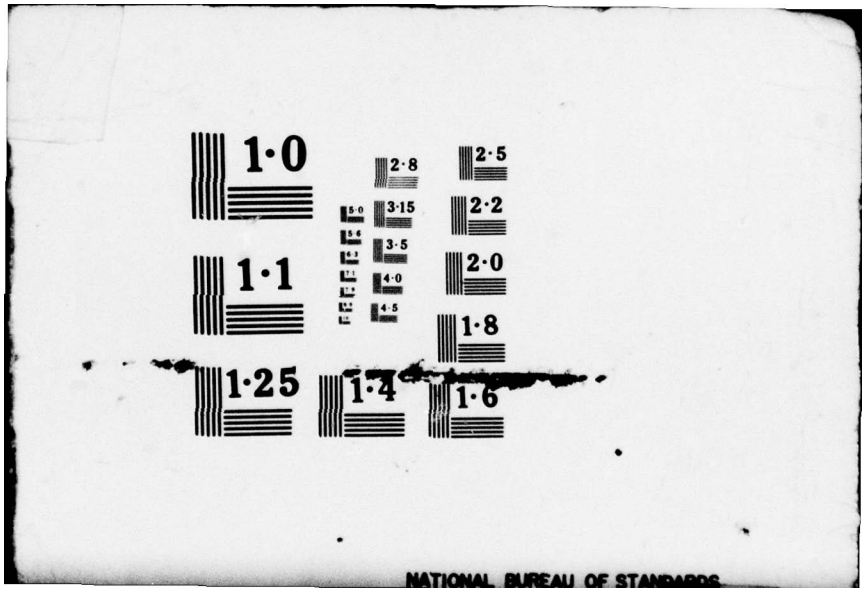
AD-A072 580 NAVAL POSTGRADUATE SCHOOL MONTEREY CA F/G 15/3
AN EVALUATION OF THE DEPARTMENT OF DEFENSE DOMESTIC BASE FACTOR--ETC(U)
JUN 79 H M SCARANGELLA

UNCLASSIFIED NL

1 OF 2
AD
A072580


1·0
1·1
1·25
1·4
1·6
2·8
3·15
3·5
4·0
4·5
2·5
2·2
2·0
1·8
NATIONAL BUREAU OF STANDARDS

(2)

NAVAL POSTGRADUATE SCHOOL

Monterey, California

(9) Master's thesis

THESIS

(6) AN EVALUATION OF THE DEPARTMENT OF DEFENSE DOMESTIC BASE FACTORS REPORT

by

(10) Henry Michael Scarangella

(11) June 1979

(12) 187 p.

Thesis Advisor: J. M. Fremgen

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) An Evaluation of the Department of Defense Domestic Base Factors Report		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis: June 1979 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Henry Michael Scarangella		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Naval Postgraduate School Monterey, California 93940		12. REPORT DATE June 1979 13. NUMBER OF PAGES
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office) Naval Postgraduate School Monterey, California 93940		15. SECURITY CLASS. (of this report) Unclassified 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution 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)

Base Operating Support Functions

DOD Budget

Domestic Base Factors Reports

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

By one account, in Fiscal Year 1977 the Defense Department spent nearly $10.7 billion for Base Operating Support functions. The Army, for the same period, spent $3.4 billion. Less than 10% of the DOD budget in that year, it still represents a substantial amount of money.

Congressional interest in just what constituted Base Operating Support functions and why they cost so much caused a new annual

DD FORM 1 JAN 73 1473 (Page 1)

EDITION OF 1 NOV 65 IS OBSOLETE

S/N 0102-014-6601

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

CONT

DOD report to be generated in 1978. The Domestic Base Factors Report (DBFR) attempts to answer those questions. The purpose of this thesis is to examine the report and determine to what extent it satisfies its objective. Emphasis is placed on the U.S. Army sections of the report.

Separate chapters treat the subjects of explaining what Base Operating Support (BOS) functions are and how they are financed; the background and purpose of the DBFR; a description of the DBFR format and content; the precautions to be taken when trying to use the data in the DBFR; an analysis of some data and potential uses; and recommendations for improving the report.

Approved for public release; distribution unlimited.

An Evaluation of the Department of Defense Domestic Base Factors Report

by

Henry Michael Scarangella
Captain, United States Army
B.B.A., Hofstra University, 1969

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

NAVAL POSTGRADUATE SCHOOL
June 1979

Author _____

Approved by: _____
Thesis Advisor

_____
Second Reader

_____
Chairman, Department of Administrative Sciences

_____
Dean of Information and Policy Sciences

ABSTRACT

By one account, in Fiscal Year 1977 the Defense Department spent nearly $10.7 billion for Base Operating Support functions. The Army, for the same period, spent $3.4 billion. Less than 10% of the DOD budget in that year, it still represents a substantial amount of money.

Congressional interest in just what constituted Base Operating Support functions and why they cost so much caused a new annual DOD report to be generated in 1978. The Domestic Base Factors Report (DBFR) attempts to answer those questions. The purpose of this thesis is to examine the report and determine to what extent it satisfies its objective. Emphasis is placed on the U.S. Army sections of the report.

Separate chapters treat the subjects of explaining what Base Operating Support (BOS) functions are and how they are financed; the background and purpose of the DBFR; a description of the DBFR format and content; the precautions to be taken when trying to use the data in the DBFR; an analysis of some data and potential uses; and recommendations for improving the report.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

I. EXPLANATION OF BASE OPERATIONS

A. INTRODUCTION

The traditional approach to scrutinizing the Defense Department's budget is to focus on the major items of combat power: ships, aircraft, and ground forces. Aside from being the weapons of war, these pieces of equipment and organizations carry monumental price tags and, therefore, are highly visible in the budgeting process.

As the scrutiny of Defense appropriations increases in the post-Vietnam era, areas of expense that previously received perfunctory treatment are now receiving greater attention. One of these areas is Base Operating Support (BOS) functions and costs. Characterized by one Senate staff member as a "nebulous mass of dollars" spent to sustain the operating forces with facilities and administrative support, BOS is easy prey to cost-conscious budgeteers. [3]

This chapter addresses some definitions of BOS and the sources of funds used to carry out BOS functions. Army installation and command structures are explained as a means of describing what BOS is in the actual, working environment. The intent is to reduce the imprecision and vagueness surrounding the concept of BOS so that, in later chapters, the difficulties encountered in trying to assess efficiency in BOS terms will be minimized.

B. DEFINITION

Base Operating Support functions and costs is an umbrella-like term. It covers all activity which is not directly related to the mission accomplishment of military organizations. Base Operating Support (BOS) functions and costs can be likened to overhead in the sense that they are not directly traceable to the final product or output. Unlike the traditional private sector handling of indirect expenses, BOS is not necessarily allocated to the final product but, rather, is identified and analyzed separately.

Since this thesis addresses BOS functions and costs as they pertain to the Department of Defense Domestic Base Factors Report, the full definition used therein is included in Appendix A. [32] A summary of that definition is provided here for the sake of continuity.

Base Operating Support costs are incurred by the consumption of resources at installations to provide services to operational units so they may pursue their mission objectives free of unrelated responsibilities. These BOS services can be categorized as follows:

1. Facility Services - maintenance of land, plant and equipment.
2. Administrative Services - Headquarters and command administrative functions, e.g., finance and accounting, legal, data processing.
3. Specific Services - consolidation of common functions and provision of a safe environment, e.g., transportation, procurement, physical security, fire protection.

4. Community Support Services - maintenance of morale, welfare and recreation (appropriated funds only), e.g., medical services, family housing, chaplain activities, clubs, libraries.

These services are considered base operating support services regardless of what organization is responsible for the funds, manpower or equipment needed to perform the service. In other words, the functions and costs are considered BOS if incurred by the installation commander, a tenant, a sub-installation or some external central authority.

By way of contrast, the term "mission" costs is used to describe those costs which directly relate to the accomplishment of the organization's mission. That mission need not be combat to qualify as a "mission," or non-BOS, cost. The cost of fuel for a hospital's ambulance is just as much "mission" cost as the fuel costs for the tanks in an armor battalion. Likewise, the cost of fuel consumed to heat the hospital is a BOS cost, as is the cost of heating the battalion's headquarters, barracks and supply facility.

In any accounting system there is legitimate room for latitude in classifying costs. A military installation is sufficiently complex so that complete consistency from one to another is simply not possible. An example is found in the difference in accounting for automated data processing (ADP) costs. At Fort Benjamin Harrison ADP costs are charged to the users of the service, whereas at Fort Benning the total cost is aggregated in the BOS activity key account for ADP. [4]

The definition of Base Operating Support described above and in Appendix A seeks to obtain as uniform treatment as possible throughout the entire Department of Defense.

C. SOURCES OF BOS FUNDS

Congressional appropriations are the primary source of resources used by the Army in all of its activities. The two appropriations acts which provide these resources are the Department of Defense Appropriations Act and the Military Construction Act. Data from the FY 1977 Acts are found in Table I. [17, 18]

The DOD Appropriations Act includes the following titles:

1. Military Personnel, Army (also Reserve Personnel and National Guard Personnel)
2. Operations and Maintenance, Army (also Army Reserve and National Guard)
3. Army Procurement
4. Research, Development, Test and Evaluation.

The Personnel titles provide for pay and allowances, subsistence, permanent change of station travel, etc. Operations and Maintenance (O&M) titles fund the costs of operating and maintaining all organizational equipment and facilities, procurement of supplies and equipment, civilian pay and benefits, morale, welfare, education and religious activities, etc. The cost of purchasing or manufacturing major items of combat or support equipment such as aircraft, missiles, weapons, tracked or wheeled vehicles and equipment, and ammunition, which are centrally obtained, is funded by

FY 1977 ARMY APPROPRIATIONS
($ 000)

Military Personnel		$9,748,595	37%
Army	$8,564,011		
Reserve	469,919		
National Guard	714,665		
Operation and Maintenance		$8,960,585	34%
Army	$7,898,285		
Reserve	356,100		
National Guard	706,200		
Military Construction		$ 730,210	3%
Army	$ 580,868		
Reserve	538,040		
National Guard	61,128		
Family Housing	34,410		
Procurement		$4,398,600	17%
Aircraft	$ 541,900		
Missiles	497,400		
Vehicles and Weapons	1,089,800		
Ammunition	902,900		
Other	1,366,600		
RDT & E		$2,280,816	9%
Stock Fund		100,000	.1%
TOTAL		$26,118,806	

TABLE 1

the Army Procurement Appropriation. The Research, Development, Test and Evaluation appropriation supports not only the mission but also the operation and maintenance of RDT&E facilities. [27, App. C]

Also included in the Appropriations Act are titles from which the Army receives some benefit. These include: Retired Pay, Defense; Salaries and Expenses, Court of Military Appeals; Research, Development, Test and Evaluation, Defense Agencies; etc.

The Military Construction Appropriations Act provides a small share of the Army's financial resources. [Table I] It funds the acquisition, construction, installation and equipment of temporary or permanent public works and military installations and facilities. There are separate appropriations in the Act for active Army, Army Reserve and National Guard construction.

Another appropriation contained in the Construction Act is for Family Housing, Defense. This Family Housing Management Account funds the acquisition, construction, alterations, and operation and maintenance of family housing. A separate amount is appropriated for each service. Unlike the services, Defense Agencies receive a separate appropriation for operation and maintenance as well as construction of family housing in this Act.

The resources needed to finance BOS functions come from both the DOD Appropriations and the Military Construction Acts. Most of the BOS dollars are supplied by the O&M

appropriation to cover the cost of civilians assigned to BOS functions (including contract work), utilities, administration, maintenance and repair of real property, transportation, etc. The Military Personnel Army (MPA) appropriation funds the cost of those soldiers assigned to BOS functions. Purchase of equipment used for BOS purposes such as communications equipment, fire trucks, etc. is funded by the Army Procurement Appropriation. The RDT & E Appropriation supplies funds for some BOS functions which benefit RDT & E facilities.

Acquisition and construction of facilities, including family housing, is supported by the Military Construction Appropriation Act. Minor construction, which is also an O&M funded BOS activity in the Army, is funded by this Act

It should be apparent that Operations and Maintenance is not synonomous with Base Operations Support. While the O&M appropriation is the major contributor to BOS, it is by no means the sole source of BOS funds. However, BOS is not universally understood to mean more than just Operations and Maintenance dollars or functions.

One major reason for the lack of a uniform definition of just what constitutes BOS is the existence of an eleventh and a twelfth program in the Five Year Defense Plan (FYDP) used by the Army. [Table II] Programs 11 and 12 are administrative budget programs designed to consolidate base operations costs which are funded only by the O&M appropriations. [29, p. B-2] The intent of the programs is to help

develop and justify the need for O&M funds and to assure control and adequate provision of support to the installation. [24, p. C-2] The BOS funds for an installation are provided from the major benefiting program known as the carrier program. For instance, a base whose primary mission is to support General Purpose forces would receive its O&M support of BOS functions from the Program 2 dollars.

FIVE YEAR DEFENSE PLAN PROGRAM STRUCTURE

Program	Title
1	Strategic Forces
2	General Purpose Forces
3	Intelligence and Communication
4	Mobility Forces
5	Guard and Reserve Forces
6	Research and Development
7	Central Supply and Maintenance
8	Training, Medical and Other General Personnel Activities
9	Administrative and Associated Activities
10	Support to Other Nations
11	Base Operations - Troop Support Activities
12	Base Operations - Real Property Maintenance

TABLE II

Another reason for the absence of a universally accepted definition of Base Operating Support is that there is a different definition used in the program element structure of the FYDP. [29, p. 6] A program element is a grouping of forces, manpower and costs associated with an organization and is a subdivision of one of the ten major defense programs. An example from Program 2 is "European Divisions." [27, p. 2-13] There are mission and service program elements and they may be comprised of only manpower and costs or just costs.

In this context BOS costs are aggregated as a service program element and associated with an organization or force (unit). The installation housing the organization or force loses its identity. The Five Year Defense Plan and the DOD budget are prepared using this program element structure.

Another version of a definition for BOS is found in the Annual DOD Manpower Requirements Reports (MRR). [30] This report is to be used with the annual DOD Military Manpower Training Report (MMTR). [1] The purpose of the MMR is to recommend to Congress, the military and civilian end strength levels, for each component for the next riscal year. One portion of the MMR contains the manpower requirements aggregated by the Defense Planning and Programming Categories as follows: [30, p. I-5]

1. Strategic
2. Tactical/Mobility
3. Auxiliary Activities

4. Support Activities - includes Base Operating Support

5. Individuals

For MMR purposes Base Operating Support is defined in a more limited way than is used in the DBFR. For instance, the MMR usage excludes personnel involved in morale and welfare functions, centralized supply operations, and depot level or centralized maintenance operations. Such personnel would be included in the DBFR definition of BOS functions.

Base Operating Support is defined in different ways for different purposes within the Defense Department. Each of these versions is well suited for a specific type of evaluation. Great care must be taken, however, before comparisons of data contained in each of these reporting vehicles can be made.

As a means of clarifying the funding sources for BOS as defined in the Domestic Base Factors Report, the following list is presented.

1. DOD Appropriations Act
    a. Operations and Maintenance, Army (and Reserve, National Guard)
    b. Military Personnel, Army (and Reserve, National Guard) - for military personnel assigned to BOS functions
    c. Research, Development, Test and Evaluation - only for RDT&E facilities
    d. Other Procurement, Army - for equipment used in BOS functions
2. Military Construction Appropriation Act
    a. Military Construction, Army (and Reserve, National Guard) - identified separately from BOS cost in the DBFR
    b. Family Housing, Defense - included in the Military Construction costs above in the DBFR

D. ARMY COMMAND AND INSTALLATION STRUCTURE

The Army, like the other services, is organized into commands which have distinct missions, all of which contribute to the general mission of preparing for land combat. These commands are called Major Commands (MACOMS) of the Army.

For the purpose of this thesis there are four MACOMS which impact upon Base Operating Support (BOS) functions and costs. A fifth MACOM, the Materiel Development and Readiness Command (DARCOM) is a principal major command charged with the development, procurement, supply and maintenance of Army materiel. The other four MACOMS are described in Table III.

The two major commands of primary interest are the Forces Command (FORSCOM) and the Training and Doctrine Command (TRADOC). FORSCOM, headquartered at Ft. McPherson in Atlanta, is the organization comprised of the Army's fighting forces in CONUS such as the 7th Infantry Division, Ft. Ord, California, and the 2nd Armored Division at Ft. Hood, Texas. Altogether, it commands the eleven CONUS based divisions, ten brigade sized combat units and nine Reserve readiness regions.

The Training and Doctrine Command is comprised of schools and training centers which run the gamut from individual basic skill training at posts like Ft. Leonard Wood, Missouri, to the Army's senior service school, the Army War College at Carlisle Barracks, Pennsylvania. Doctrinal development activities are carried out at its headquarters at Ft. Monroe,

Virginia, and at many of its training and education centers such as the Armor School at Ft. Knox, Kentucky.

PRINCIPAL MAJOR COMMANDS (MACOMS)

Name	Function
U.S. Army Forces Command (FORSCOM)	Direct and supervise CONUS based Strategic Army Forces (STRAF), Army Reserve and National Guard units; serve as the Army component of the U.S. Readiness Command; command forces oriented bases.
U.S. Army Training and Doctrine Command (TRADOC)	Responsible for individual training, education and doctrinal development; manage Reserve Officer Training Corps (ROTC) programs; command training centers and schools, training oriented bases and doctrinal development facilities.
U.S. Army Health Services Command (HSC)	Responsible for providing all manner of health services to CONUS Army personnel, dependents and retirees; command health service oriented facilities.
U.S. Army Communications Command (USACC)	Plan, engineer, install, operate and maintain Army fixed communication systems; doctrinal development.

TABLE III

Both MACOMS command CONUS installations. Some are single mission bases like Ft. Leonard Wood (basic skill training) and Ft. Polk, Louisiana (home of the 5th Infantry Division). More common are multi-mission installations containing organizations from several of the MACOMS. [29, p. 18] Ft. Belvoir,

Virginia, for instance, being the site of the Army Engineer Center and School, is a TRADOC base. Among its tenants are the Defense Systems Management College, the Army Mobility Equipment Research and Development Command and the Army Night Vision Laboratory, the last two being DARCOM organizations. Likewise, Ft. Knox supports the Armor School and a basic skill training center (both TRADOC activities) in addition to the 194th Armored Brigade, a FORSCOM unit.

This mix of activities at an installation confounds any attempt to apply a simple base classification system. Those classification schemes that are in use, including the one in the Domestic Base Factors Report, are of value only if it is recognized that an installation's primary mission designation is probably not a complete description of the activities it accommodates.

Multi-mission bases go hand in hand with multi-MACOM bases as the earlier examples indicate. One MACOM is charged with the responsibility for operating the base while the others are considered tenants. To some extent the host is powerless to control the nature of the tenant's operation and therefore its impact on BOS costs. For example, a TRADOC sponsored school, a tenant at a FORSCOM installation, begins two-shift operations. Utility costs will increase as the result of longer hours of operation; custodial contracts will cost more because of later work hours; etc. The host has little control over such matters but remains responsible to fund the BOS costs. Again, recognition that such relationships

exist is essential if a clear picture of each installation is to be obtained.

Not to be overlooked are those bases which support tenants from other services. Although generally few in numbers, these organizations, such as U.S. Air Force weather units at Army installations, present another aspect of the problem of controlling BOS functions and costs.

The standard Army Base Operating Support functions are described in Army Regulation (AR) 37-100-XX entitled, The Army Management Structure. It is issued for each fiscal year (the year being represented by the two X's above) and also changed as necessary during the year. It contains the codes used to account for funds from the FYDP programs. There is also a special Base Operations account (called the Z Account) which details specific BOS activities or functions funded solely by the O&M appropriations. Each activity is identified by a letter (A-4) and is called a key account. The total Z Account is then comprised of key accounts A through R. A brief description is included in Appendix B.

Although not shown in the Appendix, each key account is sub-divided into three basic groups of elements of expense: Civilian Personnel, Supplies and Equipment, and Contracts and Services. Further, each key account is assigned to one of the two administrative FYDP programs for BOS and is the responsibility of a Department of the Army primary staff office. This is described in Table IV.

BOS KEY ACCOUNTS BY ADMINISTRATIVE PROGRAM
AND FUNCTIONAL MANAGER

	Key Accounts	Functional Manager
Program 11 -	BOS for Troop Support Activities	
	A,B,C,D,E,F,Q	Deputy Chief of Staff, Logistics
	G,N	Deputy Chief of Staff, Personnel
	H,R	Chief of Engineers
	P	Assistant Chief of Staff, Automation and Communication
Program 12 -	Real Property Maintenance Account	
	J,K,L,M	Chief of Engineers

Note:

The Program 11 Director is the Deputy Chief of Staff, Logistics.

The Program 12 Director is the Chief of Engineers.

TABLE IV

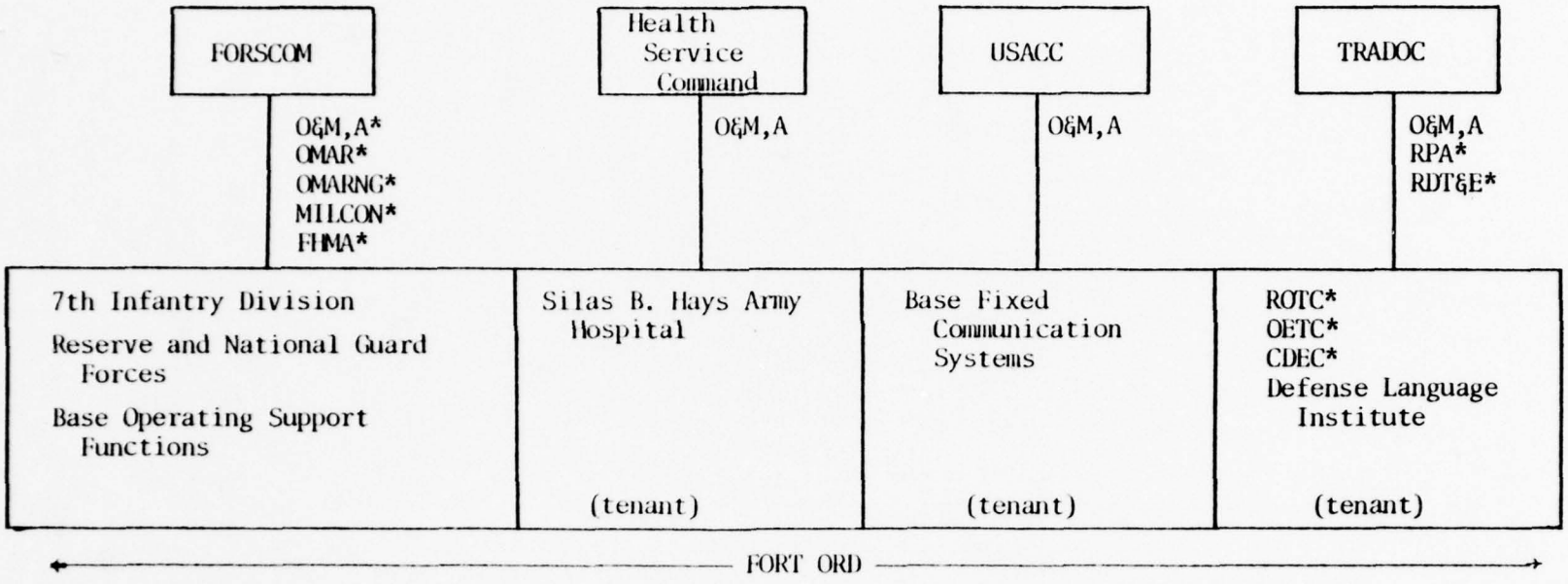
An example of the sources of funds for an installation is illustrated in Figure 1. The figure is based on the current assortment of tenant organizations at Ft. Ord, California. Housing a combat unit, the 7th Infantry Division (7ID), the primary mission category of the post is General Purpose Forces - General Purpose (Category 202).

(This classification system is described later in the thesis). In addition to the 7ID, Army Reserve and National Guard units train at Ft. Ord and at one of its sub-installations, Ft. Hunter-Liggett, California. For these reasons FORSCOM is the host MACOM.

Major tenant units include the Health Service Command hospital and several TRADOC organizations. The Organizational Effectiveness Training Center (OETC) and the Combat Development Experimentation Command (CDEC) operate from Ft. Ord proper. The Defense Language Institute (DLI) is a DOD activity, operated by TRADOC and located at another sub-installation, the Presidio of Monterey, California. Reserve Officer Training Corps (ROTC) activities, also a TRADOC responsibility, occur at Ft. Ord and Ft. Hunter-Liggett. Although headquartered at Ft. Ord, CDEC performs much of its testing and experimentation at Ft. Hunter-Liggett.

The type of funds provided to Ft. Ord and its tenants from their respective parent MACOMS are shown. As the host, FORSCOM furnishes the operating funds to the Division, the Reserve and National Guard forces, and finances the entire base operating support function for Ft. Ord and its sub-installations. There are no Military Personnel appropriations shown because those funds are not allocated by the Department of the Army (DA) to the MACOMS. Installations and MACOMS do not budget for military personnel costs because their compensation comes from an open allotment maintained

SOURCES OF FUNDS - FT. ORD



* Abbreviations:

O&M,A	- Operations and Maintenance, Army	FHMA	- Family Housing Management Account
OMAR	- O&M, Army Reserve	RPA	- Reserve Personnel, Army (ROTC)
OMARNG	- O&M, National Guard	RDT&E	- Research, Development, Test and Evaluation
MILCON	- Military Construction	ROTC	- Reserve Officer Training Corps
CDEC	- Combat Development Experimentation Command	OETC	- Organizational Effectiveness Training Center

Figure 1

at DA. This precludes having to keep track of every soldier with respect to the MACOM to which he is assigned as of the end of each pay period. There is an exception to this practice in the case of Reserve Officer Training Corps (ROTC) cadets. In this case TRADOC funds their training through the Reserve Personnel, Army (RPA) appropriation.

The Health Service Command (HSC) finances the mission activities of its hospital through the Operations and Maintenance, Army (OMA) appropriation. The Army Communications Command (USACC) does the same for its unit which operates the base communications system. TRADOC does likewise but adds the Research, Development, Test and Evaluation (RDTE) and Reserve Personnel, Army funds to support CDEC and ROTC prespectively.

Ft. Ord is a fairly typical installation with respect to its multi-mission/multi-MACOM configuration. The mix of activities at Ft. Ord is the kind which tends to optimize the use of a base's capacity. A large troop unit combined with some administrative or educational type organizations is likely to result in the fullest use of the facilities at an installation. [29, p. 24]

The Army's land holdings in the United States which are used as bases today have remained essentially unchanged since World War II. [29, p. 20] During the intervening years the force structure and its capabilities have changed dramatically. Today's combat units possess far greater mobility, longer range and more numerous weapon systems than their

counterparts of World War II or Korea. Fitting these organizations into bases which can adequately accommodate their training requirements for maneuver space, firing ranges and impact areas is difficult and often results in a sub-optimal arrangement. [29, p. 28]

The organization of the Army is very dynamic and, therefore, the creation, dissolution and reorganization of its components is a perpetual process. Accommodating these changes in the physical plant at the Army's installations is a continuing problem. In order to minimize the need for alterations or construction the existing facilities are used, even if this means operating from a less than optimal configuration.

The current indecision concerning the location of the 2nd Infantry Division (2ID) when it is withdrawn from Korea is a case in point. First, the question of when and if it will be withdrawn, despite the President's plan to do so, is unanswered because of Congressional and some Defense Department resistance.

In that atmosphere of uncertainty the search for a home base was conducted. Only one installation, Ft. Drum, New York could accommodate the entire division and then under less than optimal conditions. Ft. Drum is a Reserve forces base and would require considerable new construction to support the division. Other choices included splitting the division between two bases like Ft. Devens, Massachusetts,

and Ft. Dix, New Jersey; deactivating one of its three brigades and stationing it at one base like Ft. Bliss, Texas; deactivating the entire division and using its brigades to augment three of the four divisions which currently are one active duty brigade short of full strength; etc. Each alternative required very different basing options.

If and when the 2ID returns to CONUS, its home will have been determined by cost, physical plant, training and political considerations, given the existing installation structure. The point is that what organizations are housed at which installations is dependent upon many conflicting and complex factors. The goal is to optimize the unit-installation assignment. Under the circumstances which have, do, and will exist, that goal, more often than not, will fail to be attained.

E. SUMMARY

Base Operating Support functions and costs is a label with several definitions. In order to describe BOS uniformly across the Defense Department for the purpose of trying to better manage it, a common definition was established in the Domestic Base Factors Report and repeated in Appendix A. In this sense BOS is any indirect function or cost related to Facility, Administrative, Specific or Community Support services.

In general, each service receives its funds from Congress in the DOD Appropriations Act and the Military Construction

Appropriations Act. As defined above, most financing of BOS functions is provided both by the Operations and Maintenance titles of the DOD Appropriations Act and by the Military Construction Act (including Family Housing). It is not accurate to equate BOS with Operations and Maintenance only.

