

DCN 31



REPLY TO  
ATTENTION OF

**DEPARTMENT OF THE ARMY**  
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS  
400 ARMY PENTAGON  
WASHINGTON, DC 20310-0400



DAMO-FDL

11 August 1994

**MEMORANDUM FOR MAJOR GENERAL RAY E. McCOY, CHIEF OF STAFF,  
HQ ARMY MATERIEL COMMAND, 5001 EISENHOWER  
AVENUE, ALEXANDRIA, VA 22333-0001**

**SUBJECT: Integrated Ammunition Stockpile Management Plan (IASMP)**

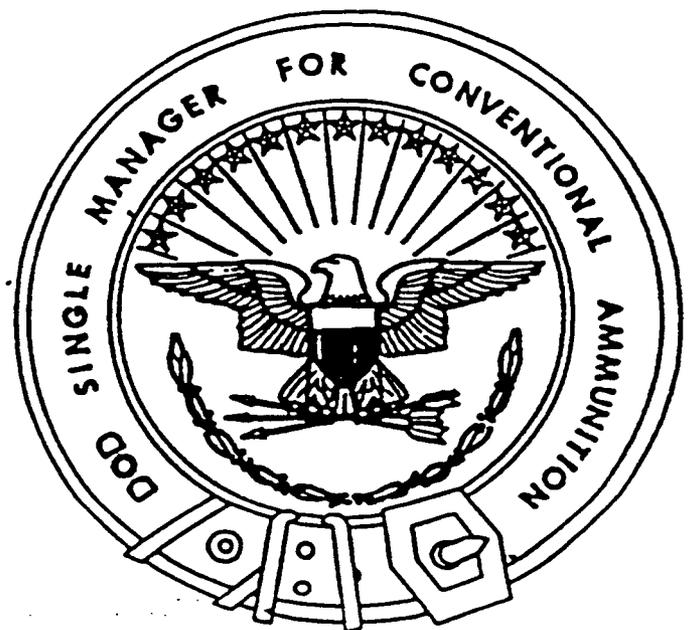
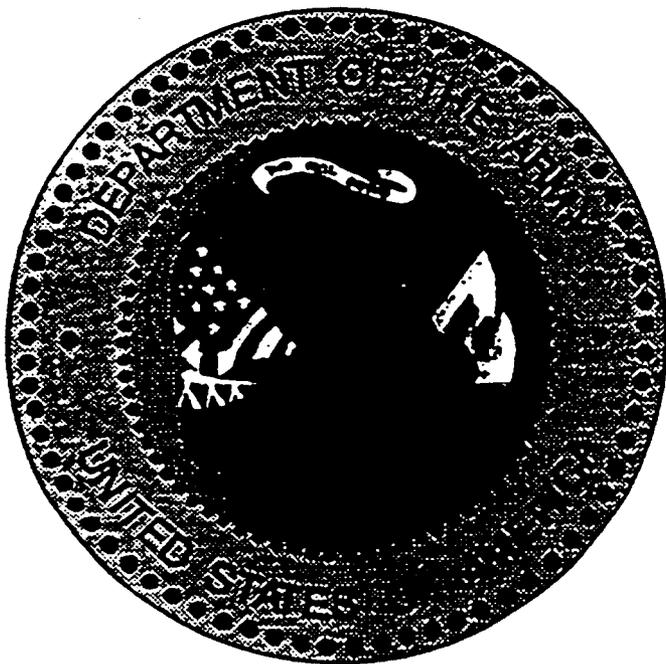
1. Reference your 3 June 94 memorandum, subject as above.
2. We have reviewed the May 1994 Integrated Ammunition Stockpile Management Plan. It is consistent with findings of the Ammunition Functional Area Analysis (FAA) and the subsequent briefings provided to the Army leadership.
3. The proposed plan responds to General Sullivan's 19 Oct 93 directive to develop an Integrated Management Plan for the Ammunition Stockpile based on the Ammunition FAA results. As a living document, it is a working basis for stockpile management within funding limitations. The FY96-01 POM and Modernization Addendum reflect the high priority the Army places on executing the Plan.

*Ray E. McCoy, Col, GS*

*for*  
JAY M. GARNER  
Major General, GS  
Assistant Deputy Chief of Staff  
for Operations and Plans,  
Force Development



# INTEGRATED AMMUNITION STOCKPILE MANAGEMENT PLAN



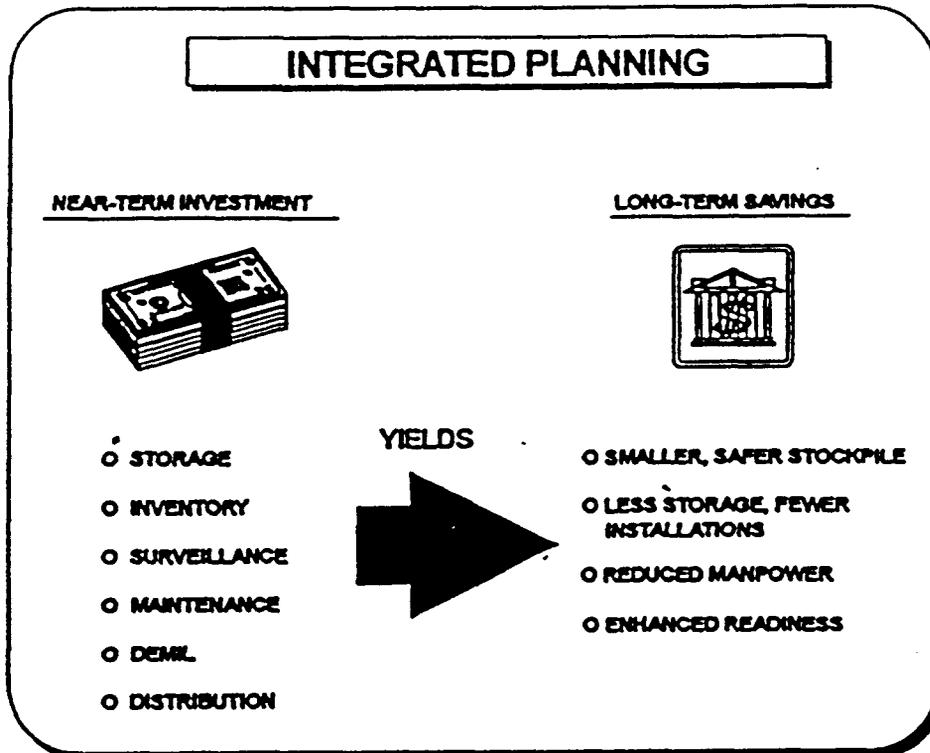
MAY 1994

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## I. PURPOSE

a. This document presents an Integrated Ammunition Stockpile Management Plan that outlines near term investments for achieving long term efficiencies. The plan provides a methodology for restructuring the current wholesale ammunition storage base. The plan also addresses changes in stockpile management methodologies for distribution, storage, inventory, surveillance, maintenance, and demilitarization.



b. The changing worldwide geopolitical environment, reduced military force, structure, decreased ammunition Operation and Maintenance, Army (OMA) funding, and revised military strategies focusing on a CONUS based power projected Army has necessitated an evaluation outlining how we intend to conduct daily ammunition stockpile management operations. Unlike pre-1991 war reserve requirements that were based on a global, protracted war in three theaters, current requirements support two Major Regional Contingency (MRC) scenarios and require a stronger emphasis on support from our CONUS wholesale ammunition storage base. Consequently, streamlining of the storage base into an efficient and effective operation has become imperative to maintain optimum readiness.

## II. OBJECTIVES

To develop a storage base and ammunition policies resulting in a smaller, safer stockpile on fewer installations using less manpower. This plan will provide a common reference and vision for both near and far term as we reduce our stockpile. It will provide the foundation for future programming and budgeting based on realistic financial resources.

## III. SCOPE

a. In consonance with the Army mission of the Single Manager for Conventional Ammunition (SMCA), this plan addresses the stockpile of wholesale ammunition for all of the Services. The tier storage base was developed encompassing the following primary wholesale stockpile storage installations:

Crane AAA	Red River AD
Hawthorne AAP	Savanna ADA
McAlester AAP	Seneca ADA
Anrleston AD	Sierra AD
Blue Grass AD	Tooele AD
Letterkenny AD	

b. The realignment of each installation is focused solely on the ammunition related functional mission at each installation. This includes work being performed on SMCA items, U.S. Army Missile Command (MICOM) items, and Service unique items.

## IV. BACKGROUND

### a. Chief of Staff - Army tasking

(1) The requirement to formulate an Integrated Ammunition Management Plan was outlined in a 19 Oct 93 memorandum from the Chief of Staff of the Army (CSA), General Gordon R. Sullivan. His letter stated that the Army will produce a plan containing a common reference and vision for both the near and far term with an ultimate objective of achieving a smaller, safer ammunition stockpile with fewer installations using less manpower. To accomplish this ambitious goal, near term investments in rewarehousing, redistribution, disposal and modernization of the stockpile, will be identified to achieve long term efficiencies. Since availability of additional resources cannot be assumed, the CSA directed that the Army take steps for more efficient use of the resources that are programmed and budgeted in the near term and out years. An important step in ensuring efficient use of resources would be to

construct a plan that contained a solid foundation for future programming and budgeting projections. As a springboard for the development of the plan, the CSA tasked the Deputy Chief of Staff for Operations (DCSOPS) to undertake and outline an Ammunition Functional Area Assessment (FAA) to the Vice Chief of Staff Army (VCSA) which would identify measures to be taken in refocusing stockpile management philosophies.

(2) The CSA tasking occurred as a result of several briefings and studies outlining the difficulties associated with the current wholesale ammunition stockpile. In March 1993, the Deputy Chief of Staff for Logistics (DCSLOG) received a briefing on Operation and Maintenance, Army (OMA) funding shortfalls and the impact on the stockpile. In May 1993, the Joint Ordnance Commanders Group (JOCG) initiated the Wholesale Ammunition Stockpile Program (WASP) review and assessment based on the possible degradation in stockpile safety, readiness, and quality resulting from the reduced level at which essential stockpile readiness functions were being funded. In July 1993, the CSA was briefed by the Army Materiel Command (AMC) Deputy Chief of Staff for Ammunition (DCS AMMO) who outlined the growing stockpile concerns associated with funding shortfalls. The WASP Study was accomplished between June and September of 1993. The study, representing the efforts of 43 major participants from all military services, provided a detailed analysis of the impacts of not performing critical functions at an appropriate funding level. Of primary concern was the lack of funding being applied to the essential stockpile readiness functions of inventory accountability, surveillance, maintenance, and rewarehousing.

(3) In October 1993, a second briefing by the DCS AMMO to the CSA outlined the results and findings from the WASP study. The direction from the CSA to accomplish a functional area assessment and develop an Integrated Ammunition Stockpile Management Plan resulted.

## **b. CHANGES IN THE STOCKPILE**

(1) Over the past few years, the wholesale ammunition storage infrastructure and the stockpile have undergone significant changes. This rapid change has been a major contributing factor to the current stockpile deficiencies as identified in the WASP study.

