compounded by the unnecessarily slow processing of the transaction documents.

The remaining sources of unreconciled cash include anything else which would cause activity cash and Treasury cash to be out of balance. These other sources include recent invalid charges against an activity, invalid collections made by an activity, or unmatched material-in-transit. These secondary sources are classified as "unresolved transactions". (The terms "unidentified transactions" and "unallocated costs" are also used).

Unresolved transactions are eventually posted to an appropriate General Ledger Account (GLA) in order to reduce the amount of the unreconciliation. The three General Ledger Accounts for this purpose are:

GIA 1493	Material-in-Transit--Unmatched
GIA 1542	Unallocated Cost--Unmatched Other
GIA 1543	Unallocated--Refunds/Collections

The result of posting unresolved transactions to a GIA is that the amount of unreconciled cash approaches equalling the amount of the undistributed disbursements.

As an illustration, Table XIII details 434 unreconciled cash items at one NIF activity that were over 90 days old as of 31 August 1983. These items were valued at a total of \$9.61 million and dated as far back as February 1980. This total is significant, particularly when compared to this activity's \$17.5 million cash allocation (share of the NIF corpus).

TABLE XIII
Unreconciled Cash Items at
Puget Sound Naval Shipyard

(\$ in millions)

<u>PROBLEM</u>	<u>NUMBER</u>	<u>VALUE</u>
Payment not yet processed to CERPS by NSC Oakland	3	\$5.32
Excess or duplicate payments	61	1.30
Receipt missing or not processed	46	1.23
Unable to identify/no back-up	185	0.85
Erroneous charge against activity	71	0.58
Contract (or mod) not received	59	0.27
Payment made without funds authorized	1	0.05
Miscellaneous	8	0.01
Total	434	\$9.61

4. The Cost of Unreconciled Cash

The problems associated with unreconciled cash and unresolved transactions are much more than just the nuisance of their presence. These items cost individual NIF activities, the entire NIF, and the Treasury Department a substantial amount of money each year.

The costs of unreconciled cash fall largely upon the individual NIF activity as they must bear the burden of resolving the discrepancies. It is not unusual for a large NIF activity to have two or three personnel working full time in the area of processing unreconciled cash items. For the entire NIF, this total would exceed 100 persons. Often activities find it cheaper to attempt obtaining NAFC approval for a write-off of items whose reconciliation appears to be excessively complicated or costly. If unable to justify a write-off, activities may simply give up on the reconciliation and allow these items to age. The Navy Accounting and Finance Center reports that:

A review of the Industrial Fund cash reconciliations in the June 1984 Financial and Operating Statements indicates unresolved disbursements ranging from \$10 to \$4,000,000 with some being over three years old [Ref. 19].

Unresolved transactions cost the NIF organization through unwarranted expenditures for duplicate, excessive, or otherwise improper disbursements, and the extraordinary number of man-hours required to discover, investigate, and correct these transactions. The difficulty in reconciling these items and the fact that many activities choose not to attempt reconciliation, finding it easier to simply accept the charge to their account, opens the door for possible improprieties such as unauthorized purchases or intentional mischarging of activity cash accounts.

Invalid collections and payments have numerous possible causes. These include duplicate or excessive payments to customers, charges to a NIF activity for goods or services received by a non-NIF activity, or charges to one NIF activity for goods or services received by another NIF activity. Unmatched material-in-transit (MIT) occurs when materials are received from a government supplier but cannot be matched to an activity's material requisition.

How severe is the problem? An accounting officer at one NIF activity estimates that they disburse as much as \$100,000 each year without adequate support or explanation.

5. The Size of the Problem

The dollar differences between activity cash and Treasury cash are sizable. Table XIV presents the undistributed disbursements data for selected NIF Activity Groups for FY 1983 and FY 1984, as reported in the NIF Financial and Operating Statements.

The figures presented in Table XIV include both collections and payments made by a finance center on behalf of an individual activity. The preponderance of negative numbers means that the undistributed amount paid out exceeds the undistributed amount taken in. Additionally, the negative values depicted in the table would be greater if not somewhat reduced in size by the amount of these collections. For example, as of 31 August 1984, the Puget Sound Naval Shipyard cash account reconciliation contained \$20.3 million of expenditures recorded by CERPS but not by the activity cash account and \$2.1 million of collections recorded by CERPS but not the activity. These sum to \$22.4 million but net out to only \$18.2 million, the reported amount of undistributed disbursements. Unfortunately, a

TABLE XIV
Undistributed Disbursements
for Selected NIF Activity Groups

(\$ in millions)

<u>ACTIVITY GFCUP</u>	<u>30 SEP 1983</u>	<u>30 SEP 1984</u>
SHIPYARDS	-148	-65
NARFS	-10	-19
CNM LABS	-72	-85
MSC	-30	13
NAVCOMPT	-208	-204
<u>TOTAL NIF</u>	<u>-586</u>	<u>-493</u>

Note: Negative figures mean activity cash is greater than Treasury cash.

breakdown of these figures is not included in the NIF Financial and Operating Statement. If this breakdown were available then the addition of the absolute values of these figures would better support the point. Still, the data in the table are sufficient to put forward the argument that the amount of undistributed disbursements is significant. For the years shown, net undistributed disbursements equalled 3.8 percent of FY 1983 revenue dollars and 3.5 percent of FY 1984 revenue dollars.

6. The Reconciliation Process

Thus far we have discussed the causes and costs associated with unreconciled cash and presented data in

order to demonstrate the size of the problem. But how are these discrepancies corrected? Unfortunately, reconciliation is often a tedious, time-consuming and expensive process.

The reconciliation procedure requires that the individual NIF activity initiate the corrective effort and the involved financial center(s) then provide the requested documentation. For example, an individual NIF activity could receive a document reflecting a payment made on their behalf by their finance activity for materials that the activity never ordered or received. The NIF activity must then obtain all documents necessary to resolve the dispute. These might include information on what the material was, who the supplier was, and where the material was actually delivered. This required support from non-NIF activities has proven to be quite an obstacle in the reconciliation task. The financial centers maintain the back-up, detailed records for no longer than one year from the time of a particular transaction. In fact, most hold these records for a considerably shorter period. Reconstruction of transactions after this holding period requires the retrieval of information from a record holding center. In addition to involving yet another party in this job, this retrieval is also a very time consuming, costly chore. Thus, the longer the reconciliation process takes, the more difficult and expensive it becomes to resolve the discrepancy.

The Navy Accounting and Finance Center recognizes that unreconciled cash is a problem and has established new accounting procedures in an attempt to reduce the size (dollars) of unreconciled cash and to assist in dealing with aged (over 90 days old) unreconciled cash items. These procedures, issued 13 November 1984, include new posting guidance for unresolved transactions (described previously), allow individual activities a one-time write-off of

unreconciled cash items that are less than \$1,000 and dated prior to December 1983, and also allow activities to forward to NAFC items that are \$1,000 or greater and dated prior to 1983. Finally, as items now become over 90 days old they are eligible for a new process which allows them to be forwarded to NAFC, via the chain-of-command, for reconciliation. NAFC, with greater resources and more clout, may be able to process some troublesome reconciliations more effectively and efficiently than lower level commands. For an item to be eligible for this procedure however, the activity must have met several requirements designed to insure that they have first attempted reconciliation at their level. The apparent goal of NAFC's initiative is to enable individual activities to concentrate their efforts on current reconciliations.

Additionally, unresolved cash transactions that have been posted to an appropriate general ledger account will be identified and included in a special section of the Financial and Operating Statements, and broken down by the age of the item. All of these new NAFC policies have been implemented and will be incorporated into the next change to the NAVCOMPT Manual.

7. Suggestions for Improvement

Despite NAVCOMPT's efforts, the NIF continues to experience problems in the processing of cash transactions. In their 10 January 1985 letter to their subordinate Systems Commands the Naval Material Command stated that many activities have given up and "...do nothing and wait for standard operating procedures to correct the errors." [Ref. 20]

Other activities have well-established procedures for reconciliation yet find their inquiries unanswered by financial centers or the data provided by the finance

activities incomplete or incorrect. These activities spend much more on reconciliation without necessarily receiving a significant increase in their success rate. This causes great frustration. Puget Sound Naval Shipyard complained to NAVCOMPT that:

Puget Sound Naval Shipyard has aggressively followed-up by letter and telephone, including contact with FIPC points-of-contact provided by Mr. Don Jacobs of NAVCOMPT. Although there was brief improvement, the situation has returned to the previous unacceptable condition. Many telephone calls are not returned and there is no response to second and third follow-up letters or Naval Speedletters which have gone unanswered. Enclosure (2) (not provided) represents a request sent out on 29 August 1984 with a follow-up request sent on 8 November 1984. The requested information was not released by FAADCLANT until 4 December 1984. During the period 1 August 1984 to 31 October 1984 this activity forwarded 119 requests for back-up, corrections, contract copies, etc. This additional work is time consuming and often compounded by unreturned telephone calls or unanswered follow-up letters. [Ref. 21]

The unreconciled cash problem is a cloud over the NIF organizations. It presents a picture of poor cash management practices and a bureaucratic nightmare. While NAFC, through the creation of CERPS and the issuance of the new reconciliation procedures, has managed some accounting improvements in this area, additional improvements are necessary.

Allowing the write-offs of many items is a treatment of the symptoms but not a cure of the illness. It is simply a cost-beneficial action that serves to reduce the size of the remaining task. Associated with this action is the risk that past improprieties will go undiscovered and that new improprieties might be encouraged, since they too may be written-off and never discovered.

Perhaps the greatest gain from the NAFC effort was their demonstration of interest in this area. The authors believe that this is the key to controlling the situation.

Managers throughout the NIF must take a greater interest in this problem before lasting improvements can be achieved. But they cannot do it without the support of the finance activities.