Most of the land the Army occupies today was acquired decades ago. The composition and capabilities of the Army have changed significantly over time and have created a current need for installation configuration much different than that which existed 30 years ago. To make the most effective use of the existing base structure many installations house several organizations whose different missions best utilize the given physical plant. Generally this results in a base being operated by one Major Command which then supports tenants from one or more other MACOMS. For this reason there is no simple way to categorize installations without obscuring the multi-mission/multi-Major Command relationships.

The Army is a dynamic organization. Fitting each of its parts into the base structure requires coping with the uncertainties brought about by changes in mission, responsibility, and political considerations. The current base structure is not ideally suited to the current needs of the Army's various organizations. It will never be ideally suited to such needs. A sub-optimal mix of bases and requirements is the only reasonably attainable goal.

II. GENERAL BACKGROUND AND PURPOSE

A. GENESIS AND EVOLUTION

Given the considerable amount of money spent each year to operate and maintain bases, coupled with the somewhat imprecise and varied meanings associated with Base Operations, there emerged an effort to better describe and justify budget requests for such funds. The Senate Appropriations Committee's Defense Subcommittee seems to have been in the forefront of such efforts. For several years prior to the hearings for the 1978 Defense Appropriations Bill, it had been trying to improve the information flow concerning the Operations and Maintenance portion of the bill. One of the largest single parts, it was considered to be the most poorly justified. [19, p. 135]

At the Committee's request, the Congressional Budget Office (CBO) analyzed ways to improve the O&M justification. [19, p. 136] The result was a recommendation to display budget data for DOD by the following output categories:

1. Strategic Warfare - offensive; defensive; command, control, communications
2. Tactical Warfare - land, air and naval warfare; tactical mobility
3. Defense-wide Forces and Support - intelligence, communications, technology base R&D, Defense-wide management
4. Non-Baseline Program - aid to other nations, military retired pay

The CBO further recommended that each of these four output categories contain the following input groups to show what was, or is, intended to be consumed in order to produce the given output. These input groups were:

1. Operations
2. Training
3. Technical Services
4. Base Costs
5. Unallocated Support
6. Communications support.

Note that this display format explicitly treats base operating costs in two input groups: Base Costs and Unallocated Support. The Congressional Budget Act of 1974 requires that the Defense Department display its budget in this format, beginning with the FY 1979 submission. [19, p. 138] The point here is not to comment on the efficacy of such a procedure but to illustrate one way the Congress has chosen to improve the visibility and clarity with which base operating costs are to be reported.

During the course of the Senate Appropriations Committee (SAC) hearings in the spring of 1976 it became apparent that some bases had no mission save providing support to family housing or tenant units. One example was Schilling Manor, Kansas, which was a government housing facility intended for occupancy by families whose military sponsors were overseas on unaccompanied tours. At the Committee's request, DOD furnished data on bases identified as containing little or

no active military force structure and/or combat type units or activities. [19, p. 30]

In November 1976, following up the data submitted on these selected bases, the Committee requested and received similar data for most major DOD installations. Grouped by mission type according to the Installation Defense Planning and Programming Categories (IDPPC), the data included population figures, base operating costs, school attendance figures and various indicators such as base operating costs per person, ratios of supporting to supported personnel, etc.

During subsequent hearings the Committee found all the services, but especially the Army, to be unresponsive to questions about base operating costs and efficiencies. [19, p. 31] The data presented and the answers rendered did not support each other. A common problem was the services' inability to explain to the Committee's satisfaction the reasons for large differences in base operating costs for installations found within the same mission category.

Using the DOD furnished data, the SAC decided to adjust the base operating funding levels for FY 1978. These adjustments were calculated by using the median Base Operating Support (BOS) costs per mission person for each mission category of installation and allowing a 20% unexplained variance above the hypothetical BOS cost based on actual mission population. Any budgeted amount in excess of the allowable variance was withdrawn. [19, p. 32]

For example, Ft. Dix, New Jersey (Category 508: Central Support Forces-Training, Medical and Other), was identified as a base spending too much for BOS. The median BOS cost per mission person for Category 508 installations was $3,232. Ft. Dix had a mission population of 8,937, allowing it a theoretical BOS dollar requirement of $28.9 million (8,937 x $3,232). Its actual BOS cost had been $33.4 million. The difference of $4.5 million was withdrawn by reducing both military and civilian personnel funding levels.

Some consideration was made for bases with special circumstances. The Alaskan post of Ft. Richardson, despite actual BOS costs more than twice the allowable level, was not decremented at all because of its relative remoteness and location in a very costly area. Similarly, Ft. Ord, California lost only half its theoretical overage because of some higher costs involved in changing missions from a basic training center to a divisional force installation.

Of the 109 Army bases for which data were provided, 20 were identified as having more than a 20% excess of actual over allowable BOS cost. Two of the 20 incurred no reduction in funding, six others lost a portion of the overage amount and the 12 remaining received a reduction equal to their overage.

So pleased was the Committee and its staff at having been able to review BOS costs somewhat systematically that it institutionalized the data reporting requirement in Senate Report number 95-325. [19, p. 34] The Defense Department was

directed to develop uniform definitions of base operating support costs, workload and performance measures, and post population profiles and to establish BOS costs for each type unit, e.g., a division. These data, including various descriptive statistics for each mission category, by service, were to be reported to the SAC annually, starting in January 1978. This requirement was and is being met by a document known as the Domestic Base Factors Report (DBFR) published by the Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics (OASD (MRA&L)). Details of the report's content and format are discussed in the next chapter.

Interest in base operations costs is not a new phenomenon. In 1971 the Army initiated a major study called the Analysis of Continental Army Command Base Operations. Known as the Maroun Study (after the major general in charge of the effort), the analysis focused on the identification and explanation of variances between installations in BOS costs. [22] Research was also being done on an individual installation basis to describe the BOS cost function better.

As public and Congressional scrutiny of the Defense budget heightened following the Vietnam draw-down, support costs became the target for cost cutting proposals. Combat to combat support resource ratios, also known as tooth-to-tail ratios, were the popular measure of efficiency. It was at this time in the mid-1970's that the Senate Appropriations Committee began its efforts to improve the information flow

concerning BOS costs. Not surprisingly, some new energy began to be devoted to this issue in the Office of the Assistant Secretary of Defense (MRA&L) in 1974. [14] Recognition of the vulnerability of support costs to budget cutting is expressed in a 3 February 1976 letter from the Assistant Secretaries of Defense (Comptroller) and (Program Analysis and Evaluation) to the Secretary of Defense. Discussing the previously mentioned Congressional Budget Act of 1974 (PL 93-344) and its new reporting format requirements, the letter states that not to provide the desired data display is to court budget reductions.

> ....Also, as it is now, our program categories make it easy to infer that at least a third and perhaps half of DOD's activities are really support "tail" without discernible mission identification. We invite cuts, In truth, our support activities such as training, medical services, central supply and maintenance provide combat capability. [23, p. 46]

The Congressional Budget Office was firmly in place by this time. It was capable of performing analytic functions for the committees and, thus, provided a new source of information. Also, with the growth of high quality professional committee staffs, the ability to cope with increased information input was enhanced. [12, p. 154]

The advent of a Domestic Base Factors Report or some similar type document should not have been wholly unexpected. Base operating support costs were significant portions of the annual Defense appropriation and were difficult to defend to an economy-minded Congress and the ordinary citizen. Having the resources to evaluate and examine cost data enabled the

Senate Appropriations Committee to ask pertinent questions concerning costs at specific installations. Unable to defend itself adequately, the Defense Department found its appropriations being reduced by virtue of data it had furnished. The obvious promise of such actions led the SAC to require future data submissions on an annual basis.

It would be naive to assume that the reason that the DOD could not explain the cost variances among its installations was that there was no valid explanation for them. This failure must be partly attributable to a lack of time to pre-evaluate the data before they were submitted to the SAC, i.e., inadequate preparation.

If the OASD (MRA&L) had been interested in this area since 1974, why was such a poor defense made? The answer may be found in the working relationship between the services and the DOD. Any effort to impose additional reporting requirements to satisfy a low visibility information need would surely meet bureaucratic resistance. To establish a DOD-wide, uniform and consistent reporting vehicle would require a considerable amount of persuasion if the need for such information was perceived to be negligible by the services. It is quite possible that the DOD staff, which was interested in this issue of base operations costs in a proactive way, was simply given the support it needed by the SAC directive to obtain the necessary data that internal impedance had denied it in the early years of its efforts.

All speculation aside, the Domestic Base Factors Report is a reality. It was submitted to the SAC in May 1978 (for FY 1977) and again in March 1979 (for FY 1978). The expected publication problems with a new document of this scope caused the slight delay in its release in final form.

B. PURPOSE OF THE DBFR

The purpose of the DBFR is not completely clear; it varies depending upon the organization for whom one works. Neither the Senate Report nor the DBFR itself states the purpose. Essentially, Congressional recipients of the report view it as a fact book which describes each installation and what functions it supports. The DOD proponent, i.e., OASD (MRA&L) considers it a management tool to be used by itself and the services, including their major subordinate commands, to identify high cost bases in comparison with similar installations.

Interviews with various House and Senate professional staff members revealed a common feeling towards the DBFR; it ought to be used more by DOD than the Congress to identify those installations whose costs of operation appear to be excessive. In other words, they believe that the onus is on the Defense Department to make such determinations prior to submission of the report to Congress. In that way DOD is not forced to react to the probings of the committees, but, rather, advises the committees of actions already taken or planned to ameliorate such variances.

Everyone agrees that the goal is to operate and maintain a base structure which adequately supports mission needs at the lowest possible cost. How to attain that lowest cost is not universally agreed upon. There are those who insist that closing bases is the only way to reduce costs significantly and those who believe that improving efficiency at each base can bring substantial savings. Adherence to one or the other philosophy is not necessarily related to whether one is on the Congressional or DOD side of the issue.

The whole base closure (or somewhat euphemistically - base realignment) matter is an obviously political issue. Because it is unlikely that any Congressman would recommend closing or reducing the activity level of an installation which would affect his constituency, the responsibility to do so rests with the Defense Department. It is Congress, however, which accepts or rejects the decision. Every year the process is repeated; DOD proposes that certain realignment actions occur, the constituencies respond, and Congress decides.

A perennial case in point is Fort Dix, New Jersey. For each of the last few years DOD has recommended it be reduced in activity level only to be rebuffed by the Congress. Finally, in 1979 it appears that the DOD recommendation will be accepted. This example bears out the stated feeling of one SAC staff member: If DOD is forceful enough and willing to take the political pressure, it can effect its base realignment desires. [3]

The DBFR does give some concrete data by which installations can be measured in terms of efficiency, e.g., the previously mentioned BOS cost per mission person figure. Having this kind of number to use as a basis for comparison makes the justification for realignments at least seem more objective than political and, therefore, easier to accept. Given this type of apolitical data, the congressman is in a much better position to explain to his constituents why "their" base is being closed and is, therefore, more likely to be receptive to DOD recommendations. Simply stated, the DBFR can facilitate the closure or reduction of bases that deserve such action. The politicized environment in Washington being what it is, none of the DOD or Congressional staffers interviewed would clearly state that this is one of the intended purposes of the DBFR.

Another apparent purpose of the report is to describe to Congress what is located at an installation and what is being done there. By furnishing data concerning population, physical characteristics and basic mission, a rough picture of the installation's function can be derived.

Whereas Congress does have the ability to analyze information by virtue of its professional staffs and the Congressional Budget Office, it is not immune to a data overload. The DBFR should contain the essential detail in as concise a form as possible. [7] In view of the magnitude of the decisions made at the Congressional level, the aggregation

of data into summary form is acceptable and useful. For example, population statistics need not be broken down into officer and enlisted groups; a composite figure is adequate.

The primary purpose of the DBFR within DOD is to identify high cost bases in comparison with others of similar mission types. There is not an automatic response (e.g., base closure) implied by mere identification of such a base. There may be sound reasons to keep a high cost installation open.

Consider the following common determinants of the military worth of a base: [13, p. 50-57]

1. Force Deployment - location of operational forces close to potential deployment areas and transportation networks.
2. Operations and Training - adequacy of weather, terrain, impact and maneuver areas, etc.
3. Multiple Missions - capacity to accommodate more than one type of mission organization, especially if one is a support type (R&D, headquarters) and one is an operational type (training center, divisional).
4. Future Flexibility - ability to accept additional mission organizations in the future.

The DBFR should highlight variant installations, which can then be evaluated to determine the causes for the apparent high or low cost. Consideration is given to the four determinants of military worth, above, and a decision made from that perspective. The Army's Alaskan posts are examples. While very costly when compared to other similar mission bases (because of their location), they represent the only

arctic training facility available to the service. The military worth is judged to exceed the cost of operating in such remote and climatically severe areas.

C. SUMMARY

The DBFR was the response to a need of both Congress and the Defense Department to define better what it was costing to operate and maintain the hundreds of installations comprising the base structure. Tighter constraints on resources and more visibility by virtue of the 1974 Congressional Budget Act set the atmosphere in which this need arose.

The Senate Appropriation Committee's limited, initial effort to review base operations costs systematically by comparing like installations revealed significant variances. Upon questioning, the Committee found the Defense Department unable to satisfactorily explain the high costs, nor could it discredit the Committee's methodology for identifying abnormally high cost bases. Encouraged by what was apparently a very effective means to highlight inefficient installations, the SAC institutionalized the reporting requirement to insure its use in future years.

There is no specifically stated purpose for the DBFR in the records of the Committee hearings which resulted in its creation. The using organization is free to define its purpose. Essentially, Congress uses it as a fact book of installation data to help it understand what activity is going on at each location. The ability to compare similar

bases and identify high cost (and presumably inefficient) ones is another purpose from the Congressional view. It also helps summarize voluminous data on hundreds of installations into a usable format for Congressional staffs.

The DBFR's purpose in the Defense Department as a whole is to allow decision making levels up the chain of command to make the same comparisons Congress will make and highlight those bases whose costs vary widely from norms. Then it can take action to reduce costs or prepare adequate justification to defend them.

III. DESCRIPTION OF THE DOMESTIC BASE FACTORS REPORT

A. GENERAL

The information required by Congress as the result of the Senate Appropriations Committee action in 1976 resulted in the publication of the Domestic Base Factors Report (DBFR). First published in its entirety in May 1978 (for FY 1977) it is now an annual submission prepared in the Office of the Assistant Secretary of Defense, Manpower, Reserve Affairs and Logistics (OASD (MRA&L)). The FY 1977 report was printed in two volumes, together numbering about 900 pages. The date of publication is intended to be in January of each year.

Considering the size of the document, its distribution is somewhat limited. However, it is sent to all cognizant Congressional committee chairmen and key staff members, the Congressional Budget Office, the Office of Management and Budget, and the Defense Documentation Center (for public access). Naturally, it receives wide dissemination throughout the DOD staff and copies are furnished to each service.

The data contained in the DBFR pertain to major installations of all the services in the fifty states and Puerto Rico. In general, government-owned-contractor-operated industrial plants, bases in the process of being closed, and minor installations, e.g., radar sites, are excluded. The FY 1977 report included data on 374 major installations.

B. FORMAT

The DBFR begins with a DOD Overview section containing tables and graphs pertaining to each of the three services. Typical information includes numbers of installations, acreage, real property acquisition cost, building area in square feet, total Base Operating Support (BOS) costs, etc.

Graphs are used to depict indicators, over time, for the DOD and for each service. For example, BOS cost per mission person, for FY 1976 and 1977, is depicted in a bar graph for the DOD, Army, Navy, Air Force and Marines. Similar graphs are used for BOS cost per gross square foot (GSF) of building area, percentage of personnel performing BOS functions that are military, average daily load of students per staff and faculty population, etc.

The bulk of the remainder of the report is presented in a columnar format. There are 85 columns used in the non-energy related sections and 37 columns in the energy related section. An example of each section is included in Appendix C. The 85 non-energy column headings are explained in the appendix; the energy column headings are self-explanatory.

The column headings in the non-energy sections are divided into three basic groups and are described in Table V. In the FY 1977 DBFR there were duplicate columns for data from FY 1968 and 1977, the Reporting Fiscal Year (RFY). In order to establish some baseline, FY 1968 was chosen because it was the year of peak involvement in Southeast Asia.

DBFR NON-ENERGY COLUMN GROUPS

GROUP	COLUMNS	DESCRIPTION	EXAMPLES
1	1 - 42	General	
1a	1 - 10	Facilities and Cost	Acreage, building area in gross square feet (GSF), backlog of maintenance and repair (BMAR), BOS cost
1b	11 - 21	Population	Authorized full-time assigned (AFTA), total and mission populations, dependent population
1c	22 - 42	Management Indicators	Building area/Total Population, Mission persons/BOS persons
2	43 - 63	Training	
2a	43 - 55	Training Activity	Staff and Faculty population, Average Daily Load (ADL) of students, school building area in GSF
2b	56 - 63	Management Indicators	ADL/Staff and Faculty, Building area (GSF)/ADL
3	64 - 85	Mission	
3a	64 - 77	Combat Structure	Number of divisions, brigades and battalions (combat and non-combat), items of combat equipment
3b	78 - 85	Management Indicators	Acres/Combat Brigade, Real Property Acquisition Cost/Combat Battalion

TABLE V

Facilities were operating at or near full capacity then and presumably experiencing the greatest degree of economies of scale. [14] The quality of the data reported for FY 1968 must be used with great caution, however. Retrieval of accurate data which are nearly ten years old is a difficult task in view of the Army system for storage and disposition of records. Furthermore, the Army Management Structure changes at least annually and, thus, makes comparisons between years, especially over such a long period, very tenuous. With appropriate recognition of these precautions, the FY 1968 data do provide some semblance of a baseline.

Following the DOD Overview section is the DOD/Service Summary. Starting with the DOD aggregation of 374 installations, data are presented for each of the non-energy columns. Each service is then treated separately, i.e., the Army's 109 installations followed by the Navy's 143 installations, etc. Each column in this section consists of several descriptive statistics which are computed from the aggregated data. In later sections the raw data for each installation are listed with the same statistics constituting the final entries in each column. The computed statistics include the sum, average, median and standard deviation based upon the raw data in that column.

Next in sequence after this introductory/summary portion of the report is the largest section, the non-energy related data presented by service by installation category. The Installation Defense Planning and Programming Categories

(IDPPC) used in the DBFR are explained in Table VI. They are the same as those used in the Base Structure Annex to the Defense Manpower Requirements Report (DMMR) but not in the DMMR itself. Army installations reported in the DBFR fall into the following IDPP categories: 103, 202, 204, 205, 303, 306, 402, 507, and 508. IDPPC 202 is illustrated in Appendix C.

All 85 columns of non-energy related data are reported for each IDPPC. If an installation category does not possess training activities and/or combat forces then, those data columns from Table V are simply omitted. An example is IDPPC 204. Since the activities covered by this category do not include training or combat forces, columns 43 through 63 and 64 through 85, respectively, are excluded.

Unlike the non-energy related data which are grouped by military service and by IDPPC, the next section is arranged by geographic region. The Installation Energy Consumption and Costs portion of the DBFR collects all bases within a geographic region (e.g., New England, West North Central, etc.) into one group. Data concerning consumption and cost by type of utility (e.g., steam, natural gas) are reported. The regions used are those of the Commerce Department's Bureau of the Census.

This section also includes various graphs depicting consumption and cost data. Examples include energy consumption percentages and costs by service and by type of energy;

INSTALLATION DEFENSE PLANNING AND PROGRAMMING (IDPP) CATEGORIES

IDPP	CATEGORY
101	Strategic Forces - Strategic
103	Strategic Forces - Intelligence and Communications
105	Strategic Forces - Guard and Reserve
106	Strategic Forces - Research and Development
202	General Purpose Forces - General Purpose
203	General Purpose Forces - Intelligence and Communications
204	General Purpose Forces - Airlift/Sealift Forces
205	General Purpose Forces - Guard and Reserve
206	General Purpose Forces - Research and Development
303	Auxiliary Forces - Intelligence and Communications
305	Auxiliary Forces - Guard and Reserve
306	Auxiliary Forces - Research and Development
307	Auxiliary Forces - Central Supply and Maintenance (Eastern Test Range)
401	Mission Support Forces - Strategic
402	Mission Support Forces - General Purpose
403	Mission Support Forces - Intelligence and Communications
404	Mission Support Forces - Airlift/Sealift Forces
405	Mission Support Forces - Guard and Reserve
502	Central Support Forces - General Purpose
503	Central Support Forces - Intelligence and Communications
505	Central Support Forces - Reserve and Guard
506	Central Support Forces - Research and Development
507	Central Support Forces - Central Supply and Maintenance
508	Central Support Forces - Training, Medical and Other Personnel)
509	Central Support Forces - Administration and Associated Activities
601	Individuals - Strategic
602	Individuals - General Purpose
603	Individuals - Intelligence and Communications
604	Individuals - Airlift/Sealift Forces
605	Individuals - Guard and Reserves
608	Individuals - Training, Medical and Other Personnel

TABLE VI

regional energy costs; consumption per person by region and per square foot of building area; etc. There are also summaries in columnar format with the same descriptive statistics used in the non-energy section.

It should be noted that the data input format required of the services is not the same as that published in the DBFR. There are 156 data entries furnished by the services and 122 (85 + 37) reported in the final document. Some of the input information is not published at all, e.g., the Uniform Installation Code, the primary and lesser mission codes, and the total number of buildings at an installation. Other service furnished data are aggregated in the published DBFR. For example, the estimated cost of the Backlog of Maintenance and Repair (BMAR) work is furnished by category (i.e., for buildings, utility systems, and all other real property facilities), but the DBFR reports only the sum of these costs. Also, various population data are furnished in terms of officer and enlisted categories which are then summed in the DBFR.

The general format of the DBFR is clear and readily usable, given the size of the document. The summary information in tables, graphs and columnar form provides a concise starting point for analyzing the data contained in the body of the report. Precautions which ought to be taken before embarking on an evaluation of installations based upon DBFR data is the subject of the next chapter.

IV. PRECAUTIONS CONCERNING USE OF THE DBFR DATA

A. GENERAL

The prodigious amount of information contained in the Domestic Base Factors Report requires some further explanation before it becomes useful. Much of what is there can too easily be misinterpreted or taken out of context. The value of the DBFR is contingent upon the intelligent use of its data. The following comments attempt to emphasize those areas which require further explanation in order that readers of the report may use it most effectively.

This chapter is arranged by category of information covered. The precautionary information pertaining to BOS cost and its components is presented first, followed by comments related to population, facility and mission data; reporting guidance and accuracy of data; and comparability among services, categories and installations. This chapter and the next deal primarily with the installations and data found in IDPP categories 202 (General Purpose Programs) and 508 (Training, Medical and Other Personnel Programs - Training Installations). Category 202 roughly corresponds to FORSCOM installations and the specific Training Installations sub-category of IDPPC 508, to TRADOC. To a lesser extent, IDPPC 205 (Guard and Reserve Programs), is also addressed.

B. BOS COST AND ITS COMPONENTS

The premier data element in the entire DBFR is the annual Base Operating Support (BOS) cost, found in column 9 in the non-energy section. As defined in Appendix A, it is intended to include all costs associated with BOS functions, regardless of source of funds, except Military Construction costs which are reported separately. Therefore, it should include the costs of acquiring equipment used for BOS purposes funded by the Other Procurement, Army (OPA) appropriation.

Based upon the input format furnished by the installations, BOS cost is the sum of the costs incurred in each of the following seven categories:

1. Military personnel performing BOS functions
2. Civilian personnel performing BOS functions
3. Purchased utilities
4. Rents and other contract costs
5. Acquisition of all supplies and material, regardless of source of funds
6. Acquisition of equipment purchased, regardless of source of funds
7. All other BOS costs, i.e., the remaining Z account costs.

BOS cost, as defined for DBFR purposes, includes recurring operating costs and non-recurring equipment investment costs. However, it excludes non-recurring military construction investment costs. A review of Army Audit Agency (AAA) reports relative to the FY 1977 and 1978 DBFR's reveal that this definition was not adhered to by the Army. [20, p. 6; 21, p. 3]

If the definition were followed explicitly, equipment costing more than $1,000 which was purchased for BOS purposes (and therefore OPA funded) would be included in each installation's annual BOS cost. In reality, the Army's fixed asset accounting system is structured such that this type of procurement action cannot be captured, especially at the installation level. [2] Furthermore, to combine investment costs for equipment purchases (e.g., data processing hardware or administrative use vehicles) with what would otherwise solely be recurring operating costs in a total BOS cost amount would be misleading to users of the data. Equipment acquisitions are expensed in the year of purchase and are not depreciated over the useful life of the asset. One installation making a multi-million dollar procurement for essential equipment would appear out of line with another whose purchase was made the year before. Since the reported BOS cost is used in many management indicators, it seems reasonable that only recurring costs be included if a measure of efficiency of operation in comparison with others is to be achieved.

As was pointed out in the AAA report from 1978, the DBFR definition of BOS cost results in inconsistent treatment of investment costs. [21, p. 5] Since military construction (including family housing) projects funded by the Military Construction Appropriation are excluded from BOS cost and separately reported, procurement costs should receive similar treatment. The AAA felt strongly enough about this deviation

from the DOD guidance that it specifically stated that it did not take exception to the Army position.

Another facet of BOS cost involves the reporting of hospital costs. The Army operates three major medical centers: Walter Reed in Washington, D.C., Fitzsimmons in Denver, and Tripler in Honolulu. It also maintains five regional hospitals: Beaumont at Ft. Bliss, Brook at Ft. Sam Houston, Eisenhower at Ft. Gordon, Letterman at the Presidio of San Francisco and Madigan at Ft. Lewis. The medical centers are all major installations themselves and are reported separately in the DBFR under IDPPC 508. The regional hospitals are all located on bases operated by one of the MACOMS.

In addition to these eight hospitals, many other installations have Army hospitals (as distinguished from medical centers and regional hospitals) as tenants. Those without Army hospitals are served by clinics. All of these medical facilities are subordinate to the Army Health Services Command (HSC).

Currently, the medical costs for the eight medical centers and regional hospitals are not included in any installation's BOS cost. Those posts possessing Army hospitals or clinics do include such costs in their BOS cost. In FY 1977, for example, $263 million of medical support cost for the eight hospitals was not included in any installation's BOS cost although medical services were rendered to them. On the other hand, Ft. Carson bore the cost of its

tenant Army hospital in the amount of $16.5 million, or 21% of its total BOS cost, and reported it in the DBFR. [20, p. 4)

This issue is further compounded when considering Army hospitals such as the one at Ft. Dix which have a regional responsibility but are not considered regional hospitals. The hospital at Ft. Dix provides support to various other DOD organizations (like McGuire AFB); 36% of the active duty people serviced by the Ft. Dix hospital were non-Army. Yet Ft. Dix, as the host installation, financed the full medical cost and included it in the DBFR BOS cost. [20, p. 4] This is not to say that the Air Force should receive service on a reimbursable basis but rather to illustrate the range of medical support costs currently included or excluded from reported annual BOS cost.

Medical costs can represent 10-20% of an installation's total BOS cost. [2] By virtue of an administrative designation as to type of medical facility, a host installation may report no support costs; or a fairly substantial portion of its total BOS cost could be attributable to a tenant hospital. The point here is not to judge the adequacy of the funding system but to highlight another area of inconsistency among different installation's reported BOS costs.

The costing of military labor assigned to BOS functions is done in two equally legitimate ways. One method uses an Army-wide average cost for officer and enlisted personnel, and the second method is based upon standard rates for each grade level. [20, p. 5] The latter method will give the

more precise results, although both include an average factor for quarters allowance, which inherently adds a distortion because of the variance in availability of government quarters among installations.

An example of the difference caused by using two costing methods is given in the FY 1977 AAA report. An unnamed installation reported BOS military costs of $25.8 million based on the Army-wide average method. The auditors, using the standard rate by grade method, computed the cost as $26.7 million, a $900,000 difference. Again, either method is acceptable; but allowing the use of both has caused inconsistency in the total BOS costs from base to base.

C. POPULATION, FACILITY AND MISSION DATA

1. Population Data

Most of the population data is expressed in end-strength terms, i.e., how many personnel are in a particular category on the last day of the reporting fiscal year (RFY). This snapshot of the installation's population may not be representative of the entire RFY.

Population data are used as an indication of workload. A representation of that workload by one day's data is not likely to convey the inevitable peaks and troughs which occur throughout the year. [10] For this reason the already referenced Maroun Study [22] and documents such as the U.S. Army Training and Doctrine Command Resource Factor Handbook [28] use man years as a measure of workload.

In this sense, the training population data are adequately described as is because of the nature of those numbers. The Average Daily Load (ADL) is not an end-strength but an average, and the Total Annual Output (TAO) of trainees is given as a cumulative figure for the year.

A problem arises in the reporting of Reserve Component (RC) and ROTC training. End strength reporting would be virtually meaningless because of the short-term and intermittent nature of RC and ROTC. It is quite likely, for instance, that no RC personnel would be supported on 30 Sep 19XX, the end of the RFY, whereas thousands would be in on-base training during the summer.

To accommodate this situation, population data are recorded in terms of man years for RC personnel. (A man year is the equivalent of one person working a full day on every normal workday for a year). The RC man years are converted to man months and then multiplied by a factor to arrive at a daily average equivalent load. Two factors are used, depending upon whether the RC personnel are engaged in flying or non-flying training. The resulting daily average equivalent is added with the other end strengths to compute the RFY Total Population (column 15).