(2) A number of key events have occurred to reshape the size and structure of both the wholesale storage base and the ammunition stockpile.

a) The 1988 Base Realignment and Closure (BRAC) commission recommended the cessation of conventional ammunition operations at four depot activities: Fort Wingate, Navajo, Pueblo, and Umatilla. That decision reduced the CONUS wholesale storage base by six million gross square feet and required the absorption of 92,165 short tons, the equivalent of 830,000 square feet, into the remaining wholesale storage base.

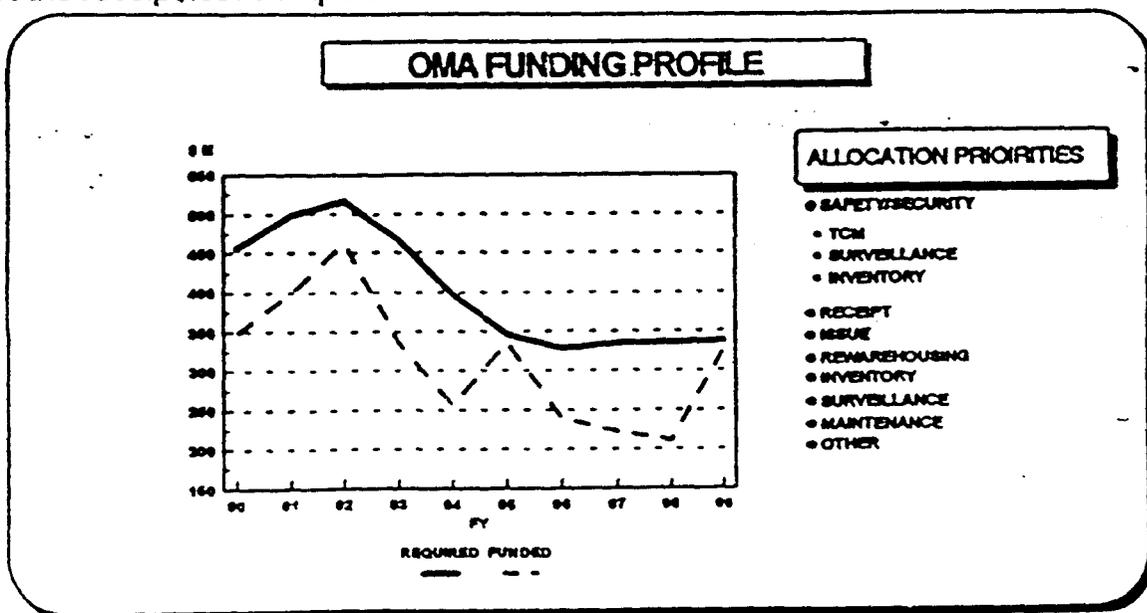
b) During Operation Desert Shield/Desert Storm, nearly 500,000 short tons were shipped from the CONUS storage base. Simultaneously, stocks aboard afloat prepositioned ships were downloaded, Europe based stocks were shipped to SouthWest Asia (SWA), and basic load and uploaded systems were arriving in theater. Nearly all stocks remaining after the Gulf War, regardless of origin, were retrograded to the CONUS storage base. The impact of this additional storage requirement on the already strained storage base and storage base operations was soon amplified significantly as stocks were received back into the wholesale system and were no longer configured in predominately large lots; a configuration which optimizes storage space, lends itself to economical surveillance and inventory, and requires little or no rewarehousing.

c) In FY 92-FY93 all services began a total realignment and right-sizing. The Department of Army announced a roll back of troops and munitions from Europe, an ammunition movement which by end state would place more than one half million short tons back into the CONUS storage base. To compound the problem, the Navy and Air Force also have roll back programs containing significant tonnages that have yet to be identified.

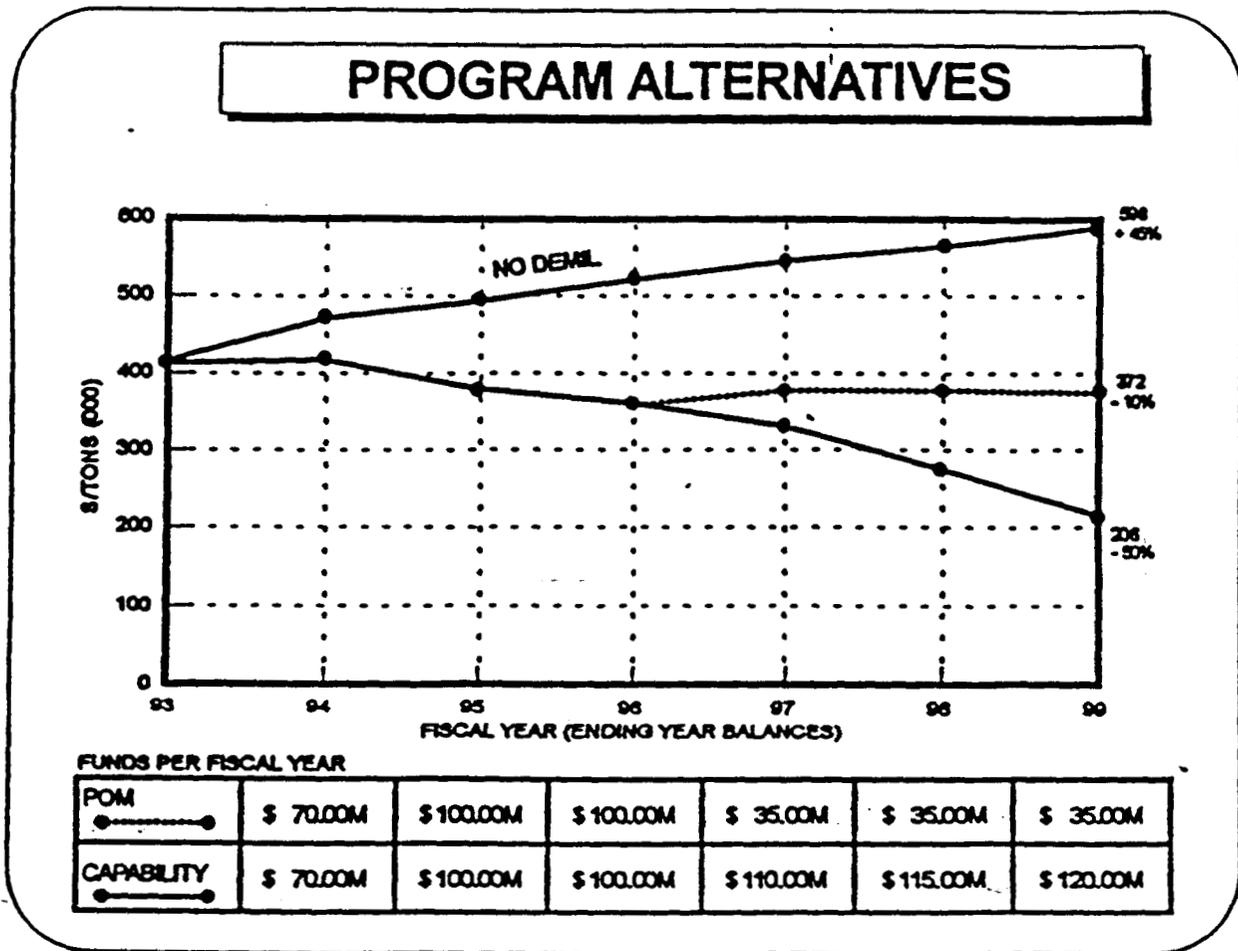
(3) Ultimately, significant force and funding reductions have reduced the capability of the storage installations to perform many basic storage functions to include rewarehousing, inventory, surveillance, and even the capability to efficiently and effectively receive and issue stock.

### c. FUNDING

(1) In recent years, OMA funding has been sporadic and on the decline. Although funding levels for FY95 and FY99 are favorable, FY96/97/98 are significantly under funded. As programmed, planned funding levels result in an overall inability to meet the receipt/issue requirements for a full FY.

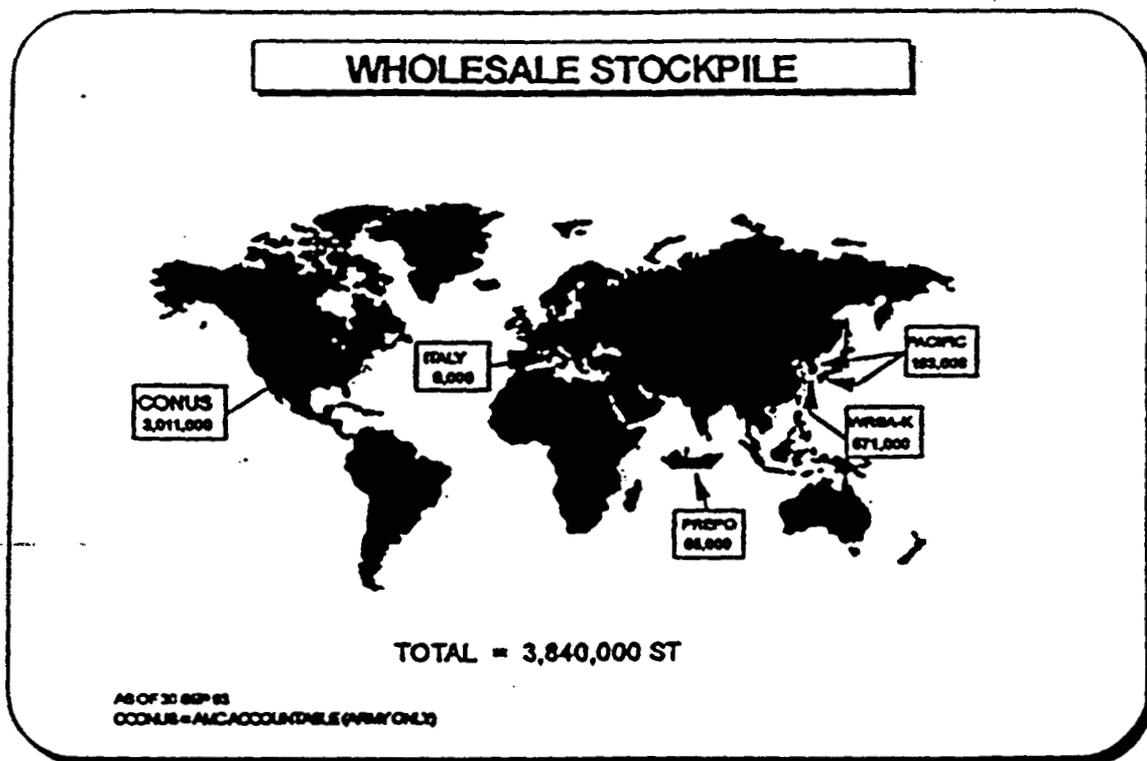


(2) Another major element of stockpile management is demilitarization. With the growing demilitarization stockpile, currently at 413,000 short tons, funding to accomplish demilitarization programs has become critical. With the augmentation of contractor support to the government base capacities, funding levels increase to levels whereby the actual backlog will start to decline in FY95. Without any funding, the backlog would continue to grow significantly. Demilitarization is currently funded to full capacity in FYs 94/95/96 by Procurement Appropriation - Army (PAA) Funds but are funded at less than one-third of capability in FYs 97/98/99.