Consideration should be given to centralizing the entire cash reconciliation process at NAFC. This would allow individual NIF activities to focus their efforts upon areas better managed at the local level, such as cost reduction measures. However, until this is done it must be recognized that the key to reducing this problem lies in finding a way to motivate both the NIF activities and the finance activities towards actively pursuing reconciliation through its completion.

Heightened NIF management attention will produce an increased reconciliation effort on the activity side but NIF activities need strong support from the finance centers. However, since the finance activities incur no costs as a result of their slow or incorrect responses to NIF requests, there is an insufficient motivation for them to improve. NAVCOMPT must find a method to motivate the finance centers to make them more responsive to NIF needs.

E. CONTROL OF OPERATING COSTS

1. Summary

The NIF's operating costs are a direct result of management decisions and policies established at each echelon of government involved with the NIF from Congress down to the individual activity. The extent to which these costs are controlled impacts directly on the fund's cash position. The study identified and explored several aspects of operating costs which offer real potential for substantial cash savings to the NIF.

What are the NIF's "operating costs"? The authors will use this term to encompass those costs incurred in conducting the ordinary major activities of each NIF activity. Although the costs examined are identical to the costs commonly referred to as production costs (direct material, direct labor and factory overhead) in most business firms, the authors prefer the term operating costs in view of the NIF's dual commercial and service orientation.

2. Direct Material

By definition direct material is any material or part that can be physically identified with a product unit. For a commercial activity such as a Naval Shipyard examples of direct material for a ship's overhaul include steel and aluminum, or parts such as boiler tubes, pump wearing rings, high pressure piping, electronic components, radio receivers and missile launchers to list but a few.

Direct material is routinely procured well in advance of its actual use in production. Depending upon the "uniqueness" of direct material in regards to its application, NIF activities stock and position direct material differently.

For example, the NARFs, which closely resemble a process system in many respects, commonly maintain a minimum quantity of many materials and parts on hand so that production is not halted for lack of material. Shipyards, on the other hand more closely parallel a job shop system. Much of the shipyard's direct material is unique to a specific ship class or even a particular hull. As such, the shipyards commonly only procure and position direct material for a specific overhaul.

a. Material Levels

A review of the financial and operating statements of several NIF activities and the briefings received by the authors at two specific activities supports that the direct material inventory (DMI) is extensive and its price costly. In the shipyard environment, direct material accounts for nearly one quarter of the activity's direct costs. Commonly more than \$.20 of every \$1.00 of cost are tied up in direct material. With such a sizeable investment associated with DMI one would expect the management of this inventory to be optimized at all levels within the NIF with particular emphasis at the activity level.

However, the authors found that this is not necessarily the practice. In fact, within the shipyard community the policy exists whereby DMI management is consciously sub-optimized. NAVSEA, as the responsible management agency for Naval Shipyards, has established a goal of having 100 percent DMI prepositioned at the shipyard prior to the commencement of a vessel's overhaul. This policy guidance is currently addressed in NAVSEA Instruction 4700.8A of June 1982. Proponents of this policy verbalize two central themes.

First, they rationalize the policy by highlighting the historic inabilities of their supply sources,

Navy Stock Fund and commercial alike, to deliver on time. They argue that despite the existing NAVSEA DMI goal, and the local level's procurement efforts, DMI actually on site at overhaul start rarely exceeds 75 percent of the total ordered for submarine overhauls and 60 percent for surface ship overhauls. As such the overwhelming majority of those individuals involved with this process at the activity level are frustrated by the lack of supplier response. They no longer question the financial soundness of the NAVSEA policy but continue to obligate millions of dollars against DMI.

Second, these same individuals point out that although the cost of direct material accounts for about one-fourth of their direct variable costs, management attention is better focused on optimizing the predominant cost element, labor. Since an activity cannot easily manage changes to its workforce, management does not want to jeopardize the use of this resource by having it idle at the expense of material shortage. (Labor costs will be addressed in a later section.)

Although both arguments are plausible and have merit, each reflects a particular conservatism in its approach to efficient management of a resource. Combined they ignore a fundamental issue: the true cost of supporting the existing DMI policy.

The authors observed elaborate planning and control systems among the shipyards. Program Evaluation and Review Technique (PERT) and the Critical Path Method (CPM) are popular quantitative techniques used to plan, schedule and control ship overhauls. The shipyard planning department goes to great effort to schedule when specific overhaul repair work is to start. Obviously, not every production job in the overhaul package will, can, nor should start on Day 1. Given the length of a ship's overhaul today (a typical destroyer's overhaul routinely spans 11-12 months),

many jobs may not even begin for several months. However, the present approach to procuring DMI simply ignores this planning effort and attempts to have all direct material on site at Day 1. Presently there is no attempt to coordinate material procurement really required to support the production effort. Rather the simpler, albeit less efficient, mindset governs: order DMI as early as possible attempting to minimize the risk of late delivery.

What alternatives exist for the NIF in controlling their DMI costs? At one end of the spectrum is the option to continue doing business as they presently are. The current system closely parallels the private sector's "just-in-case" inventory system which has received, and continues to receive, serious re-evaluation by American industry.

The underlying philosophy to material inventories throughout the NIF and particularly at the shipyards has classically been one to order DMI to a level so as to eliminate the potential risk of a production delay. In some areas this approach may be the only viable alternative for NIF activities. Certain NARF's are forced to carry a high level of some select DMI because the Navy Supply System refuses to carry these items due to a lack of system-wide use.

For example, material for the aging A-3 aircraft, reworked by NARF Alameda, falls into this category. However, this approach clearly costs the NIF money. At the other end of the spectrum is the option of the "just-in-time" approach to inventory management. Clearly with the multitude of restrictions and limitations facing public sector contracting and supply sourcing today, the just-in-time philosophy does not appear to be feasible. However, if one were to step back for a moment and reconsider the objectives of DCD Directive 7410.4, the just

in time approach, as radical as it may appear by today's public sector standards, may be a serious consideration for tomorrow's NIF. Numerous legal changes would, of course, be necessary to exempt the NIF from today's supply sourcing criteria. Given the nature of the NIF's business environment such changes warrant re-thinking.

Somewhere in the middle of inventory management spectrum lies a more immediately realizable option. NIF management could rather easily analyze the direct material being presently utilized in terms of dollar costs. A certain dollar threshold could be established. Those high-cost items above the threshold would receive enhanced management attention and be tied more closely to when the material was actually required to support the production effort. Those items below the specified threshold would receive minimal attention and simply be procured at any point in the requisitioning envelope to ensure receipt. Complementing this approach must also be a conscious consideration of the particular lead times involved for specific items and material. This alternative would unquestionably necessitate additional management attention, but clearly provides an achievable means to reduce the NIF's material costs.

b. Excess Material

Excess material first became a high visibility item when the Air Force became involved in a situation of selling off, or disposing of, valuable material which was in excess of their immediate needs, only to subsequently buy back that same material from a private vendor at a much higher price. An evaluation conducted of the NIF revealed a similar problem existed, particularly at the shipyards. Here excess material is simply what the name implies, material remaining unused after a vessel's overhaul has been

completed. The authors believe that this problem is tied hand-in-hand with NAVSEA's approach to requisitioning DMI. It is clearly an outgrowth of an unwritten philosophy of buying material in quantities to guarantee that an activity will never run short. There are many cases in which an activity will order 3 or maybe even 4 of a particular item although its planning estimates only project a real need for 1 such item.

What real incentive exists for the shipyards to eliminate excess? In practice, really very little incentive exists. After all, material procured for a particular overhaul is built into the stabilized rate charged the customer and therefore viewed by many as free of cost at the shipyard level.

In an attempt to deal with this costly problem NAVSEA has taken some specific steps. For example, although OSD lifted a DOD-wide freeze on excessing material in late 1984, NAVSEA has continued the excessing freeze at the shipyards. However, there have been several undesired effects of continuing the freeze on excessing material. The most significant impact has occurred in the area of final billing a customer once an overhaul has been completed.

Under current procedures shipyards are unable to final bill a customer until all excess material is cleared from a ship's financial records. Although NAVSEA has an established standard in which its shipyards have 60 days after completion of an overhaul to accomplish final billing, the imposed freeze severely restricts an activity's ability to meet this goal. In fact, final billing today routinely takes a shipyard between 6 to 8 months to complete and even then is only accomplished by manipulating the process. Shipyards have found that the easiest way to clear a ship's records of excess material, and therefore be able to final bill, is simply to roll the excess material forward to the record's of the next ship in the overhaul process.

This delay in a shipyard's ability to final bill clearly impacts upon that activity's and the entire NIF's cash position. The Puget Sound Naval Shipyard described the extent of the problem in its Financial and Operating Statement of 30 September 1984 as follows:

Because of the freeze, we are unable to clear excess DMI from ship's financial records and therefore unable to final bill our customers. This inability results in a poorer cash position since we cannot take fixed price gains (currently about \$10 million and growing with the completion of each availability) until final billing occurs. [Ref. 22].

The problems of this entire area are compounded by an interface dilemma with the Navy Supply System. Of the standard material left over at the end of an overhaul, only about 23 percent will be accepted by the supply system for credit and subsequent re-issue. The remaining 75+ percent will not be accepted for one of two primary reasons: either the particular material item does not exceed a specific dollar value threshold or there is an abundance of the item currently in the supply system. Additionally, the supply system refuses to accept any non-standard material, regardless of its value. Under the current freeze these materials are unable to be sold and remain at the shipyards.

In November 1984 NAVSEA promulgated additional guidance in its attempt to deal with the current problem. Whereas the new policy attempts to delineate specific retention requirements for categories of excess material (for example 6 years for non-standard stock items), NAVSEA's guidance is misdirected. It attempts to deal with the consequences of an ill-conceived procurement policy rather than the real source of the problem. It focuses on the holding costs of this material and totally ignores the buying costs. Nowhere does the policy address the potential for entering excess DMI into a common data base. Such a

system could facilitate the sharing of information concerning excess DMI by all appropriate activities (e.g. shipyards, NARFs) and eliminate the costly procurement of DMI by one activity which was already being held in an excess status at another activity.

c. Customer Prepayments

One means available to the Naval Shipyards to reduce their investment in DMI is to take advance payments for DMI from their customers. This procedure enables each activity to tie up less of its corpus and, in theory at least, to operate with less working capital. The procedures for taking advance DMI payments are straight forward and uncomplicated.