Reserve training also creates other problems for installation record keeping and reporting. The costs incurred to support off-post Reserve Centers were included in the host installation's BOS cost. Generally, the man days of training conducted at these centers, i.e., weekend

training, was excluded from the population statistics. The result then is an understatement of the workload supported by the host. [20, p. 5] Another AAA discovered inconsistency concerned, in some cases, the exclusion of Army National Guard, ROTC, and Navy/Marine Reserves training data because of a strict interpretation of the DOD guidance, i.e., restricting reserve training to Army Reserve units only. At one post this caused an understatement of workload supported by 863 man years. [21, p. 4]

The retired population served by a base is also a difficult group for which to account. Their numbers are used to compute the RFY Population Supported (column 21) figure. Various techniques are used to assess retiree usage of Facilities. Surveys of commissary and exchange patrons, post motor vehicle registration, lists of retirement payments made to persons in the geographic support region, examination of medical facility records, etc., are all used to establish the size of the retiree population. None of these techniques are exact, and it also must be recognized that it is impossible to avoid double counting retirees served by more than one installation located in the same locale, e.g., the Naval Postgraduate School, the Presidio of Monterey, and Fort Ord.

Population data are grouped together in columns 11-21 (general population) and columns 43-52 (school population) in the DBFR. Some effort is made to identify population subgroups, e.g., Dependents (column 20), Average Daily Student Load (column 47), etc. Most of the management indicators,

however, use the aggregated population figures of Total, Mission, and Authorized Full-Time Assigned (AFTA) populations. The RFY Mission Population (column 16) is comprised of military and civilian personnel assigned to non-BOS functions, military and civilian school attendees, and Reserve Component personnel whose training is supported by the installation.

The cost of supporting a military person is different than that incurred for civilians by virtue of the medical care, housing, exchanges, recreation facilities, etc., required for the former. Further, school attendees differ dramatically in terms of support required. Basic trainees certainly present far different support cost profiles than do senior officers and civilians attending the Army War College. [4] Even the Maroun Study neglected to reflect this factor in its determination of BOS cost estimating relationships. [5, p. 4]

The type of unit assigned to a base determines the extent to which BOS is required. A training or school organization possesses little organic engineer, transportation, communication or administrative (finance, personnel, etc.) capabilities, to name a few. Alternatively, a division possesses all of those capabilities to some degree; and, therefore the cost to the installation of providing BOS to the division is much less, on a per capita basis, than it would be to the training organization.

All these variables are lost in the aggregated population data reported in the DBFR. The mix of personnel has a profound impact on the BOS cost incurred by an installation. This must be considered when comparing bases, even those within the same IDPPC.

2. Facility Data

An installation's size is reported in the Land Area column (14). The land area by itself does not accurately represent the configuration of the base. Posts such as Ft. Knox and Ft. Lewis are bisected by public highways which restrict the actual maneuver space available for training.

Sheer size does not necessarily imply adequate training facilities. Aside from the type of problem just menioned, some installations are located near growing population centers. The result is a limitation on the firing of tank guns and artillery weapons and a restriction on usable aircraft flight corridors, due to both noise and air pollution considerations. [29, p. 20]

Further, a very large base may require duplicate facilities because of widely separated tenant organizations. Multiple ration points, dining, recreation, religious, and maintenance facilities may all be required by virtue of the size and configuration of an installation. [4] The result is somewhat higher BOS cost because of an inability to take advantage of economies of scale.

Building Area expressed in gross square feet (GSF), reported in column 5, includes all buildings located on the

land reported in column 3, Land Area. This figure is joined by the School Facilities Building Area data (column 53) to represent the building space found at each base. Just as with the personnel information, the mix of building types is obscured in these data elements.

The advent of the All-Volunteer force concept has caused a great deal of new construction to be accomplished. Stressing quality-of-life considerations, the new barracks are dramatically different from the old wooden structures of yesterday. Thrty-man bays are replaced by four-man rooms, a single latrine is replaced with at least one on each floor, gas or oil central heating (and in some cases air-conditioning) units are used instead of a coal furnace for each building, etc. The extra doors, locks, windows, walls, toilet fixtures, etc., all create a very different BOS cost profile than for older structures. This mix of buildings at a given installation is not obvious from the Building Area data.

The manner in which buildings are used also differs and affects BOS cost. Barracks, offices, dining facilities, warehouses, maintenance shops, recreation facilities, airfield buildings, family quarters and classrooms are all likely to be found on any post. The energy and water consumption patterns, physical security requirements, custodial requirements, repair and maintenance characteristics, provision of furnishings, etc., will all be different for each type of facility as determined by its use. These and other factors then will impact on BOS cost.

The Real Property Acquisition Cost (column 4) is not especially useful for making decisions about fixed costs. It represents the sum of all such costs, valued at time of purchase, and not adjusted for depreciation. In no way does it represent the current value or the replacement cost of the existing real property.

The Backlog of Maintenance and Repair (BMAR) amount (column 8) is the cost of performing all the required real property maintenance and repair at the installation. It is essentially an indicator of how far behind in maintenance and repair the base is that year. The BMAR is recomputed and recosted annually.

Unused building space is maintained at a far lower standard than is occupied space. Therefore, the amount of inactive space will impact on BOS cost. Using FORSCOM in 1977 as an example, only four of 23 installations reported any inactive space and, with one exception, it represented less than 5% of the total gross square footage. [25] If these figures are typical, then inactive space, while impacting on BOS cost, represents a very minor issue in terms of accurately describing a base's building occupancy rate. However, the one exception reported that 20% of its space was inactive. Such abnormal utilization is worthy of note.

The other significant part of an installation's building space is family housing. It is not uncommon to find a thousand or more sets of quarters (of all types) on a FORSCOM or TRADOC post. Again, this kind of structure

presents a different BOS cost profile than for mission buildings or troop barracks.

Just as personnel mix affects BOS functions and costs, so too does the mix of building types and purposes for which they are used. The building area data in the DBFR does not illuminate that point.

3. Mission Data

The mission data found in columns 64-85 intend to describe the operational fighting forces located at an installation. These data columns are only included in two IDPP categories: 202 and 303. Therefore forces located at installations from the other categories are not shown. For example, the FORSCOM armored and infantry brigades at the TRADOC posts of Ft. Knox and Ft. Benning, respectively, do not appear at all. Similarly, neither the 3d Armored Cavalry Regiment nor the 11th Air Defense Group are reflected as being located at Ft. Bliss. Also, Ft. Richardson, the already acknowledged highly expensive Alaskan post, is depicted as not possessing any combat forces when, in fact, it houses the 172nd Infantry Brigade. This is because only divisional components are included in the Army portion of the DBFR. Separate brigades, such as the 172nd, are omitted altogether. And, since IDPPC 205 (Guard and Reserve) does not include columns 64-85, National Guard and Reserve units stationed there, albeit on a part time basis, are not reflected nor are they accounted for as a unit at the active Army installations at which they may be assigned.

The lowest echelon organization reported in the mission data is the battalion. This causes the omission of separate numbered companies, which are not assigned to a battalion as are most companies. Ft. Bragg has four such units that go unreported. [20, p. 13]

Those units of battalion and larger size that are reported as combat units are limited to the traditional "maneuver" units, i.e., infantry, mechanized infantry and armor. This results in the exclusion of artillery, air defense, engineer and aviation units, all of which have combat missions. At Ft. Hood for example, this results in eight artillery battalions (possessing 280 self-propelled howitzers and tracked ammunition carriers) being excluded from the combat battalion data. [21, p. 5] The result is to exaggerate differences among the total battalion and combat battalion numbers, implying, for example, that the force at Ft. Hood is far more "tail" than "tooth" oriented.

Likewise, Ft. Sill appears to be only the site of the Army Artillery Center and School. What is not shown is that it also accommodates the III Corps Artillery, consisting of 12 firing battalions, or approximately 160 guns of various sizes. Omitting the mission data columns from certain IDPP categories creates the impression that all the personnel reported in the population data are a function of the primary installation mission and, as appropriate, of the combat units identified as being located there. These few examples demonstrate the inaccuracy of that impression.

The combat equipment data (column 72) includes tanks, armored personnel carriers and aircraft. This list does not represent a total picture of the combat equipment actually at an installation. It was chosen to insure consistency; there should be no doubt as to what constitutes a tank, personnel carrier or an aircraft. Venturing into other types of equipment poses additional problems. [14] For example, adding artillery pieces means having to define whether that means only howitzers, howitzers and mortars, or howitzers and mortars above a certain size, etc. While this definitional problem should be recognized, it is still true that Ft. Hood, just by virtue of the eight artillery battalions previously mentioned, did not report the 144 howitzers in those battalions as combat equipment. Add to that the air defense and anti-tank weapons and there arises a considerable number of legitimate items of combat equipment being omitted from the report.

D. REPORTING GUIDANCE AND ACCURACY OF DATA

1. General

The Army Audit Agency, after reviewing the FY 1977 DBFR submission, stated that neither the data nor the resulting management indicators were

> . . . reasonable for comparing the cost and operational efficiency of the various installations. The DBFR data were not considered reasonable because of the significant and numerous inconsistencies and errors disclosed by our review. [20, p. 13]

While acknowledging improvements over the previous year, the

AAA report on the FY 1978 input still maintained that the data and management indicators were of little use for making comparisons because of continued errors and inconsistencies.

Errors in reporting are understandable, especially in the early years of submitting the data. By the time the input reaches DOD for consolidation into the DBFR, has passed through the installation (point of preparation), the MACOM and Department of the Army. All that transmission and processing effort inevitably causes other errors. Given time, this sort of problem can be minimized.

It is interesting that, at least in FY 1978, the Marine Corps prepared the DBFR at its Headquarters for each Marine installation. In an audit similar to the AAA report, the Naval Audit Service shows a very low error rate for Marine Corps input compared with Navy input. [33, p. 2] The Navy submits its data as the army does, from the installation. The two Marine bases audited were found to average five errors each, whereas the five Navy installations averaged 37 errors apiece. It is reasonable to assume that the centralized report preparation undertaken by the Marines impacted favorably on the error rate of their input to DOD.

The quality of data then is not of the highest caliber by auditing standards. However, none of the interviews conducted with Congressional staff members, OMB analysts and others revealed any hesitancy about accepting the data at face value. The magnitude of some of the discrepancies uncovered by the AAA are on the order of hundreds of

thousands of dollars (both over and under-stated) and tens of thousands of man days (for Reserve components). In a ten billion dollar BOS program such amounts may appear immaterial, but combining these kinds of errors from all installations could affect the aggregate figures.

The more important type of errors result from unclear guidance. With several hundred installations from all the services reporting data, clear guidance is a necessity. At the very least all submissions should be consistent, even if accuracy suffers somewhat. Comparisons between installations demand consistent data which can only be achieved through lucid, comprehensive guidance.

Preparing such guidance for use by four services is a very difficult task. One would think that the entries for an installation's city and state could be provided with perfect accuracy and consistency. The Naval Audit Service report, however, disclosed problems: Did "city" mean post office or geographic location? Did "state" pertain to the location of the city or of the installation? [33, p. F1]

Development of the guidance was basically a DOD project with little service input. It has changed somewhat each year and, given the evolutionary nature of the DBFR, will continue to change. [14] The findings of both the Army and Navy auditing organizations clearly point out the continuing need to further define and tighten definitions in order to improve consistency, at least on an intra-service basis. In this report consistency of data is paramount.

A cognizant interviewee who prefers to remain unnamed has raised the point that DOD and the services might benefit from a report to Congress which cannot simply be taken at face value. If information is prepared for Congress and if their use of that information can result in funding cuts, then those furnishing the data are better served if simple, quick analysis is not possible because of inconsistencies in the data. A compilation of data which stand entirely on their own can be a very potent source of power in the politics of Congressional appropriations.

From the services' viewpoint, data which require amplification and explanation before they can be employed, present less risk than a report which can be used without service assistance, especially in the appropriations process. As has been mentioned, the guidance necessary to produce such a stand-alone report is extraordinarily difficult to develop. So, some ambiguity is inevitable. However, there are problems which have been reported by the AAA in consecutive years, e.g., treatment of medical costs, which remain unresolved. Suggestions to conduct an all-service conference to address inconsistencies have been made but have not yet been acted upon. [11] There is apparently some credence to the thought that the military departments' parochial interests are best served by allowing some degree of imprecision to exist, especially if one accepts the premise that a perfect stand-alone document is virtually unattainable under any circumstances.

2. Population Data

Reserve component training data suffer from unclear guidance. With respect to inactive duty training (IDT) and annual training (AT) the AAA found installations reporting no man days despite IDT having been performed, reporting AT man days for only battalion size or larger units, and reporting in some cases IDT man days performed at Reserve Centers and at the host installation and in other cases only at the installation. [20, p. 4]

Several other audit findings resulted either from erroneous Army supplemental guidance (e.g., to include student ADL in the AFTA population) or, more commonly, from bases failing to follow the DOD guidance consistently. [21, p. 6] An example of the latter is including military and civilian personnel who serve at Armed Forces Entrance and Examining Stations (AFEES) in the installation population while excluding the AFEES BOS costs and real property data. In this case no AFEES data should be included in the installation's DBFR.

There are several personnel data areas requiring more comprehensive guidance. Groups of personnel classified as transients, hospital inpatients and prisoners at confinement facilities are not included in the population data but are reflected in BOS costs. One base with a personnel center had an unreported average daily transient population of 700. Similarly, ROTC instructors and cadets are not clearly to be

included in population data; yet, the resultant BOS costs invariably are reported. [20, p. 11-12]

Virtually all bases have exchanges and other commercial enterprises (banks, dry cleaners, watch repairs, credit unions, etc.) which are not directly supported by the host installation. The limited support rendered to such activities, e.g., utilities, is generally reimbursed to the installation. Reporting of the employees varies from none to a full accounting of all employees. The treatment of this population group and its limited impact on the base's BOS cost cause this to be an area susceptible to wide over or under-statement of workload.

3. Cost Data

As previously explained, the acquisition costs of BOS equipment funded by the procurement appropriation were omitted from the Army BOS cost. Although clearly contrary to the DOD guidance, the Army chose to use its own orientation, and not without some very good reasons. In this instance the clarity of the guidance is not in question but, rather, the fundamental concept underlying the guidance.

Military Construction (MILCON) costs are an area fraught with imprecision. The definition for column 6 (MILCON Not Completed) and column 7 (Five Year Defense Plan (FYDP) MILCON) are found in Appendix C. The former is used to report the cost of all MILCON projects which have been approved, funded by any appropriation, and started but not completed for the RFY and the two preceding years. The FYDP

MILCON column contains the cost of MILCON projects authorized in the FYDP, funded, but not yet started.

The AAA found that some installations interpreted the guidance to apply only to MILCON projects funded by other than O&M appropriations. By excluding O&M funded minor construction, the MILCON Not Completed data were understated by as much as 21% [21, p. 6] The same AAA report also found that projects not started but reported were, in effect, causing budgeted values and not actual costs to be included as MILCON costs.

Inconsistencies between the DBFR reporting guidance (issued by DOD) and the definition of FYDP MILCON (column 7) resulted in the FY 1979 FYDP MILCON data being omitted from the FY 1977 DBFR. The reporting guidance called for including FY 1980 to 1983 costs whereas the definition for column 7 required that costs for FY 1979 to 1982 be reported. The installations followed the reporting guidance and, thus, caused the omission of FY 1979 FYDP MILCON costs. [20, p. 6]

4. Summary

A report the size and scope of the DBFR invites errors to be made. Each service must institute quality control procedures to minimize errors, but they will never be completely eliminated. Consistency, with reasonable accuracy, is paramount. Consistency of data, or the lack thereof, determines the viability of the comparison process, which is the primary purpose of the DBFR. It does not matter so much what is being compared as long as it is clearly

defined and scrupulously uniform from sample to sample. The reporting guidance needs to be improved in the population and cost areas to make the DBFR document more useful to external groups, if, in fact, that is the objective.

E. COMPARABILITY AMONG SERVICES, CATEGORIES AND INSTALLATIONS

Despite the fact that the DBFR is intended to be a report capable of providing comparative data, great care is necessary in doing so. Inconsistencies are prevalent in the definition of data elements and in the categorization of installations. Recognizing these inconsistencies is a prerequisite to intelligent use of the DBFR.

The prefatory material in the FY 1977 DBFR cautions against making inter-service comparisons; the four services are just too dissimilar in organization and modus operandi. This point is well supported by the different treatment of equipment procurement costs by the Army and the Navy mentioned earlier. In another instance, the Army essentially subsidizes BOS costs by virtue of its divisions performing BOS functions financed by mission funds. This is not the case in the Air Force, where operational squadrons and wings possess virtually no BOS capability. [8] If such a critical data element as BOS cost is not consistent among the services, then most comparisons are of little value. And, when comparing just Army installations, the inconsistent treatment of medical costs must also be recognized.

When using the report recognition must be given to the lag inherent in the data. In any year the DBFR contains information which was current as of 30 September, e.g., the end of FY 1978. The report is published in January of the following year (FY 1979) and used by Congress in its hearings during the spring and summer to influence the budget for the upcoming fiscal year beginning on 1 October (FY 1980). During the fiscal year in which the DBFR is used by Congress, i.e., the budget execution year (FY 1979), changes are being made to the funding levels of the services and their installations. These changes are not reflected in the DBFR which is being used to establish funding for the next budget year, i.e., FY 1980.

This issue is of concern not only to the services but also to some in Congress. [34] The problem can be resolved during the committee hearings process by furnishing data updates as needed. Of some relevance is the fact that, when the hearings begin, the data are only six months old and, given the level of magnitude at which the committees and Congress function, only major mission or funding changes are going to be pertinent. [7]

Besides comparing services, the next most obvious basis for comparison is the IDPP category breakdown. As already established, the IDPPC does not comprehensively describe the missions of each installation. The Training, Medical and Other category (IDPPC 508) may be the best example. Even when just training bases are taken alone, there are great

differences between recruit, flight and professional development training bases, to name a few. There is no simple way to categorize installations without losing some of their distinctiveness.

This can be illustrated by referring back to the account of how the Senate Appropriations Committee (SAC) used median BOS cost per mission person to adjust various bases' appropriations. The SAC used FY 1975 data adjusted for inflation, which data are not readily available. But, by using the data in the FY 1977 DBFR, the fallacy of considering one IDPPC as a homogeneous entity can be illustrated. Table VII lists four sub-categories of IDPPC 508, composed of the eight high cost installations identified by the SAC. This table compares the median BOS cost per mission person for category 508 as a whole with the median cost per mission person in each of those four sub-categories. The differences between the category and sub-category median costs are substantial in some cases. Consideration must be given to the fact that some of the sub-categories contain only a few bases that significantly influence the size of the median cost. Nevertheless, homogeneity within an IDPPC is not a supportable assumption for this and other previously discussed reasons, such as multiple mission bases and variant personnel mixes.

Although the IDPP categories seem to equate to the MACOM structure, there is not nor was there intended to be a perfedt match. Categories 202 and 508 are illustrative. The former is primarily comprised of FORSCOM posts and the

COMPARISON OF MEDIAN COST PER MISSION PERSON FOR IDPPC 508
AND ITS SUB-CATEGORIES

IDPPC 508 Sub-Categories	Median IDPPC 508 Cost ($)	Median IDPPC 508 Sub-Category Cost ($)	Difference ($)
Hq and Administration Forts Monroe and Sheridan	5508	14590	9082
Professional Development Training Fort McNair and Carlisle Barracks	5508	13184	8306
Recruit Training Fort Dix	5508	5603	95
Specialized Skill Training Forts Benning, Eustis and Hamilton	5508	5240	(268)

TABLE VII

training bases in Category 508 are basically TRADOC installations. However, IDPPC 202 includes Ft. Story, which is a sub-installation of Ft. Eustis which is a TRADOC post in IDPPC 508. Ft. Meyer, although an IDPPC 202 base, is not a FORSCOM installation. Ft. Sam Houston, home of Brook regional hospital and a major medical training facility, would appear to be a Health Service Command installation. In fact, it is a FORSCOM post included in IDPPC 508. The list of similar instances is too long to duplicate here.

Sub-installations present another enigma to DBFR users trying to make comparisons. The parent installation furnishes varying degrees of support to its sub-installation depending on the latter's mission, size and geographic proximity to the parent. Typical of the services rendered are finance and accounting, civilian personnel, procurement and data processing; all of which are also typical BOS functions. The manpower, equipment, supplies and contract costs of providing these services are borne by the parent installation. For purposes of the DBFR, the sub-installation will show lower BOS costs and manpower resources utilized, while the parent installation's data will be distorted upward. [20, p. 12] This is not troublesome from a funding viewpoint but it does display misleading information for the unaware user. Since many sub-installations (e.g., Presidio of Monterey, Ft. Story, Hunter Army Airfield, Camp Perry, etc.), are also listed in the various IDPPC's their identification as sub-installations is disguised. Likewise, there is no way to distinguish

those bases which support sub-installations from those that do not.

The hidden combat forces based at some posts present yet another difficulty when comparing what appear to be similar installations. The fact that the population data include those soldiers assigned to such posts aggravates the matter rather than clarifying it.

For instance, comparing Ft. Gordon, Ft. Sill and Ft. Benning would, on the surface, seem reasonable. They are all in IDPPC 508, subordinate to TRADOC, and have primary missions of specialized skill training. What does not appear in the DBFR is that Ft. Sill also houses III Corps Artillery, consisting of three brigades, and Ft. Benning is the home of the 197th Infantry Brigade. All the soldiers in these FORSCOM units are accounted for in the population data, but the existence of the units and their equipment is not. The AFTA, Total, and Mission population figures will reflect the extra people just as if they were connected to the training mission of the post. BOS costs will be affected because of the real, but hidden, mix of units and personnel on base. For example, the Corps Artillery possesses engineer, medical, maintenance and transportation capabilities which are financed by mission, not BOS, funds. Therefore, the burden on Ft. Sill for providing these typical BOS services is reduced. None of this information is at all apparent from the DBFR alone. What started out as looking like three similar installations ends up showing marked dissimilarities.

F. SUMMARY

The Domestic Base Factors Report is too complex a document to be used in a simplistic way. The idiosyncracies of each service make any attempt to display Base Operating Support costs a complex problem. Intelligent use of the DBFR demands that close attention be given to the inconsistencies inherent in the data.

BOS cost, the premier data element, is typical. The services differ in terms of what they include in the total. Within the Army, medical costs are treated differently from base to base, as is the costing of military labor. The Population data are generally reported in end-strengths, which do not fully describe what the actual workload was during the year. Reserve Components bring a host of problems to the report. How to account for personnel supported at various training sites for different types of training has been a complicated issue which resulted in widely variant reporting procedures. The mix of personnel and units supported by an installation affect its BOS requirements and costs. Real property configuration, age, type and utilization all affect BOS cost and contribute to the uniqueness of each installation.

Inconsistencies in the data result from errors in recording and processing as well as from unclear guidance. In the judgement of Army auditors the DBFR was not usable for making comparisons between installations, so serious were the inconsistencies and so numerous the errors. The extraordinary

difficulty in devising comprehensive, lucid guidance was clearly illustrated by the request for a clarification of how to determine a base's city and state.

Recognizing that the DBFR is used to make comparisons, consistency in the data is crucial to the report's utility. Even accuracy may be sacrificed to some extent as long as scrupulous care is taken to preserve uniformity. Reserve Component and Military Construction data are the two areas most in need of improved reporting guidance and definition.

A multitude of issues bear on the problem of comparing seemingly similar installations. The IDPPC system, just as any other classification system, is susceptible to all manner of difficulties. Multi-mission bases are not identified; installations within a given IDPPC differ greatly with respect to missions, personnel and unit mix, etc.; and MACOM structures do not coincide exactly with the bases in an IDPPC. Further, combat forces are hidden at several posts and parent/sub-installation relationships are entirely undisclosed.

Serious misrepresentation will result if the DBFR is siezed by an unwitting user and subjected to perfunctory analysis. Careful attention to the multitude of inconsistencies and vagaries in the data is essential for productive use to be made of the report.

V. USES AND ANALYSIS OF DBFR DATA

A. GENERAL

1. Basic Uses

Two basic uses for the DBFR are evolving as it becomes a more familiar document in the Congress and the Defense Department. Primarily, the DBFR is used to make comparisons among services, Installation Defense Planning and Programming Categories (IDPPC), geographic regions, and installations within the same IDPPC or region. Its secondary usage is as a handbook of installation data and management indicators. There is a third function which the report will serve in the future as annual data are recorded, i.e., trend analysis.

Use of the DBFR in its primary role is affected by the precautions noted in the preceding chapter. Nonetheless, comparison of installations is the principal function currently served by the document. Limited as they are by the highly aggregated nature of the data, the results of such comparisons can only be to serve as exception reporting devices, i.e., identifying widely variant bases which deserve further investigation. Ascertaining the reasons for the variance requires far more detailed information than that found in the DBFR.

As a fact book, the DBFR is useful at the Congressional level of decision making. It does present more information on more installations than any other single document.

However, in terms of presenting an accurate picture of what BOS costs are being spent to support, the report is deficient. This deficiency was treated earlier in Chapter IV and recommendations for improvement are enumerated in the following chapter.

As data are collected over time, it will become possible to compare installations on the basis of trends as well as for any given year. The direction and rate of change of the Backlog of Maintenance and Repair (BMAR) estimates or the percentage of BOS cost accounted for by purchased utilities represent the kinds of information which are appropriate to watch over time. This function of the report will be rendered useless if the consistency of data definition is not maintained from year to year.

2. Measurement of Efficiency

The DBFR attempts to furnish information which is useful for determining efficiency. There is no attempt to assess effectiveness, since no goals or objectives are stated. The notion of efficiency used in the DBFR is one of comparing installations on the basis of cost per unit of input where inputs are resources such as personnel or facilities. This concept of efficiency, as distinguished from the classic output per unit of input definition, is made necessary because of the difficulty in quantifying output for Defense Department installations. The contribution a base makes to the preparedness of the defense structure is, in no way, reflected in the DBFR. In this respect, the report is

typical of others which deal with the notion of efficiency in the Defense environment.

Without a quantifiable statement of objectives, the effectiveness of installations cannot be judged. The efficient base may well be an ineffective one and vice versa, although only its efficiency rating will be apparent from the DBFR. The assumption implicit in the DBFR is that each installation contributes the same degree of support to the preparedness objective; some just consume more resources to render that support.

It is the intention of the DOD proponent for the DBFR to establish targets for the services to attain. [4] They will be developed as more data become available each year and permit the identification of norms on the basis of trend analysis. Initially, the guidance will be of a general nature and included in such documents as the Program Objectives Memoranda guidance which DOD furnishes the services.

Instituting targets for the services accomplishes several things. It sets a visible standard by which their performance will be judged. In this way Congress, DOD and the services are all operating by the same set of rules. If those rules are unsatisfactory to the Congress, it can take issue with the Defense Department and does not have to deal with each military department in addition to the DOD.

Further, setting standards will help to move away from the current situation in which efficiency is judged in relation to the performance of the specific group of

installations in question. In this case, the group may be operating very inefficiently, but, as long as all the installations are all inefficient together, there will always be a neat arrangement of bases spaced along an efficiency-inefficiency spectrum, giving the illusion that some are actually operating efficiently when, in fact, that is not true.

Establishing standards will not be easy nor will it be a panacea for solving the efficiency measurement problem. Each service will desire (and probably deserves) its own set of targets. For instance, a standard for the percentage of personnel performing BOS functions with respect to mission persons would probably have to be different for the Army and the Air Force, in view of the dissimilar BOS capabilities organic to their units. Likewise, targets for each IDPPC would be more useful, in light of the uniqueness of each installation grouping. Notwithstanding these difficulties, carefully instituted standards would enhance the utility of the DBFR for all users.

3. Utility to Levels of Decision-Makers

In any organization the information needs of decision-makers change with their position within the hierarchy. The requirements for timely and detailed data decreases as the decision-making echelon moves toward the top. As a report primarily intended for Congressional consumption, the DBFR is, and ought to be, an aggregated, historical compilation of information.

However, in view of the distribution of the DBFR receives, hierarchical position is no more important than how the report is to be used. For example, the Office of Management and Budget, although a top level organization, found the DBFR inadequate for detailed analysis of the costs of providing BOS because it fails to identify, among other things, fixed and variable costs. [6] This same lack of detail diminishes its usefulness for lower echelons, e.g., the major commands (MACOM) and the installations.

Users who can deal in highly aggregated, historical data and who need to identify (but not explain) wide variances among similar installations, will find the DBFR of value. Recognizing the time and effort spent in the preparation of the report, one is tempted to encourage its use on as wide a scale as possible. This is not effective because of the very different information requirements found at each echelon. The detailed, near real time information which is necessary for successful management at the installation level is replaced by increasingly more summarized and less timely information as the decision making function moves up the hierarchy to the Defense Department and Congress.

At the MACOM and installation level the value of the DBFR is affected by two factors. First, there are existing reporting systems, tailored to the specific organization, which have long dealt with the concept of BOS costs. The DBFR is, then, an add-on report of a more general nature with, in all likelihood, different definitions of terms than

those familiar to the user. Second, the MACOMS and, especially, the installations are far more interested in managing those aspects of BOS cost (however it is defined) that are controllable at their levels. A costly physical plant or energy inefficient facilities are certainly of interest but are just as certainly beyond the control of the commanders and resource managers faced with such problems. These people are mostly concerned with how to get the assigned job done with the available resources. Actions which could improve efficiency (e.g., mission changes, base realignments) on a meaningful scale are well beyond the provinces of installation managers and, to a large extent, their MACOM counterparts.