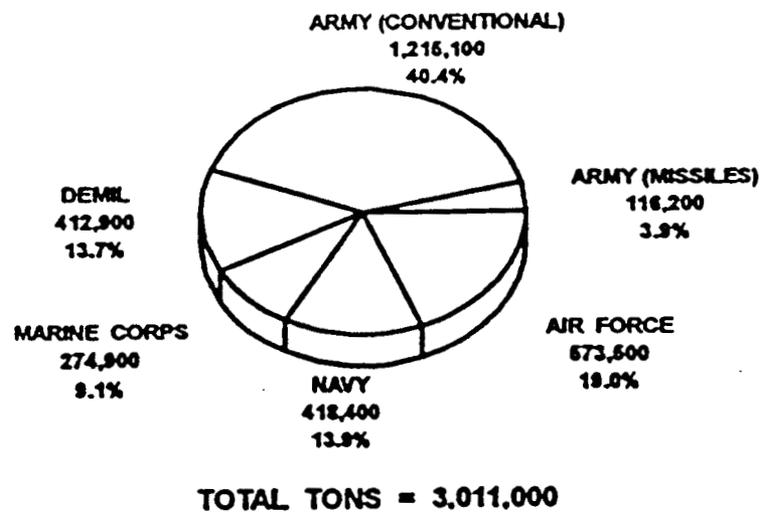
## V. STOCKPILE ASSESSMENT

a. As the Single Manager for Conventional Ammunition (SMCA), the Army has oversight of wholesale assets of all services, as well as Army Reserve (AR) and Operational Projects stored in forward deployed theaters and aboard Army Prepositioned Afloat vessels. The overall stockpile for which SMCA maintains accountability totals approximately 3,840,000 short tons. A total of 3,011,000 short tons resides in the CONUS wholesale storage base.



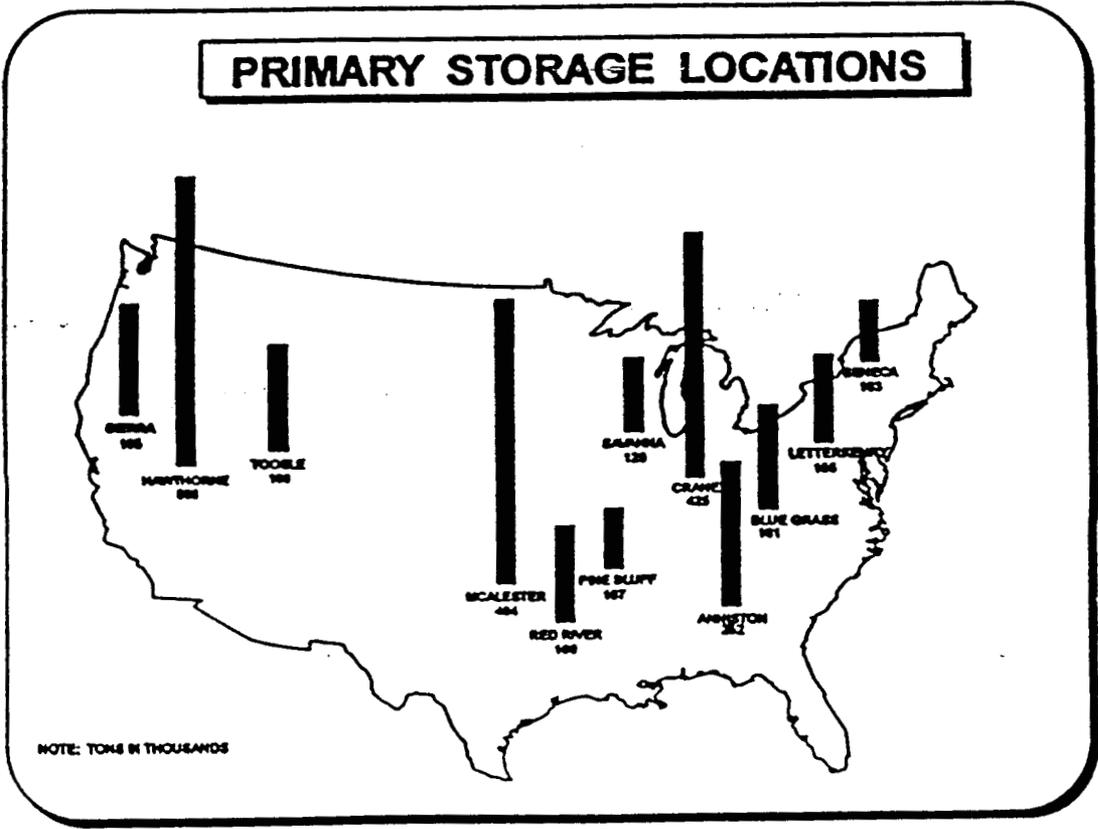
b. The CONUS wholesale stockpile is further broken down into individual account owners. The base is responsible for the storage of Army (conventional and missile), Navy, Marine Corps, Air Force, and demilitarization account stocks. The Army accounts for approximately 44 percent (40 percent conventional, 4 percent missiles) of the total base. An additional 14 percent, or 413,000 short tons of the 3,011,000 short tons resides in the demilitarization account. Significantly, 42 percent of the CONUS wholesale stockpile belongs to the other services.

### CONUS WHOLESAL STOCKPILE



c. The ammunition wholesale stockpile is primarily configured within several CONUS base installations as depicted in this chart:

### PRIMARY STORAGE LOCATIONS



d. Essential to the Integrated Ammunition Stockpile Management Plan is the separation and segregation of the current stockpile into two distinct subsets, based on the requirements for which the stocks are designated. Currently, the stockpile is intermingled with many types of diverse stocks for varying requirements. In order to classify the stockpile into distinct and separate requirements, or purposes, the following terms must be defined:

(1) **Required Stocks:** That portion of the stockpile that has an identifiable requirement. This includes all stocks in storage that have a requirement for:

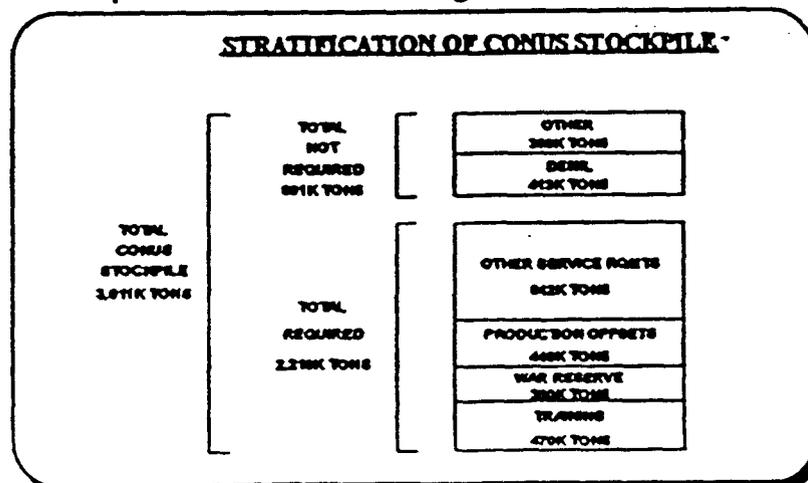
a) **War reserve:** Stocks required from CONUS base to meet service requirements for the two MRCs.

b) **Training:** Peacetime utilization stocks.

c) **Production Offset:** Those stocks that are over and above established requirement levels but are retained under the provisions of the Office of Secretary of Defense (OSD) stockpile retention policy. Examples include economic retention stocks to support training beyond the Program Objective Memorandum (POM) years and contingency retention stocks wherein stocks of older items are held to meet the shortfalls of newer, technologically advanced improved items. Stocks in this category are normally long lead time production items, that, in the event of a consumption of war reserve stocks during wartime, they could readily be transitioned for war reserve replenishment as directed in Department of Defense (DOD) planning guidance.

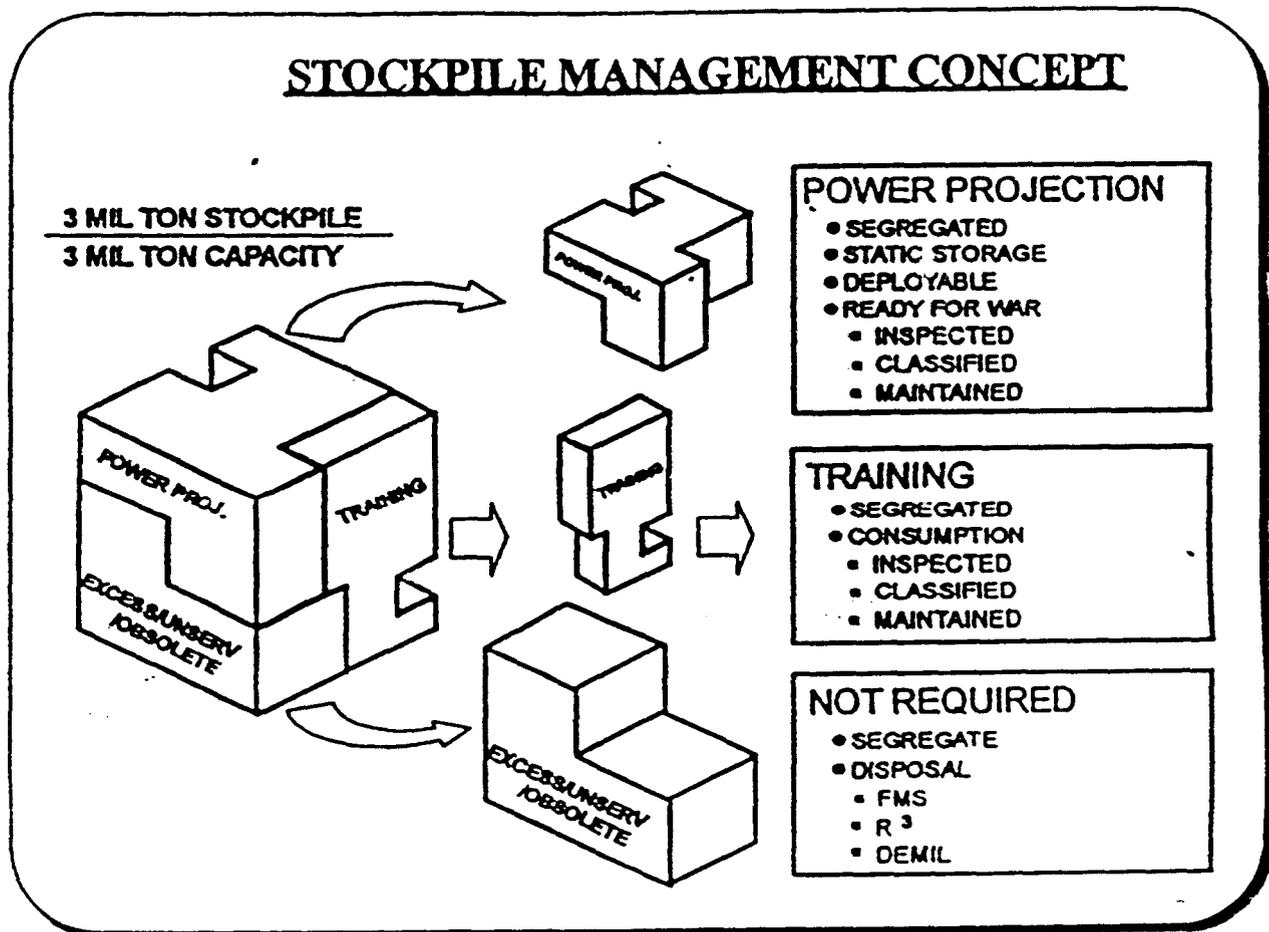
(2) **Non-required Stocks:** That portion of the stockpile that has no identifiable requirements. Included in this segment are stocks located within the demilitarization account and excess stocks awaiting final disposition.

e. The identification of the current CONUS stockpile of 3,011,000 short tons into required and non-required stocks indicates that approximately 2,210,000 short tons are to be considered as required and the remaining 801,000 short tons to be non-required.