Current guidance stipulates that an activity can take these advance payments once two criteria are met. The current fiscal year must coincide with the fiscal year of the vessel's induction into overhaul and a customer's funding document must be in hand. Although the activity may have procured DMI as much as several years in advance of the actual overhaul start date, these two criteria must be satisfied before advance payments can be taken. It must be emphasized, however, that the onus for taking advance payments clearly rests with the activity. It is through their initiative that funds are drawn against a customer's O&M,N account.

Table XV depicts the status of DMI for each Naval Shipyard (NSY) as of 28 February 1985. As can be observed the extent to which each of the eight shipyards takes advantage of the DMI advance payment opportunity varies drastically. One would almost be lead to believe that no standard guidance exists in this area. However, it is NAVCOMPT's and NAVSEA's goal that customer prepayments be 90 percent of that DMI identified with and assigned to a

particular job order. Although this goal may be a bit overly aggressive, it does exist and it certainly captures the appropriate concept of using working capital.

TABLE XV
Shipyard DMI and Customer Prepayments
as of 28 February 1985

(\$ in thousands)

<u>Activity</u>	<u>Assigned Direct Material</u>	<u>Customer Prepayments</u>	<u>Net</u>
Portsmouth	\$22,590	\$1,100	\$21,490
Philadelphia	55,916	42,278	13,639
Norfolk	44,386	27	44,359
Charleston	23,493	0	23,493
Long Beach	22,960	9,209	13,752
Mare Island	29,188	13,944	15,244
Puget Sound	55,645	36,643	19,002
Pearl Harbor	28,174	7,628	20,545
<u>NSY Total</u>	<u>\$282,353</u>	<u>\$110,828</u>	<u>\$171,525</u>

Clearly none of the shipyards are achieving this goal and the range among shipyards is large. NSY Philadelphia comes closest to the goal at 76 percent while NSY Charleston takes no advantage of advance DMI payments. More significant, however, the performance in terms of customer prepayments of four of the eight shipyards is deplorable.

Taking advance DMI payments from customers is an area that the authors believe warrants immediate management attention at the NAVSEA level. The potential for cash savings here are real and there for the taking. Clearly improvements in this area will not come cost-free to an activity. However, since seven of the eight shipyards already have a system in place, minimal changes to policy and manning would be projected for these activities. NSY Charleston must implement a system to support the Activity Group Commander's policy.

In summary it should be clear that the authors believe that improvements can be made in the entire DMI area. However, this will require a completely revised approach to inventory management at both the Activity Group and activity levels. The entire inventory issue must be managed from "cradle to grave" rather than under today's patch work methodology. More efficient methods of predicting material requirements are urgently needed so that huge excesses are not left over. Improved procedures must be developed to identify what is actually already on hand so as to eliminate unnecessary and costly duplicate requisitioning. A system must be established which facilitates the sharing of material availability information among the shipyards. In short, shipyard management must stop avoiding its management responsibility by having so much material on hand that there is no need to manage its inventories.

d. Material-in-Transit

Still another material area offering the potential for improvement in the NIF's cash position is material-in-transit (MIT). Here the opportunity results from a different management approach in the payment of requisitioned material depending upon source. Payment for material procured from private vendors is not effected until the

material is actually received. On the other hand, however, for material requisitioned from any government source (the vast majority of the NIF's material comes from the Navy Stock Fund) the funds are obligated in advance of the receipt of the material. In fact, material procured from any government source is charged against the shipyard's records once the material is dropped from the source's records. Herein lies problem.

The authors reviewed the Financial and Operating Statements for the eighteen month period of 30 June 1983 to 31 December 1984 of three different shipyards and found that on the average 33 percent of the material-in-transit was over 6 months old. For example, as of 30 September 1984 Pearl Harbor Naval Shipyard's (PHNSY) financial statement reflected \$1.4 million of its total MIT of \$3.4 million over 180 days old. Due to the formatting of these statements the authors were unable to further analyze the aging of MIT older than 6 months. However, an audit conducted at PHNSY by the Naval Audit Service in FY 1981 documented that about 40 percent of that activity's MIT was over 18 months old. [Ref. 23] Each shipyard not only has substantial amounts of money tied up for lengthy periods in its material-in-transit account, but is also subject to charges for material that occasionally is never received.

Aligning the existing policy for material procured from government sources with those procedures currently in effect for material supplied by private vendors will improve the NIF's cash position. Although smaller dollar improvement potential exists in MIT as compared to the previously discussed material areas, the potential for improvement exists nonetheless.

3. Direct Labor

Labor comprises the most significant portion of the cost of goods and services produced by NIF activities. As previously noted labor represents more than 70 percent of the cost of services provided by the shipyards. This situation is exacerbated by the fact that the NIF's labor costs have increased by 60 percent as compared to an increase of 40 percent in the private sector's labor costs over the past 5 year period. Controlling the cost of labor clearly warrants NIF's management's attention.

A review of the Personnel Summary Sections for each Industrial Fund of the President's Budgets for the period 1955 to 1985 revealed several interesting points in regards to labor. Up until FY 1973 the average grade level of a General Schedule (GS) employee within the NIF closely approximated the highest average GS grade level of any of the other four Federal Government industrial funds. Beginning in FY 1974 a trend began. While the average GS grade level within each of the other four industrial funds remained plateaued, the average GS grade within the NIF has steadily risen. In FY 1982, for example, the NIF's average GS grade level was 9.17, almost one full grade higher than any of the other industrial funds. Figure 6.2 shows the NIF's average GS grade for each fiscal year from 1955 through 1982. Figure 6.3 shows the trend in the average number employees at NIF activities and figure 6.4 shows the average annual salary for GS and ungraded positions for each fiscal year from 1956 through 1984.

To what extent can NIF managers control their labor costs? Many have traditionally argued that little can be done to control these costs. However, this argument only addresses one side of an activity's labor costs. The cost of labor must be broken into its 2 components: wage rate and wage hours.



Figure 6.2 NIP's Average General Schedule Grade Level.

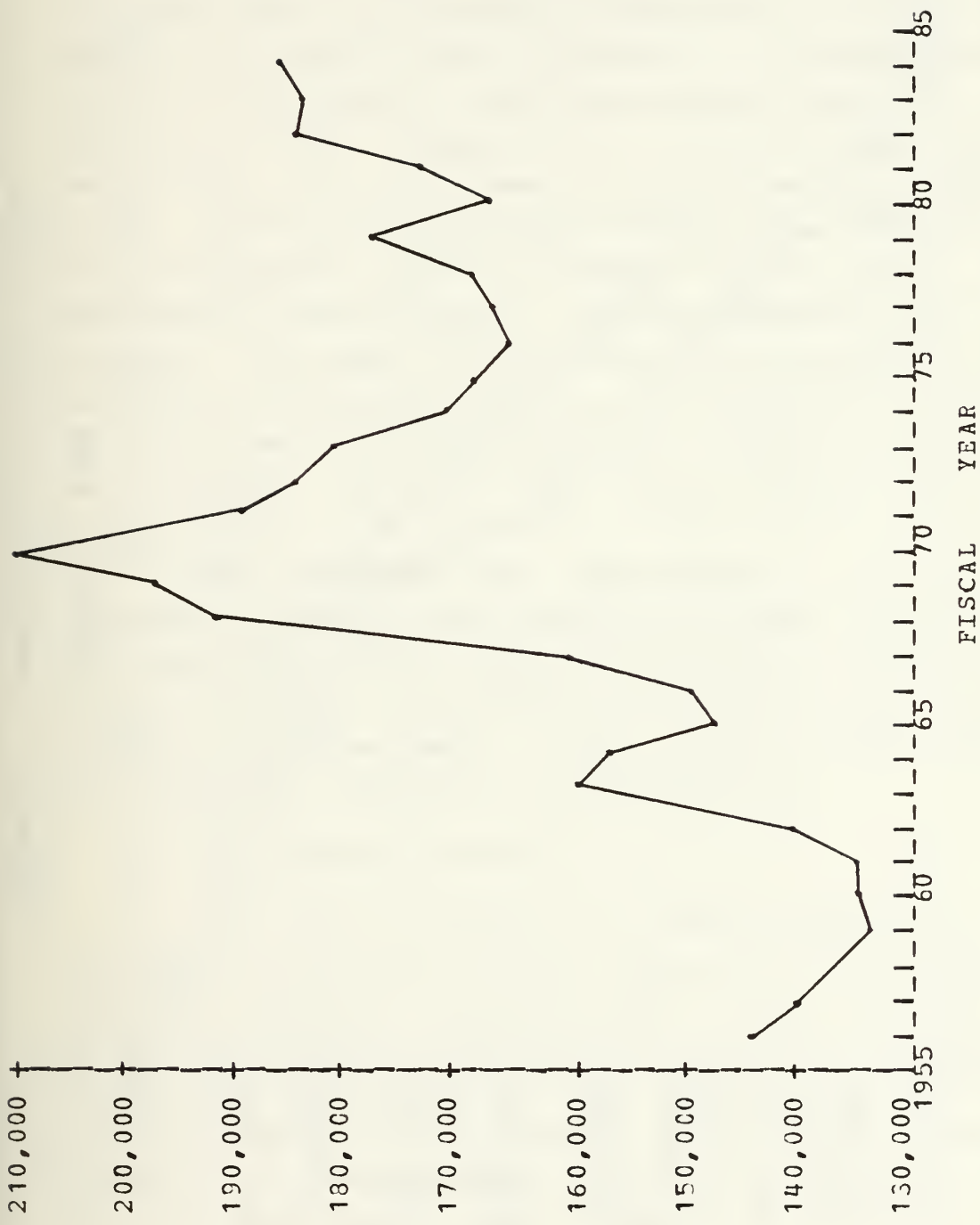


Figure 6.3 Average Number of NIF Employees.