B. ANALYSIS OF DATA

1. General

Statistical analysis of various types was done on the FY 1977 Domestic Base Factors Report data to attempt to isolate those elements of information which were closely correlated to the principal item of data, BOS cost. Computer generated analysis was performed with the Statistical Package for the Social Sciences (SPSS) system of programs. [9] Both parametric and non-parametric techniques were employed to try to overcome the problems caused by having relatively small samples and by having to make the necessary normality assumptions. Only Army installation data were analyzed and then only for IDPP categories 202, 205, and the training sub-category from IDPPC 508 (hereafter referred to simply as IDPPC 508).

Correlating BOS cost with other variables has been done in the Maroun and other studies. [22, 5, 28] The effort in those cases was to develop cost estimating relationships for each installation to use for forecasting funding requirements. The DBFR is not intended to be used in that manner, but the idea of identifying strong relationships between BOS cost and other variables is sound in either case.

If a strong relationship can be established between two variables, then some insight into the characteristics of the dependent variable is possible. This is not necessarily a cause and effect circumstance; to assume that it is entails great risk. However, by examining a range of independent variables and how well they correlate with the dependent variable, a comprehensive profile of the latter can be developed. This can be useful for directing attention to those areas that can better explain cause and effect or in developing indicators which accurately signal a change in condition that will affect the dependent variable.

Only the individual data elements (as distinguished from the management indicators) were scrutinized statistically. Correlating the ratios labeled management indicators is a potentially misleading exercise because of the interaction between the two components of the ratio and the other variable, i.e., BOS cost. Also, in many cases, BOS cost is either the numerator or denominator of the ratio making correlation with BOS cost impractical. The data elements concerned with Military Construction (MILCON) were also excluded

on the basis of the previous discussion concerning their gross inaccuracy in the FY 1977 DBFR.

In most of the correlation analysis BOS cost was the dependent variable and the other data elements, the independent variables. In one instance total energy consumption was used as the dependent variable and correlated with various population and facilities statistics.

2. Identification of Highly Correlated Variables

In order to identify those independent variables (data elements) which showed a strong correlation with BOS cost, an examination was made to determine if the necessary assumptions about normality could be supported. The data elements tested are listed in Table VIII along with abbreviations which are used throughout this chapter. Using the SPSS program Condescriptive, the usual descriptive statistics (e.g., mean, standard deviation, etc.) were computed for each data element. The three groups of installations (202, 205, and 508) were treated as one large group of 55 bases and also as separate groups of 16, 17 and 22 installations, respectively. These particular categories were chosen because they represent essentially two different types of bases, i.e., operational forces (202) and training (508). Category 205 (general and Reserve) was chosen to contrast with the active force installations in IDPPC 202. Also, these three groupings are relatively large and they represent the more common types of installation as compared with the specialized

Listing of Data Elements (Variables)

Abbreviation	Data Element
GENERAL FACILITIES	
Acres	Land Area
RP ACQCOST	Real Property Acquisition Cost
GSF	Total Building Area in gross square feet
BMAR	Backlog of Maintenance & Repair
NBRBLDGS[1]	Number of buildings on an installtion
BOS Cost	Base Operating Support Cost
GENERAL POPULATION	
AFTA	Authorized Full-Time Assigned personnel
TOTPOP	Total Population
MSNPOP	Mission Population
BOSPOP	Base Operating Support Population
DEPNPOP	Dependent Population
SPTDPOP	Population Supported
SCHOOL POPULATION	
S&F	Staff & Faculty
ADL	Average Daily Load of students
TAO	Total Annual Output of students
SCHOOL FACILITIES	
SCH BLDG	Number of School Facility Buildings
SCH GSF	School Facility Building Area in GSF
SCH ACQCOST	School Facility Real Property Acquisition Cost
SCH OPCOST	School Operating Cost
MISSION DATA	
DIV,BDE,BN	Division, Brigade, Battalion
CBTDIV,CBTBDE,CBTBN	Combat - Division, Brigade, Battalion
CBTEQUIP	Combat Units of Equipment
EXPEQUIP	Expanded Combat Units of Equipment
ENERGY DATA	
TOTMBTU	Total Energy Consumption in Million British Thermal Units
MANYEARS DATA	
MMY[2]	Military Man Years Supported
CMY[2]	Civilian Man Years Supported
CMMY[2]	Civilian & Military Man Years Supported

1/ Data obtained from Army DBFR input.
2/ Data obtained from HQ FORSCOM Resource Management Reference Book [25] and HQ TRADOC working papers [4].

TABLE VIII

airlift/sealift, research and development, or supply and maintenance bases.

In each case the data showed very little tendency towards normality. In a normal distribution only 5% of the data should fall outside a range of two standard deviations on either side of the mean. Ordinarily, the distribution of data within two standard deviations can extend beyond zero on the x-axis (i.e., into the range of negative values) without consequence. However, none of the DBFR data can be negative in value, e.g., it is not possible to have minus building area or a negative dependent population.

Examining the standard deviation with respect to the mean for each variable revealed that, in most cases, if the data were normally distributed some negative valued data would be present. Because this is impossible with DBFR variables, the conclusion was drawn that a normal distribution did not represent the actual data distribution. Further support of this conclusion was found by examining the skewness values for each variable. Again, in virtually every case, positive skewness was evident. The distribution was not symmetrical, but tailed off to the right. Finally, there is no intuitive reason to expect that the data would be normally distributed, as they are totally devoid of any sense of randomness.

In order to cope with this problem and the small sample sizes, both the Pearson product-moment correlation coefficient (r) and two non-parametric statistics (Spearman's

rho and Kendall's tau) were computed. Correlation coefficients and levels of significance using each of these techniques were produced for the whole group (i.e., IDPPC 202, 205 and 508) and for each group individually. The results are displayed in Tables IX, X, XI and XII.

Both the rho and tau statistical procedures produce coefficients expressing the degree of association between variables. [7, p. 202-223] They are both based on the correlation between two sets of ranks rather than the actual variable values, e.g., the relationship between the rank-orders of installations on the basis of the amounts of BOS cost and on the basis of the sizes of their mission population. The Spearman test deals with the numerical difference between the ranks of the two variables being examined for each installation. Kendall's procedure measures association by determining the number of changes necessary in the ranking of one variable to perfectly align it with the rank-order of the other variable.

The correlation between the dependent variable BOS Cost and each of the independent variables is expressed by the coefficients listed at the intersection of the r, rho and tau columns and the row corresponding to the independent variable. Significance levels are listed only if they equal or exceed .01. The "n" column is used to identify cases where the number of installations analyzed differs from the total size, i.e., "n" for the whole group. That value is noted directly below the title of each table, e.g., (n=55).

Correlation Coefficients for IDPPC 202, 205 & 508
(n=55)

BOS Cost with VARIABLES:	n	Pearson r	sig	Spearman rho	sig	Kendall tau	sig
Acres		.18	.18	.43		.32	
RP ACQCOST	54	.92		.93		.78	
GSF		.92		.92		.76	
BMAR	46	.59		.67		.50	
NBRBLDGS		.83		.86		.67	
AFTA		.84		.93		.76	
TOTPOP		.89		.88		.69	
MSNPOP		.85		.84		.65	
BOSPOP	54	.98		.98		.90	
DEPNPOP	48	.85		.90		.73	
SPTDPOP	54	.85		.90		.75	
S&F	30	.33	.07	.17	.37	.13	.32
ADL	30	.29	.12	.11	.55	.09	.45
TAO	30	.37	.04	.27	.15	.18	.17
SCH BLDG	30	.43	.02	.42	.02	.29	.03
SCH GSF	30	.17	.36	-.07	.71	-.04	.76
SCH ACQCOST	29	.25	.19	.06	.75	.02	.88
SCH OPCOST	30	.25	.19	.12	.52	.12	.36
BDE							
BN							
CBTDIV							
CBTBDE	REFER TO TABLE X FOR MISSION DATA						
CBTBN							
CBTEQUIP							
EXPEQUIP							
TOTMBTU		.86		.92		.79	
MMY	35	.85		.89		.73	
CMY	35	.78		.74		.56	
CMMY	35	.88		.89		.73	

TABLE IX

Correlation Coefficients for IDPPC 202
(n=16)

BOS Cost with VARIABLES:	n	Pearson r	sig	Spearman rho	sig	Kendall tau	sig
Acres		.02	.94	.21	.42	.15	.42
RP ACQCOST		.86		.79		.61	
GSF		.86		.86		.73	
BMAR		.50	.05	.57	.02	.43	.02
NBRBLDGS		.82		.83		.65	
AFTA		.91		.91		.77	
TOTPOP		.91		.89		.73	
MSNPOP		.88		.87		.70	
BOSPOP		.99		.96		.85	
DEPNPOP		.87		.89		.77	
SPTDPOP		.86		.86		.70	
S&F	9	.80	.01	.64	.06	.48	.07
ADL	9	.85		.72	.03	.61	.02
TAO	9	.87		.62	.08	.50	.06
SCH BLDG	9	.56	.12	.46	.21	.34	.21
SCH GSF	9	.68	.04	.30	.43	.17	.53
SCH ACQCOST	8	-.44	.28	-.53	.18	-.39	.19
SCH OPCOST	9	.80	.01	.77	.01	.65	.02
BDE	10	.73	.01	.75	.01	.63	.02
BN	10	.83		.65	.04	.53	.04
CBTDIV	10	.45	.19	.41	.24	.35	.22
CBTBDE	10	.61	.06	.69	.03	.58	.03
CBTBN	10	.79		.68	.03	.55	.03
CBTEQUIP	10	.60	.06	.50	.14	.38	.13
EXPEQUIP	10	.66	.04	.62	.05	.47	.06
TOTMBTU		.80		.77		.63	
MMY	12	.87		.78		.61	
CMY	12	.81		.66		.54	.01
CMMY	12	.88		.78		.61	

TABLE X

Correlation Coefficients for IDPPC 205
(n=17)

BOS Cost with VARIABLES:	n	Pearson r	sig	Spearman rho	sig	Kendall tau	sig
Acres		-.12	.64	.14	.58	.07	.68
RP ACQCOST	16	.64		.72		.50	
GSF		.70		.68		.51	
BMAR	8	.70	.05	.82	.01	.69	.02
NBRBLDGS		.75		.70		.53	
AFTA		.76		.84		.66	
TOTPOP		-.10	.71	.05	.83	.01	.93
MSNPOP		-.24	.34	-.09	.74	-.06	.74
BOSPOP		.98		.83		.74	
DEPNPOP	11	.00	.98	.70	.02	.45	.05
SPTDPOP		.45	.07	.85		.64	
S&F		-		-		-	
ADL		-		-		-	
TAO		-		-		-	
SCH BLDG		-		-		-	
SCH GSF		-		-		-	
SCH ACQCOST		-		-		-	
SCH OPCOST		-		-		-	
BDE		-		-		-	
BN		-		-		-	
CBTDIV		-		-		-	
CBTBDE		-		-		-	
CBTBN		-		-		-	
CBTEQUIP		-		-		-	
EXPEQUIP		-		-		-	
TOTMBTU		.79		.75		.60	
MMY	4	-.05	.95	.20	.80	.00	.99
CMY	4	.12	.87	.80	.20	.67	.17
CMMY	4	.95	.05	.20	.80	.00	.99

TABLE XI

Correlation Coefficients for IDPPC 508
(n=22)

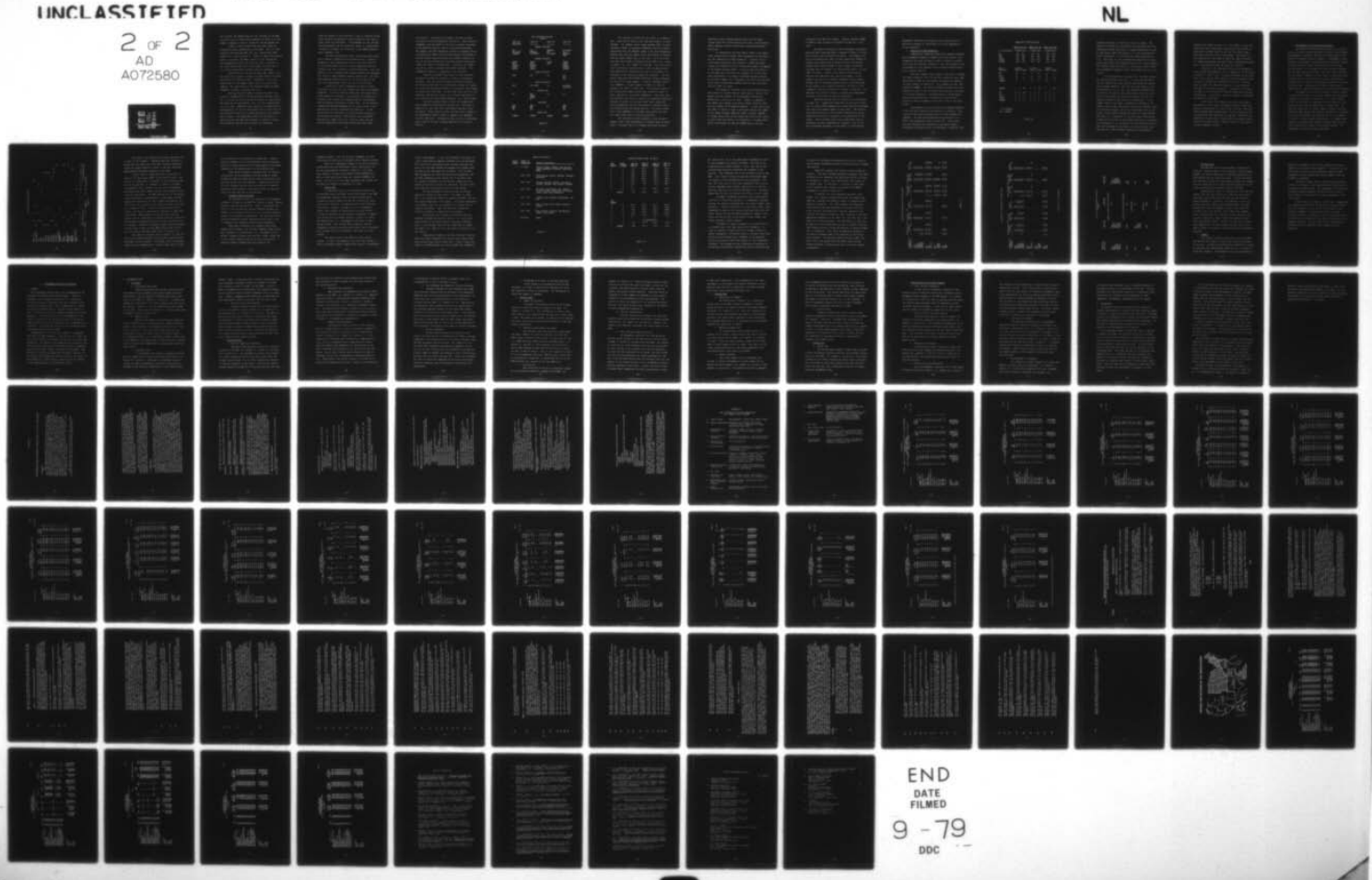
BOS Cost with VARIABLES:	n	Pearson r	sig	Spearman rho	sig	Kendall tau	sig
Acres		.30	.17	.89		.74	
RP ACQCOST		.93		.96		.85	
GSF		.95		.95		.82	
BMAR		.64		.69		.52	
NBRBLDGS		.87		.94		.81	
AFTA		.83		.85		.68	
TOTPOP		.89		.90		.76	
MSNPOP		.84		.86		.72	
BOSPOP	21	.95		.98		.90	
DEPNPOP	21	.82		.90		.71	
SPTDPOP		.87		.84		.71	
S&F	21	.78		.81		.59	
ADL	21	.66		.70		.51	
TAO	21	.74		.78		.56	
SCH BLDG	21	.70		.86		.66	
SCH GSF	21	.42	.05	.42	.06	.29	.06
SCH ACQCOST	21	.52	.01	.65		.44	
SCH OPCOST	21	.65		.76		.57	
BDE		-		-		-	
BN		-		-		-	
CBTDIV		-		-		-	
CBTBDE		-		-		-	
CBTBN		-		-		-	
CBTEQUIP		-		-		-	
EXPEQUIP		-		-		-	
TOTMBTU		.93		.92		.77	
MMY	19	.89		.89		.77	
CMY	19	.74		.70		.53	
CMMY	19	.91		.91		.78	

TABLE XII

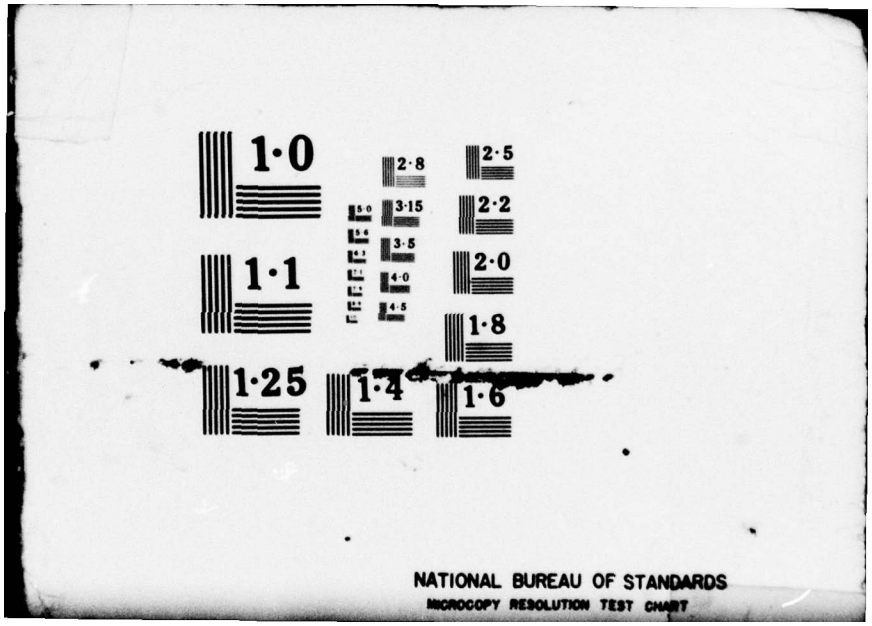
AD-A072 580 NAVAL POSTGRADUATE SCHOOL MONTEREY CA F/G 15/3
AN EVALUATION OF THE DEPARTMENT OF DEFENSE DOMESTIC BASE FACTOR--ETC(U)
JUN 79 H M SCARANGELLA

UNCLASSIFIED NL

2 OF 2
AD
A072580



END
DATE
FILMED
9-79
DDC


1·0
1·1
1·25
2·8
3·15
3·5
4·0
4·5
2·5
2·2
2·0
1·8
1·4
1·6
NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

For instance, RP ACQCOST data were not included in the DBFR for one of the 55 installations addressed in Table IX so the number 54 appears in the "n" column for the RP ACQCOST row.

A dash is used to denote the case where data are missing for every installation in the IDPPC. This is illustrated by the Training (S&F, ADL, etc.) and Mission (BDE, CBTDIV, etc.) data in Table XI. IDPPC 205 (Guard and Reserve) bases, as listed in the DBFR, report no such information. The independent variable for Divisions (DIV) is omitted in all cases because there are no non-combat divisions and to list the DIV and CBTDIV variables would be redundant.

Coefficients for the Mission data (BDE, CBTDIV, etc.) are found only in Table X because the DBFR reports this information only for IDPPC 202 bases. Therefore, to list the coefficients in the summary table (Table IX) would be misleading. The significance of the Expanded Combat Equipment (EXPEQUIP) in Table X is discussed later.

Choosing the most highly correlated variables was initially accomplished by setting minimum acceptable values for r, rho and tau as well as for the levels of significance. The value set for the Pearson r was .75 with a significance of .05 or less. Squaring r then results in a coefficient of determination (r^2) of .56, which means that at least half of the variation in BOS cost is being explained by the independent variable. The significance level sets the point at which decisions are made about whether to accept or reject the hypothesis that the two variables are correlated.

Since the purpose of this analysis is only to identify strong intra-variable relationships, these coefficient and significance values are sufficient. If development of cost estimating relationships was the objective, values of r approaching .9 would be in order; as is the case in the TRADOC Resource Factor Handbook. [28]

The two non-parametric tests, being rank-order based, have different standards than the Pearson test. Generally speaking, if the significance level is low, the actual rho or tau coefficients can be of a lesser magnitude than the Pearson r and still indicate a strong correlation. Also, the Kendall tau is a somewhat more rigorous measure than Spearman's rho; hence it shows somewhat smaller coefficients. The minimum acceptable values were set at .55 for rho and .50 for tau, with significance levels of .05 or less for both.

Selection of those independent variables strongly correlated with BOS cost was accomplished using the foregoing standards. If the correlation coefficient and significance level expressed by Kendall's tau exceeded the standard for a variable, that variable was examined against the Spearman, then the Pearson statistics, in that order. If the variable exceeded the minimum standards for all three tests, it was determined to be well correlated with BOS cost. If the results were not consistent or if the relative ranking of the variable was unclear, other factors were considered. Specifically, sample size (i.e., the "n" value) and the relative magnitude of the three coefficients were taken

into account. The smaller the sample, the more reliance was placed on the non-parametric statistics. Some intuitive judgements were also made on the basis of general knowledge of the DBFR data and the various installation groupings. For example, the AFTA population variable is probably better correlated with IDPPC 202 bases than Category 508 because it excludes student population data and students comprise far less of the total population at General Purpose force bases (IDPPC 202) than at Training bases. Likewise, the TOTPOP variable is better correlated with IDPPC 508 bases. This judgemental analysis is supported by the statistics.

Table XIII portrays the results of this selection process by listing the variables in order of correlation strength. Only the five most highly correlated variables are listed; beyond that the relationships become too tenuous to ascribe any significant degree of correlation, even though all three tests were used. In some cases there were not five variables from which to choose (e.g., School Population) or less than five met the minimum standards, e.g., Mission Data.

The data elements shown in Table XIII demonstrate some strength of relationship with BOS cost. Care must be taken not to infer that this relationship indicates cause and effect. High correlation does not mean that a change in the independent variable causes a change in the dependent variable (BOS cost). Although this may be true in individual cases, that is not what is being measured by correlation analysis.

Best Correlated Variables
(ranked)

IDPPC 202, 205 & 508	IDPPC 202	IDPPC 205	IDPPC 508
	GENERAL FACILITIES		
GSF	GSF	NBRBLDGS	RP ACQCOST
RP ACQCOST	NBRBLDGS	GSF	GSF
NBRBLDGS	RP ACQCOST	RP ACQCOST	NBRBLDGS
			BMAR
	GENERAL POPULATION		
BOSPOP	BOSPOP	BOSPOP	BOSPOP
AFTA	AFTA	AFTA	TOTPOP
SPTDPOP	DEPNPOP		MSNPOP
TOTPOP	TOTPOP		SPTDPOP
MSNPOP	MSNPOP		DEPNPOP
	SCHOOL POPULATION		
NONE	ADL	N/A	S&F
			TAO
			ADL
	SCHOOL FACILITIES		
NONE	SCH OPCOST	N/A	SCH BLDG
			SCH OPCOST
	MISSION DATA		
N/A	BDE	N/A	N/A
	CBTBN		
	CBTBDE		
	BN		
	MAN YEARS		
CMMY	CMMY	N/A	CMMY
MMY	MMY		MMY
CMY	CMY		CMY
	ENERGY DATA		
TOTMBTU	TOTMBTU	TOTMBTU	TOTMBTU

TABLE XIII

The listings in Table XIII are useful in a number of ways. They tend to focus on the same data elements in each category. For example, gross square footage (GSF) of building space, number of buildings (NBRBLDGS) and real property acquisition cost (RP ACQCOST) appear in all four categories, whereas Acres does not appear at all and backlog of maintenance and repair (BMAR) does so only once. This could indicate data which might be dropped from the DBFR (e.g., Acres) or added to it, e.g., number of buildings. Also, the consistency with which a variable does or does not appear under each group and its rank order position in each group is an indicator of the similarity among the categories. The previously mentioned AFTA-TOTPOP difference between categories 202 and 508 is a good example. Likewise, dependent population (DEPNPOP) is ranked higher for IDPPC 202 than for category 508, where it ranks last. The transient nature of the training environment places many students/trainees at bases temporarily, and without dependents. Such posts have less extensive facilities to service the dependent population. Category 202 bases, on the other hand, have a much more static population, with the likelihood of a greater proportion being married and having families. This factor apparently raises DEPNPOP to a stronger relationship with BOS Cost than either Total or Mission Population.

The recurrence of data elements in each category suggests that a more comprehensive treatment might be appropriate. Obviously GSF is a strongly correlated variable.

Additional square footage measures that could be added include space for active/inactive facilities, troop housing/family housing, new/old construction, and mission/support facilities.

As indicated by the word "None," there is no significant correlation for either school population or facilities for the combination of IDPP categories. Inclusion of all three school population data elements in IDPPC 508 demonstrates the uniqueness of the training environment as compared to the general purpose bases. As can be seen from Table X, the average daily load (ADL) for category 202 is only tenuously designated as a strongly correlated variable because of the small sample size. Therefore, the use of this and the other school related data elements must be used with great care for IDPPC 202 bases.

The ranking of variables in the Mission Data group is more subject to dispute than any other group. Clearly, the combat division (CBTDIV) has no meaningful correlation. Beyond that, little else is clear. Combat, as opposed to non-combat units appear to be more strongly related to BOS cost for reasons not altogether apparent. In only one of the ten IDPPC 202 bases is there a difference between the number of non-combat brigades (BDE) and combat brigades (CBTBDE). Ft. Bragg reports four of the former and three of the latter; in every other case there is no difference. Although correlation coefficients for BDE and CBTBDE differ, they are

essentially the same data element. However, whether CBTBDE or CBTBN is more strongly correlated with BOS cost is not clear.

One means of focusing on those management indicators which are most revealing about a category of bases is to use the listing of best correlated variables. For example, the ratio of building area (GSF) to total population (TOTPOP) is probably more descriptive of IDPPC 508 bases than General Purpose bases because TOTPOP is more strongly correlated with BOS costs of category 508 installations than it is with IDPPC 202 bases. Further, this approach can be used to identify new indicators that could be included. In the example just given, an indicator composed of gross square footage (GSF) of building area per person in the AFTA population seems to be a logical addition on the basis of the strength of the AFTA variable with respect to BOS cost. The DBFR does not currently contain a building area management indicator on the basis of the AFTA population.

There are various uses to be made of the information in Table XIII. Suggestions concerning the addition or deletion of certain data elements can be made from the consistency with which the elements appear in each group. The relative rank order position of a data element from group to group expresses the notion of similarity or dissimilarity of the groups. Those variables which recur consistently may be candidates for more comprehensive treatment. The list of best correlated variables is also useful in selecting the

management indicators that should be most descriptive of a particular category of installation or of the aggregation of all categories.

3. Analysis of IDPP Categories

Comparability among the Installation Defense Planning and Programming Categories (IDPPC) within one service is an assumption which must be made in order to contrast installations from the different categories. Both the parametric and non-parametric tests applied to this problem produced essentially similar results.

Four data elements were chosen as the basis to compare the three categories (202, 205 and 508) because of their high correlation to BOS cost and because they generally appeared for each category in Table XIII. The elements are GSF, AFTA, TOTPOP and TOTMBTU. The AFTA and TOTPOP variables were both selected in order to use a variable which was well correlated in all three categories. Data pertaining to school populations and facilities and to mission units were omitted because of their uniqueness to only one or two of the three groups.

The parametric tests used were the standard Student's T Test and the F statistic from analysis of variance. Both statistics were again obtained using the SPSS programs on a computer. The two-tailed probabilities generated by the SPSS T-Test program are shown in Table XIV. These probabilities represent the likelihood of getting as large a difference as actually exists in the means (T statistic) and

Comparison of IDPP Categories

	IDPPC 202 & 205		IDPPC 202 & 508		IDPPC 205 & 508	
F & T Statistics:	F Prob	T Prob	F Prob	T Prob	F Prob	T Prob
GSF	.000	.001	.304	.612	.000	.000
AFTA	.000	.000	.001	.056	.000	.000
TOTPOP	.000	.001	.036	.319	.000	.000
TOTMBTU	.000	.000	.407	.613	.000	.000

Wald - Wolfowitz:	R Values Table	R Values Actual	R Values Table	R Values Actual	R Values Table	R Values Actual
GSF	11	12	12	21	13	8
AFTA	11	4	12	18	13	7
TOTPOP	11	10	12	19	13	10
TOTMBTU	11	8	12	17	13	6

Summary:	F	T	WW	F	T	WW	F	T	WW
GSF	D*	D	S**	S	S	S	D	D	D
AFTA	D	D	D	D	D	S	D	D	D
TOTPOP	D	D	D	D	S	S	D	D	D
TOTMBTU	D	D	D	S	S	S	D	D	D

* D = different

** S = similar

TABLE XIV

standard deviations (F statistic) purely by chance. The smaller the probability the greater the likelihood that the differences between the means or standard deviations are due to some factor other than chance, i.e., they come from different populations. In this case the small probabilities (i.e., less than .05) are interpreted to mean that the categories whose means and standard deviations are being compared are different from each other in a statistical sense; therefore, management judgements about them should take this into account.