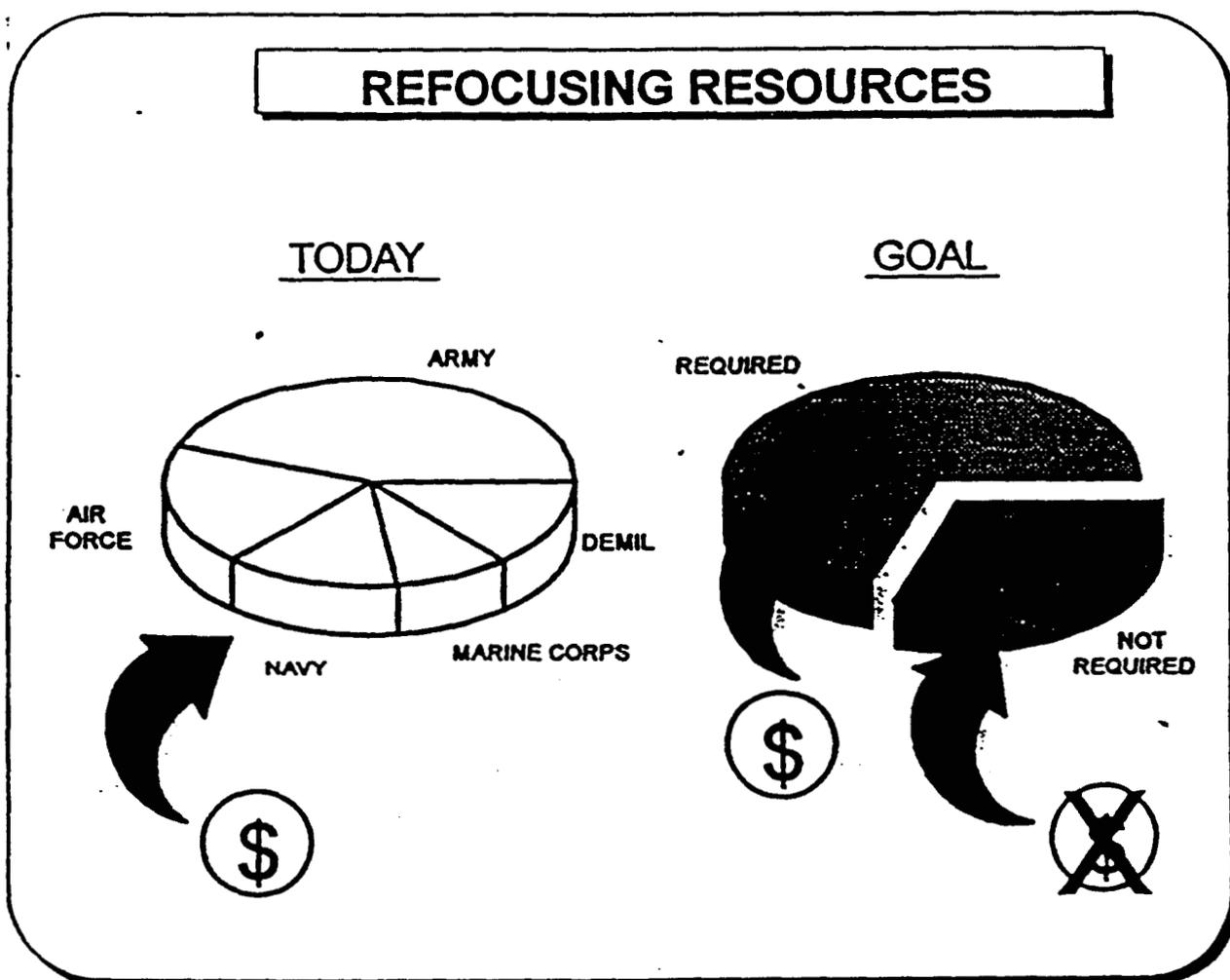


## VI. SEGREGATING AND SEPARATING THE STOCKPILE

a. The basis for successful implementation of this plan involves the separation and segregation of required power projection and training stocks from non-required excess, obsolete, and unrepairable stocks. Much of the segregation will be through redistribution, rewarehousing, aggressive demil programs, and intensive distribution forecasting. Segregating the stockpile in this fashion will increase installation efficiencies in supporting power projection principles. Stocks required to support power projection and training will be set aside and not co-mingled with other assets.



b. Under the current system, available funding and resources are allocated against the total stockpile, regardless of how the stocks are classified. By separating the required and non-required stocks significant reductions in resource requirements can be realized. Scarce resources will concentrate almost exclusively on that portion of the stockpile that has valid training and war reserve requirements. The remainder of the stockpile, the non-required stocks, will receive minimal resource allocations for safety and security considerations until disposition can be made. In each of the assessment areas outlined in this plan, this segregated operational philosophy is applied. The segregated operational philosophy also forms the basis for revised management of the stockpile.



## VII. TIER DEPOT CONCEPT

### a. OVERVIEW

(1) The "Tier Depot Concept" was developed to support the CSA objectives of reducing the current CONUS base storage infrastructure, decreasing manpower requirements, increasing efficiencies and managing a smaller, safer stockpile. This concept acknowledges five basic categories of ammunition subject to three levels of activity.

a) Required war reserve Stocks needed for immediate use to support contingency operations, normally < C+30: Level of activity is minimal during peacetime, but intensive during the first 30 days of a conflict.

b) Required war reserve stocks not immediately needed during contingency operations, normally > C+30: Level of activity is minimal during peacetime, but intensive beyond the first 30 days of a conflict.

c) Required Training Stocks for peacetime utilization: Level of activity is steady during peacetime.

d) Required production offset stock storage: Level of activity is considered minimal with a static stock storage configuration primarily inventory, surveillance, maintenance and moderate receipt/issue workload.

e) Non-required Stocks awaiting demilitarization or other disposition (such as sale of stocks): Level of activity includes primarily demilitarization operations.

(2) The Tier Depot Concept reduces the number of active storage sites and creates efficiencies by realigning the required and non-required stockpile into an appropriate tier activity level. Three levels, or tiers, of installations are used for identifying the level of activity an installation performs. They are:

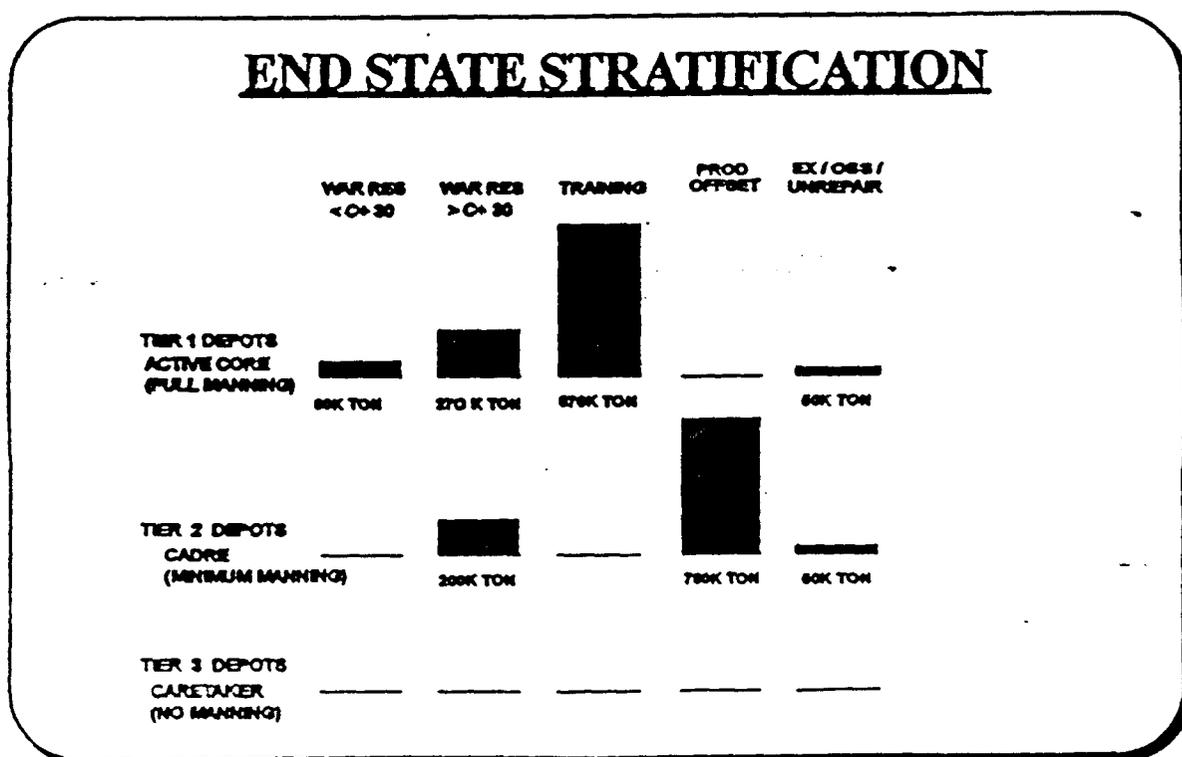
a) **Tier I - Active Core Depots;** Installations designated as Tier I will support a normal/full-up daily activity level with a stockage configuration of primarily required stocks and minimal non-required stocks requiring demilitarization. Normal activity includes daily receipts/issues of training stocks, storage of war reserve stocks required in contingency operations < C+30, and additional war reserve stocks > C+30 to augment lower level tier installation power projection capabilities. Installations at this activity level will retain the need for requisite levels of storage support, surveillance, inventory, maintenance and demilitarization.

b) **Tier II - Cadre Depots;** Installations designated as Tier II will normally be utilized to perform static storage of follow-on war reserve requirements > C+30, and, at the end-state objective, store production offset stocks and limited non-required

demilitarization stocks. Daily activity will be minimal for receipts/issues, while workload will be primarily focused on maintenance, surveillance, inventory and demilitarization operations. Tier II installations will have minimal staffing to accomplish assigned workload and will not achieve full staffing levels of Tier I activities until contingency operations require the Tier II installations to begin supporting power projection shipping initiatives of the war reserve assets.

c) **Tier III - Caretaker Depots;** Installations designated as Tier III will be minimally staffed and will contain static non-required stocks in static storage until disposition can be made. The end state objective for activities at this level is to inactivate the ammunition support mission and completely drawdown stockage levels to zero balances.