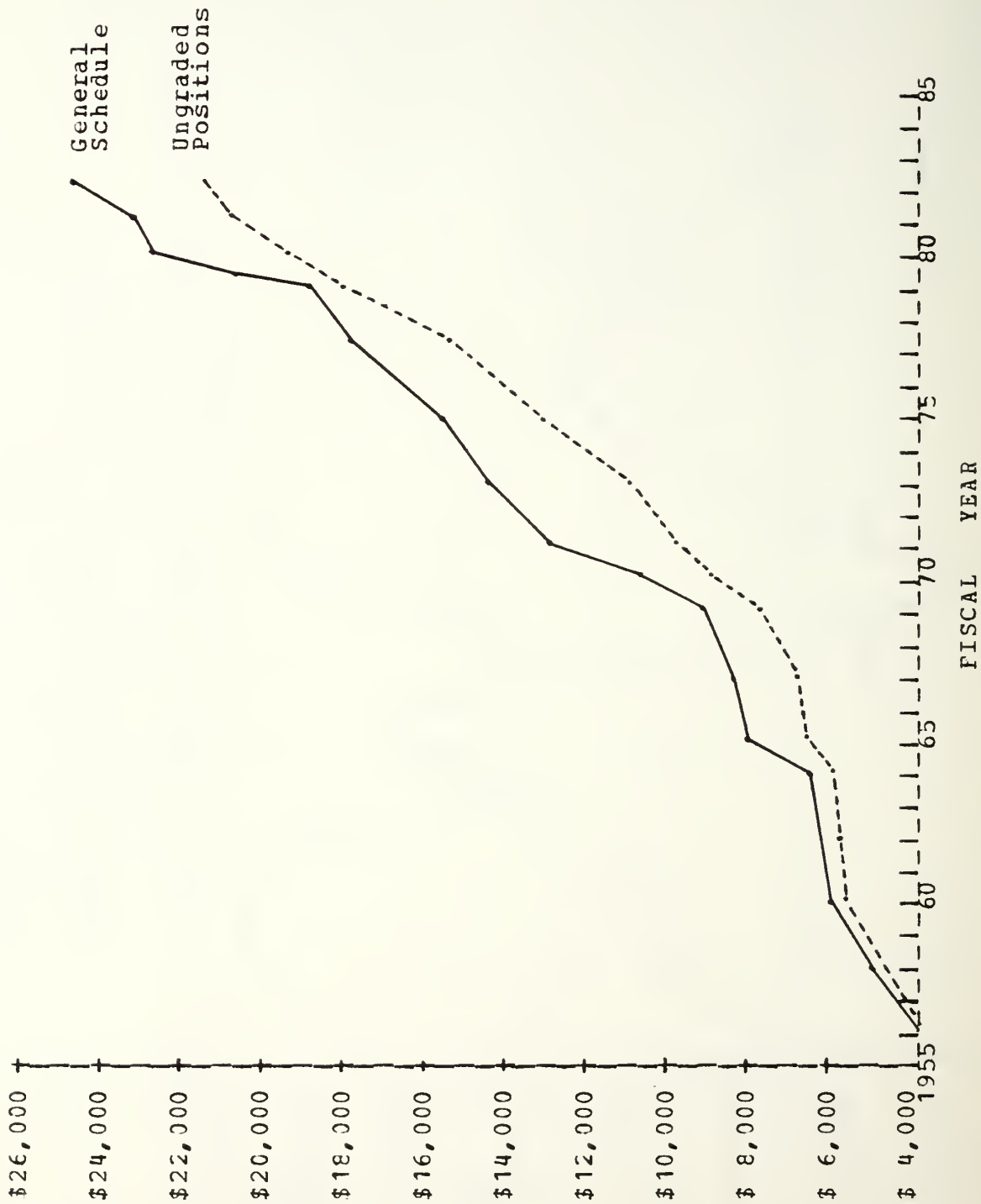


Figure 6.4 Average Annual Salary/ Person.

As discussed in Section B of this chapter, NIF managers have virtually no control over the wage rate element. Additionally, NIF activities are subject to civilian employee ceilings and constraints on hiring and firing as are other government activities. Although patterned after private sector businesses, NIF management is unable to quickly reduce or increase its labor force as a function of workload. When the workload drops off, excess labor is, at best 'farmed out' to other NIF activities where work exists, but more commonly is carried in factory overhead. Should unexpected work develop, the personnel ceilings frequently prevent managers from hiring people permanently to do the work. Rather management faces limited options. The work, if accepted, can be performed by hiring temporary or part-time workers, if available, using expensive overtime, or be contracted out. Each of these substitute sources of labor are also subject to various constraints.

NIF management does have control over the second component of labor costs, namely wage hours. The establishment and application of production standards and the control of an activity's productivity is certainly the responsibility of its management. These aspects of NIF management are discussed in Section F of this chapter.

a. Temporary Workers

The utilization of temporary workers provides certain NIF activities limited flexibility in altering their manning profile and reducing labor costs. However, an activity's location and the nature of the work it performs impacts upon the extent to which 'temporaries' can be beneficially employed. For example, Puget Sound Naval Shipyard (PSNSY), the second largest shipyard in regards to the size of its labor force and primarily a nuclear overhaul

facility, requires specially skilled workers but faces an extremely small labor pool. As such PSNSY's 'temporaries' comprise only 5 percent (600 workers) of the work force. Philadelphia Naval Shipyard, on the other hand, faces a different environment. It is not only a conventional shipyard but its geographical location provides access to a substantially larger labor pool. As such, Philadelphia routinely employs 1500 temporary workers.

b. Overtime

The authors' research revealed that minimal management control of overtime exists for some NIF activities, particularly the shipyards and the NARFs. For example, the shipyards have traditionally received the entire amount of overtime requested, free from budget cuts at the Activity Group level. However, even this financially questionable management approach has not proved satisfactorily controllable. Whereas direct overtime within the shipyards has historically averaged approximately 10 percent per year, first quarter FY 1985 direct labor overtime increased to an Activity-Group wide average of nearly 19 percent. Figures 6.5, 6.6 and 6.7 depict the quarterly trends in overtime beginning 30 September 1983 for the shipyards, NARFs and total NIF respectively. These figures clearly highlight the fact that this area warrants renewed management attention if labor costs are to be controlled.

c. Summary

Employment ceilings and restrictive termination policies used by the President and Congress to maintain control of the total number of Federal employees are at best inferior substitutes for financial controls and effective management. However, as long as these controls are utilized in the public sector, NIF management must look seriously

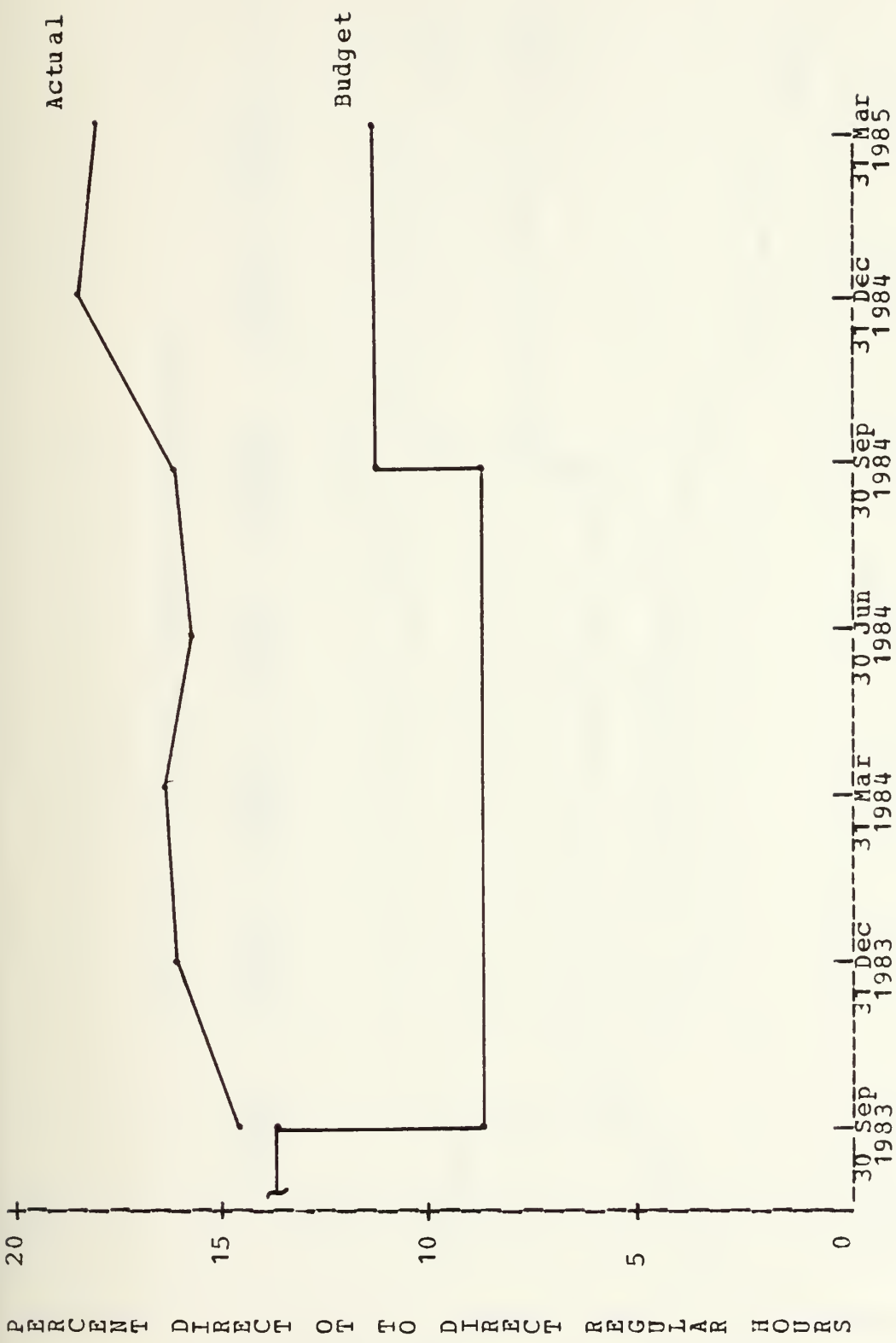


Figure 6.5 Overtime Summary at the Shipyards.