The non-parametric test applied to the same variables was the Wald-Wolfowitz runs test. It tests the hypothesis that two samples are drawn from the same population against the alternate hypothesis that the two groups differ in any way whatsoever. [28, p. 136] This manually performed test is based on the idea of rank ordering the values of a variable for each group and checking the degree to which the combined ranking of both groups is interspersed. If the highest value of one group is immediately followed by the highest value of the other group, and the next highest values are similarly arranged, and so on, both groups will be completely interspersed, assuming the groups are approximately the same size. Conversely, if all the values of one group precede all the values of the second group there is obviously no interspersion. In the former case, the interpretation is that the two groups are similar; in the latter case, that they are not. Less extreme situations are evaluated by

comparing the number of runs (i.e., the number of times the values of either group appear consecutively when placed in rank order) actually found in the data with table values which vary with the sizes of both groups. The results of this analysis are also shown in Table XIV. When the actual "r" (run) value exceeds the table value, interspersion exists and is interpreted to mean the groups are similar.

Analysis of the information from the two parametric tests and the Wald-Wolfowitz test is summarized at the bottom of Table XIV. The "F" and "T" columns represent the two parametric tests and the "WW" stands for the non-parametric test. A letter "D" stands for "different" and "S" for "similar." Clearly, IDPPC 205 (Guard and Reserve) is quite different from both of the other categories. A great deal of similarity seems to exist between the General Purpose and Training installations. Intuitively, the first finding is acceptable; the second is surprising.

On the basis of different statistical techniques, pertaining to a few highly correlated variables, Guard and Reserve installations are statistically different from both General Purpose and Training bases. No such conclusion can be drawn about IDPP categories 202 and 508. Therefore, any comparisons of bases made between these three groups should be made with these results, however limited by the scope of the data examined, in mind.

4. Development of an Installation profile

One method of portraying the profile of an installation is to select certain meaningful variables (data elements and management indicators) and plot the installation's rank within its category for each variable. A refinement of this procedure can be made by selecting the most efficient, median and least efficient bases (on the basis of BOS cost per mission person) in the category and plotting their rankings for the same selected variables. Any other single installation can then be compared to these three to illustrate which variables tend to mirror those of the most efficient base and which tend to reflect the rankings portrayed by the least efficient base. Identifying what seems to contribute to inefficiency is the first step towards rectifying the problem.

An example of this type of display is seen in Figure 2 using IDPPC 202 data. Forts Hood, Campbell and Wainwright (denoted in the figure by the letters H, C and W, respectively) were selected to represent the most efficient, the median and the least efficient bases, in that order. Ft. Hood was chosen over Ft. Hunter-Liggett (actually the most efficient base) because the latter's efficiency is a function of its sub-installation relationship with Ft. Ord, whereas Ft. Hood is a major, parent installation. Ft. Campbell was chosen as the median post because its median BOS cost per mission person was closest to the category median. Ft. Wainwright is clearly the least efficient.

An Installation Profile

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
BOS Cost		H		C								W				
RP ACQCOST	H			C		W										
GSF		H		C							W					
BMAR		W							H	C						
AFTA	H			C										W		
TOTPOP	H				C									W		
MSNPOP	H				C									W		
BOSPOP		H		C									W			
DEPNPOP		H	C											W	W	
SPTDPOP	H			C												W
RP ACQCOST / TOTPOP					H				C							
GSF / TOTPOP			H						C							W
BOS Cost / MSNPOP		H					C									W
MSNPOP / BOSPOP			H				C								W	
Purch Utility / AFTA				W						H	C					

High (Efficient) — Low (Inefficient)

Note: H = Ft. Hood C = Ft. Campbell W = Ft. Wainwright

Figure 2

The scale at the bottom of the figure represents the 16 bases in the category. Depending upon what variable is being used, the number one (left most) position represents either the highest amount or value, or the most efficient. Magnitude and efficiency diminish to the right.

In most cases Ft. Hood places far to the left in terms of its rank within IDPPC 202 for each variable. Conversely, Ft. Wainwright is generally at the low/inefficient end of the spectrum. Ft. Campbell is usually in between. Two anomalies occur, however, for the cost of backlogged maintenance and repair (BMAR) projects and purchased utility costs per AFTA person. The BMAR variable for Ft. Wainwright either represents an extraordinarily large amount of backlogged work (especially for such a small installation) or a very costly area in which to get repair work done (the base is in Alaska) or both. The cost of purchased utilities, however, can easily be explained by reference to other data in the DBFR. DBFR column 36 in the non-energy section reveals that Ft. Wainwright's purchased utilities constitute the smallest percentage of BOS cost of any installation in its category. Further, the energy related section discloses the fact that it pays less per MBTU and has lower utility costs per person than most other bases in category 202.

The value of a display such as Figure 2 is that any base can be readily compared with the high, median and low performers for any variable. The trends set by the extreme bases are also illuminating in terms of what tends to allow

an installation to be efficient or inefficient. Figure 2 points to bigness in size and population and the resultant ability to spread high costs over large numbers of personnel supported as the characteristics of an efficient base.

Even without a graphic representation, an installation profile can be developed by moving column by column through the DBFR and comparing the target installation with the high, median and low performers. Contrasting one base with this category profile can be instructive in terms of determining what changes can be made to shift its position toward the efficient end of the spectrum.

5. Expanded Combat Equipment

As mentioned earlier, the combat units of equipment (CBTEQUIP) included in the DBFR are limited to tanks, armored personnel carriers and aircraft. Table X illustrates that there is a poor correlation between CBTEQUIP and BOS cost. However, as an indicator of the size of the force located at a base, this variable is instructive. The fact that classification standards preclude breaking the data down by type of equipment only marginally affects their usefulness.

Additional information was obtained from Forces Command which allowed a new variable, Expanded Combat Equipment (EXPEQUIP) to be generated. [26] The numbers of air defense (Chaparral/Vulcan) and artillery (105mm, 155mm, and 8 inch) weapons found at each of the ten installations reporting combat equipment data were added to the

CBTEQUIP variable. This new variable, EXPEQUIP, was then correlated with BOS costs to determine what changes occurred.

There was a meaningful change in both the correlation coefficients and the significance levels, particularly for the two non-parametric statistics (Table X). All three tests showed a stronger relationship between EXPEQUIP and BOS cost than had existed using the original CBTEQUIP variable. The utility of the combat equipment data element can therefore be enhanced by expanding its scope.

6. Energy Data

As described earlier, an installation profile can be developed using the energy related data found in the DBFR. The management indicator Total Cost per Mission Person (column 35) would probably provide the criterion for choosing the most efficient, the median and the least efficient installation. However, arranged as it is by geographic region, each category of installations is quite diverse. In order to mitigate the considerable differences in population and facility mix among shipyards, schools, air bases and laboratories, etc., supplemental efficiency criteria should be used. The cost per MBTU (column 29) and the consumption rates per person and per square foot of building area (columns 30-32) are indicators that would suit that purpose.

The regions used in the DBFR are Census Bureau regions. As such, they appeared to be less than optimal in terms of defining climatic regions with respect to determining

utility requirements. A test was performed to determine if a more climatological regional breakdown could be developed. The criteria for determining which regional groupings were better was the range between the maximum and minimum values for each of the following four variables: cost per MBTU, MBTU consumption per total and per mission population, and per MBTU consumption gross square feet of building area. The regional breakdown with the smallest ranges would presumably be the more precise and, therefore, the more useful when comparing installations within the same region.

The new breakdown was derived using the average degree day ratings for each state. The number of degree days is the difference between 65 degrees Fahrenheit and the daily mean temperature. For example, if the mean temperature is 60 degrees then that day generates five degree days of heating requirements. When the mean daily temperature exceeds 65 degrees, no degree days are produced.

State degree day averages were obtained from the Handbook of Degree Day Data for the U.S. [1] Using these data and maps of the United States displaying isothermal lines, a new regional structure was established by degree day range. [15] Table XV lists the states according to the new regions.

Comparing the ranges of the four variables from the DBFR nine-region breakdown with the new eight-region breakdown reveals mixed results (Table XVI). Tighter ranges are found in the DBFR regions for cost per MBTU and consumption

Regions by Degree Day

Region Number	Number of Degree Days	States in each Region
1	0 - 2500	Florida, Georgia, Alabama, South Carolina, Texas, Mississippi, Louisiana, Puerto Rico, Hawaii
2	2500 - 3500	North Carolina, Arizona, Arkansas, Tennessee, California
3	3500 - 5000	Virginia, Kentucky, Missouri, New Mexico, Delaware, Maryland, West Virginia, Oklahoma
4	5000 - 6000	New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Kansas, Connecticut, Utah, Nevada, Oregon, Rhode Island, Washington
5	6000 - 7000	Colorado, Iowa, Nebraska, Massachusetts, New York
6	7000 - 8000	Idaho, Michigan, South Dakota, Wisconsin, Wyoming
7	8000 - 9500	Maine, Montana, Minnesota, New Hampshire, Vermont, North Dakota
8	9500 Plus	Alaska

TABLE XV

Selected Variable Ranges, by Region

DBFR Region	Number of Bases	Cost per MBTU ($)	MBTU per TOTPOP	MBTU per MSNPOP	MBTU per GSF
1	2	.16	136.4	181.3	173.9
2	5	1.72	151.1	335.4	103.6
3	3	2.33	290.3	412.3	138.7
4	4	1.19	146.7	329.7	99.1
5	17	4.69	204.5	218.4	254.8
6	5	2.73	85.3	127.8	128.4
7	6	3.28	72.9	110.2	1359.7
8	1	0	0	0	0
9	12	7.22	740.9	1209.9	410.1
	AVERAGE:	2.91	228.5	365.6	333.5
New Region					
1	16	6.10	112.4	153.1	1373.6
2	9	5.61	116.0	118.7	188.0
3	12	4.65	197.1	210.5	226.6
4	9	3.40	304.0	385.3	168.4
5	6	3.12	153.8	181.3	173.9
6	1	0.	0	0	0
7	0		No Installations		
8	2	.45	377.8	592.8	49.1
	AVERAGE:	3.88	210.2	273.6	363.3

TABLE XVI

per square foot, but in the eight-region breakdown for both of the consumption per person variables. The results are inconclusive for several reasons. First, only the 55 Army installations previously addressed are included in this analysis. They represent 14% of the 394 bases listed in the DBFR. Also, those 55 bases are unevenly distributed among the regions in both the DBFR and the new breakdowns. Further, the total utility costs and consumption rates are not entirely dependent upon climate; some portion is used for lighting, operation of tools and equipment, etc. Therefore, degree days are only one factor which affects utility usage.

Although a breakdown based upon some climatological criterion is intuitively superior to a demographic regionalization, the analysis performed does not clearly support that hypothesis. Several reasons for this have been stated. More comprehensive analysis may produce additional data which will either support the current DBFR breakdown or suggest a different one which places installations in more common, and tightly defined, climatic regions.

The amount of energy consumed at an installation is of interest from a cost and conservation standpoint. In order to identify variables which are strongly related to energy consumption, correlation analysis was done using Total Million British Thermal Units (TOTMBTU) as the dependent variable and several other data elements as the independent variables. The strength of the relationship, expressed in correlation coefficients, between the pairs of variables can

be useful in explaining the characteristics of an installation's energy consumption pattern and possible ways to change that pattern.

Table XVII contains the results of the correlation analysis. The tests, minimum acceptance standards, and table notation are all identical with those used earlier in Tables IX through XII. Again, only significance levels equal to, or greater than, .01 are noted. A listing, in rank order, of the variables most strongly correlated with TOTMBTU consumption is found in Table XVIII.

In general, all five population variables (AFTA, TOTPOP, etc.) showed a strong correlation with energy consumption, although the ranking in order of strength varied among the categories. Only IDPP category 508 (Training) installations exhibited meaningful correlations with the school facility and population variables, whereas no significant correlation existed for these variables in the four aggregated categories or for IDPPC 202, which has only a few bases with training missions. The implication is that some minimum level of training activity must be present within an IDPP category before a strong relationship to energy consumption is recognized. This notion of magnitude equating to correlation strength seems to be supported in the Mission Data variables. The battalion (BN) and brigade (BDE) variables, which rank higher than the combat battalion and brigade variables, represent more units than their combat counterparts.

Correlation Coefficients for Energy Data

TOTMBTU with	IDPPC 202, 205 and 508 (n = 55)							IDPP Category 202 (n = 16)						
		Pearson		Spearman		Kendall			Pearson		Spearman		Kendall	
VARIABLES:	n	r	sig	rho	sig	tau	sig	n	r	sig	rho	sig	tau	sig
GSF		.87		.88		.75			.71		.71		.56	
AFTA		.76		.83		.66			.64		.61	.01	.53	
TOTPOP		.80		.81		.63			.63		.61	.01	.53	
MSNPOP		.76		.76		.59			.61		.57	.02	.50	
DEPNPOP	48	.76		.81		.65			.65		.61	.01	.53	
SPTDPOP	54	.76		.79		.64			.61		.56	.02	.47	
S&F	30	.26	.16	.11	.55	.11	.39	9	.68	.04	.49	.17	.36	.17
ADL	30	.23	.22	.07	.71	.02	.88	9	.67	.03	.38	.31	.28	.29
TAO	30	.30	.10	.21	.26	.12	.34	9	.70	.03	.52	.15	.39	.14
SCH GSF	30	.13	.47	-.07	.71	-.04	.76	9	.43	.24	-.02	.96	-.05	.83
BDE								10	.65	.04	.86		.74	
BN								10	.74	.01	.89		.77	
CBTBDE								10	.55	.09	.81		.69	
CBTBN								10	.71	.02	.79		.64	.01
MMY	35	.71		.73		.60		12	.50	.10	.49	.11	.39	.07
CMY	35	.61		.57		.44		12	.29	.36	.32	.31	.27	.22
CMMY	35	.73		.74		.60		12	.48	.11	.49	.11	.39	.07

TABLE XVII

Correlation Coefficients for Energy Data

TOTMBTU with VARIABLES:	IDPP Category 205 (n = 17) Pearson n	r	sig	Spearman rho	sig	Kendall tau	sig	IDPP Category 508 (n = 22) Pearson n	r	sig	Spearman rho	sig	Kendall tau	sig
GSF		.71		.83		.68			.96		.93		.82	
AFTA		.52	.03	.44		.35	.05		.79		.77		.59	
TOTPOP		-.04	.86	.11	.66	.03	.87		.87		.84		.68	
MSNPOP		-.16	.54	.00	.99	-.04	.80		.82		.81		.65	
DEPNPOP	11	.06	.73	.73	.01	.53	.02	21	.79		.86		.71	
SPTDPOP		.57	.19	.47	.05	.34	.06	21	.82		.77		.61	
S&F		-		-		-		21	.77		.78		.61	
ADL		-		-		-		21	.67		.70		.44	
TAO		-		-		-		21	.72		.75		.50	
SCH GSF		-		-		-		21	.43	.05	.44	.05	.31	.05
BDE		-		-		-			-		-		-	
BN		-		-		-			-		-		-	
CBTBDE		-		-		-			-		-		-	
CBTBN		-		-		-			-		-		-	
MMY	4	.26	.74	.20	.80	.00	.99	19	.87		.82		.60	
CMY	4	.94	.06	.80	.20	.67	.17	19	.77		.66		.48	
CMMY	4	.42	.57	.20	.80	.00	.99	19	.90		.83		.63	

TABLE XVII (CONTINUED)

Best Correlated Variables (Energy)
(ranked)

IDPPC 202, 205 & 508	IDPPC 202	IDPPC 205	IDPPC 508
	GENERAL FACILITIES AND POPULATION		
GSF	GSF	GSF	GSF
AFTA	DEPNPOP		TOTPOP
TOTPOP	AFTA		MSNPOP
SPTDPOP	TOTPOP		DEPNPOP
MSNPOP	MSNPOP		SPTDPOP
DEPNPOP	SPTDPOP		AFTA
	SCHOOL FACILITIES AND POPULATION		
NONE	NONE	N/A	S&F
			TAO
	MISSION DATA		
N/A	BN	N/A	N/A
	BDE		
	CBTBN		
	CBTBDE		
	MAN YEARS		
CMMY	NONE	NONE	CMMY
MMY			MMY

TABLE XVIII

7. Man Year Data

The DBFR uses end-of-year personnel strength data primarily. Man-year data, as was explained in the preceding chapter, are better indications of workload supported by an installation over the course of a year. To test the hypothesis that man-year data are satisfactory measures of workload, they were subjected to the same correlation analysis as the various population data elements found in the DBFR.

Examination of Tables IX through XIII, XVII and XVIII reveals that the three variations of man-year data exhibit reasonably good correlations with BOS cost and levels of energy consumption. Generally, the combined civilian and military man-year (CMMY) variable demonstrated a stronger relationship with the dependent variable than either the civilian or military man-year (CMY or MMY) data elements alone. Between these two, however, military man years consistently exhibited a higher correlation coefficient and lower significance levels. Finally, the man-year variables were comparable to the end strength variables used in the DBFR in terms of strength of relationship with the dependent variable.

8. Summary

This chapter proposed various ways to use the DBFR and reported the results of statistical analysis performed on the data. Correlation techniques were employed as a means of improving the understanding of BOS cost as it relates to other data elements. Non-parametric tests were performed in

addition to parametric tests to help compensate for small sample sizes and lack of data normality. An analysis of the statistical similarities and differences among the IDPP categories was also accomplished using parametric and non-parametric techniques.

One way to display data to produce an installation profile with respect to the high and low performing bases in a category was demonstrated. The improvement in correlation between the combat equipment and BOS cost which resulted from expanding the definition of combat equipment was also illustrated.

Energy data are treated in several ways. Suggestions for comparing installations on the basis of energy related data are followed by a test of the effectiveness of the regional breakdown of installations used in the DBFR. A correlation analysis, identical to the one performed earlier with BOS cost, was done with total energy consumption as the dependent variable. Finally, the value of using man-year population data as compared to end-strength data was addressed.

VI. RECOMMENDATIONS AND CONCLUSIONS

A. GENERAL

This concluding chapter deals with recommendations for improving the Domestic Base Factors Report. They are arranged in six categories related to cost, population, facilities, mission, and energy data and to general administrative or format issues. Each recommendation is based on material presented earlier, primarily from Chapters IV and V. Therefore, only brief comments accompany each recommendation. (In connection with each recommendation, the reader is referred to the pertinent section in an earlier chapter where the analysis supporting that recommendation is discussed). Following this section is one containing broad concluding remarks about the DBFR.

Recommendations to delete data elements or management indicators are made sparingly. The focus of this thesis was on the Army portion of the DBFR, and then on only three IDPP categories. The effect on the remaining Army categories and on the sections dealing with the other services of removing data from the report cannot, therefore, be evaluated. Suggestions to add data are made more frequently, however, on the grounds that significant benefits accrue with respect to the categories of installations studied and no ill effects on the remaining parts of the DBFR are likely.

B. RECOMMENDATIONS

1. Cost Data

a. Costing Military Labor

Either the service-wide average officer/enlisted rate method or the standard rate-by-grade method should be established as the sole means of determining military labor costs in the DBFR. (cf. Chapter IV, section B). Although both methods are satisfactory, the latter method yields more accurate results. However, it is also somewhat more time-consuming to apply. Use of only one method will prevent inconsistent treatment of military labor costs.

b. Medical Costs

Medical costs borne by an installation should be clearly identified in a new separate data element column as either a dollar amount or a percentage of BOS cost. (cf. Chapter IV, section B) This cost should remain part of the installation's BOS cost figure, but its existence ought to be recognized because it is a substantial amount of money and is not common to all installations. Identification of medical costs will facilitate comparisons of installations which are really alike.

c. Investment Costs

All investment costs should be separated from the BOS cost amount used to assess installation efficiency. (cf. Chapter IV, section B) Investments in equipment should be treated the same as investments in military construction. Equipment costs should be identified in a new separate data

element column. As one-time costs, neither construction nor major equipment investments should be included in the BOS cost currently listed in column 9 of the DBFR. To do so makes the comparison of installations very difficult because not all bases will have incurred investment costs in a given year. Further, judgements about efficiency of operation are more meaningfully based on recurring, not one-time, costs.

d. Sub-Installation Relationships

A notation should be made for every installation listed in the DBFR to indicate whether it is a parent or a sub-installation. (cf. Chapter IV, section E) The impact on BOS cost for both types of bases is significant and should be recognized. If each installation were assigned a number and a new data element column inserted, a sub-installation would display its parent's number and the parent would display a unique character or letter. BOS costs are affected by a parent sub-installation relationship and the fact that this situation exists should be known.

2. Population Data

a. Man Year Population Reporting

Population data expressed in man years should be included in the DBFR. (cf. Chapter IV, section C.1 and Chapter V, section B.7) As a minimum, the current Total Population figure should be stated in man years rather than end strength terms because it is the most comprehensive measure of workload supported in the report. Any such data should include separate listings for civilian and military man years.

Man year data are superior to end strength data because they more accurately reflect workload over the whole course of the reporting period.

b. Population Mix Reporting

Some indication of population mix should be made apparent in the DBFR. (cf. Chapter IV, section C.1) Emphasis should be placed on differentiating between permanent party personnel (military and civilian), transients (students, trainees, new enlistees, etc.) and Reserve Component personnel. The population mix affects the BOS costs of an installation and also differentiates installations which otherwise seem similar and, therefore, it should be disclosed in either the DBFR or in accompanying documentation.

c. Common Personnel Measure

Consideration should be given to the establishment of a common measure in which all personnel supported by an installation could be expressed by use of appropriate factors or weights. (cf. Chapter IV, section C.1) If all categories of personnel were converted to a common measure (e.g., military permanent party), population mix effects would be removed from comparisons of installations on any basis concerned with personnel, e.g., BOS cost per mission person. Use of such a factor would eliminate the need to implement the previous recommendation regarding population mix. Theoretically, the use of a factor is a sound way to cope with the population mix issue. However, the feasibility

of developing an accurate factor is unknown; hence, the recommendation is only to consider its use.

d. Post Exchange and Commercial Activity Personnel

Personnel employed by post exchanges and commercial activities should either be included in the Population Supported data for the installation (or sub-installation) at which they work, on a factored basis, or be explicitly excluded from the DBFR. (cf. Chapter IV, D.2) Reporting all such personnel would probably overstate the significance of the workload supported because of the limited BOS support rendered to the activities that employ them. If the development of an accurate factor would be impractical, the explicit exclusion of these people would at least assure consistency among installations and, in view of the limited magnitude of such operations. would have little impact on relative accuracy.

e. Reserve Components

Revised guidance should be issued which will clarify the installation's responsibility to report training, supported by the installation, of all reserve, National Guard and ROTC personnel from any service. (cf. Chapter IV, D.2) The individuals should be accounted for regardless of the size of the unit to which they are assigned for training and without regard to whether the training is their Inactive Duty Training (IDT) or Annual Training (AT). Unless all personnel who train at facilities supported by the active Army installation are reported, that installation's workload will be understated.

f. Percentage of Military in the BOS Population

Either column 19, Percentage Military of BOS Personnel, or column 33, BOS Military Personnel per Total BOS Population, should be eliminated. The information in these two columns is redundant.

3. Facility Data

a. Number of Buildings

The number of buildings located on the acreage reported in Land Area should be added to the DBFR. (cf. Chapter V, section B.2) This information is readily available, because it is required from the services in their input to DOD. The number of buildings, in addition to the Building Area data, help portray a more accurate profile of the individual installation.

b. Backlog of Maintenance and Repair

The currently used total Backlog of Maintenance and Repair (BMAR) cost should be replaced with the three BMAR figures required of the services in their input to DOD, i.e., BMAR Buildings, BMAR Utilities, and BMAR Other. (c.f. Chapter IV, section C.2) This expansion will allow for a better understanding of what type of facilities at a base are most in need of repair. Also, it will improve the accuracy of the management indicator, BMAR per gross square foot of building area (column 38), by permitting the use of the BMAR Building cost instead of the total BMAR cost.

c. Building Mix

Some indication of the mix of buildings located on an installation should be included in the DBFR. (cf.

Chapter IV, section C.2) Useful information would include the mix of utilities and unutilized space, old and new construction, and space devoted to housing (both troop and family) and mission related purposes. These data could be reflected in either numbers of buildings or gross square footage or as a percentage of total building area. The variety of facilities supported by an installation affects BOS costs and should be more fully explained in the DBFR or in some accompanying documentation.

d. Military Construction

Military Construction (MILCON) cost reporting guidance should be reviewed and clarified to prevent further inaccuracies. (cf. Chapter IV, section D.3) MILCON is an expensive and important investment and should remain in the DBFR.

e. Total FYDP and FYDP MILCON Costs

The management indicators for FYDP MILCON per mission person (column 26) and FYDP cost per mission person (column 27) should be eliminated from the DBFR. (cf. Chapter IV, section D.3) Both indicators are five year projections of costs related to the current year's mission population. In order for these indicators to be useful, one must assume that the mission population will remain unchanged and that all of the projected MILCON costs are intended solely for the support of the current mission, not to accommodate different missions planned for the future. Further, one must be able to accept these assumptions for every installation in order

to make valid comparisons. Such assumptions do not seem reasonable, if one examines the current situation in which plans are and have been in operation to relocate training facilities, billet overseas divisions, etc.

4. Mission Data

a. Definition of "Combat"

The definition of "combat," as it pertains to mission data in the DBFR, should be expanded to include cannon artillery, air defense artillery and combat engineer functions. (cf. Chapter IV, C.3) This will broaden the reporting of units and equipment and present a more accurate picture of the combat power supported by the installation. This expanded definition is in consonance with the generally accepted Army definition of combat.

b. Reporting Combat Units

All installations housing combat forces, of brigade size or larger, should display that fact in the mission data sections of the DBFR. (cf. Chapter IV, sections C.3 and E) This will require adding columns 64-85 to each IDPPC in which combat forces are found. The result will be a more accurate portrayal of the burden supported by the installation than is now found in the DBFR.

c. Combat Equipment

The current Combat Units of Equipment data (column 72) should be expanded to include cannon and air defense artillery weapons. (cf. Chapter IV, section C.3 and Chapter V, section B.5) The guidance required to implement

this recommendation will not be so difficult to prepare as to obviate the benefit derived from having a more accurate accounting of the magnitude of major weapons systems supported by the installation. The current definition of combat equipment is so restricted that it serves little useful purpose and ought to be deleted entirely if it is not expanded. It does not adequately express the size of combat equipment assets found in combined arms forces of today.

d. Mission Codes

Primary, secondary and tertiary mission codes should be developed for each installation listed in the DBFR. (cf. Chapter I, section D) Although this information is readily available from the services' input to the DOD, the coding system adopted for this purpose need not be as complex as that. A better understanding of the range of functions supported by an installation will result if major missions are identified to supplement the mission categorization inherent in the IDPPC titles.

5. Energy Data

a. Degree Days

The average annual number of degree days recorded at each installation should be reported in the energy related section of the DBFR. (cf. Chapter V, section B.6) This added information will permit refining the energy region groupings into sub-groups of bases whose weather conditions are more nearly the same and, thus, enhancing the ability to compare costs and consumption rates.

6. Administrative and Format Comments

a. Joint Service Conference

A joint service conference, sponsored by DOD, should be held to reconcile definitional differences and to recommend further changes to the DBFR format. (cf. Chapter IV, section D.1) After two years of working with the report, the services have developed ideas for improving the DOD initiated reporting guidance. Formal service input regarding the content of the DBFR is appropriate at this point.

b. Quality Control and Data Accuracy

Positive steps should be taken to improve the accuracy of the data submitted by the installations. (cf. Chapter IV, section D.1) The frequency and magnitude of the errors discovered during the Army Audit Agency audits indicate that the overall accuracy of the Army input is questionable. The visibility this report receives and the actions that may be based upon its contents demand the highest quality input.

c. Reporting Data Changes

Installations should be required to report only those data which have changed from the previous year. (cf. Chapter III, section B) This will serve to reduce the reporting burden at the installation and may also result in improved accuracy.

d. Fiscal Year 1968 Information

Data and management indicators for FY 1968 should be deleted from future reports. (cf. Chapter III, section A)

The validity of that information is uncertain and virtually impossible to verify. Also, using a year of peak involvement in the Viet Nam conflict as a baseline presupposes that every installation was fully utilized and operating at maximum efficiency by taking advantage of economies of scale. Just as likely is the possibility that great waste and inefficiencies were experienced because of the haste to train and equip urgently needed combat forces. Therefore, unless evidence exists to support the presumption of efficiency, using the FY 1968 data as a baseline is misleading.

e. Installation Rankings

The rankings associated with the management indicators should be explicitly defined as relating to an efficiency - inefficiency scale. (cf. Chapter V, section A.2) It is now left to the user to determine, for example, if it is more efficient to have invested more or less money in real property assets per person (column 22) or to have a higher or lower BOS cost per BOS person ratio (column 30). A standard ranking order should be established so that, for instance, the numeral 1 always indicates the most efficient base and the highest numeral in the category indicates the least efficient base.

f. Establishment of Standards

The concept of setting standards for various management indicators should be considered. (cf. Chapter V, section A.2) As data are accumulated over time, standards which can be linked to efficiency will emerge, e.g.,

civilian/military personnel ratio in the BOS population or purchased utilities as a percentage of BOS cost. Setting standards will help achieve efficiency in operating installations and will clearly state the measures by which commanders' and managers' performances will be judged.