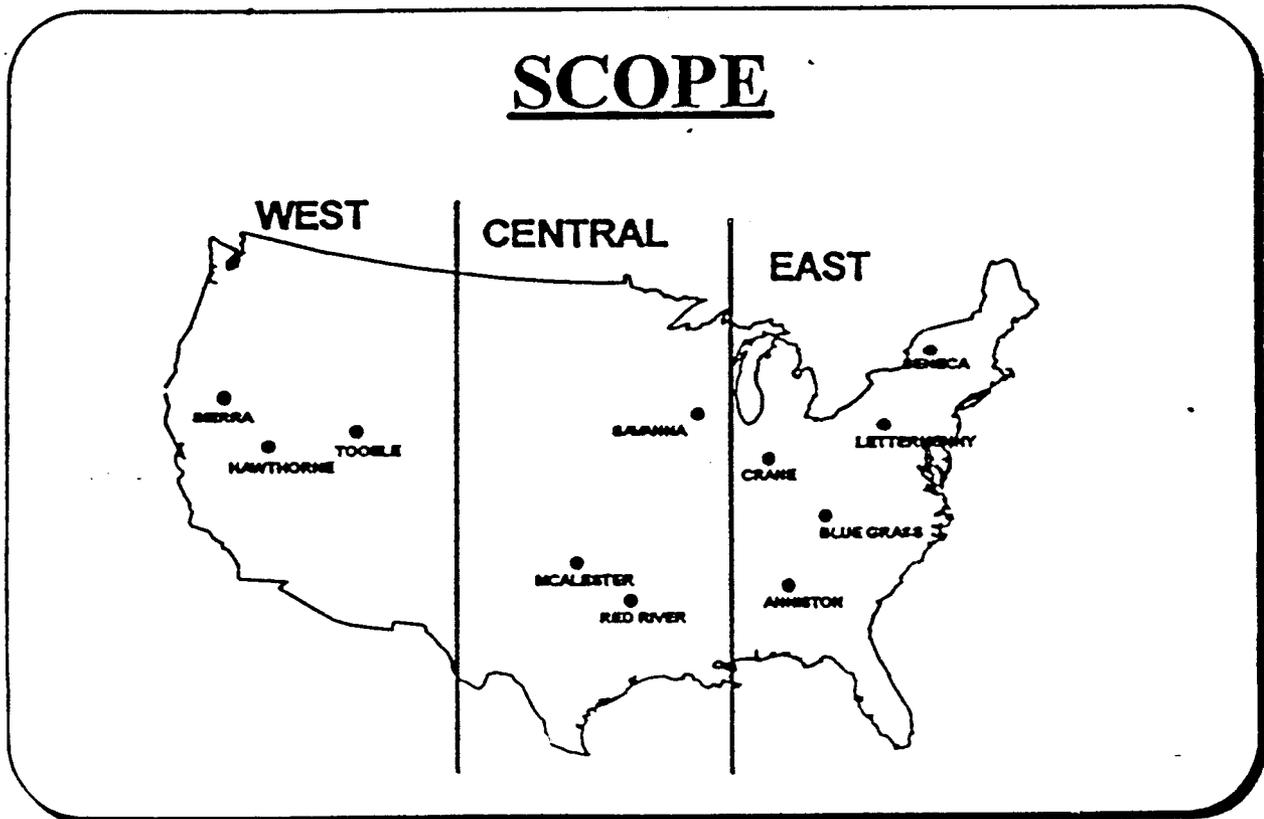
(3) Balances within each tier at the end state objective indicates that, given today's requirements and wholesale postures, approximately 90,000 war reserve short tons would be stratified against Tier I installations to support the first 30 days of a two MRC contingency. War reserve assets required beyond the first 30 days of a two MRC sustainment equate to 470,000 short tons, with the majority, 270,000 short tons, positioned in Tier I installations and the balance in Tier II. Current training unique and training standard items will place approximately 870,000 short tons (470,000 Army, 400,000 other services) in Tier I installations. Some production offset stocks (780,000 short tons) located at Tier II installations, at end state, may transition into the demilitarization account. The end state objective for demilitarization stocks is to reduce the backlog level to 100,000 short tons and be equally distributed among Tier I and II installations.



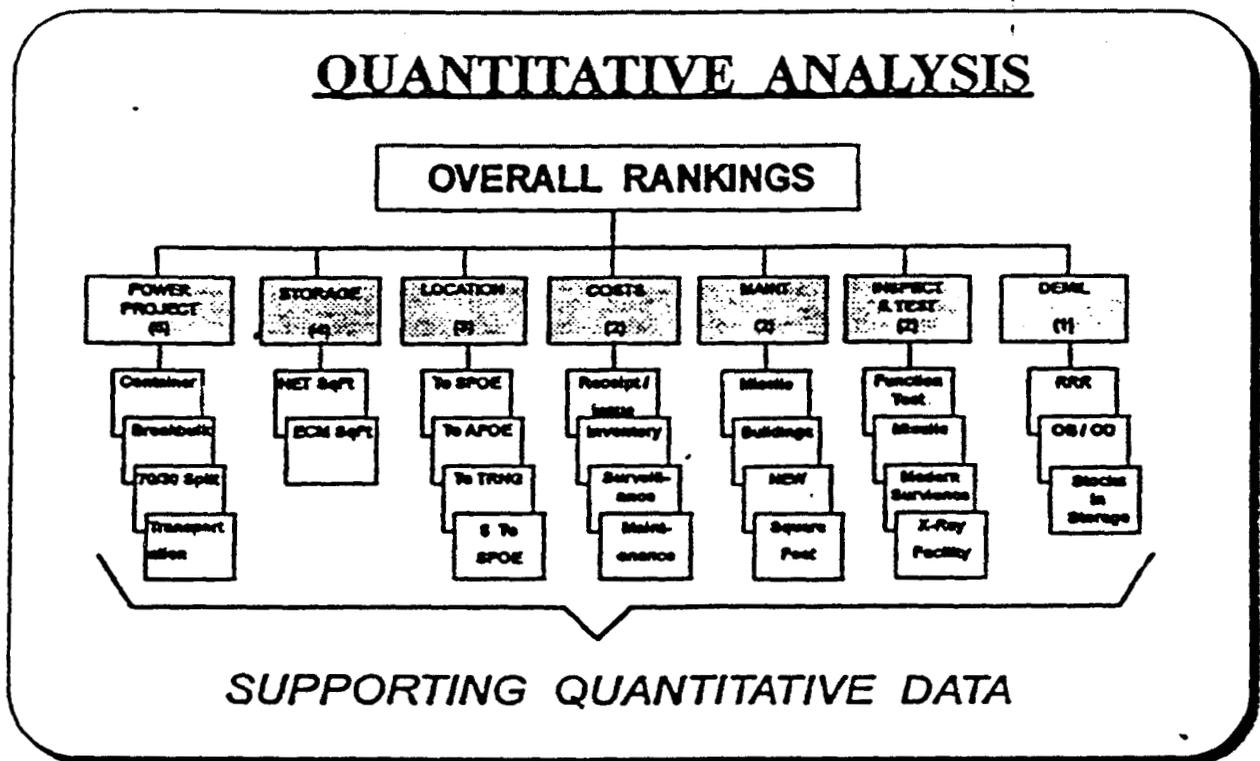
## b. TIER DEPOT ANALYSIS

(1) The Tier Depot Concept, in its end state alignment, must support two primary objectives, the power projection requirements of the two MRCs as outlined in Defense Planning Guidance (DPG) and provision of sufficient storage space for assigned tier stockage configurations. Current asset distribution is mal-aligned placing shipping directives on some installation during a contingency operation that exceed their organic capabilities to outload, while in other installations, based on stockage configurations, only a small percentage of their capabilities are utilized. The end state asset distribution of the Tier Depot Concept will maximize the outloading capabilities at Tier I and II installations.

(2) The Tier Depot Concept allows the stockpile to be distributed within geographically oriented regions with a minimum of one Tier I and one Tier II installation configured within each region. Regional distribution fully supports area training requirements and provides an active installation within the proximity of the two sea ports of embarkation for supporting MRC power projection requirements.



(3) A Tier Depot Analysis was performed February through March 1994 in an effort to identify and assign appropriate tier levels for each of the eleven primary wholesale storage installations. The analysis was conducted using both quantitative and qualitative considerations to achieve a final overall installation ranking. The quantitative data was derived from major criteria considered critical in the management and operations of the ammunition stockpile. The major criteria were then further divided into contributing sub-factors. Each sub-factor and major criteria were assigned a weight identifying the importance of the factors and criteria in relation to each other. As portrayed in this chart, power projection capability was considered the most important of all criteria, followed by storage, cost, etc....



(4) The scoring system for each criteria utilized an 11 point scale, giving the highest score, 11, to the installation determined to possess the greatest capability, lowest cost, or best physical location. Each of the other installations were awarded a percentage of the 11 point maximum depending on the difference between the installation's capability, cost, or location, and that of the installation receiving the maximum score.

(5) Development of an 11 point scale was predicated upon the inability to measure some individual factors with hard data numbers. Those factors, such as "yes/no" questions (does an installation have the capability to perform function tests?), were assigned a score from 1 to 11, giving 11 points to the installations with the

maximum subjective score. Subsequent scores for the remainder of the installations ranged from 10 to 1 as applicable. All scores, utilizing both hard data and subjective data were normalized on the 11 point scale.

(6) The final quantitative analysis provided an overall order ranking of installations. Qualitative considerations were then applied to achieve overall final rankings and tier assignment conclusions. Qualitative considerations included multi-mission installations, customer preferences and toxic chemical missions. To assure that the tier assignment conclusions could support and store both the power projection requirements of two MRCs and peacetime training requirements, a comparison of requirements to capabilities was conducted. Assuming an end state stockpile distribution that maximized capabilities, installations identified as Tier I and II would support all power projection requirements during contingency operations. An additional Tier I and II installation is required in the east region to support training and power projection requirements of MRC east.

(7) The Tier Depot Analysis resulted in the following realignment of the CONUS wholesale storage infrastructure:

a) West Region;

Tooele Army Depot - Tier I  
Hawthorne Army Ammunition Plant - Tier II  
Sierra Army Depot - Tier III

b) Central Region;

Mcalester Army Ammunition Plant - Tier I  
Red River Army Depot - Tier II  
Savanna Army Depot Activity - Tier III

c) East Region;

Crane Army Ammunition Activity - Tier I  
Blue Grass Army Depot - Tier I  
Letterkenny Army Depot - Tier II  
Anniston Army Depot - Tier II  
Seneca Army Depot Activity - Tier III

## c. TIER IMPLEMENTATION

(1) A complete, detailed implementation/redistribution plan has not been developed. Prior to the development of the redistribution plan the end state stockage configuration must be identified that: assures maximum utilization of outloading capabilities; supports a geographical orientation of stocks to support MRC

requirements; and supports a regional orientation of training stocks. Redistribution of the stockpile will be accomplished tier by tier, DODIC by DODIC, FY by FY. Milestone for completion of the current state/end-state stratification and the year-by-year redistribution plan is 30 Sep 1994. Assuming resources are made available to support stock redistribution, end state asset stratification is estimated to take approximately six years. The implementation/redistribution plan will concentrate efforts as follows:

(2) Issues: Issues of training ammunition will be accomplished through prioritization from Tier II/III installations. War reserve stocks requisitioned for storage in forward theaters and PREPO ship locations will be priority issued from Tier III installations.