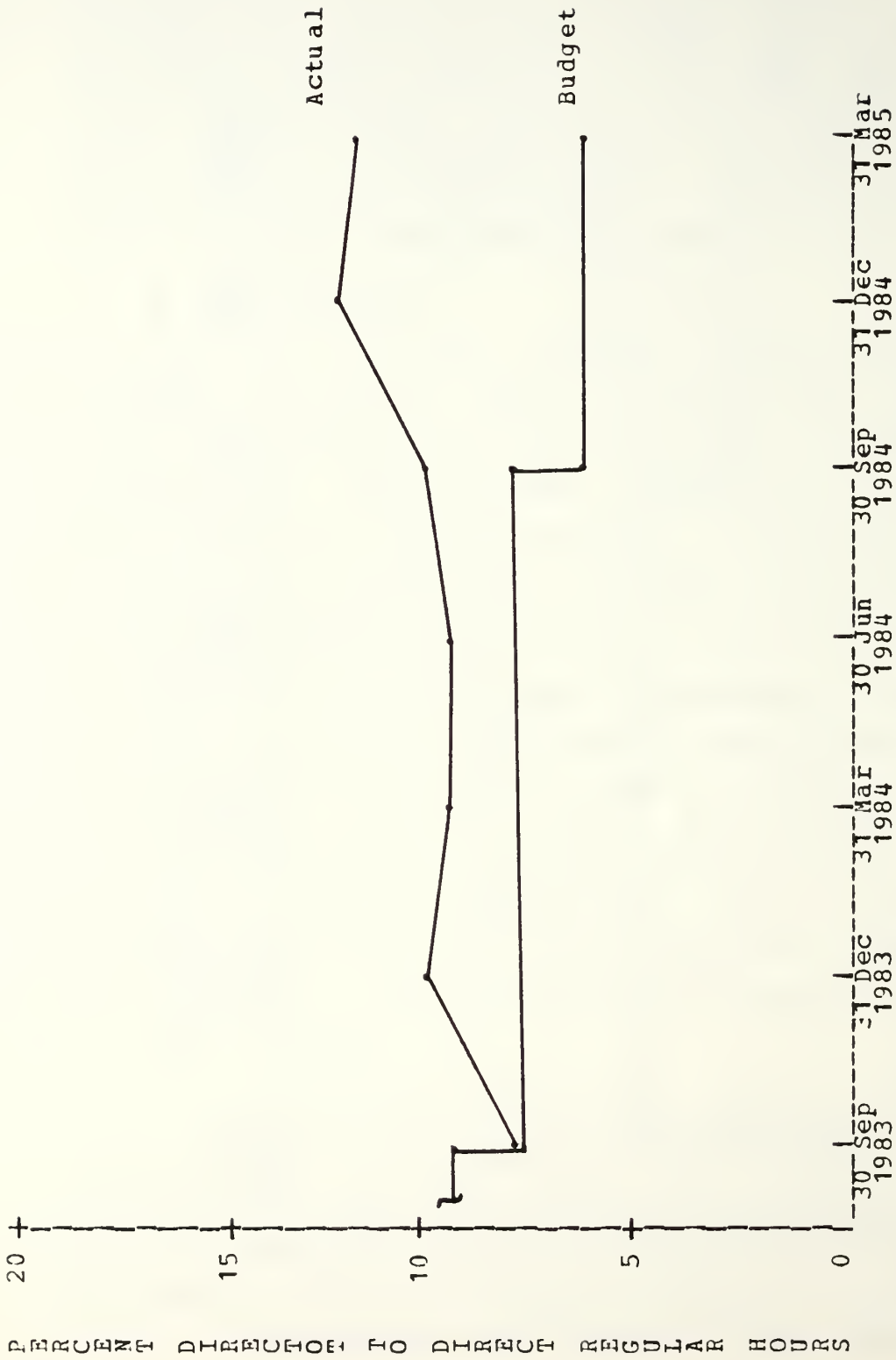


Figure 6.6 Overtime Summary at the NARFs.

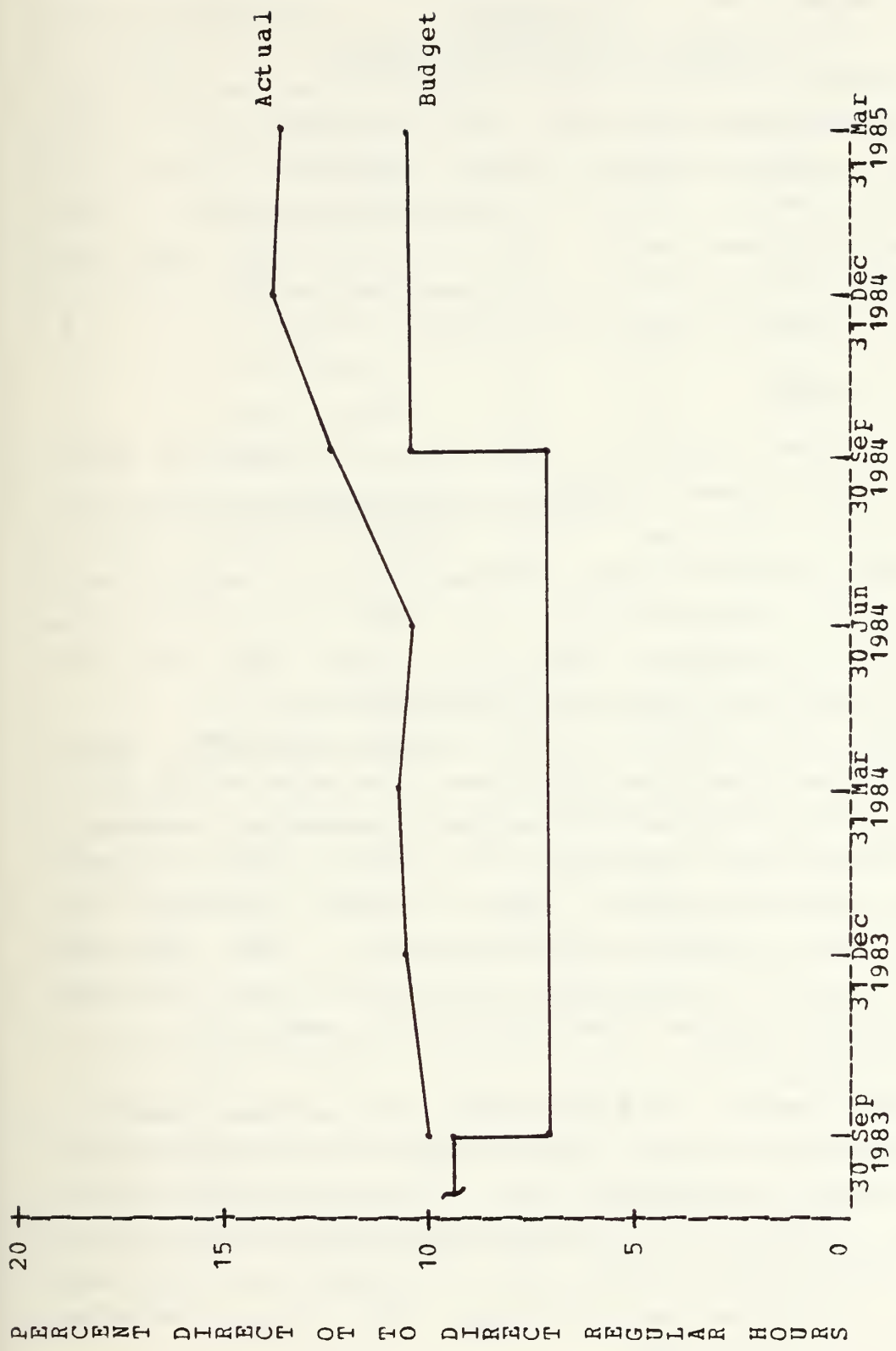


Figure 6.7 Overtime Summary Total NIF.

within the system to do a better job controlling labor costs. Unquestionably NIF management is constrained in this area, but improvements are readily achievable. Figures 6.3 and 6.7 clearly indicate that potential cost savings exist. Total NIF manning levels must be re-evaluated with the goal to improve productivity and reduce excesses. Direct overtime must also be reduced. Reductions in both of these areas simultaneously will, of course, create a real challenge for NIF managers to continue to provide service or deliver a quality product on schedule.

4. Overhead

Overhead costs are those costs of business associated with the general operation and administration of individual NIF activities. The authors believe that an opportunity exists for many NIF activities to significantly reduce their overhead costs, and that this can be accomplished by management action at either the individual activity, Activity Group, or NAVCOMPT level.

When interviewed by the authors NAVCOMPT, as the overall NIF manager, estimated that some NIF activities may have as much as 25 percent excessive personnel working in areas charged to overhead. To combat this, NAVCOMPT severely marks (adjusts) these budgets, lowering, for example, a proposed stabilized rate. Some activities respond properly by squeezing overhead in order to remain within budget, while others fail and reluctantly accept the financial loss.

One means of monitoring NIF overhead costs is through the productivity ratio, computed by dividing direct labor time by total labor time. The lower an activity's overhead percentage is, the higher their productivity ratio. Table XVI displays productivity ratios for the Naval Shipyards for fiscal years 1978 and 1984 and the end of the first quarter of FY 1985.