C. CONCLUSIONS

The Domestic Base Factors Report exists because of Congressional pressure to explain what Base Operating Support is and why it costs ten billion dollars each year. The DBFR contains the information that officials of the Defense Department thought appropriate for answering those questions. On the basis of Congressional acceptance of the report, it appears to have accomplished its objective.

An extraordinary amount of effort and time is required to prepare and submit the raw data that go into the DBFR. To try to justify that expenditure of resources by claiming that the report also has utility at levels between DOD and the installation is only partly correct. As one proceeds down the hierarchy from DOD, the utility diminishes at an increasing rate. The closer one gets to the operating management level (i.e., where BOS costs are incurred) the greater is the need for timely and detailed information. The DBFR is historical and, despite its bulk, highly aggregated. There are many other information systems which were designed to serve the requirements of managers at these levels.

To be of optimum use to the decision makers and planners in the Congress (for whom the report was intended) and others of similar stature in the governmental hierarchy, the DBFR needs to depict the uniqueness of each installation in a manner that is consistent within, if not between, the servi services. Users of the report at higher echelons are not familiar with the particulars of every installation, but they need to know them in order to make intelligent judgements about resource allocations. The DBFR goes a long way towards providing this sort of information and the recommendations presented earlier are intended to improve upon that base.

How much information to provide and in what form is difficult to determine. It should not be a unilateral effort, at least not any longer. Strong direction was essential at the start, but increased service participation at this point can be of value.

The initial use of DBFR data by the Senate Appropriations Committee in 1976 to reduce FY 1978 funding levels has generated a sense of distrust in some quarters. More judicious use of the report the following year has had a mitigating effect, but the suspicion is still there. Involving the services in the foundation of plans to modify the DBFR will go even further towards alleviating doubts and will probably result in an improvement in the quality of the data.

The DBFR has been institutionalized. The Congress is pleased with it, and the services are learning to cope with it. As a compendium of facts, it is useful; as a means to

measure a single installation's efficiency, it falls short. The burden of preparing the document will remain. So, the emphasis should now be on how to improve it while minimizing the burden at the installation level, where the load is greatest and the benefit is the least.

APPENDIX A

DEFINITION OF BASE OPERATING SUPPORT (BOS) FUNCTIONS AND COSTS

1. Purpose

Base operating support functions have been defined in such a way that all overhead functions which do not directly contribute to the mission accomplishment of combat units and tenants on Department of Defense (DoD) installations, activities and facilities are classed as BOS. It must be appreciated that all DoD resources ultimately contribute to the Defense mission. Nevertheless, in order to identify those functions which the Department considers to be the overhead costs of its base structure, it was necessary to make a distinction. A common definition of BOS enables the Military Departments and Agencies to report consistent data on base operating support costs to the Secretary of Defense, the Congress, and other organizations, as required.

The uniform definition of BOS differs from the program element structure upon which the Five Year Defense Plan

(FYDP), the Defense Budget and other similar documents are based. Program elements reflect the way in which the DoD organizes and manages resources, and do not lend themselves to requirements of the Congress when reviewing BOS in total. The intent of establishing a uniform definition of BOS was not to change organizational arrangements to fit the definition, but the development of new functional categories within the current DoD financial system.

The uniform definition of BOS does not differentiate between fixed, semi-variable and variable costs. Therefore, financial reports based on the definition will not indicate potential savings, for example, from base realignments. Potential savings, therefore, can be determined only through case-by-case studies of specific base realignment proposals.

2. Definition

The term "base operating support costs" refers to resources used at DoD installations, activities and facilities to provide services so that operational units and tenants can pursue mission objectives free of unrelated responsibilities. The services listed below are considered BOS regardless of whether they are incurred by the installation commander; by an activity on an installation which is not part of the installation organization (medical, commissary, etc.); by a subinstallation; by a separate facility; or by activities controlled by a central authority. In addition, this definition of BOS applies regardless of whether or not the installation (or activity) commander is responsible for planning, programming, budgeting, expending and/or accounting for the costs involved in these services. In other words, these services are considered BOS regardless of what organizational entity is responsible for the funds, manpower, and equipment needed to perform the function.

The BOS services fall into four broad categories:

Facility services to maintain land, plant and equipment.

Administrative services to accomplish clerical functions and increase efficiency.

Specific services to consolidate common type functions, increase efficiency and to insure a safe and habitable work place.

Community support services to maintain morale, welfare, recreation and to provide programs associated with military life and required by law.

The resources include expenses for both military and civilian manpower and both direct and reimbursable appropriated funds (regardless of source), but exclude nonappropriated expenses which are not a cost to the Government. Appropriations/funds which pay for recurring costs are operation and maintenance, military personnel (active, Reserve and Guard), RDT&E, family housing, industrial funds and installation schools. Nonrecurring costs for facilities and equipment to perform base operating support functions are generally funded by military construction and procurement appropriations. The definition includes all family housing costs but excludes BAQ payments. Future refinements of the definition may consider changes such as these payments.

3. BOS Functional Categories

Each category of BOS service includes the following functional costs:

Facility Services:

Maintenance and Repair of all Real Property
- Buildings
- Other Facilities
- Pavements (roads, parking areas, etc.)
- Land (grounds)
- R.R. Trackage

Minor Construction (with other than military construction funds).

Operation of Utilities for all Real Property.

Other Engineering Support (excludes rentals, fire protection).

- Custodial Services
- Entomology Services
- Refuse Collection and Disposal
- Snow Removal and Ice Alleviation

Rental of all Real Property except payments for GSA controlled space (includes cost of lease and all utilities and services).

Standard Level User Charges (SLUC) paid for GSA controlled space.

Special user service charges paid for GSA controlled space (includes annual recurring and one time costs for alterations of space).

Land Management.

Support Groups/Units Assigned to these functions.*

Related Investment.**

Administrative Services:

Installation Headquarters Administration and
Command (including squadron level responsible
for Base Operations)
Installation Comptroller
- Accounting and finance
- Budget
- Management analysis/engineering
- Internal review
Installation ADP services
Installation Public Information Activities
Installation Legal
Installation Civilian Personnel Administration
Installation Military Personnel Administration
Installation Printing and Reproduction
Installation Safety
Installation Engineering Service
Related Investment**
Support Groups/Units assigned to these functions*

Specific Services:

Installation Audio/Visual
Installation Supply Operations (retail only)
Installation Transportation Activities
Installation Procurement Operations
Installation Training (excludes troop training
and tactical exercises)
Fire Protection and Prevention
Installation Physical Security and Police Activities

Installation Communications
Laundry and Dry Cleaning (for troop support and other appropriated fund activities)
Installation Airfield/Air Base Operations (control tower, weather, flight services, etc.)
Installation Storage Activities
Maintenance of Installation Materiel (includes maintenance of administrative aircraft, vehicles and equipment but excludes maintenance of tactical equipment, combat vehicles and mission aircraft)
Support Group/Units Assigned to these functions*
Related Investment**

Community Support Services (includes only appropriated fund support)

Operation of Medical Clinics and Dispensaries (excludes regional hospitals)
Operation of Dental Clinics (excludes regional clinics)
Bachelor Housing Operations and Furnishings (management; housing assignment; care of quarters; provision, care, preservation and maintenance of furnishings, etc.)
Retail Commissary Operations
Operations of Troop Issue Commissary for Subsistence
Installation Food Services
Family Housing (FHMA account less reimbursables for other services/facilities already included, i.e., utilities, maintenance and repair of facilities, etc.)
Appropriated Fund Support for Installation Dependent School Operations in U.S.

Morale, Welfare and Recreation Activities
- Clubs
- Messes
- Libraries
- Sports Activities and Operation of Recreational Facilities
- Craft Shops
- Radio
- Television
- Newspapers

Social Action Programs
Community Service Activities
Chaplain Activities
Bands
Support Groups/Units assigned to these functions*
Related Investment**

*Also includes resources used by groups/units assigned to specific BOS tasks on an ad hoc basis such as engineer/Red Horse/SeaBee units assigned to repair/construction facilities, roads, parking areas; etc., even if the work is classified a military unit training project.

**Investment costs include the total authorized construction program for each fiscal year, as well as expansion, extension, and renovation of facilities with military construction funds. Investment also includes the costs to procure equipment needed to perform the functions in each category of service.

APPENDIX B

KEY ACCOUNTS OF THE BASE OPERATIONS (Z) ACCOUNT (O & M) FUNDED

A - Audio Visual:	photographic, television, audio-visual
B - Supply Operations:	operation of storage facilities, clothing sales, operation of supply stock fund activities
C - Maintenance of Materiel:	aircraft, combat vehicles, weapons, automotive vehicles, audio-visual equipment
D - Transportation Services:	administrative motor, rail and aviation services; movement of household goods
E - Laundry and Dry Cleaning:	self-explanatory
F - Food Service:	operation of bakeries, dining facilities (including KP contracts), ration processing points
G - Personnel Support:	chaplain; command information; morale support (libraries, gyms, sport facilities); preservation of order (military police, traffic control, physical security); other (drug and alcohol rehabilitation)
H - Bachelor Housing Furnishings:	acquisition, issue and maintenance of bachelor housing (including troop barracks), furnishings
I - Not Used	
J - Operation of Utilities:	water, sewage, boiler and heating plants, cold storage, air conditioning
K - Maintenance and Repair of Real Property:	utility systems, buildings, grounds, surfaced areas
L - Minor Construction:	determined by dollar value of the work to be performed

M -	Other Engineer Support:	fire protection and prevention, refuse collection, custodial services, snow removal, pest control
N -	Administration:	Headquarters Commandant functions, e.g., protocol, operation of the base headquarters; finance and accounting; administrative services; Adjutant General functions (message center, publications)
O -	Not Used	
P -	Data Processing:	self-explanatory
Q -	Troop Issue/ Commissary Operations:	operation of troop issue subsistence breakdown points, operation of the retail commissary stores for certain legislated functions
R -	Installation Restoration:	return of property used for chemical weapon research and experimentation purposes to general use

APPENDIX C

Format Samples and Explanation of Data Column Headings

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IA -- GENERAL INSTALLATION DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	3		4		5		6	
Installation	ST	Land Area (Acres)	RK	RP Acq $ ($Mil)	RK	Tot Bldg Area (000GSF)	RK	MILCON Not Completed ($Mil)	RK
RICHARDSON, FORT	AK	71372	11	174.4	9	7361	9	0.5	13
WAINWRIGHT, FORT	AK	655943	1	230.2	6	6136	11	9.9	11
HUNTER LIGGETT, FORT	CA	164637	5	22.0	16	691	16	*	*
ORD, FORT	CA	28016	12	166.3	10	12800	6	47.4	7
CARSON, FORT	CO	137789	6	205.5	7	10472	8	45.3	8
STEWART, FORT	GA	279270	2	151.9	11	6477	10	129.3	2
HUNTER ARMY AIRFIELD	GA	5370	14	62.1	13	2818	12	8.1	12
SCHOFIELD BARRACKS MIL RES	HI	14111	13	175.9	8	11336	7	56.4	5
RILEY, FORT	KS	100990	9	259.2	3	14084	5	36.6	9
CAMPBELL, FORT	KY	111150	8	250.9	4	15720	4	83.7	3
POLK, FORT	LA	199441	4	125.8	12	995	15	166.7	1
BRAGG, FORT	NC	130781	7	327.3	2	21661	1	63.7	4
HOOD, FORT	TX	217206	3	418.9	1	21052	2	53.9	6
MYER, FORT	VA	256	16	22.0	16	2196	13	0.4	14
STORY, FORT	VA	1451	15	25.7	14	1149	14	*	*
LEWIS, FORT	WA	86759	10	231.6	5	19862	3	27.2	10

no.selected	16.000	16.000	16.000	16.000
present	16.000	16.000	16.000	14.000
missing	0.000	0.000	0.000	2.000
sum	2204547.000	2849.700	154830.000	729.100
max	655948.000	418.900	21661.000	166.700
min	256.000	22.000	691.000	0.400
average	137784.190	178.106	9676.875	52.079
median	106070.000	175.150	8916.500	46.350
std dev	161420.200	111.787	7331.356	48.221

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART 1B -- GENERAL INSTALLATION DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	7		8		9		10	
Installation	ST	FYDP MILCON ($Mil)	RK	BMAR Cost ($Mil)	RK	Annual BOS Cost ($Mil)	RK	FYDP MILCON & BOS Cost (Con $Mil)	RK
RICHARDSON, FORT	AK	15.3	12	15.2	7	65.437	7	342.485	9
WAINWRIGHT, FORT	AK	33.6	11	21.6	2	35.159	12	209.395	12
HUNTER LIGGETT, FORT	CA	11.0	15	0.3	16	2.265	16	22.325	16
ORD, FORT	CA	64.3	6	7.8	8	82.981	3	479.205	4
CARSON, FORT	CO	145.8	1	16.1	6	78.776	5	539.680	3
STEWART, FORT	GA	61.3	8	0.8	14	47.820	11	300.400	10
HUNTER ARMY AIRFIELD	GA	1.8	16	0.8	14	15.869	14	81.145	14
SCHOFIELD BARRACKS MIL RES	HI	40.3	9	16.2	5	49.632	10	288.460	11
RILEY, FORT	KS	35.8	10	3.5	11	65.042	8	360.810	8
CAMPBELL, FORT	KY	81.5	7	4.3	10	79.653	4	459.765	6
POLK, FORT	LA	107.8	3	19.8	4	63.480	9	425.200	7
BRAGG, FORT	NC	98.8	4	23.1	1	130.601	1	752.605	1
HOOD, FORT	TX	142.5	2	5.7	9	111.614	2	700.070	2
MYER, FORT	VA	12.7	14	1.9	12	32.476	13	175.080	13
STORY, FORT	VA	13.6	13	0.6	15	5.240	15	39.800	15
LEWIS, FORT	WA	78.1	5	21.1	3	76.435	6	460.275	5
no selected		16.000		16.000		16.000		16.000	
present		16.000		16.000		16.000		16.000	
missing		0.000		0.000		0.000		0.000	
sum		923.800		156.800		942.560		5636.700	
max		145.800		23.100		130.601		752.605	
min		1.800		0.300		2.265		22.325	
average		57.737		9.925		58.911		352.294	
median		60.800		6.750		64.261		351.647	
std dev		46.237		8.731		35.741		215.987	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IIA -- INSTALLATION POPULATION DATA
FY 1977

Service: ARMY

June 3, 1978

AFTA POPULATION

1	2	11		12		13		14	
Installation	ST	FY68 (Pers)	RK	RFY (Pers)	RK	FY68-RFY Change (Pers)	RK	RFY/FY68 Utiliz (Dec)	RK
RICHARDSON, FORT	AK	9018	9	6937	12	-2081	8	0.769	8
WAINWRIGHT, FORT	AK	7071	14	3393	14	-3678	7	0.480	1
HUNTER LIGGETT, FORT	CA	1995	16	1346	16	-649	10	0.675	5
ORD, FORT	CA	36946	3	19045	6	-17901	2	0.515	2
CARSON, FORT	CO	32302	5	24061	5	-8241	3	0.745	7
STEWART, FORT	GA	7868	12	13313	10	5445	14	1.692	15
HUNTER ARMY AIRFIELD	GA	8246	10	4428	13	-3818	6	0.537	3
SCHOFIELD BARRACKS MIL RES	HI	8049	11	16689	8	8640	15	2.073	16
RILEY, FORT	KS	16908	7	18511	7	1603	12	1.095	12
CAMPBELL, FORT	KY	31340	6	24606	4	-6734	4	0.785	9
POLK, FORT	LA	10863	8	14677	9	3814	13	1.351	14
BRAGG, FORT	NC	62925	1	43917	2	-19008	1	0.698	6
HOOD, FORT	TX	39600	2	52100	1	12500	16	1.316	13
MYER, FORT	VA	7860	13	8604	11	744	11	1.095	11
STORY, FORT	VA	2238	15	1395	15	-843	9	0.623	4
LEWIS, FORT	WA	34391	4	28079	3	-6312	5	0.816	10
no selected		16.000		16.000		16.000		16.000	
present		16.000		16.000		16.000		16.000	
missing		0.000		0.000		0.000		0.000	
sum		317820.000		281101.000		-36519.000		16.266	
max		62925.000		52100.000		12500.000		2.073	
min		1995.000		1346.000		-19008.000		0.480	
average		19851.250		17568.812		-2282.438		0.954	
median		9940.500		15683.000		-1462.000		0.777	
std dev		17505.407		14630.766		8419.360		0.454	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IIB -- INSTALLATION POPULATION DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	15		16		17	18		19	20		21	
Installation	ST	RFY Tot Pop (Pers)	RK	RFY Man Pop (Pers)	RK	% Mil of RFY Man Pop %	BOS Pers (Pers)	RK	% Mil of BOS Pers %	No of Depend (Pers)	RK	Pop Supported (Pers)	RK
RICHARDSON, FORT	AK	7109	12	4291	12	97.949	2818	10	52.058	7089	12	14642	13
WAINWRIGHT, FORT	AK	3393	14	2103	14	100.000	1290	13	57.364	3726	14	7359	15
HUNTER LIGGETT, FORT	CA	1351	16	1240	16	87.418	111	15	63.964	16	16	1433	16
ORD, FORT	CA	19210	7	15005	8	94.228	4205	5	60.156	24462	5	67372	5
CARSON, FORT	CO	26285	4	21741	4	94.871	4544	3	46.026	22096	6	53553	6
STEWART, FORT	GA	13663	10	10805	10	96.446	2858	9	33.345	8128	11	25114	11
HUNTER ARMY AIRFIELD	GA	4428	13	3507	13	98.232	921	14	39.414	4594	13	12580	14
SCHOFIELD BARRACKS MIL RES	HI	18820	8	18408	8	98.830	2412	11	35.987	14834	10	33677	10
RILEY, FORT	KS	19228	6	15415	7	95.148	3813	7	42.853	18759	8	44283	7
CAMPBELL, FORT	KY	25983	5	21717	5	97.463	4266	4	40.741	38115	3	80907	4
POLK, FORT	LA	18437	9	14601	9	97.588	3636	8	37.431	15293	9	34238	9
BRAGG, FORT	NC	48468	2	40807	2	97.486	7661	1	42.135	69116	1	123997	2
HOOD, FORT	TX	55290	1	49230	1	95.440	6060	2	49.587	48100	2	161200	1
MYER, FORT	VA	8604	11	6913	11	48.691	1691	12	51.094	20973	7	36915	8
STORY, FORT	VA	1518	15	1422	15	86.078	96	16	41.667	1417	15	18654	12
LEWIS, FORT	WA	31531	3	27635	3	93.284	3896	6	60.359	37049	4	88672	3
no selected		16.000		16.000		16.000	16.000		16.000	16.000		16.000	
present		16.000		16.000		16.000	16.000		16.000	16.000		16.000	
missing		0.000		0.000		0.000	0.000		0.000	0.000		0.000	
sum		303317.320		253039.320		1479.152	50278.000		733.181	333767.000		804574.000	
max		55289.780		49229.780		100.000	7661.000		63.964	69116.000		161200.000	
min		1350.900		1239.900		48.691	96.000		33.345	16.000		1433.000	
average		18957.332		15814.957		94.708	3142.376		44.650	20860.437		50285.875	
median		18628.360		14902.890		95.943	3247.000		43.940	17026.000		35575.500	
std dev		15907.190		14022.026		12.277	2068.970		8.216	19042.260		44538.033	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IIIA -- SELECTED INSTALLATION MANAGEMENT INDICATORS
FY 1977

Service: ARMY

June 3, 1978

1	2	22 RP Acq $		23 Bldg Area		24 RP Acq $		25 RFY+1 MILCON		26 FYDP MILCON	
Installation	ST	Tot Pop ($/Pers)	RK	Tot Pop (GSF/Pers)	RK	Bldg Area ($/GSF)	RK	Man Pop ($/Pers)	RK	Man Pop ($/Pers)	RK
RICHARDSON, FORT	AK	24532.007	2	1035.436	15	23.692	4	812.691	6	3565.538	8
WAINWRIGHT, FORT	AK	67845.563	1	1808.429	16	37.516	2	4136.947	1	15977.175	1
HUNTER LIGGETT, FORT	CA	16285.439	4	511.511	7	31.838	3	*	*	8871.683	3
ORD, FORT	CA	8657.103	10	668.331	12	12.992	14	759.764	4	4285.335	7
CARSON, FORT	CO	7818.230	11	398.406	4	19.624	9	101.193	12	6706.309	5
STEWART, FORT	GA	11117.798	7	474.062	8	23.452	5	888.496	3	5673.415	6
HUNTER ARMY AIRFIELD	GA	14024.390	5	636.405	11	22.037	7	*	*	513.259	16
SCHOFIELD BARRACKS MIL RES	HI	9346.639	9	602.351	6	15.517	12	621.663	5	2456.179	12
RILEY, FORT	KS	13480.510	6	732.483	13	18.404	10	194.619	9	2309.475	14
CAMPBELL, FORT	KY	9656.158	8	605.001	9	15.961	11	128.929	11	2831.828	10
POLK, FORT	LA	6823.191	14	53.967	1	126.432	1	3567.298	2	7283.233	4
BRAGG, FORT	NC	6752.901	15	448.913	5	15.110	13	367.583	8	2416.249	13
HOOD, FORT	TX	7578.448	12	380.758	3	19.898	8	379.851	7	2894.589	9
MYER, FORT	VA	2556.950	16	255.230	2	10.018	16	57.862	13	1837.118	15
STORY, FORT	VA	16927.941	3	756.817	14	22.367	6	*	*	9562.649	2
LEWIS, FORT	WA	7345.096	13	630.549	10	11.649	15	173.691	10	2826.102	11
no selected		16.000		16.000		16.000		16.000		16.000	
present		16.000		16.000		16.000		13.000		16.000	
missing		0.000		0.000		0.000		3.000		0.000	
sum		230746.360		9994.649		428.508		11890.587		80010.134	
max		67845.563		1808.429		126.432		4136.947		15977.175	
min		2556.950		53.967		10.018		57.862		513.259	
average		9395.111		510.456		18.405		689.707		3286.363	
median		9501.398		603.676		19.761		379.851		3230.063	
std dev		15182.448		386.597		27.547		1334.096		3931.349	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IIIB -- SELECTED INSTALLATION MANAGEMENT INDICATORS
FY 1977

Service ARMY

June 3, 1978

1	2	27 FYDP Cost		28 BOS Cost		29 BOS Cost		30 BOS Cost		31 Man Pers	
Installation	ST	Man Pop ($/Pers)	RK	Man Pop ($/Pers)	RK	Bldg Area ($/GSF)	RK	BOS Pers ($/Pers)	RK	BOS Pers (Ratio)	RK
RICHARDSON, FORT	AK	79813.238	15	15249.541	15	8.690	14	23221.078	14	1.523	16
WAINWRIGHT, FORT	AK	99569.659	16	16718.497	16	5.730	9	27255.038	15	1.630	15
HUNTER LIGGETT, FORT	CA	18005.484	4	1826.760	1	3.278	1	20405.405	12	11.170	2
ORD, FORT	CA	31937.077	14	5530.348	14	6.483	11	19733.888	11	3.568	14
CARSON, FORT	CO	24823.464	9	3623.431	8	7.523	13	17336.267	5	4.784	8
STEWART, FORT	GA	27802.509	11	4425.819	11	7.383	12	16731.980	1	3.781	13
HUNTER ARMY AIRFIELD	GA	23138.009	7	4524.950	12	5.631	8	17230.184	4	3.806	12
SCHOFIELD BARRACKS MIL RES	HI	17580.878	3	3024.940	4	4.378	3	20577.114	13	6.802	5
RILEY, FORT	KS	23406.786	8	4219.462	9	4.618	5	17057.959	2	4.043	11
CAMPBELL, FORT	KY	21170.332	6	3667.701	7	5.067	6	18671.589	8	5.091	7
POLK, FORT	LA	28727.555	13	4288.864	10	63.799	16	17458.745	6	4.071	10
BRAGG, FORT	NC	18443.009	5	3205.352	5	6.039	10	17073.619	3	5.327	6
HOOD, FORT	TX	14220.457	1	2265.174	2	5.297	7	18401.680	7	8.124	3
MYER, FORT	VA	25326.196	10	4697.816	13	14.789	15	19205.203	9	4.088	9
STORY, FORT	VA	27984.811	12	3684.432	8	4.560	4	54583.331	16	14.815	1
LEWIS, FORT	WA	16655.364	2	2765.853	3	3.844	2	19618.839	10	7.093	4
no selected		16.000		16.000		16.000		16.000		16.000	
present		16.000		16.000		16.000		16.000		16.000	
missing		0.000		0.000		0.000		0.000		0.000	
sum		498604.830		83718.939		157.309		344561.890		89.717	
max		99569.659		16718.497		63.799		54583.331		14.815	
min		14220.457		1826.760		3.278		16731.980		1.523	
average		22275.984		3725.034		6.088		18747.364		5.528	
median		24118.125		3951.947		5.681		18938.396		4.436	
std dev		23649.983		4309.812		14.643		9223.527		3.436	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IIIC -- SELECTED INSTALLATION MANAGEMENT INDICATORS
FY 1977

Service: ARMY

June 3, 1978

1	2	32 Contr BOS Pers		33	34	35	36 Pur Util $	37 Pur Util $	
		BOS Cost		BOS Mil Per	BOS Pers	Energy $			
Installation	ST	(Pers/$Mil)	RK	BOS Tot Pers %	BOS Cost %	BOS Cost %	BOS Cost %	AFTA Pop ($/Pers)	RK
RICHARDSON, FORT	AK	1.620	13	52.058	66.620	2.765	0.701	88.187	3
WAINWRIGHT, FORT	AK	2.531	11	57.364	57.220	8.151	0.674	69.850	4
HUNTER LIGGETT, FORT	CA	*	*	63.984	64.238	20.925	11.965	201.337	13
ORD, FORT	CA	*	*	50.155	69.708	4.443	8.182	269.362	16
CARSON, FORT	CO	8.289	4	45.026	67.138	4.372	4.820	157.807	7
STEWART, FORT	GA	9.118	3	33.345	83.011	6.096	4.582	164.578	8
HUNTER ARMY AIRFIELD	GA	6.428	6	39.414	61.541	13.499	5.432	194.670	12
SCHOFIELD BARRACKS MIL RES	HI	11.565	1	35.987	57.169	8.445	7.572	225.178	14
RILEY, FORT	KS	4.628	7	42.853	67.899	7.827	7.666	269.353	15
CAMPBELL, FORT	KY	3.887	9	40.741	63.312	7.445	5.872	190.078	11
POLK, FORT	LA	6.238	8	37.431	70.813	3.879	3.132	135.450	5
BRAGG, FORT	NC	10.795	2	42.135	59.578	9.469	5.414	161.238	9
HOOD, FORT	TX	2.556	10	49.587	65.245	7.898	8.262	176.833	10
MYER, FORT	VA	2.525	12	81.094	68.780	5.058	1.139	43.003	1
STORY, FORT	VA	*	*	41.667	23.378	6.240	3.702	139.068	8
LEWIS, FORT	WA	4.095	8	50.359	64.952	7.585	2.219	60.401	2
no selected		18.000		18.000	18.000	18.000	18.000	18.000	
present		13.000		16.000	16.000	16.000	16.000	16.000	
missing		3.000		0.000	0.000	0.000	0.000	0.000	
sum		74.254		733.181	990.603	124.098	79.333	2524.368	
max		11.565		63.984	70.813	20.925	11.965	269.362	
min		1.620		33.345	23.378	2.765	0.674	43.003	
average		6.603		44.650	64.463	6.787	4.977	166.880	
median		4.628		43.940	64.595	7.515	5.117	162.906	
std dev		3.333		8.216	11.065	4.358	3.061	70.140	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - TOPP CATEGORY 202
PART III D -- SELECTED INSTALLATION MANAGEMENT INDICATORS
FY 1977