(3) Receipts: All training ammunition will be receipted into Tier I installations. War reserve receipts into Tier I/II installations (stockage configuration at end state when developed) will provide breakout based on storage and outloading capabilities. Field return receipts of non-required stocks will be receipted into installations where stocks will likely be demilitarized. Receipts of production offset stocks will be positioned in Tier II installations.

(4) Demilitarization: Initial Demilitarization efforts will concentrate on Tier I installations for space generation. Follow-on efforts will be Tier II/III.

(5) Reworkhousing: Priorities will be targeted at Tier I/II installations for segregation/separation of required/non-required stocks and to increase storage space utilization efficiencies. No further intra-installation reworking efforts will take place at Tier III installations.

(6) Inter-installation Movements: Movements between depots will be required to position remaining stocks located in an incorrect tier or installation within a tier, and for maximization of outloading and geographical positioning of stocks to support MRC requirements. Inter-installation movement of training stocks will be minimal. The majority of training stocks will be moved in support of training requirements.

(7) Army Strategic Mobility Plan (ASMP) projects: The ASMP projects will be realigned to concentrate efforts on Tier I/II installations. Some ASMP projects slated for Tier III installations could still be funded if the project is considered critical through end state projection.

(8) Prior to the final development of the implementation/redistribution plan, issues and receipts of training stocks can begin to be implemented within current FY.

(9) The Functional Area Assessment (FAA) portion of this plan provides additional implementation strategies for each of the stockpile management functions of distribution, storage, inventory, surveillance, maintenance and demilitarization.

## VIII. FUNCTIONAL AREA ASSESSMENTS

### a. DISTRIBUTION

(1) The ability to support the CONUS based power projection requirements of two near simultaneous MRCs remains as the most critical element in establishing an efficient and effective realigned tier installation infrastructure. Necessary actions are being identified and taken for optimizing outloading capabilities and overcoming issues that limit our current capabilities.

#### a) LIMITING FACTORS - Mal-distribution of assets.

1 Current stockage profiles at the CONUS installations are not configured or aligned IAW Operational Plans conducted for the two MRC scenarios. This requires cross country shipments of some stocks within short timeframe windows for onward movement. Additionally, assets are not distributed amongst the wholesale storage base adequately to assure maximum utilization of the installation's infrastructure.

2 Current asset distribution is mal-aligned placing shipping directives on some installation during a contingency operation that exceed their organic capabilities to outload, while in other installations, based on stockage configurations, only a small percentage of their capabilities are utilized.

#### b) LIMITING FACTORS - Outdated facilities.

The current state of the CONUS distribution base is biased towards the distribution of munitions utilizing breakbulk methodologies. The Army goal is to process future movement requirements through the utilization of the Containerized Ammunition Distribution System (CADS). Containerized movements significantly improve port handling capabilities.

#### c) LIMITING FACTORS - Unable to fully support early movement requirements of Ammunition Basic Load (ABL).

Current distribution of assets prevents the CONUS base from providing full support of the Services Power Projection initiatives. Certain early deploying units will not be capable of deploying with total munitions support in the projected quick turn-around timeframes. Wholesale assets are not identified and reserve specifically for ABL movements and the probability exists that movements may be required from installations that are unable to support requirements due to their physical proximity to early deploying units.

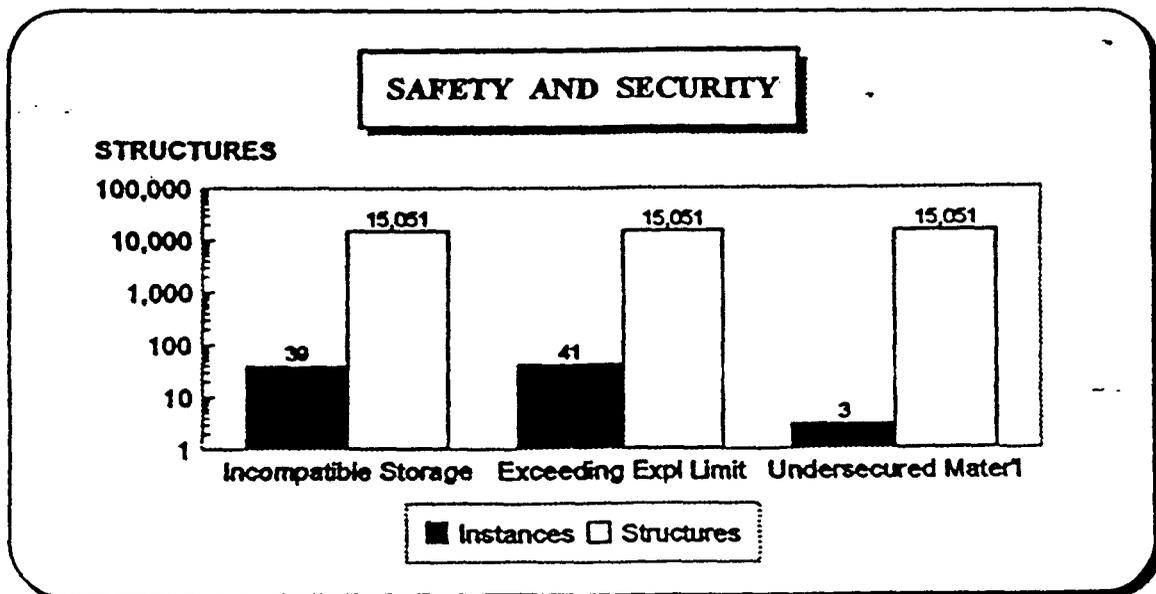
(2) Several initiatives to overcome these limitations have been identified and submitted for funding approval.

incidental to receipts/issues. The rewarehousing costing rate of \$50.00 per short ton was provided by the AMCCOM ammunition product line. The projected one time cost, spread over a three year time period, of rewarehousing all required stocks is reflected below:

SEGREGATION OF REQUIRED STOCKS				
	Short Tons	15 % of ST	Cost Rate	TOTAL
FY 96	2,153,000	107,650	\$50.00	\$5,382,500
FY 97		107,350	\$50.00	\$5,382,500
FY 98		107,350	\$50.00	\$5,382,500

(6) An analogy was drawn between the Service's top twenty assets and the required stocks as a basis to verify the rewarehousing costs. The VISTA database (detailed storage visibility) was used since it contains segments of the Standard Depot System (SDS) lot and magazine files. The Service's top twenty assets were identified for each installation as well as the specific storage structures containing each lot. The lots were consolidated by condition code. The assets in each location were classified as required (top twenty assets) or non-required. The weight of each classification was calculated within the structure to determine if the required or non-required stocks would be more economically relocated. The overall costs for the top twenty assets were significantly lower than the projected rewarehousing cost estimate. The lower cost is due to the greater quantity of required stocks in comparison to using the top twenty assets. The results provided a "ball park" assurance for using the WASP fragmented lot percentages.

(7) A base level of funding will be required to rewarehouse improperly stored assets violating safety and security requirements.



(8) The low level of deficiencies identified during the WASP study reflected the installations efforts to immediately correct such violations. The WASP study discovered that if funding is not available to correct these deficiencies, the costs will be absorbed as a receipt/issue function. The premise used to develop base cost is a historical average of rewarehousing costs applied to a percentage of tonnage on hand at an installation. The base level costs should, over time, decline due to a reduced level of activity at the various tier installations. The base level funding, tier III installations not included, is as follows:

<b>BASE LEVEL REWAREHOUSING</b>				
	Short Tons	2% of ST	\$ per ST	TOTAL \$
FY 96	2,153,000	43,060	\$50.00	\$2,153,000
FY 97	2,077,000	41,540	\$50.00	\$2,077,000
FY 98	1,965,000	39,300	\$50.00	\$1,965,000

(9) The total cost associated with consolidation of required assets and maintaining a base rewarehousing level at the tier I and II installations (consolidation cost is a one time cost spread over three years) is as follows:

<b>CONSOLIDATION AND BASE LEVEL REWAREHOUSING COSTS</b>			
	Consolidation	Base Level	TOTAL \$
FY 96	\$5,382,500	\$2,153,000	\$7,535,500
FY 97	\$5,382,500	\$2,077,000	\$7,459,500
FY 98	\$5,382,500	1,965,000	\$7,347,500

(10) The projected wholesale stockpile occupancy, levels without rewarehousing, is bleak. The WASP study has projected reaching a 100% occupancy level during FY95. Outside storage of field service and demilitarization assets is currently being utilized as an alternate storage method at many installations.

(11) Initiatives can be taken to generate the needed storage space prior to FY96. Several initiatives, some of which were in the WASP study, include aggressive demilitarization programs, rewarehousing of low hazard and inert stocks to maximize explosive storage space utilization, consolidation of less than one half pallet of B5A (demil) materiel into box pallets, proliferation of storage racks and utilization of cargo pallets for light pallets of field service stocks. Below are proposed milestones for some of these initiatives:

a) FY94; Less than 1/2 pallet of B5A assets:

- 1 Develop LOI and drawings for the procedure.
- 2 Develop bid packages for the installations identifying the potential B5A assets to be palletized.
- 3 Fund installations according to tiering priority.

b) FY94; Use of storage racks:

- 1 Develop bid packages for the installations identifying potential assets for storage racks.
- 2 Fund installations for purchase of storage racks and rewarehousing of assets.

c) FY95; Less than 1/2 pallet of field service assets:

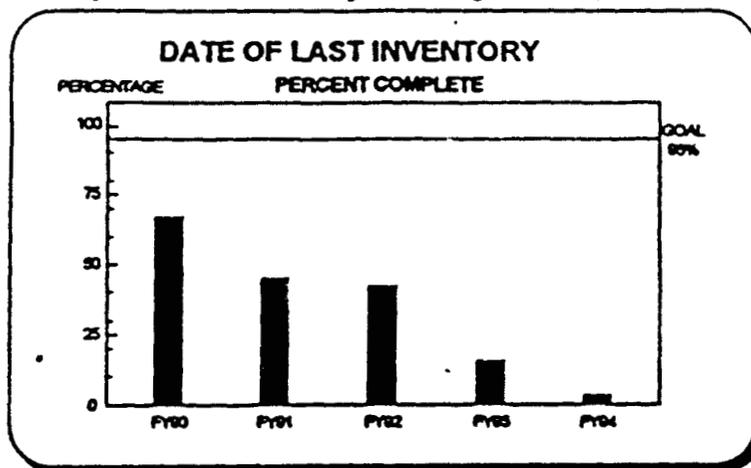
- 1 Coordinate procedure within the IOC to include safety, surveillance, packaging, and functional areas.
- 2 Develop drawings for the procedures.
- 3 Develop bid packages for the installations identifying potential field service assets.
- 4 Fund installations for the purchase of cargo pallets and rewarehousing of field service assets.

(12) Implementation of the above recommendations would improve storage space efficiency. However, an aggressive demilitarization program funded to full capability through FY99 will generate permanent storage space and eliminate from the stockpile a big contributor to inefficient use of storage space.