TABLE XVI
Shipyard Productivity Ratios

<u>ACTIVITY</u>	<u>FY 78</u>	<u>FY 84</u>	<u>Q1 FY 85</u>
PUGET SOUND	.59	.57	.60
PHILADELPHIA	.62	.58	.58
LONG BEACH	.63	.55	.57
PEARL HARBOR	.62	.54	.55
PORTSMOUTH	.57	.51	.55
CHARLESTON	.57	.55	.54
MARE ISLAND	.60	.54	.55
NORFOLK	.58	.54	.54

Source: NAVCOMPT Autodin Report

As seen in Table XVI, during the period from FY 1978 to FY 1984 every shipyard saw a decrease in productivity. In fact, two shipyards saw their productivity ratios plummet 8 percent. Claims were made that overhead growth was due to new requirements such as tighter security and better communications facilities. Others claimed workload reductions had left the activities with greater fixed costs to distribute over fewer total labor time.

Yet some activities have recently improved their productivity ratios. NARF Alameda reduced their overhead workforce by 56 persons during FY 1984, contributing to a 3 percent rise in their productivity ratio. This significant accomplishment required close management attention to the problem and was accomplished through the elimination of some unnecessary jobs and the removal of non-performing personnel.

Fuget Sound Naval Shipyard increased their productivity ratio 3 percent during the first quarter of FY 1985. During their visit, the authors noted a concern for cutting overhead costs which was shared by all levels of management. The result speaks for itself.

Management attention and efforts in the area of overhead costs offer the activities of the NIF a very real opportunity to lower costs. The authors believe that immediate action should be taken at all levels of NIF management in order to bring this problem under control.

F. ESTABLISHING AND APPLYING PRODUCTION STANDARDS

1. Summary

Production standards, in one form or another, are a part of nearly every type of MIP activity. Variations exist, however, in the application of these standards. For example, production (labor) standards are a key component in the pricing equations only at the Naval Air Rework Facilities and the Navy Publications and Printing Service. The authors believe that the process of setting production standards at these activities could significantly impact upon their cash positions.

2. What are Production Standards?

A production standard is the predetermined amount of work that should be performed during a specific period of time. It may also be described as a benchmark of how efficiently resources should be converted into goods or services. A variation of the production standard is the standard time, or work norm, which is defined as the amount of time it should take to complete a specific task.

Production standards exist to support management. Management can measure productivity and then compare these actual results against the previously determined norm. Effective use of these measurements contributes to achieving an efficient operation. Specifically, production standards are used in cost reduction programs, product pricing decisions, production scheduling, and the measurement of worker performance.

3. Setting the Standard

Setting a standard for labor performance is by no means a simple task. It often involves careful studies and

time consuming disputes and negotiations, particularly in unionized workplaces.

A wide range of techniques are employed when setting these standards, ranging from a simple judgement based upon past experience to the use of computerized models. The primary method, however, involves scientifically reducing each task down to a series of human movements, statistically calculating an average time value for each of these motions, summing these time values to arrive at the required time to complete a specific task, and adjusting this total in order to allow for other considerations.

The first step in establishing a standard employs scientific time and motion studies, usually accomplished by industrial engineers. These studies are broken down into the task of identifying the individual movements necessary to complete a task and the recording of time measurements of these individual human movements. Each movement is given a time value based upon numerous observations of various people performing these movements. Analysis of these measurements is then accomplished, usually using one of several well-regarded scientific methods.

The time values assigned to the series of movements required to complete a task are then summed in order to arrive at the total time required to perform a specific task. The totals are then adjusted to allow for start-up times, machine breakdowns, waiting, rest periods, and so on. These adjustments typically involve inputs from engineers, accountants, management, and labor representatives and may require delicate negotiations. The final result is the standard time for a particular job, or the "work norm" for that job.

When a new product or process is started, the labor standard must also include a provision for learning. Each time a repetitive task is performed a worker "learns" how to

complete this requirement in less time. The rate that this learning takes place is dependent upon many variables, but can be adequately estimated for various particular types of work. A mathematical model is then used to express this rate of learning, which can then be described as a percent learning curve. For example, a 70 percent learning curve means that, theoretically, every time the number of repetitions is doubled, the time required to perform the task should be only 70 percent of the time previously necessary.

4. NIF Applications of Product Standards

Throughout the Navy Industrial Fund production standards are used to assist management in planning and control, much as in the private sector. In fact, often NIF management is able to compare its standards to those established in a similar industry outside of Government. Additionally, the NIF employs work norms in the determination of prices at both the NARFs and Printing Service. At these activities, high volume repetitive work facilitates the use of the unit-price concept. This, in turn, permits the use of fixed-price contracts without negotiations. The customer is simply charged an amount equal to the product of the current stabilized rate and the work norm for a particular job.

5. Establishing Work Norms at the NARFs

Work norms are established for the individual jobs performed at the NARFs using an analysis by industrial engineers as a basis. The Naval Aviation Logistics Center (NALC) then adjusts these measurements to a level which they believe is attainable. NALC adjustments encompass both general allowances such as employee rest periods as well as specific considerations such as variations in plant layouts

between the NARF activities. Although the NARF activities are unionized, labor organizations have no voice in the setting of these norms. Additionally NAVCOMPT, as the NIF manager, reviews these developed norms quarterly and has the final approval of all modifications.

6. Impact Upon Cash Position

It is apparent that the Navy, through the Office of the Comptroller, is using work norms as one component of a NIF price control plan. The other key component in this strategy is the stabilized rate.

Stabilized rates, addressed in a separate section of this chapter, are (theoretically) designed to capture all costs of an activity and reduce these costs to a unit price. At the NARFs, stabilized rates are a price per direct labor man-hour. These rates are established as part of the NIF budget.

Work norms, on the other hand, are not a part of the budget. This fact allows NAVCOMPT a great deal of latitude in adjusting prices charged to NARF customers. For example, when developing the work norms to be used by the NARFs during FY 1983, NAVCOMPT directed NALC to use the same norms that were established during the third quarter of FY 1981, halting the trend of escalating standards. The effects of this action were far reaching. The Naval Audit Service, in their report on NARF cash position management, referred to this action and commented:

Frozen workload standards prevent annual renegotiation that will allow for such factors as the increased age of aircraft, actual rework experience, and major modifications [Ref. 22].

NALC calculated that NAVCOMPT's decision to freeze norms resulted in a \$25.9 million loss for the NARFs in FY 1983. Why would NAVCOMPT take such an action? Two possibilities exist.

The first possible explanation for NAVCOMPT's deliberate action is that it was a calculated effort intended to bring down prices by forcing the NARFs into greater efficiency. Indeed, this was the explanation identified in the Naval Audit Service report. NAVCOMPT representatives, when interviewed by the authors, substantiated this opinion. They claimed that their actions forced NARF management to closely monitor the content of work packages and eliminate unnecessary tasks. This, in turn, reduced costs and increased efficiencies. NAVCOMPT estimated that these cost reductions saved nearly \$18 million in FY 1983. The theory that these cost reductions were due solely to improved efficiencies, however, is uncertain.

But what actions were necessary to cut costs? NARF cash management seemed beyond the control of the activity commander. Frustrations set in and extraordinary cost-cutting measures took place. Besides reductions in the scope of normal work packages other actions, such as training reductions and maintenance cut-backs became commonplace.

A second possibility for NAVCOMPT's action also provides an answer to the question to why NAVCOMPT delayed so long in taking any action, even when presented figures showing huge NARF losses. Frozen work norms resulted in prices charged to NARF customers which were insufficient to cover production costs. In other words, customers got more work done than they paid for. Obviously, the customer benefited greatly from the decision to freeze work norms. Could this have been intentional?

The Naval Audit Service, in their audit of FY 1983 NARF operations, stated that there was a shortage of customer funds necessary to fully reimburse the Navy Industrial Fund. In other words, the customer could not afford to pay a price which covered all NIF costs.

7. Conclusions

For proper cost planning and control, establishing and modifying work norms must be removed from political considerations. NIF line managers must be allowed to make these decisions, and a careful analysis of production cost trends and variances must be a part of this decision process. Is the learning curve accurate? Are costs increasing? If so, why? What part of cost increases are uncontrollable, such as resulting from aging aircraft? Answering these questions and others is part of a sound norm-setting process. Work norms need to be reasonable figures which are not subjected to arbitrary, uncontrolled adjustments. NAVCOMPT can continue to promote increased efficiency by other means such as establishing incentives for subordinates, designed to motivate managers towards operating more efficiently.

G. INCENTIVES FOR IMPROVING CASH MANAGEMENT

1. Summary

Performance incentives are a vital component of every successful management control system. Presently, the Navy Industrial Fund has few positive managerial incentives, thereby impeding the improvement of the effectiveness of NIF cash management. The authors believe that opportunities exist for NIF managers to be further incentivized towards actions which improve cash management while still providing the customer a quality product on schedule. These incentives include rewards both in the form of positive performance evaluations (military and civilian alike) and merit pay for civilians, and negative motivators including the restructuring of Title 31, U.S. Code, sections 1341 and 1517 (formerly R.S. 3679) to encompass joint responsibility at both NAVCOMPT and the activity group levels.

2. The Present Incentive System

Incentives are a well established method of motivating individuals towards channeling and sustaining their efforts in a particular, desired direction. The authors believe that within the NIF, managers are insufficiently motivated in the area of cash management. For example, presently few performance evaluations require a comment on a manager's financial management performance. Only the NAVAIR Systems Command's evaluations of subordinate commanding officers (at NALC and NARFs) contain a recently added item on cash management.

NAVAIR, in the wake of the NARF's huge financial losses, has developed 14 key financial indicators which it uses to carefully monitor NARF performance. Several of these indicators are also used in the evaluation of the six NARF Commanding Officers, as well as in the evaluation of

the NALC Commanding Officer, the intermediary between NAVAIR and the NARFs.