Service: ARMY

June 3, 1978

1	2	38 BMAR $		39 BMAR $		40 BMAR $		41 Pop Supp		42 No of Dep	
Installation	ST	Bldg Area ($/QSF)	RK	RP Acq$Mil (Ratio)	RK	AFTA Pop ($/Pers)	RK	AFTA Mil Pers (Ratio)	RK	AFTA Mil Pers (Ratio)	RK
RICHARDSON, FORT	AK	2.065	14	87156.961	12	2191.149	15	2.663	6	1.289	10
WAINWRIGHT, FORT	AK	3.620	16	93631.449	15	6366.048	16	2.888	4	1.311	11
HUNTER LIGGETT, FORT	CA	0.434	6	13636.363	5	222.883	7	1.248	1	0.014	1
ORD, FORT	CA	0.609	8	46903.187	8	409.556	8	4.188	14	1.621	12
CARSON, FORT	CO	1.837	13	78345.498	10	669.133	11	2.619	5	1.081	6
STEWART, FORT	GA	0.124	1	5266.623	1	60.092	1	2.278	3	0.737	2
HUNTER ARMY AIRFIELD	GA	0.284	5	12882.447	2	180.668	4	3.298	10	1.206	7
SCHOFIELD BARRACKS MIL RES	HI	1.429	12	92097.781	14	970.699	13	2.252	2	0.992	3
RILEY, FORT	KS	0.249	2	13503.086	3	189.077	5	2.842	7	1.204	8
CAMPBELL, FORT	KY	0.274	4	17138.302	6	174.754	3	3.758	13	1.771	14
POLK, FORT	LA	19.899	16	157392.680	16	1349.050	14	2.842	8	1.270	9
BRAGG, FORT	NC	1.066	11	70577.451	9	525.992	10	3.224	9	1.787	15
HOOD, FORT	TX	0.271	3	13607.066	4	109.405	2	3.444	11	1.028	4
MYER, FORT	VA	0.865	9	86363.634	11	220.828	6	8.727	15	4.958	16
STORY, FORT	VA	0.522	7	23346.303	7	430.108	9	16.349	16	1.242	8
LEWIS, FORT	WA	1.061	10	91106.352	13	781.451	12	3.651	12	1.626	13
no selected		16.000		16.000		16.000		16.000		16.000	
present		16.000		16.000		16.000		16.000		16.000	
missing		0.000		0.000		0.000		0.000		0.000	
sum		34.210		903153.190		14820.891		65.972		22.945	
max		19.899		157392.680		6366.048		16.349		4.958	
min		0.124		5266.623		60.092		1.246		0.014	
average		1.026		55725.164		864.921		3.354		1.391	
median		0.737		58740.318		419.832		3.033		1.256	
std dev		4.817		44226.838		1653.833		3.635		1.029	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IVA -- INSTALLATION TRAINING ACTIVITY DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	43 FY 68 Staff & Fac (Pers)	RK	44 FY 68 ADL (STU)	RK	45 FY 68 TAO (STU)	RK	46 RFY Staff & Fac (Pers)	RK	47 RFY ADL (STU)	RK	48 RFY TAO (STU)	RK
Installation	ST												
RICHARDSON, FORT	AK	.	.	.	.	.	.	32	9	15	9	178	9
WAINWRIGHT, FORT	AK	.	.	.	.	.	.	.	.	.	.	.	.
ORD, FORT	CA	3945	3	15046	2	75922	2	51	7	70	6	418	8
CARSON, FORT	CO	.	.	.	.	.	.	68	3	82	3	685	3
HUNTER ARMY AIRFIELD	GA	5681	1	347	4	3383	4	.	.	.	.	.	.
STEWART, FORT	GA	.	.	.	.	.	.	.	.	.	.	.	.
SCHOFIELD BARRACKS MIL RES	HI	.	.	.	.	.	.	.	.	.	.	.	.
RILEY, FORT	KS	.	.	.	.	.	.	58	6	75	4	557	5
CAMPBELL, FORT	KY	.	.	.	.	.	.	57	8	60	6	829	4
POLK, FORT	LA	4083	2	22052	1	111275	1	44	8	42	8	505	7
BRAGG, FORT	NC	533	4	599	3	3928	3	647	1	469	1	4343	1
HOOD, FORT	TX	.	.	.	.	.	.	76	2	108	2	1278	2
LEWIS, FORT	WA	.	.	.	.	.	.	58	6	48	7	532	6
no selected		13.000		13.000		13.000		13.000		13.000		13.000	
present		4.000		4.000		4.000		9.000		9.000		9.000	
missing		9.000		9.000		9.000		4.000		4.000		4.000	
sum		14212.000		38044.000		194508.000		1090.000		969.000		9525.000	
max		5681.000		22052.000		111275.000		647.000		469.000		4343.000	
min		533.000		347.000		3383.000		32.000		15.000		178.000	
average		3553.000		9511.000		48627.000		121.111		107.667		1058.333	
median		3999.000		7822.500		39925.000		58.000		70.000		557.000	
std.dev		2164.290		10821.515		53897.461		197.606		138.039		1271.784	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IVB -- INSTALLATION TRAINING ACTIVITY DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	49 FY68-RFY S&F Change		50 FY68-RFY ADL Change		51 FY68-RFY TAQ Change		52 RFY/FY68 ADL Utiliz	
Installation	ST	(Pers)	RK	(STU)	RK	(STU)	RK	(Dec)	RK
RICHARDSON, FORT	AK	32	4	15	5	178	4	*	*
WAINWRIGHT, FORT	AK	*	*	*	*	*	*	*	*
ORD, FORT	CA	-3894	3	-14976	2	-76504	2	0.005	2
CARSON, FORT	CO	88	8	82	9	885	9	*	*
HUNTER ARMY AIRFIELD	GA	-5681	1	-347	3	-3383	3	*	*
STEWART, FORT	GA	*	*	*	*	*	*	*	*
SCHOFIELD BARRACKS MIL RES	HI	*	*	*	*	*	*	*	*
RILEY, FORT	KS	58	7	75	6	557	7	*	*
CAMPBELL, FORT	KY	57	5	60	7	829	8	*	*
POLK, FORT	LA	-4009	2	-22010	1	-110770	1	0.002	1
BRAGG, FORT	NC	114	10	-130	4	415	5	0.783	3
HOOD, FORT	TX	75	9	108	10	1278	10	*	*
LEWIS, FORT	WA	58	7	46	6	532	6	*	*

no selected	13.000	13.000	13.000	13.000
present	10.000	10.000	10.000	3.000
missing	3.000	3.000	3.000	10.000
sum	-13122.000	-37075.000	-184983.000	0.790
max	114.000	108.000	1278.000	0.783
min	-5681.000	-22010.000	-110770.000	0.002
average	-1312.200	-3707.500	-18498.300	0.011
median	57.500	31.500	473.500	0.005
std dev	2268.740	7968.219	40227.577	0.450

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IVC -- INSTALLATION TRAINING ACTIVITY DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	53	54	55	56		57		58		59	
					FY68 ADL		FY68 TAD		RFY ADL		RFY TAD	
		Sch Fac	Sch Fac	Sch Fac								
Installation	ST	Bldgs (No)	Bldg Area (00005F)	RP Acq $ ($Mil)	FY68 S&F (Ratio)	RK	FY68 S&F (Ratio)	RK	RFY S&F (Ratio)	RK	RFY S&F (Ratio)	RK
RICHARDSON, FORT	AK	1	14.0	0.2	*	*	*	*	0.469	9	5.662	9
WAINWRIGHT, FORT	AK	*	*	*	*	*	*	*	*	*	*	*
ORD, FORT	CA	15	52.0	0.2	3.814	2	19.248	2	1.373	2	8.196	7
CARSON, FORT	CO	12	93.0	0.5	*	*	*	*	1.206	4	13.015	3
HUNTER ARMY AIRFIELD	GA	*	*	*	0.061	4	0.595	4	*	*	*	*
STEWART, FORT	GA	*	*	*	*	*	*	*	*	*	*	*
SCHOFIELD BARRACKS MIL RES	HI	*	*	*	*	*	*	*	*	*	*	*
RILEY, FORT	KS	1	41.0	0.3	*	*	*	*	1.293	3	9.603	5
CAMPBELL, FORT	KY	34	59.0	0.2	*	*	*	*	1.053	5	14.544	2
POLK, FORT	LA	15	54.0	0.3	5.441	1	27.455	1	0.955	6	11.477	4
BRAGG, FORT	NC	37	199.6	*	1.124	3	7.370	3	0.725	8	6.713	8
HOOD, FORT	TX	9	31.0	0.1	*	*	*	*	1.440	1	17.040	1
LEWIS, FORT	WA	19	87.0	0.4	*	*	*	*	0.828	7	9.172	6
no.selected		13.000	13.000	13.000	13.000		13.000		13.000		13.000	
present		9.000	9.000	8.000	4.000		4.000		9.000		9.000	
missing		4.000	4.000	5.000	9.000		9.000		4.000		4.000	
sum		143.000	810.600	2.200	10.440		54.665		9.340		95.323	
max		37.000	199.600	0.500	5.441		27.455		1.440		17.040	
min		1.000	14.000	0.100	0.061		0.595		0.469		5.662	
average		15.889	87.844	0.275	2.677		13.686		0.889		8.739	
median		15.000	54.000	0.250	2.469		13.307		1.053		9.603	
std dev		12.703	54.189	0.128	2.461		11.996		0.324		3.757	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART IVD -- INSTALLATION TRAINING ACTIVITY DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	60 Bldg Area		61 RP Acq $		62		63 RFY Sch $	
Installation	ST	ADL (GSF/STU)	RK	ADL ($/STU)	RK	RFY Sch $ ($MIL)	RK	RFY TAO ($/STU)	RK
RICHARDSON, FORT	AK	933.333	5	13333.333	8	0.3	8	1685.393	8
WAINWRIGHT, FORT	AK	.	.	.	.	.	.	.	.
ORD, FORT	CA	742.857	4	2857.143	2	0.6	6	1436.407	7
CARSON, FORT	CO	1134.146	7	6097.561	6	0.7	3	790.960	3
HUNTER ARMY AIRFIELD	GA	.	.	.	.	.	.	.	.
STEWART, FORT	GA	.	.	.	.	.	.	.	.
SCHOFIELD BARRACKS MIL RES	HI	.	.	.	.	.	.	.	.
RILEY, FORT	KS	548.667	3	4000.000	4	0.5	7	897.666	4
CAMPBELL, FORT	KY	983.333	6	3333.333	3	0.5	7	603.136	1
POLK, FORT	LA	1285.714	8	7142.857	6	0.5	7	990.099	5
BRAGG, FORT	NC	425.586	2	.	.	7.6	1	1749.942	9
HOOD, FORT	TX	287.037	1	925.926	1	0.8	2	625.978	2
LEWIS, FORT	WA	1395.833	9	8333.333	7	0.6	5	1127.820	6
no selected		13.000		13.000		13.000		13.000	
present		9.000		8.000		9.000		9.000	
missing		4.000		5.000		4.000		4.000	
sum		7734.506		46023.466		12.100		9906.402	
max		1395.833		13333.333		7.600		1749.942	
min		287.037		925.926		0.300		603.136	
average		630.134		2554.180		1.344		1270.341	
median		933.333		5048.780		0.600		990.099	
std dev		386.188		3905.754		2.360		432.792	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART VA -- MISSION DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	64	65		66	67	68	69	70	71
Installation	ST	FY66 Combat BN/SQ (No)	FY66 Combat UE (No)	RK	Tot Div/Wgs (No)	Tot Bde/Gps (No)	Tot Bn/Sq (No)	Combat Div/Wgs (No)	Combat Bde/Gps (No)	Combat Bn/Sq (No)
ORD, FORT	CA	*	*	*	1	2	17	1	2	7
CARSON, FORT	CO	*	*	*	1	3	21	1	3	10
STEWART, FORT	GA	*	*	*	1	2	16	1	2	7
SCHOFIELD BARRACKS MIL RES	HI	*	*	*	1	2	17	1	2	6
RILEY, FORT	KS	*	*	*	1	2	16	1	2	7
CAMPBELL, FORT	KY	*	*	*	1	3	27	1	3	13
POLK, FORT	LA	*	*	*	1	2	17	1	2	7
BRAGG, FORT	NC	*	*	*	1	4	44	1	3	17
HOOD, FORT	TX	10	626	1	2	7	58	2	7	25
LEWIS, FORT	WA	*	*	*	1	3	26	1	3	12
no.selected		10.000	10.000		10.000	10.000	10.000	10.000	10.000	10.000
present		1.000	1.000		10.000	10.000	10.000	10.000	10.000	10.000
missing		9.000	9.000		0.000	0.000	0.000	0.000	0.000	0.000
sum		10.000	626.000		11.000	30.000	263.000	11.000	29.000	113.000
max		10.000	626.000		2.000	7.000	58.000	2.000	7.000	25.000
min		10.000	626.000		1.000	2.000	17.000	1.000	2.000	7.000
average		10.000	626.000		1.100	3.000	26.300	1.100	2.900	11.300
median		10.000	626.000		1.000	2.500	19.500	1.000	2.500	9.000
std.dev		0.000	0.000		0.316	1.563	13.921	0.316	1.524	5.870

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART VB -- MISSION DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	72		73	74	75		76		77	
Installation	ST	Combat UE (No)	RK	Combat Bn/Sq Depl (No)	Combat UE Deploy (No)	FY68-RFY Change Com Bn/Sq (No)	RK	FY68-RFY Change Com UE (No)	RK	RFY / FY68 Com UE (Dec)	RK
ORD, FORT	CA	160	10	*	*	7	3	160	1	*	*
CARSON, FORT	CO	688	2	*	*	10	6	688	9	*	*
STEWART, FORT	GA	213	8	*	*	7	3	213	3	*	*
SCHOFIELD BARRACKS MIL RES	HI	208	9	*	*	8	5	208	2	*	*
RILEY, FORT	KS	485	4	*	*	7	3	485	7	*	*
CAMPBELL, FORT	KY	424	5	*	*	13	8	424	6	*	*
POLK, FORT	LA	400	6	*	*	7	3	400	5	*	*
BRAGG, FORT	NC	608	3	*	*	17	10	608	8	*	*
HOOD, FORT	TX	1511	1	*	*	15	9	885	10	2.414	1
LEWIS, FORT	WA	361	7	*	*	12	7	361	4	*	*
no.selected		10.000		10.000	10.000	10.000		10.000		10.000	
present		10.000		0.000	0.000	10.000		10.000		1.000	
missing		0.000		10.000	10.000	0.000		0.000		9.000	
sum		5058.000	*		*	103.000		4432.000		2.414	
max		1511.000	*		*	17.000		885.000		2.414	
min		160.000	*		*	7.000		160.000		2.414	
average		505.800	*		*	10.300		443.200		0.808	
median		412.000	*		*	9.000		412.000		2.414	
std dev		392.619	*		*	3.743		231.307		0.000	

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART VC -- MISSION DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	78 RP Acq $Mil		79 Land Area [1		80 RP Acq $Mil		81 Land Area[1	
Installation	ST	Com Bde/Gp ($Mil/Bde)	RK	Com Bde/Gp (Acres/Bde)	RK	Com Bn/Sq ($Mil/Bn)	RK	Com Bn/Sq (Acres/Bn)	RK
ORD, FORT	CA	83.150	8	39499.500	3	23.757	9	11285.871	4
CARSON, FORT	CO	68.500	3	48093.000	5	20.550	6	14427.900	5
STEWART, FORT	GA	75.950	4	139782.000	10	21.700	7	39937.714	10
SCHOFIELD BARRACKS MIL RES	HI	87.950	8	73675.000	7	21.987	8	18468.750	7
RILEY, FORT	KS	129.600	10	51213.000	6	37.029	10	14632.286	6
CAMPBELL, FORT	KY	83.633	7	37105.333	2	19.300	5	8562.769	2
POLK, FORT	LA	62.900	2	99771.000	8	17.971	2	28506.000	8
BRAGG, FORT	NC	109.100	9	45837.000	4	19.253	3	8088.882	1
HOOD, FORT	TX	59.843	1	31070.428	1	16.756	1	8699.720	3
LEWIS, FORT	WA	77.200	5	118191.670	9	19.300	5	29547.918	9
no.selected		10.000		10.000		10.000		10.000	
present		10.000		10.000		10.000		10.000	
missing		0.000		0.000		0.000		0.000	
sum		837.826		664437.920		217.604		182157.510	
max		129.600		139782.000		37.029		39937.714	
min		59.843		31070.428		16.756		8088.882	
average		79.789		61153.621		20.472		15694.292	
median		80.175		49653.000		19.925		14530.093	
std.dev		21.358		38025.789		5.739		10891.994	

[1 Land area includes land area for primary installations and associated properties

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
GENERAL PURPOSE FORCES - GENERAL PURPOSE PROGRAMS - IDPP CATEGORY 202
PART VD -- MISSION DATA
FY 1977

Service: ARMY

June 3, 1978

1	2	82 RP Acq $Mil		83 Land Area [1]		84 Msn Pop		85 Msn Pop	
Installation	ST	Com UE ($Mil/Equip)	RK	Com UE (Acr/Equip)	RK	Com Bn/Sq (Pers/Bn)	RK	Com UE (Pers/Equip)	RK
ORD, FORT	CA	1.039	10	493.744	6	2143.523	6	93.779	10
CARSON, FORT	CO	0.299	2	209.708	2	2174.072	7	31.600	1
STEWART, FORT	GA	0.713	8	1312.507	10	1543.540	1	50.727	6
SCHOFIELD BARRACKS MIL RES	HI	0.846	9	710.337	8	2050.950	4	78.883	9
RILEY, FORT	KS	0.534	4	211.188	3	2202.109	8	31.783	2
CAMPBELL, FORT	KY	0.592	6	262.538	5	1670.571	2	51.220	8
POLK, FORT	LA	0.314	3	498.855	7	2114.446	5	37.003	4
BRAGG, FORT	NC	0.538	5	226.169	4	2400.415	10	67.117	7
HOOD, FORT	TX	0.277	1	143.940	1	1969.191	3	32.581	3
LEWIS, FORT	WA	0.842	7	982.202	9	2302.937	9	76.552	8
no.selected		10.000		10.000		10.000		10.000	
present		10.000		10.000		10.000		10.000	
missing		0.000		0.000		0.000		0.000	
sum		5.795		5051.187		20571.753		551.244	
max		1.039		1312.507		2400.415		93.779	
min		0.277		143.940		1543.540		31.600	
average		0.457		350.624		2066.930		46.177	
median		0.865		378.141		2128.984		50.973	
std dev		0.247		389.033		267.641		22.684	

[1] Land area includes land area for primary installations and associated properties

Explanation of Installation Data Column Entries
(All data entries apply to the Reporting Fiscal Year (RFY) unless otherwise identified)

Column	Explanation of Column Data
	PART I - GENERAL INSTALLATION DATA
1	Name of installation. (This entry is repeated on each separate page.)
2	Two letter standard State abbreviation of the State in which the installation is located. (This entry is repeated on each separate page).
3	Total land area of the installation, in acres, as contained in the installation Real Property Inventory (RPI) records for the reporting Fiscal Year (RFY). (Includes fee, public domain, easement, lease). The land area of the installation includes all separate satellite properties for which the installation provides support personnel and BOS funds.
4	Total real property acquisition costs as reported in the installation RPI for the RFY in millions of dollars ($ MIL).
5	Total gross building area as reported in the installation RPI for the RFY in thousands of gross square feet (GSF) - (000GSF).

6 Total military construction (MILCON) (defined as including all facility projects regardless of source or appropriation, i.e., minor; RDT&E; Family Housing, Procurement, etc.) projects approved and funded which have been started but not yet completed in millions of dollars ($ MIL). This entry consists of all MILCON from FY minus 2-years to the FY being reported.

- For the FY 1976 DBFR, this MILCON would include:
  - FY 1974
  - FY 1975
  - FY 1976
- For the FY 1977 DBFR, this MILCON would include:
  - FY 1975
  - FY 1976
  - FY 1977
- For each subsequent annual DBFR, the data entry follows the above pattern.

7 Total Five Year Defense Plan (FYDP) MILCON including that authorized and funded but not yet started in millions of dollars ($ MIL).

- For the FY 1976 DBFR, this would include the cost of all projects in the FY 1977 Budget as approved by Congress.
- For the FY 1977 DBFR, this would include the cost of all projects in the FY 1978 Budget as approved by Congress.
- For each subsequent annual DBFR, the data entry follows the above pattern.

PLUS

All MILCON included in the remaining four years of the FYDP related to the President's Budget of the then current FY (not DBFR reporting FY) in millions of dollars ($ MIL).

- For the FY 1976 DBFR, this includes the projects contained for the first four Fiscal Years in the FYDP of FY 1978 to FY 1982.
- For the FY 1977 DBFR, this includes the projects contained for the first four Fiscal Years in the FYDP of FY 1979 to FY 1983 and may be estimated.
- For each subsequent annual DBFR, the data entry follows the above pattern.

8 The total estimated value of the Backlog of Maintenance and Repair (BMAR) for all buildings regardless of source of funding or appropriation (i.e., Family Housing, RDT&E facilities, medical facilities, etc.) as of the end of the RFY, in millions of dollars ($ MIL). (The BMAR is the end of the fiscal year measurement of maintenance and repair work on all real property (i.e., buildings, utilities plants and systems, and other facilities such as roads, paved areas, etc.) remaining as a firm requirement of the installation work plans prescribed by DoD Directive 4165.2 but which lack of resources prohibited accomplishment in that fiscal year.) Three categories of BMAR have been totalled for this entry - buildings, utilities and all other BMAR.

9 Total annual Base Operating Support (BOS) costs for the RFY, in millions of dollars ($ MIL) based upon the uniform definition of BOS contained in this document except MILCON for the reporting FY which is included separately as part of the data entry of Column 6.

10 The sum of the FYDP MILCON plus the five year projection of the RFY total annual BOS in constant RFY millions of dollars ($ MIL).

PART II - INSTALLATION POPULATION DATA

11 The end FY 1968 Authorized Full Time Assigned (AFTA) military, civilian and appropriated fund financed contractor personnel for all activities at the installation. For civilian personnel, this data includes all appropriated fund financed full time, part time and intermittent workers which are part of end strengths (ceilings) of all activities at the installation.

12 Same as column 11 but for the RFY.

13 The change in the number of AFTA personnel at the installation from FY 1968 to the RFY.

14 The decimal value of the RFY utilization of the installation on the basis of its FY 1968 AFTA population (decimal).

15 The RFY TOTAL POPULATION at the installation. The total population consists of the AFTA population (Column 12) plus the sum of the Average Daily Load (ADL) of students (military and civilian) and the average equivalent daily Reserve Component training load (considered to be all military personnel) at the installation, as appropriate.

The average equivalent daily Reserve Component (RC) training load is comprised of two components: (1) for RC aviation activities and (2) for other than aviation activities. This load is derived by identifying the total annual RC activity training load in man-years separately for each type of activity using the installation. This annual load is then converted to a monthly load for each of

the two types of activities. These monthly loads are then equated to a daily average equivalent load by use of a factor. The factor for estimating the average daily equivalent load for RC aviation activities is 26 percent of the average monthly RC aviation activity personnel using the installation for training purposes. Full time RC technicians located at an installation are included as part of this RC load. The factor for non-aviation RC activity personnel using the installation for training purposes is 14 percent of the average monthly RC load. The factor is greater for RC aviation activities because of more personnel required to support such activities.

The ADL of students applies only to installations which have formal type school and training activities and represents the average daily load of both military and civilian students. Formal type schools and training activities exclude division/unit schools but include formal pilot training schools involved in transitioning, proficiency, combat, etc., training taught in Combat Crew Training type Schools (CCTS).

16 The RFY MISSION POPULATION at the installation. The MISSION POPULATION consists of the TOTAL POPULATION less the military and appropriated fund financed civilian and contractor personnel assigned to BOS functions at the installations.

17 The percentage of military personnel at the installation included in RFY MISSION POPULATION (%).

18 The number of military and appropriated fund financed civilian and contractor personnel assigned to BOS functions at the installation at the end of the RFY. (The personnel included in the AFTA population performing BOS functions and services).

19 The percentage of military personnel assigned to BOS functions at the installation at the end of the RFY (%).

20 The end of the RFY dependent population (excluding sponsors) living both on and off-post in government housing and off-post in private housing for all sponsors who are assigned to any activity at the installation.

21 The end of the RFY population supported by the installation. This population figure includes the AFTA population, the Non-Appropriated fund (NAF) personnel assigned to all NAF activities at the installation, the dependents of all sponsors assigned to installation whether living on or off-post in government housing or off-post in private housing and the military retiree population which uses installation facilities. Every effort has been made to avoid duplication of the military retiree population in areas where activities at more than one installation are used by retirees.

PART III - SELECTED INSTALLATION MANAGEMENT INDICATORS

22 The average real property acquisition cost per capita on the basis of the TOTAL POPULATION for the installation at the end of the RFY ($/Person). This factor is subject to serious distortion because the Government accounts for this acquisition on the basis of original cost at the time acquired which could have been many years ago. Care, therefore, must be used when evaluating this factor. This cautionary note applies to any factor involving the real property acquisition cost of military installations. Despite the difficulties with this factor, it has some utility since it is the only real property investment type installation data available.

23 The average building area in gross square feet used per capita on the basis of the TOTAL POPULATION at the installation at the end of the RFY (GSF/person).

24 The average real property acquisition cost per gross square foot of building space at the installation at the end of the RFY ($/GSF). (See cautionary note under Column 22).

25 The per capita new real property investment (MILCON) authorized and funded by the Congress for the installation for the RFY plus one year on the basis of the MISSION POPULATION ($/person).

26 The five year planned new real property investment (MILCON) per capita for the installation on the basis of the MISSION POPULATION ($/person).

27 The five year planned new real property investment (MILCON) plus the projected five-year RFY constant dollar BOS costs per capita for the installation on the basis of the MISSION POPULATION ($/person).

28 The average annual BOS cost per capita for the installation for the RFY on the basis of the MISSION POPULATION ($/person).

29 The average annual BOS cost per gross square foot of building space at the installation at the end of the RFY ($/GSF).

30 The average annual BOS expenditure for each person assigned to BOS functions at the installation at the end of the RFY ($/person).

31 The ratio of the MISSION POPULATION to the personnel assigned to BOS functions at the installation at the end of RFY.

32 The average number of appropriated fund financed contractor personnel per million dollars of annual BOS expenditure at the installation at the end of the RFY (persons/$MIL).

33 The military personnel assigned to BOS functions as a percentage of the total personnel assigned to BOS functions at the installation at the end of the RFY (%).

34 The cost of BOS personnel salaries (military and appropriated fund civilian personnel) as a percentage of the total annual BOS expenditures at the installation during the RFY (%).

35 The annual cost of energy as a percentage of the total annual BOS expenditures at the installation during the RFY (%).

36 The annual cost of purchased utilities as a percentage of the total annual BOS expenditures at the installation during the RFY (%).

37 The annual cost of purchased utilities per capita at the installation for the RFY on the basis of the AFTA population ($/person).

38 The average BMAR cost per gross square foot of building space at the installation at the end of RFY ($/GSF).

39 The ratio of BMAR cost per million dollars of real property acquisition cost for the installation at the end of the RFY ($/$ MIL).

40 The BMAR cost per capita at the installation at the end of RFY on the basis of the AFTA population ($/person).

41 The ratio of the population supported to the AFTA population of the installation at the end of the RFY.

42 The ratio of the average number of dependents of sponsors assigned to the installation to the AFTA population at the installation at the end of the RFY.

PART IV - INSTALLATION TRAINING ACTIVITY DATA

43 The total number of military and appropriated fund civilian and contractor personnel assigned to all the staffs and faculties (S&F) of the formal school/training activities at the installation during FY 1968. This entry includes all command, instructors, administrative, clerical, support and other personnel assigned to all formal school/training activities at the installation. This entry excludes BOS personnel assigned to the installation although they may support the school/training activity.

44 The total Average Daily Load (ADL) of students, both military and civilian, assigned to all formal school/training activities at the installation during FY 1968.

45 The Total Annual Output (TAO) of students at all the formal school/training activities at the installation who successfully completed the school/training requirements during FY 1968.

46 The same entry as for Column 43, except for the RFY.

47 The same entry as for Column 44, except for the RFY.

48 The same entry as for Column 45, except for the RFY.

49 The change in S&F from FY 1968 to the RFY at the formal school/training activities at the installation (persons).

50 The change in the ADL of students from FY 1968 to the RFY at the formal school/training activities at the installation (students).

51 The change in TAO of students from FY 1968 to the RFY at the formal school/training activities at the installation (students).

52 The ADL of students using the formal school/training activities at the installation in the RFY as a function of the FY 1968 ADL of students (decimal).

53 The number of buildings used for all the formal school/training activities at the installation at the end of the RFY.

54 The building area in thousands of gross square feet, used for all the formal school/training activities at the installation at the end of the RFY (000GSF).

55 The total acquisition cost in millions of dollars of the school facilities used for all formal school/training activities at the installation at the end of the RFY ($ MIL).

56 The ratio of the ADL of students to the total S&F of the formal school/training activities at the installation for FY 1968.

57 The ratio of the TAO of students to the total S&F of the formal school/training activities at the installation for FY 1968.

58 The same as the entry for Column 56, except for the RFY.

59 The same as the entry for Column 57, except for the RFY.

60 The average building area used per student comprising the ADL for all formal school/training activities at the installation at the end of the RFY (GSF/student).

61 The average school facility real property acquisition cost per student comprising the ADL for all formal school/training activities at the installation at the end of the RFY ($/student).

62 The total annual cost in millions of dollars of operating all the formal school/training activities at the installation for the RFY ($ MIL). This entry excludes all BOS costs attributable to the formal school/training activities but includes the cost of all military and appropriated fund financed civilian and contractor personnel assigned to those activities.

63 The total annual cost of operating all the formal school/training activities per student comprising the TAO at the installation during the RFY ($/student).