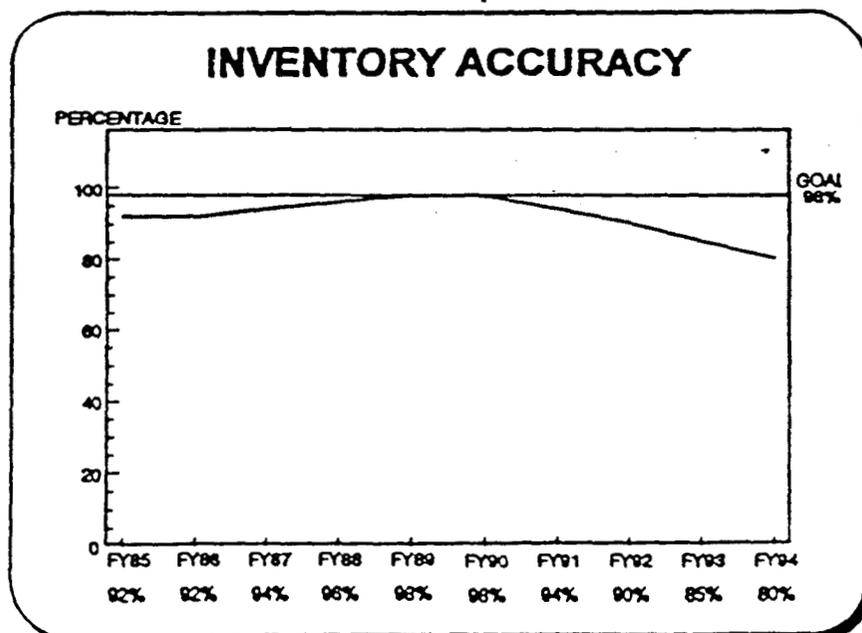
### c. INVENTORY

(1) The inventory program is the basis provided to meet the Army's obligation to Public Laws requiring fiscal accountability. This is normally accomplished by performing an annual inventory of all stocks and a subsequent reconciliation to the accountable records.

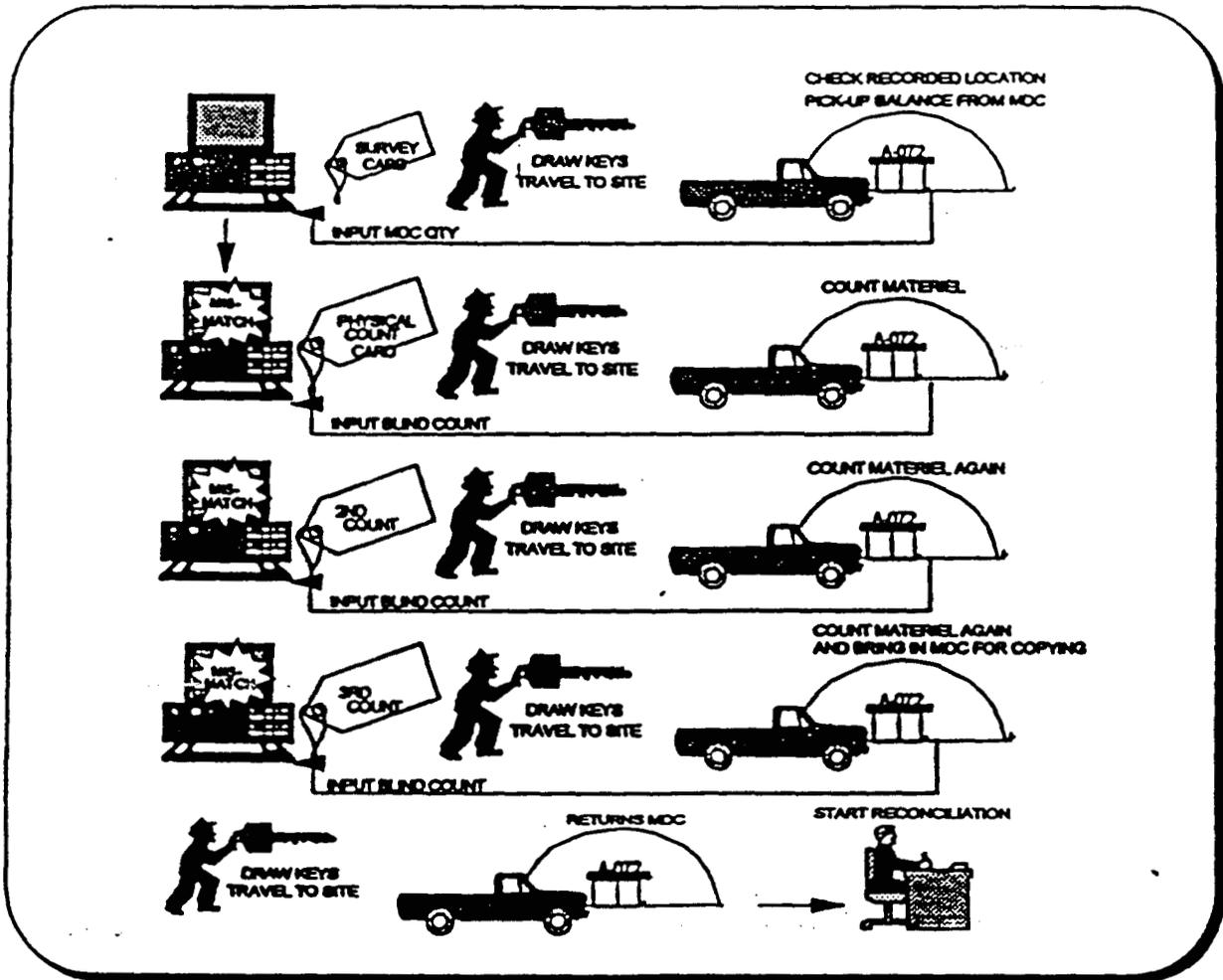
(2) Prior to FY90, annual inventories occurred at all installations. At the completion of the FY89 inventory, accuracy was documented at 98.5 percent. Beginning in FY90 and continuing through the current Fiscal Year, funding has been inadequate and each year less inventory is being accomplished.



(3) In late FY93, the JOCG commissioned the WASP study to measure the health of the stockpile as the result of several years of underfunding in the functions that provide care for stocks in storage. The inventory team determined that accuracy of the inventory had decreased to a maximum of 85 percent.

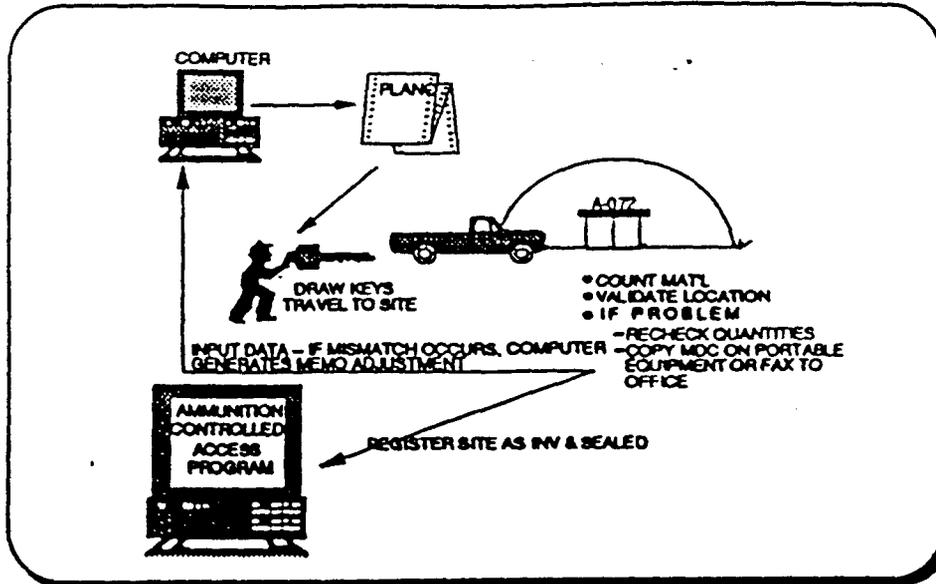


(4) Additional findings concluded that significant inventory resources were required to support the current structured inventory program. The greatest extent of this cost centered around the methodology of conducting the inventory and required reconciliations at the National Stock Number (NSN) level. This system requires numerous visits to a single structure throughout the inventory cycle by requiring the inventory verification process of a multitude of NSNs.



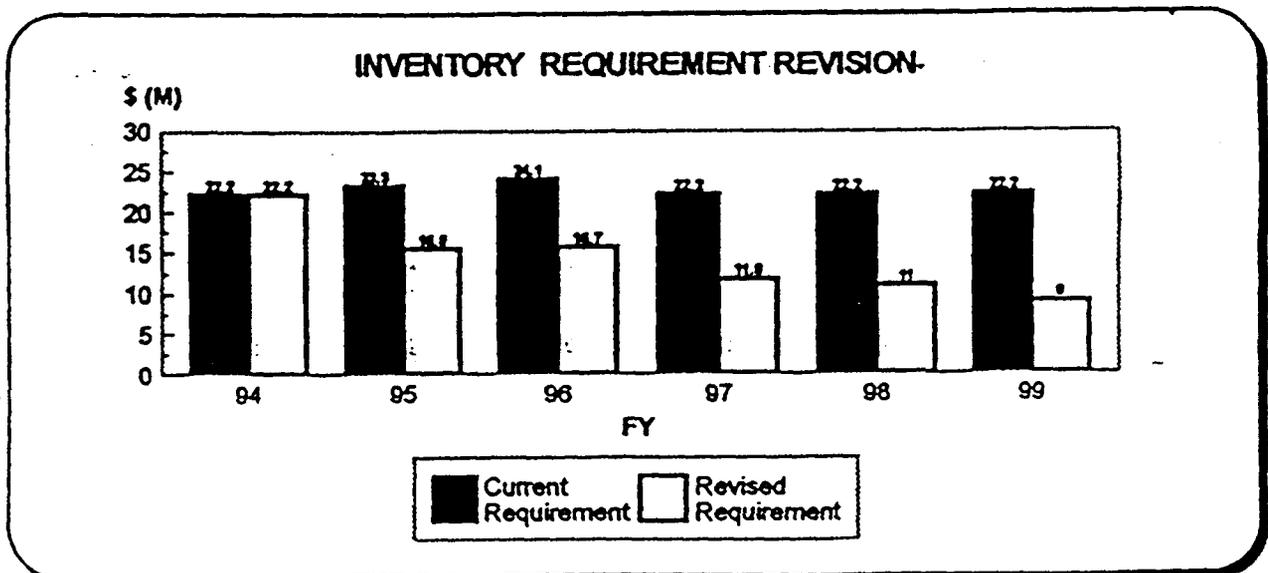
(5) Ammunition stocks in storage are recorded by grid location within a storage structure. The WASP study recommended a revised and rewritten inventory program that encompassed a grid based inventory system that would achieve increased efficiencies and effectiveness resulting in lower operating costs. Memo adjustments would be prepared for each discrepancy as it was identified in lieu of at the end of the process. Once the system identifies that all recorded grid locations for a given NSN have occurred, a flasher report would be produced and a subsequent computer reconciliation occurs for any memo adjustments made throughout the inventory. Only those reconciliations that are not correctable will require additional manual research

and reconciliation. An analysis of this approach indicated that by deleting the requirement to enter the same structure on a number of occasions and accepting the stock posture as is, an appreciable manpower and resource reduction would occur.