The five financial performance indicators used in a NARF commanding officer's fitness report are:

- Treasury cash balance
- Activity cash balance
- Accumulated operating results
- Productivity ratio
- Inventory level

Targets are established for each of these items unique for an individual NARF activity. Actual performance can then be compared against the stated objective and, using a weighted scoring system, an evaluation of the commanding officer's financial management performance made.

NAVAIR has taken other significant steps towards making NARF managers more attentive to cash management. The tours of NARF Commanding Officers have been lengthened from two years to three years. Additionally, whenever a 10 percent variance occurs in any of 14 key financial indicators (reported monthly) the NARF management must provide an explanation to NAVAIR, via the chain-of-command. The indicators monitored by NAVAIR are:

- Treasury cash balance
- Activity cash balance
- Accumulated operating results
- Productivity ratio
- Inventory level
- Revenue
- Total costs
- Orders received
- Allocated direct labor hours
- Indirect labor hours
- Direct labor overtime hours
- Indirect labor overtime hours
- Total permanent employees
- Total temporary employees

Unfortunately, other commands have not followed NAVAIR's example. Other activity managers, in general, receive no rewards or penalties as a consequence of how they influence cash flow.

The primary incentive for effective overall NIF cash management is Title 31, U.S. Code, sections 1341 and 1517

which place limitations on the amount of funds which may be expended and obligated. For the Navy Industrial Fund this law requires that the cash balance at the Treasury Department always be non-negative. The responsibility for ensuring NIF compliance with the provisions of this law rests with the Office of the Comptroller, NAVCOMPT. No other command within NIF shares any of this responsibility.

3. Recommended Incentives

a. The Need For Cash Management Incentives

While it is certainly not the case that the NIF lacks management talent, it certainly is true that managers manage what they perceive to be important. With the responsibility for adhering to the specifications of Title 31 resting solely upon the shoulders of NAVCOMPT and without any budgetary responsibility for the cost of money, activity managers cannot be blamed for the failure to give cash management serious attention. They must be incentivized towards actions of effective cash management.

But these incentives are lacking. The 1976 Joint Financial Management Improvement Program reported:

The study has confirmed the previous assumptions concerning the importance of cash management in the Federal Government and the general lack of attention by operating agencies to specific plans and procedures with respect to cash management. This is not considered to be due to mismanagement but to a lack of motivation for agencies to manage cash effectively.

This theory was supported in the 1978 President's Reorganization Project Report, which stated:

There has been little incentive in the Federal Government for program and financial managers to practice cash management. Managers, in general, received no rewards or penalties as a consequence of the way they manage collections and disbursements. With few

exceptions, agencies and departments experience no direct costs or benefit related to the cash flow they handle. The absence of incentives for managers has tended to result in lack of attention to managing cash flows, including a low priority for developing modern cash management systems, practices and techniques.

b. Title 31, U.S. Code

The authors recommend that the responsibility for avoiding a violation of Title 31 be refocused. Activity Group Commanders should share in the responsibility for keeping the NIF Treasury cash account non-negative. This can be accomplished by holding NAVCOMPT and an Activity Group Commander jointly accountable for maintaining the Activity Group's share of the Treasury cash account non-negative. In this way each and every Activity Group would have to remain in a sound cash position, unlike the present system which requires only the sum total of all Activity Groups to be solvent.

Lowering the level for Title 31 responsibility must be done carefully. An Activity Group Commander should not be held solely accountable for that Activity Group's performance. NAVCOMPT retains such a great deal of power that the Activity Group Commander cannot control all aspects of performance. For example, the setting of stabilized rates and the establishment of work norms are a part of a budgetary process and thus subject to NAVCOMPT marks. These adjustments can significantly impact upon an Activity Group's Treasury cash position.

c. Performance Evaluations

If the responsibility under Title 31 is refocused as recommended, both NAVCOMPT and Activity Group Commanders will be incentivized towards sound cash

management practices. But what about the individual activity's commanding officer and key civilian personnel? The authors support the actions taken by NAVAIR which require NARF commanding officer fitness reports to contain an evaluation of cash management effectiveness. It is recommended that other activities follow this example and provide specific, measurable financial objectives for activity commanders to work towards.

d. Financial Management By Objectives

NAVAIR is attacking the NARF cash problem using a management by objectives approach. The entire NIF should adopt this process, beginning with NIF top management setting overall financial goals. These goals should be carefully designed in order to motivate NIF cash managers towards minimizing the cash held outside the Treasury Department. In this way the NIF can do its share in minimizing the Federal Government's cost of money. The goals, once announced, would serve as the beginning point for the Activity Group Commanders to establish their own objectives and plans for achieving the stated goals.

Activity Group objectives and plans must consider the costs of implementation. For example, suppose NAVCOMPT decided that excessive inventory levels were costing the Federal Government by unnecessarily keeping funds outside of the Treasury Department account. Rather than developing a costly, bureaucratic program that charges each NIF activity interest on the dollar value of their inventory, a simple objective such as "a 10 percent reduction in inventory level by the end of the year" could accomplish this same goal.

The Activity Group should then provide the individual NIF activities specific, measurable objectives.

These objectives should be limited to performance areas that are under the control of the individual to be held accountable. This is a key point. Activity Groups which use stabilized rates or work norms must allow the individual activity to participate in the establishment of these rates.

During visits to two individual NIF activities the authors found contrasting opinions on the degree to which an individual activity participates in the establishment of these rates. One activity found little change between rates that they proposed and those incorporated into the budget. An activity in a different Activity Group called the process of negotiating these rates a waste of time as their inputs were completely ignored and they were handed rates which they believed unachievable.

e. Other Incentives

Civilian government employees are eligible for types of positive incentives not available to the military. The authors recommend that the NIF take advantage of these motivational opportunities by developing a NIF-wide program to insure cash management initiatives are included as a critical element of the Senior Executive Service (SES) and Merit Pay programs. The SES is a separate personnel system for top level government employees and appraises their performance through a comparison of actual performance against agreed upon objectives. The Merit Pay System allows an agency to develop a system that pays more to better performing supervisors and managers. Both of these systems offer the NIF an opportunity to incentivize civilian managers towards more effective cash management actions.

Additionally, other incentive programs such as suggestion awards, commendations, and other special recognitions can be used to generate cash management improvement ideas.

f. Impact Upon Production Performance

Throughout this discussion the authors have identified numerous opportunities for the NIF to motivate their managers towards actions which would improve NIF's cash management. But what effect would these incentives have upon an activity's production performance? The authors believe that many cash management improvements can be made without impacting upon NIF's ability to deliver a quality product on schedule.

The design of any incentive program must begin with the understanding that the activities of the NIF are service oriented and consider meeting their delivery schedule to be critical. The needs of the Navy, and hence the reputations of individual activities and their managers hinge upon the timely delivery of their products. What is the cost of a late delivery? At each level within the NIF chain-of-command, from NAVCCMPT through the individual activity, the authors asked if the cost of a one day or a one week delay in the completion of a ship overhaul had ever been estimated. Without exception, the response was no. Slipping the completion date of an overhaul is not considered to be an option for cost savings. The perturbations on Navy scheduling are too costly. Operating under this constraint, the authors still consider the previously discussed incentives as a valid means of bringing about improved cash management.

g. Conclusion

In conclusion, the authors believe that the strong competition that exists between the individual

activities within a NIF Activity Group will continue to provide sufficient motivation to deliver a quality product on time. However, this healthy, competitive atmosphere should be expanded to encompass cash management competition as well. NIF activity managers must believe that effective cash management is beneficial to them personally, and also beneficial to their NIF activity. Incentives, such as those identified by the authors, can provide the necessary motivational force needed to bring about these cash management improvements.

H. CONTRACT DESIGN OPPORTUNITIES

1. Summary

Contracts serve as a legal means for contractors and their customers to agree upon a method of payment for goods or services to be provided. The Navy Industrial Fund activities enter into agreements to perform work for their customers using various contracting methods. The authors believe that the selection of a particular type of contracting method directly effects the price charged for this work and thus impacts upon the cash position of the individual NIF activity and the entire NIF.

2. NIF Contract Types

The Activity Groups of the Navy Industrial Fund employ different approaches in charging their customers for goods or services provided. Basically, these contracting methods can be grouped into the following categories:

- Cost reimbursable
- Pre-determined rates
- Fixed price

Although different in their approaches, all three categories share the common long term goal of recovering all incurred costs.

The cost reimbursable contract requires that the customer pay for all allowable contract costs. Due to the uncertainty of the final price, this method is primarily used only in the absence of any valid basis for making a reasonable estimate of total performance costs. Cost reimbursement provides a means of shifting certain indefinite risks from the NIF to their customer and thus allows for the work to quickly begin even though a final cost cannot be determined. Unfortunately, these contracts offer little or

no incentive for effective cost control. Additionally, the cost reimbursable contract imposes an administrative burden upon both the NIF and their customer, requiring careful surveillance and auditing of costs. For these reasons, and since the development of the stabilized rate concept (addressed in a separate section of this chapter) this approach has fallen into very limited use.

The second method, the predetermined rate approach, charges customers a preset "stabilized rate", designed to recover costs considered to be predictable. Additionally, these costs are expressed as a function of another, more easily measured cost item such as direct labor man hours. Billable costs are then easily accumulated for each customer account. The selection of the predetermined rate value requires careful consideration of all cost trends to ensure they are captured within the rate charged. In this way the objective of zero accumulated operating results (ACR) can still be achieved. This method provides some incentive for the NIF activity to control costs, but does not provide a ceiling on total price. While this allows the scope of a work package to be expanded to cover new work, it also permits billing for both effectively and ineffectively performed work.

A third NIF contracting approach is the fixed price contract. Here, the work order involves an agreement between an individual NIF activity and its customer to perform a specific work package at a specified price. This fixed price may be either negotiated or determined mathematically using the product of work norms and applicable stabilized rates. The NIF activity must then perform the agreed upon work for this price regardless of the actual cost experienced. This method offers the greatest incentive for the NIF activity to control operating costs and it requires the least administrative burden of the three methods

discussed. It also places all financial risk and responsibility for performance on the NIF activity.