PART V - MISSION DATA

The mission data included in the report consists of total number divisions and wings; the total number of brigades, groups and similar sized military units; and the total number of battalions and squadrons assigned to the installation. These totals of the various military units include all combat type units plus all others which carry the appropriate designation regardless of mission or equipage (e.g., for the Air Force an assigned mobile communications squadron would be included in the total number of squadrons of the installation. This type of unit, however, is not included in the combat type squadrons contained in the report as indicated below.)

The mission data also includes information on the total number of combat type divisions and wings; brigades and groups; and battalions and squadrons assigned to the installation. For the preparation of this report, all battalions/squadrons with assigned aircraft are considered to be combat type units and their assigned aircraft are considered Unit Equipment (UE). In addition, all other aircraft assigned to aviation installations

are also included in the total combat Unit Equipment column entries. Further, for the Army and Marine Corps installations, only armored, mechanized, infantry, and amphibious battalions are considered combat type units and the UE column entry is limited to the number of tanks, armored personnel carriers (APC's) and the amphibious vehicles (LVT's) assigned to these combat type units and all other units at the installation. Accordingly, any review of factors involving the UE at an installation must take into account that there is not a direct correlation between the total number of combat type battalions/squadrons and the total combat UE column entry for the installation. For example, for Army and Marine Corps installations, the combat UE column entry includes the total number of tanks, APC's and LVT's assigned to the installation, whereas the combat type battalion/squadron column entry will include infantry battalions without such equipment. The report data has, of necessity, been limited, as indicated above, in order to display the most important, meaningful and readily quantifiable mission type data.

Column	Explanation of Column Data
64	The total number of combat type battalions/squadrons assigned to the installation in FY 1968. This entry includes the total number of aviation battalions and squadrons assigned to the installation in FY 1968. In addition, for Army and Marine Corps installations, the entry also includes the total number of infantry, mechanized, tank and amphibious (in the case of the Marine Corps) battalions assigned to the installation in FY 1968.
65	The total number of combat type unit equipment (UE) assigned to the installation in FY 1968. This includes the total number of aircraft assigned to the combat type battalions/squadrons and to all other units at the installation in FY 1968. For Army and Marine Corps installations, the entry also includes the total number of tanks, APC's and LVT's assigned to the combat type battalions and all other units at the installation in FY 1968.

66 The total number of divisions/wings assigned to the installation during the RFY.

67 The total number of brigade/group type units assigned to the installation during the RFY.

68 The total number of battalions/squadrons assigned to the installation during the RFY.

69 The total number of combat type divisions/wings assigned to the installation during the RFY.

70 The total number of combat type brigade/group type units assigned to the installation during the RFY.

71 The same entry as for Column 64, except for the RFY.

72 The same entry as for Column 65, except for the RFY. The combat type Unit Equipment (UE) assigned to the installation during the RFY is limited to all aircraft and only tanks, APC's and LVT's.

73 The average number of combat type battalions/squadrons normally deployed away from the installation during the RFY.

74 The average number of UE (limited to the types contained in the Column 72 entry) associated with the combat type battalions/squadrons normally deployed away from the installation during the RFY.

75 The change in the number of combat type battalions/squadrons at the installation from FY 1968 to the RFY.

76 The changes in the combat type UE at the installation from FY 1968 to the RFY.

77 The RFY number of combat UE as a function of the FY 1968 combat type UE assigned to the installation (decimal).

78 The real property acquisition cost of the installation per combat type brigade/group assigned to the installation in the RFY ($ MIL/bde).

79 The sum of the land area at the installation and all associated properties per combat type brigade/group assigned to the installation in the RFY (acres/bde).

80 The real property acquisition cost of the installation per combat type battalion/squadron assigned to the installation in the RFY ($ MIL/bn).

81 The sum of the land area at the installation and all associated properties per combat type battalion assigned to the installation in the RFY (acres/bn).

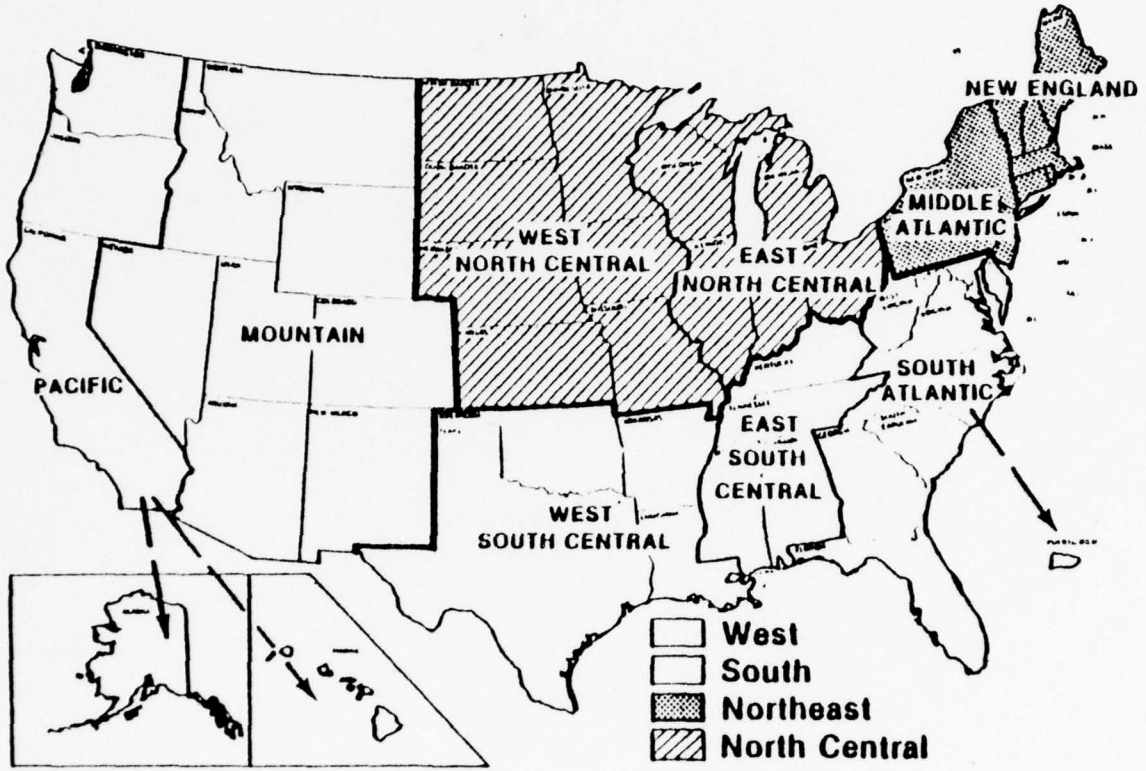
82 The real property acquisition cost of the installation per combat type UE assigned to the installation in the RFY ($ MIL/piece of equipment).

83 The sum of the land area at the installation and all associated properties per combat type UE assigned to the installation in the RFY (acre/piece of equipment).

84 The average number of mission personnel at the installation per combat type battalion/squadron assigned to the installation in the RFY (persons/bn).

85 The average number of mission personnel at the installation per combat type UE assigned to the installation in the RFY.

REGIONS AND SECTIONS OF THE UNITED STATES



DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
INSTALLATION ENERGY DATA
PART I-A FY77 ENERGY CONSUMPTION AND COST DATA

NEW ENGLAND

1 INSTALLATION	2 STATE	3 IDPP	ELECTRICITY 4 MWH	5 $COST	6 $/KWH	7 MBTU	8 $/MBTU	OIL 9 MBTU	10 $COST	11 $/MBTU
NAVAL SUB BASE, NEW LONDON	CT	402	98680	3479701	0.035	336627.920	10.337	1673857	4419712	2.640
DEVENS, FORT	MA	508	58497	2206758	0.038	199591.760	11.068	995121	3066222	3.081
EDWARDS, CAMP	MA	205	278	11737	0.042	948.536	12.374	3380	9678	2.864
HANSCOM AFB	MA	306	46845	2198025	0.045	166659.140	13.189	736291	1517936	2.062
NAS, SOUTH WEYMOUTH	MA	205	6640	248389	0.037	22655.680	10.964	125423	287087	2.289
OTIS AFB	MA	105	75088	836473	0.011	256193.430	3.265	*	*	*
USA MAT & MECH RESEARCH CTR	MA	306	7500	319711	0.043	25590.000	12.494	123889	278915	2.251
USA NATICK RESEARCH & DEV CMD	MA	306	13278	554684	0.042	45297.712	12.246	131209	415478	3.167
WESTOVER AFB	MA	208	10800	318665	0.030	36849.600	8.648	202358	495999	2.451
LORING AFB	ME	101	42538	1095601	0.026	145132.830	7.549	742866	2200810	2.963
NAS, BRUNSWICK	ME	202	27398	584502	0.021	93481.976	6.263	449781	1046782	2.327
NAVAL COMM UNIT, CUTLER	ME	303	5087	121012	0.024	17356.844	6.972	270972	686633	2.534
PEASE AFB	NH	101	37489	961727	0.026	127912.470	7.519	397640	990617	2.491
PORTSMOUTH NAVAL SHIPYARD	NH	507	61000	2702138	0.053	174012.000	16.528	456184	2316983	5.057
NAV CONST BN CTR, DAVISVILLE	RI	507	4508	192130	0.043	15374.472	12.497	59795	163452	2.566
NAV EDUCATION & TRAINING CTR	RI	508	37133	1487421	0.040	126697.800	11.740	763056	1726933	2.263
NAV REG MED CTR, NEWPORT	RI	508	2599	135190	0.052	8867.788	16.245	*	*	*
NAVAL UNDERWATER SYST CTR	RI	306	27664	1354243	0.049	94389.567	14.347	109908	289027	2.630
NAVAL WAR COLLEGE	RI	508	5108	265611	0.052	17428.496	16.240	*	*	*
no selected			19	19	19.000	19.000	19.000	19	19	19.000
present			19	19	19.000	19.000	19.000	16	16	16.000
missing			0	0	0.000	0.000	0.000	3	3	3.000
sum			580102	19073726	0.708	1911068.000	207.461	7243730	19902265	43.636
max			98660	3479701	0.053	336627.920	16.528	1673857	4419712	5.057
min			278	11737	0.011	948.536	3.265	3380	9678	2.062
average			29479	1003880	0.037	100582.530	9.981	452733	1243892	2.748
median			27398	584502	0.040	93481.976	11.740	334306	838625	2.550
std dev			27740	996936	0.012	94648.550	3.411	442531	1238915	0.696

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
INSTALLATION ENERGY DATA
PART I-B FY77 ENERGY CONSUMPTION AND COST DATA

NEW ENGLAND

1 INSTALLATION	2 STATE	3 IDPP	COAL 12 MBTU	COAL 13 $COST	COAL 14 $/MBTU	NATURAL GAS 15 MBTU	NATURAL GAS 16 $COST	NATURAL GAS 17 $/MBTU	PROPANE GAS 18 MBTU	PROPANE GAS 19 $COST	PROPANE GAS 20 $/MBTU
NAVAL SUB BASE, NEW LONDON	CT	402	•	•	•	•	•	•	301	1613	5.027
DEVENS, FORT	MA	508	•	•	•	384404	1405101	3.655	960	4900	5.104
EDWARDS, CAMP	MA	206	•	•	•	3460	14626	4.227	1184	6450	5.448
HANSCOM AFB	MA	306	•	•	•	270646	545437	2.015	•	•	•
NAS, SOUTH WEYMOUTH	MA	205	•	•	•	31079	115412	3.714	223	1213	5.439
OTIS AFB	MA	105	•	•	•	116228	446169	3.872	458	2760	6.004
USA MAT & MECH RESEARCH CTR	MA	306	•	•	•	2867	10927	3.811	•	•	•
USA NATICK RESEARCH & DEV CMD	MA	306	•	•	•	7635	28083	3.678	26	195	7.500
WESTOVER AFB	MA	206	•	•	•	11061	25228	2.281	•	•	•
LORING AFB	ME	101	373650	572670	1.533	•	•	•	2185	12517	5.729
NAS, BRUNSWICK	ME	202	•	•	•	•	•	•	•	•	•
NAVAL COMM UNIT, CUTLER	ME	303	•	•	•	•	•	•	42	295	7.024
PEASE AFB	NH	101	•	•	•	228809	427696	1.869	•	•	•
PORTSMOUTH NAVAL SHIPYARD	NH	507	•	•	•	•	•	•	•	•	•
NAV CONST BN CTR, DAVISVILLE	RI	507	•	•	•	21428	74466	3.475	•	•	•
NAV EDUCATION & TRAINING CTR	RI	508	•	•	•	180867	644364	3.562	•	•	•
NAV REG MED CTR, NEWPORT	RI	508	•	•	•	36	1817	51.914	•	•	•
NAVAL UNDERWATER SYST CTR	RI	306	•	•	•	•	•	•	763	3154	4.189
NAVAL WAR COLLEGE	RI	508	•	•	•	•	•	•	•	•	•
no selected			19	19	19.000	19	19	19.000	19	19	19.000
present			1	1	1.000	12	12	12.000	9	9	9.000
missing			18	18	18.000	7	7	7.000	10	10	10.000
sum			373650	572670	1.533	1257318	3739325	88.079	6132	32987	61.463
max			373650	572670	1.533	384404	1405101	51.914	2185	12517	7.500
min			373650	572670	1.533	36	1817	1.869	26	195	4.189
average			373650	572670	1.533	104777	311610	2.974	681	3665	5.379
median			373650	572670	1.533	26254	94939	3.667	458	2760	5.448
std dev			0	0	0.000	131140	418267	14.059	693	3918	1.019

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
INSTALLATION ENERGY DATA
PART I-C FY77 ENERGY CONSUMPTION AND COST DATA

NEW ENGLAND

1 INSTALLATION	2 STATE	3 IDPP	- PURCHASED STEAM - 21 MBTU	22 $COST	23 $/MBTU	- OTHER - 24 MBTU	25 $COST	26 $/MBTU	- TOT ANNUAL CONSUMPTION & COST - 27 MBTU	28 $COST	29 $/MBTU
NAVAL SUB BASE, NEW LONDON	CT	402	•	•	•	•	•	•	2010786	7900926	3.929
DEVENS, FORT	MA	508	•	•	•	•	•	•	1580077	6662979	4.230
EDWARDS, CAMP	MA	206	19215	81323	4.232	•	•	•	28188	123815	4.393
HANSCOM AFB	MA	308	•	•	•	•	•	•	1173595	4261398	3.631
NAS, SOUTH WEYMOUTH	MA	206	•	•	•	•	•	•	179381	652101	3.635
OTIS AFB	MA	105	•	•	•	•	•	•	371879	1285392	3.456
USA MAT & MECH RESEARCH CTR	MA	306	•	•	•	•	•	•	152346	609553	4.001
USA NATICK RESEARCH & DEV CMD	MA	306	793	2338	2.948	•	•	•	184961	1000788	5.411
WESTOVER AFB	MA	208	•	•	•	•	•	•	250269	839892	3.356
LORING AFB	ME	101	•	•	•	•	•	•	1263834	3881598	3.071
NAS, BRUNSWICK	ME	202	•	•	•	•	•	•	543263	1631284	3.003
NAVAL COMM UNIT, CUTLER	ME	303	•	•	•	•	•	•	288371	807940	2.802
PEASE AFB	NH	101	•	•	•	•	•	•	754361	2380040	3.155
PORTSMOUTH NAVAL SHIPYARD	NH	507	•	•	•	125461	722008	5.755	757657	5741129	7.577
NAV CONST BN CTR, DAVISVILLE	RI	507	•	•	•	•	•	•	96597	420047	4.348
NAV EDUCATION & TRAINING CTR	RI	508	•	•	•	•	•	•	1070421	3858718	3.605
NAV REG MED CTR, NEWPORT	RI	508	53233	336365	6.300	•	•	•	62136	472372	7.602
NAVAL UNDERWATER SYST CTR	RI	306	110000	770000	7.000	•	•	•	315051	2416424	7.670
NAVAL WAR COLLEGE	RI	508	34238	215699	6.300	•	•	•	51666	481310	9.316
no selected			19	19	19.000	19	19	19.000	19	19	19.000
present			5	5	5.000	1	1	1.000	19	19	19.000
missing			14	14	14.000	18	18	18.000	0	0	0.000
sum			217479	1404725	26.780	125461	722008	5.755	11134838	45447706	88.192
max			110000	770000	7.000	125461	722008	5.755	2010786	7900926	9.316
min			793	2338	2.948	125461	722008	5.755	28188	123815	2.802
average			43498	280945	6.459	125461	722008	5.755	586044	2391985	4.082
median			34238	215699	6.300	125461	722008	5.755	315051	1285392	3.929
std dev			41882	301606	1.699	0	0	0.000	580356	2346077	1.931

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
INSTALLATION ENERGY DATA
PART II-A FY77 ENERGY CONSUMPTION FACTORS

NEW ENGLAND

1 INSTALLATION	2 STATE	3 IDPP	30 TOT. CONS./ TOT. POP (MBTU/PERS)	31 TOT. CONS / MISSION POP (MBTU/PERS)	32 TOT. CONS./ BLDG AREA (MBTU/THOUS GSF)	33 TOT. CONS / CUR.R.P.INVEST (MBTU/$MIL)
NAVAL SUB BASE, NEW LONDON	CT	402	124.884	142.357	366.766	17142.250
DEVENS, FORT	MA	608	150.166	196.089	218.791	13921.381
EDWARDS, CAMP	MA	208	13.777	13.861	48.068	*
HANSCOM AFB	MA	308	239.302	341.535	315.313	14173.854
NAS, SOUTH WEYMOUTH	MA	205	55.779	66.097	168.748	5276.902
OTIS AFB	MA	105	1188.113	1609.868	70.888	3440.143
USA MAT & MECH RESEARCH CTR	MA	308	236.102	360.865	222.403	10663.586
USA NATICK RESEARCH & DEV CMD	MA	306	130.071	173.999	180.878	8144.874
WESTOVER AFB	MA	206	107.083	143.081	47.788	2406.429
LORING AFB	ME	101	311.596	629.713	206.436	7116.181
NAS, BRUNSWICK	ME	202	139.736	227.423	216.871	8891.374
NAVAL COMM UNIT, CUTLER	ME	303	1373.194	4727.391	994.362	4342.934
PEASE AFB	NH	101	185.803	349.241	216.884	7604.460
PORTSMOUTH NAVAL SHIPYARD	NH	607	66.544	102.461	207.976	11125.653
NAV CONST BN CTR, DAVISVILLE	RI	507	232.798	380.519	29.008	3146.497
NAV EDUCATION & TRAINING CTR	RI	508	243.943	383.471	107.483	6660.923
NAV REG MED CTR, NEWPORT	RI	608	148.650	414.239	142.187	13607.780
NAVAL UNDERWATER SYST CTR	RI	306	98.238	174.061	228.961	8800.295
NAVAL WAR COLLEGE	RI	608	81.108	126.946	117.960	5938.678
no selected			19.000	19.000	19.000	19.000
present			19.000	19.000	19.000	18.000
missing			0.000	0.000	0.000	1.000
sum			5127.659	10842.203	4094.583	180183.160
max			1373.194	4727.391	994.362	17142.250
min			13.777	13.861	29.008	2406.429
average			160.732	208.346	179.478	7993.327
median			148.650	227.423	206.436	7360.318
std.dev			368.424	1067.882	208.066	4272.878

DEPARTMENT OF DEFENSE
DOMESTIC BASE FACTORS REPORT
INSTALLATION ENERGY DATA
PART II-B FY77 ENERGY COST FACTORS

NEW ENGLAND

1 INSTALLATION	2 STATE	3 IDPP	34 TOT. COST/ TOT. POP ($/PERS)	35 TOT. COST/ MISSION POP ($/PERS)	36 TOT. COST/ BLDG AREA ($/THOUS.GSF)	37 TOT. COST/ CUR.R.P.INVEST ($/$MIL)
NAVAL SUB BASE, NEW LONDON	CT	402	489.798	559.368	1397.899	67356.672
DEVENS, FORT	MA	508	636.128	826.136	929.812	68880.672
EDWARDS, CAMP	MA	208	60.514	60.842	202.312	*
HANSCOM AFB	MA	306	868.921	1240.134	1144.822	61466.158
NAS, SOUTH WEYMOUTH	MA	208	202.774	240.282	613.463	19179.441
OTIS AFB	MA	105	4106.684	6564.468	246.023	11890.768
USA MAT & MECH RESEARCH CTR	MA	308	940.668	1523.882	889.858	42626.084
USA NATICK RESEARCH & DEV CMD	MA	308	703.789	941.475	979.245	33248.770
WESTOVER AFB	MA	208	358.367	480.174	160.377	8078.885
LORING AFB	ME	101	957.001	1934.030	630.949	21858.844
NAS, BRUNSWICK	ME	202	419.593	682.694	651.211	26698.592
NAVAL COMM UNIT, CUTLER	ME	303	3847.333	13244.918	2788.000	12167.771
PEASE AFB	NH	101	586.217	1101.870	683.330	23992.339
PORTSMOUTH NAVAL SHIPYARD	NH	507	519.390	776.395	1578.934	84304.389
NAV CONST BN CTR, DAVISVILLE	RI	507	1012.308	1567.691	126.140	13682.313
NAV EDUCATION & TRAINING CTR	RI	508	879.380	1310.261	387.460	23618.165
NAV REG MED CTR, NEWPORT	RI	508	1130.077	3149.147	1080.943	102689.560
NAVAL UNDERWATER SYST CTR	RI	306	753.484	1335.041	1756.122	67497.675
NAVAL WAR COLLEGE	RI	508	758.589	1182.580	1098.881	66322.988
no selected			19.000	19.000	19.000	19.000
present			19.000	19.000	19.000	18.000
missing			0.000	0.000	0.000	1.000
sum			19228.014	37720.575	17338.672	724651.390
max			4106.684	13244.918	2788.000	102689.560
min			60.514	60.842	126.140	8078.885
average			616.223	850.362	732.643	32625.385
median			753.484	1182.580	889.858	29973.681
std dev			1082.169	2989.176	654.852	27559.911

LIST OF REFERENCES

1. American Petroleum Institute. Handbook of Degree Day Data for the United States. New York: American Petroleum Institute, 1958.

2. Ashdown, Ronald. U.S. Army Finance and Accounting Center, Domestic Base Factors Report Action Officer, Fort Benjamin Harrison, Indiana. Interview 25 April 1979.

3. Coleman, Jerry. Professional Staff, U.S. Senate Committee on Appropriations, Defense Sub-Committee, Washington, D.C. Interview, 22 February 1979.

4. Farmer, Steven. U.S. Army Training and Doctrine Command, Deputy Chief of Staff for Resource Management, Office of Resource and Economic Analysis, Fort Monroe, Virginia. Interview, 20 February 1979.

5. Kolasheski, Richard F., LTC, U.S. Army. "Fort Leavenworth Installation Budget Model." Directed Research Paper, U.S. Army Command and General Staff College, Fort Leavenworth, Kansas, 1974. (Mimeographed.)

6. Kretzman, Franz. Office of Management and Budget, National Security Affairs Division, Army Branch, Washington, D.C. Interview, April 1979.

7. Lieberman, Richard D. Personal Staff Assistant to U.S. Senator Thomas Eagleton (formerly professional staff member of Senate Committee on Appropriations, Defense Sub-Committee), Washington, D.C., Interview, March 1979.

8. McCloud, William. Office of Management and Budget, National Security Affairs Division, Washington, D.C. Interview, April 1979.

9. Nie, Norman H.; Hull, C. Hadlai; Jenkins, Jean G.; Steinbrenner, Karin; Bent, Dale H. Statistical Package for the Social Sciences. New York: McGraw Hill, 1975.

10. Perkins, John. Office of the Assistant Secretary of the Army (Installations and Housing), Washington, D.C. Interview, 9 April 1979.

11. Riordan, James P., Major, USMC. Hq U.S. Marine Corps Coordinator for the Domestic Base Factors Report, Washington, D.C. Interview, 27 April 1979.

12. Ripley, Randall B. Congress - Process and Policy. New York: W.W. Norton, 1975.

13. Rogner, E.A. "An Integrated Approach to the Management of the Military Base Structure." Student Research Report No. 192, Industrial College of the Armed Forces, Washington, D.C., 17 April 1974.

14. Rogner, E.A. U.S. Department of Defense; Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics (Installations and Housing), Washington, D.C. Interview, 22 February 1979.

15. Ruffner, James A., ed. The Weather Almanac. Detroit: Gale Research Co., 1977.

16. Siegel, Sidney. Nonparametric Statistics for the Behavioral Sciences. New York: McGraw Hill, 1956.

17. U.S., Congress, House. An Act Making Appropriations for the DOD for the FY Ending September 30, 1977. Pub. L. 94-419, 94th Cong., 2nd Sess., 1976, H.R. 14262.

18. U.S., Congress, House. An Act Making Appropriations for Military Construction for the DOD for the FY Ending September 30, 1977. Pub. L. 94-367, 94th Cong., 2nd Sess., 1976, H.R. 14235.

19. U.S., Congress, Senate. Department of Defense Appropriations Bill, 1978. S. Report 95-525 to Accompany H.R. 7933, 95th Cong., 1st Sess., 1977.

20. U.S., Department of the Army, Army Audit Agency. Review of Input to the Domestic Base Factors Report (DBFR) for Fiscal Years 1976 & 1977. Audit Report No. HQ78-704, 27 April 1978.

21. U.S., Department of the Army, Army Audit Agency. Review of Input to the Domestic Base Factors Report (DBFR) for Fiscal Year 1978. Audit Report No. 79-701, 26 January 1979.

22. U.S., Department of the Army, Comptroller of the Army. Analysis of CONARC Base Operations (Maroun Study). 1971

23. U.S., Department of the Army, Comptroller of the Army, Directorate of Cost Analysis, Report No. DCA-R-47. The Promise of Section 601, Perspective on Management by Mission Areas. December 1976.

24. U.S., Department of the Army, Comptroller of the Army, Director of the Army Budget. Budget Reference Book - FY 1979. 23 January 1978.

25. U.S., Department of the Army, Forces Command, Deputy Chief of Staff, Comptroller (AFCO). Resource Management Reference Book. 31 December 1977.

26. U.S., Department of the Army, Forces Command, Deputy Chief of Staff, Logistics (AFLG-RER), letter, Subject: Thesis Research Information. 17 April 1979.

27. U.S., Department of the Army, Office of the Chief of Staff, Directorate of Program Analysis and Evaluation. Planning, Programming and Budgeting System Handbook. January 1979.

28. U.S., Department of the Army, Training and Doctrine Command, Deputy Chief of Staff, Resource Management (ATRM-RA). TRADOC Resource Factor Handbook. 14 September 1978.

29. U.S., Department of Defense, Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics. Base Structure Annex to Manpower Requirements Report for FY 1980. January 1979.

30. U.S., Department of Defense, Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics. Manpower Requirements Report for FY 1980. February 1979.

31. U.S., Department of Defense, Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics. Military Manpower Training Report for FY 1980. March 1979.

32. U.S., Department of Defense, Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics. Report on Domestic Base Factors, FY 1977. May 1978.

33. U.S., Department of the Navy, Auditor General of the Navy. Audit of FY 1978 Domestic Base Factors Reports for Selected Navy and Marine Corps Activities. Audit Report No. S30229, 31 January 1979.

34. Vanderschaaf, Derek. Professional Staff, U.S. House of Representatives Committee on Appropriations, Washington, D.C. Interview, 3 April 1979.

INITIAL DISTRIBUTION LIST

		No. Copies
1.	Defense Documentation Center Cameron Station Alexandria, Virginia 22314	2
2.	Library, Code 0142 Naval Postgraduate School Monterey, California 93940	2
3.	Department Chairman, Code 54 Department of Administrative Science Naval Postgraduate School Monterey, California 93940	1
4.	Professor James M. Fremgen, Code 54(Fm) Department of Administrative Science Naval Postgraduate School Monterey, California 93940	1
5.	Commander Edwin A. Fincke, Code 54(Fi) Department of Administrative Science Naval Postgraduate School Monterey, California 93940	1
6.	Professor J. W. Creighton, Code 54(Cf) Department of Administrative Science Naval Postgraduate School Monterey, California 93940	1
7.	Mr. E. A. Rogner Director, Installation Management and Planning OASD (MRA&L)/IB Room 3E752, Pentagon Washington, D.C. 20301	1
8.	Mr. Ronald Ashdown U.S. Army Finance and Accounting Center ATTN: DACA - FAP - P Indianapolis, Indiana 46249	1
9.	Mr. Frank Wright U.S. Army Training and Doctrine Command ATTN: ATRM-RA Ft. Monroe, Virginia 23651	2

10. Defense Logistics Studies Information Exchange 1
U.S. Army Logistics Management Center
Ft. Lee, Virginia 23801

11. Major James P. Riordan 1
HQ, U.S. Marine Corps
ATTN: Code LFF1
Washington, D.C. 20380

12. Mr. Jerry Coleman 1
Room 1243
Dirksen Office Building
Washington, D.C. 20510

13. Mr. William Wilkinson 1
U.S. Army Forces Command
ATTN: AFCO-PBB
Ft. McPherson, Georgia 30330

14. Commander 1
7th Infantry Division
ATTN: Comptroller (Miss Kirby)
Ft. Ord, California 93941

15. CPT Henry M. Scarangella 1
2053 Pilgrim Drive
Woodbridge, Virginia 22192