The NIF primarily uses the fixed price contracting method, although predetermined rates are also used in contracting with their customers. The use of these methods permits the possibility that the individual NIF activity could earn a profit or suffer a loss based upon their ability to control production costs. The selection of either of these methods over the cost reimbursement approach makes it appear that the objective of zero AOR is a long range goal, not necessarily to be achieved on each and every contract. Additionally, the goal of zero AOR does not necessarily override the desire to encourage efficiency at the NIF activities.

3. Contracts at Selected Activity Groups

The effect that the selection of a particular type of contract has upon NIF performance can be discussed by examining the three largest NIF Activity Groups and their contracting methods. The Naval Air Rework Facilities, the Military Sealift Command, and the Naval Shipyards use either fixed price contracts, predetermined rates, or a variation of these two approaches.

Due to the production-line nature of aircraft maintenance work, NIF management has decided that the NARFs should use firm-fixed price contracts for nearly all of their work. The fixed price, however, is not negotiated but rather calculated using work norms (predetermined amount of labor for a particular task) and stabilized rates established 18 to 24 months earlier. While the use of a firm fixed price contract may promote cost consciousness and encourage efficiency, the procedure for setting the rates often has prevented the NARFs from achieving a zero AOR,

most notably during FY 1983. In fact, the Naval Audit Service report on FY 1983 NARF cash position management stated that of the \$154.6 million loss suffered by the NARFs during that year, \$67.1 million was due to inadequate stabilized rates and \$25.9 million due to underestimated work norms.

The Military Sealift Command primarily uses negotiated fixed price contracts with an economic price adjustment clause. This clause allows for reimbursements for escalating costs in areas such as the price of fuel, and thus shifts a portion of the financial risk away from MSC and towards their customers.

Naval Shipyards use a hybrid of the firm-fixed price and predetermined rate type contracts. Typically, the customer is charged the product of a stabilized rate (price per manday) and the level of effort (number of mandays worked) through the first half of a ship overhaul. At this point, the scope of the remaining work and a firm-fixed price are agreed upon. This arrangement has allowed growth work during the portion of the overhaul when equipment is removed and opened and then set the final price when, optimistically, the scope of the remaining work package can be determined.

4. Accomplishments and Opportunities

While the use of predetermined rates and fixed price contracts has made achieving the zero AOR objective more difficult, it has probably achieved the reduction of production costs and thus promoted efficiency. Contracts which are not simply cost reimbursements provide a strong incentive to avoid waste and devise production and subcontracting methods that save labor and materials. Furthermore, these contracts are the simplest to administer

by both the NIF activity and the customer. Care must be exercised, however, so that the NIF activity is not also motivated towards taking undesirable shortcuts in their attempt to meet budgetary requirements. Inspections, tests, warranties, and other quality assurance measures should be a part of the contract in order to provide the necessary controls to avoid this occurrence.

NIF management has apparently determined that the advantages of using variations of the fixed price contract outweigh their disadvantages. In fact, consideration is being given to the idea of changing all ship overhaul contracts so that the final, firm-fixed price is established at the start date, rather than fixing this price at the overhaul's halfway point. The NIF customer believes that this change would hold down overhaul costs and increase the probability that the overhaul could be completed on time. The NIF activity also supports this move, believing that their experience is sufficient enough to adequately predict the scope of an upcoming repair package and the cost of completing this work. This knowledge would place them in a strong bargaining position.

Interestingly, the shipyard also believes that they will not be accepting a significant amount of additional financial risk. In order to understand this theory, an appreciation for the shipyard's view of financial risk must be gained. Figure 6.8 was developed by the Puget Sound Naval Shipyard and depicts financial risk (the risk of failing to complete a work package at a predicted cost) as a function of the point during the overhaul that this final cost prediction is made.

The broken line in the figure represents a straight line reduction in risk as the overhaul progresses. In other words, at the half way point in the overhaul there would be a 50 percent chance that the final cost could be accurately

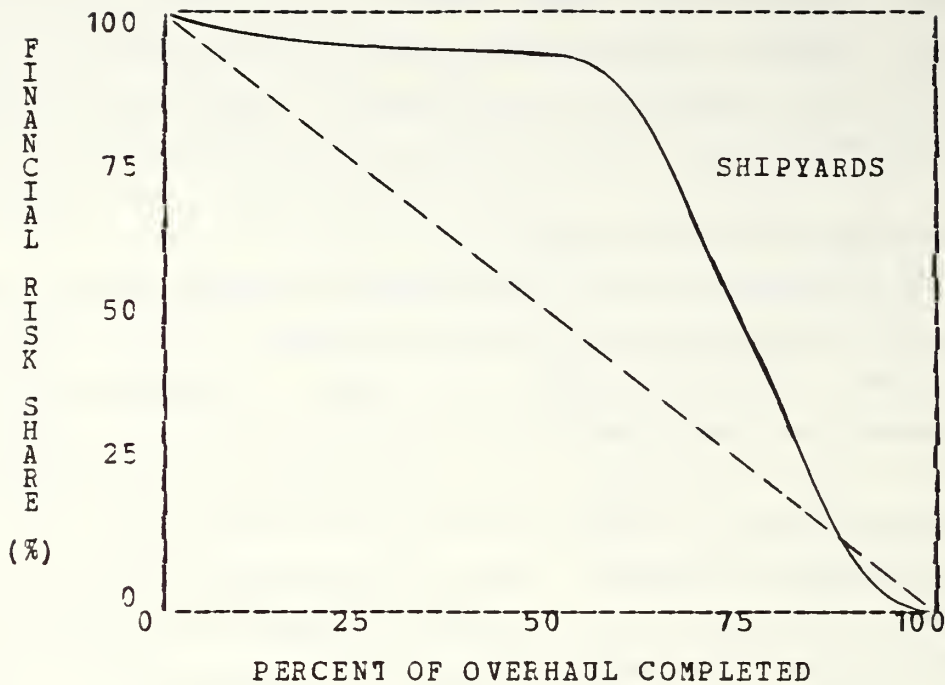


Figure 6.8 Financial Risk vs Percent Work Completed.

predicted. The experience of the shipyard, however, expresses this time/risk relationship as a non-linear function. They believe that a 50 percent chance of predicting final overhaul cost is not achieved until 75 percent of the overhaul is completed. More significant is their belief that at the halfway point in the overhaul, the point where a firm-fixed price agreement is presently made, they can do little better at predicting the final cost than if this prediction were made at the overhaul start date.

5. Recommendations

The authors support the use of fixed price contracts by the major activity groups of the Navy Industrial Fund. Requiring the NIF activity manager to complete the specified

work within the established price should promote efficiency. However, since these same managers are expected to achieve a zero AOR, the setting of the fixed price must be done fairly. The agreed upon price, while encouraging cost reductions, must also allow the NIF activity an opportunity to breakeven. For some contracts, such as ship overhauls, this requires a fair negotiation process, during which the scope of all work is identified, prior to the setting of the fixed price.

The authors further believe that establishing the price and size of an overhaul work package at the outset will provide a much-needed incentive for both the shipyard and their customer to better identify the specific work necessary to complete an overhaul. The present system of using a pre-overhaul test and inspection (POT&I) will have to be greatly improved upon. In this way, both parties would be better prepared to negotiate a fixed price.

When work norms and stabilized rates are used to set the fixed price, reasonable negotiations must have been a part of setting these rates. If this is not the case, the zero AOR objective may appear so far out of reach that managers are not motivated towards striving for what they perceive as an unobtainable goal.

In summary, contract design does offer an opportunity for improved cash positions at the NIF activities. The authors believe that many NIF operations are ideally suited for a profit-type motivation, which can best be brought about through the use of variations of the fixed price contract. These contracts will encourage the NIF activity to take many necessary measures in order to bring about cost reductions. This improved efficiency will not only result in more work accomplished for each customer dollar, but also offer the NIF activity an opportunity for short-run profits.

VII. CONCLUSIONS

During the course of their research the authors identified and analyzed numerous opportunities for the Navy Industrial Fund to contribute towards the effort of minimizing the Government's cost of money. The authors determined that the NIF improves the government's cash position through actions which improve the position of the NIF account at the Treasury Department. NIF refers to this account as "Treasury cash."

The authors found that the NIF performance of the existing Federal cash management programs is generally satisfactory, and areas which offer the potential for improvement were noted. The authors believe that efforts in these areas would produce a negligible effect upon either Treasury cash or the NIF activities' own cash records, referred to as "activity cash."

The authors did, however, discover numerous opportunities, not included in specific Federal programs, which would enable the NIF to better manage their cash. Additionally, the authors have identified areas where they believe action should be taken by NIF management in order to reduce the cost of conducting business. These opportunities offer the potential for the NIF to operate with a smaller amount of working capital, as well as the chance for the NIF to conduct their present business at a lower cost. These opportunities would produce a secondary effect of reducing the cash held outside the Treasury Department, thus contributing to the reduction of the Federal Government's cost of money.

The opportunities for the Navy Industrial Fund to manage cash and costs more effectively and efficiently are summarized as follows:

1. Reorganization of the NIF activities under a single command would improve cash management effectiveness and efficiency.
2. Use of flexible **stabilized rates** would minimize NIF yearly cash position fluctuations.
3. Consolidation of all NIF working capital into the corpus and development of a model to determine the optimum amount of working capital necessary to conduct NIF operations.
4. Development of procedures to reduce the amount of **unreconciled cash**.
5. Sustained management effort to **reduce NIF operating costs**, including reduction in direct material inventory, optimization of the size of the labor force, and reduction in overhead expenses.
6. Establishment of **production standards** without consideration of their impact upon prices.
7. Development of a program of **incentives**, designed to motivate managers throughout NIF towards actions which would improve both the effectiveness and efficiency of NIF cash management.
8. Increased use of **fixed price contracts** in order to promote greater NIF operating efficiency.

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