(6) Modifications in the inventory program are also reflected in the development of a controlled access program. Once a particular structure has had a complete inventory accomplished, adjustments made, and file maintenance performed, it is identified as a sealed structure requiring no future inventories unless keys have been drawn for activity that would result in movement of stocks. This program involves storing non Category I and II materiel. An annual sample of sites are conducted for validation and verification of the sealing of static storage site process.

(7) These revisions and modifications to the existing inventory program will result in immediate reductions in inventory funding requirements and allow for a more efficient and effective operation.



(8) Milestones have been established for program modification and execution as follows:

a) FY94

- 1 Identify modification requirements.
- 2 Establish the controlled access program.
- 3 Prototype modified system.
- 4 Prototype revised grid based and controlled access programs.

b) FY95

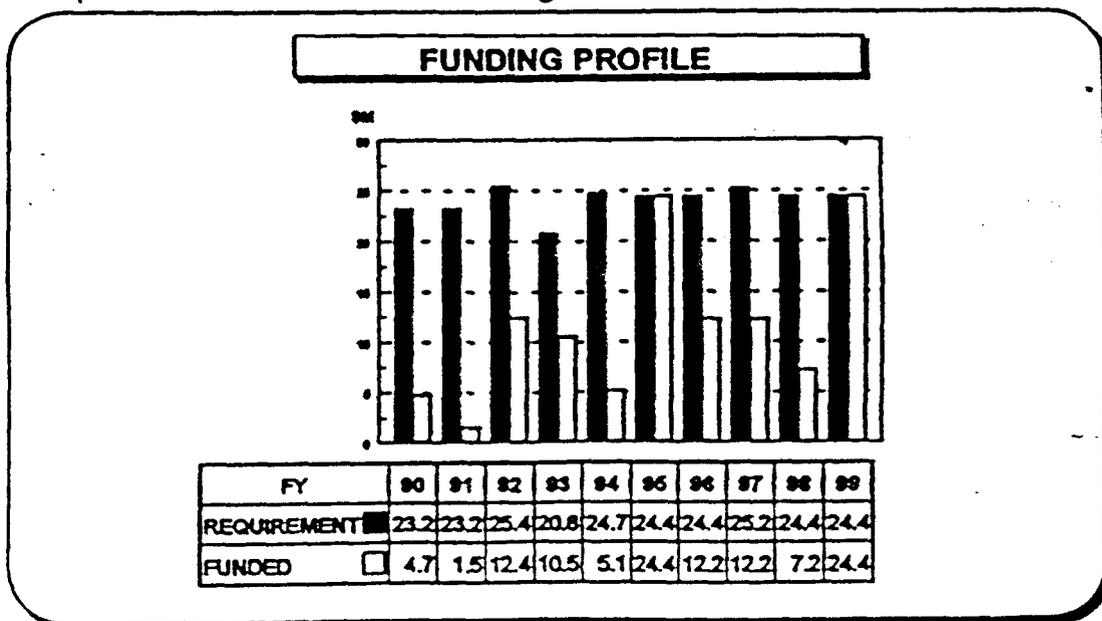
- 1 Execute grid based program at all Standard Depot System (SDS) storage installations.
- 2 Assistance to installations as required.
- 3 Revalidate the LOGMARS program and integrate if applicable.
- 4 Develop an automated key room program.

**d. SURVEILLANCE**

(1) The Ammunition Stockpile Surveillance Program is comprised of several major programs. The purpose of these programs is to assure that the condition, performance capabilities, and safety margins of ammunition are known throughout their life cycle. This is accomplished through periodic sampling, inspection, and testing of stocks. Test/inspection results are used to make appropriate stockpile decisions such as identifying items for maintenance and demilitarization, and withdrawing or restricting items considered to be of marginal serviceability. In addition, surveillance supports several key safety and logistical requirements: inspection of storage structures and safety of ammunition stored therein; transportation conveyances; and inspection of maintenance and demilitarization facilities and operations.

(2) Programs devoted exclusively to safety have been and are projected to be fully funded. However, two key programs, Large Caliber Testing and Periodic Inspection, devoted primarily to determining the serviceability of the stockpile are significantly behind schedule. The Large Caliber Test Program currently has 42 percent of items beyond its test interval. Twenty percent of the lots in the wholesale stockpile are beyond their periodic inspection interval. There has been a significant historical inspection failure or reclassification rate for items/lots included in these programs. For periodic inspection, the reclassification rate has been 7 percent and for large caliber testing, the rate has been 17 percent. Continued tolerance and growth of this backlog runs the risk of eroding our confidence in the true condition of the stockpile. It also prevents the identification of unserviceable stocks for appropriate corrective action; i.e., perform maintenance, suspend or restrict ammunition lots.

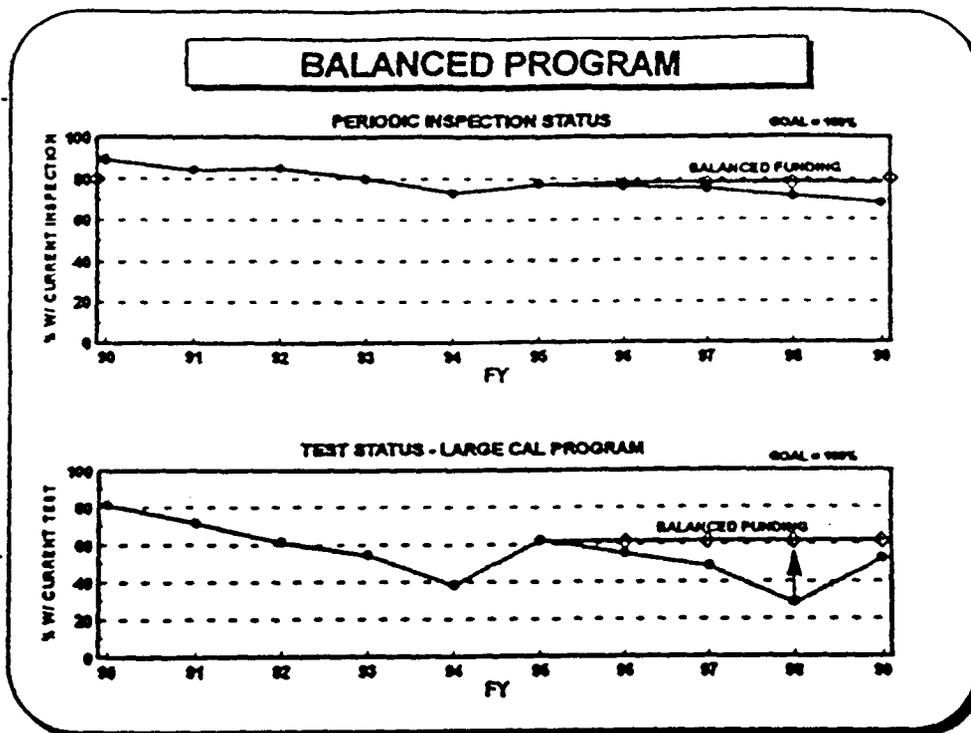
(3) Relative to this background, several issues have emerged. The Army is now faced with such a diminished ammunition surveillance program that knowledge of stockpile readiness is critically reduced. Moreover, projected funding does little or nothing to improve on this shortfall in the long term.



(4) In reality, the unbalanced nature of funding through FY 99 will only further diminish the skill base necessary to complete even the most critical surveillance functions. Accordingly, the ammunition surveillance community, working in tandem with other logisticians, has tried to address these problems through several progressive initiatives.

(5) What follows is a discussion of some key actions in progress or proposed to effectively meet the challenge of the above issues. Caution must be exercised when considering cost savings or avoidance's discussed below. Any savings realized through these initiatives are only valid against a backdrop of full surveillance inspection/test compliance. For example, in recent years the number of periodic inspections completed have fallen to nearly zero. There is obviously no cost avoidance against a base of zero. Funding at the requirement level must serve as the baseline to determine the value of the process.

a) **Balanced program:** The funding profile through FY 99 for Ammunition Surveillance represents a significant improvement over forecasts as recently as 1 year ago. The \$80.4M now forecast for the Ammunition Surveillance Program through FY 99 is however, distributed unevenly with peaks in the first and last years of the period. This erratic funding profile raises serious concerns about the Army's ability to retain the highly trained specialists necessary to perform the surveillance test and inspection function. The funding profile suggests that a Reduction in Force (RIF) would be necessary in late FY 97 to accommodate the low level of funding currently projected for FY 98. Subsequently, in FY 99 a 300%+ increase in surveillance funding would find the Army in a position where dollars are available but trained personnel to accomplish the work are not. A funding profile which is balanced over the FY 96-99 (approximately \$14M per year) would assure the continuing availability of trained and skilled personnel for this function. Even a \$80.4M program through FY 99 will continue to result in significant shortfalls in uninspected and untested ammunition. Any possibility of closing this gap should be pursued. To this end, the balanced funding approach will significantly improve the readiness posture of the Army. Calculations show that the inspection backlog could be reduced by 8% at the end FY 99 with a balanced funding approach. For large caliber testing, there is a 5-30% reduction in testing backlog through FY 99. FY 98 represents a worst case of 70% backlogged items with the current planned unbalanced funding scenario. In summary, a balanced funding program through FY 96-99 assures availability of trained personnel to perform necessary work and actually results in an appreciably reduced backlog while spending the exact same amount of funds.



b) **Prioritize Inspection of Required Stocks:** Assuming no increase in funding beyond the \$80.4M through FY 99, a backlog will persist whether or not a balanced program is approved. It is therefore important to the readiness of the Army that inspection and test dollars be wisely invested. To achieve this goal, the ammunition surveillance community has joined with our supply manager counterparts to embrace the concept of dividing the wholesale stockpile into two separate pieces; required and non-required. Given that required stocks satisfy both current power projection and training requirements, inspection and test of these assets will be of the greatest importance. It is envisioned that these lots will receive periodic inspection IAW SB 742-1, be represented in testing programs as described in AR 702-6, and be stored IAW standard storage drawings. Of course, all safety related inspections, to include magazine inspection of storage structures, will be assured for required stocks. Conversely, non-required stocks, those assets currently in excess of both power projection and training requirements, may be deemed suitable for a lesser degree of scrutiny. Barring unforeseen circumstances, it is envisioned that inspection requirements can be reduced to at least a Safety in Storage (SIS) inspection. For items deemed suitable due to their durability in storage, further inspection reductions or possible elimination is possible. Examples may be small arms ammunition, inert components, HE projectiles, etc. Block storage may be deemed appropriate, but such considerations will hinge on completion of associated rewarehousing and reconfiguration to separate required and non-required stocks. These stocks cannot however be abandoned. Accordingly, all safety related inspections, to include magazine inspection of storage structures and their contents, must also be assured for non-required stocks. In terms of cost analysis, given completion of associated

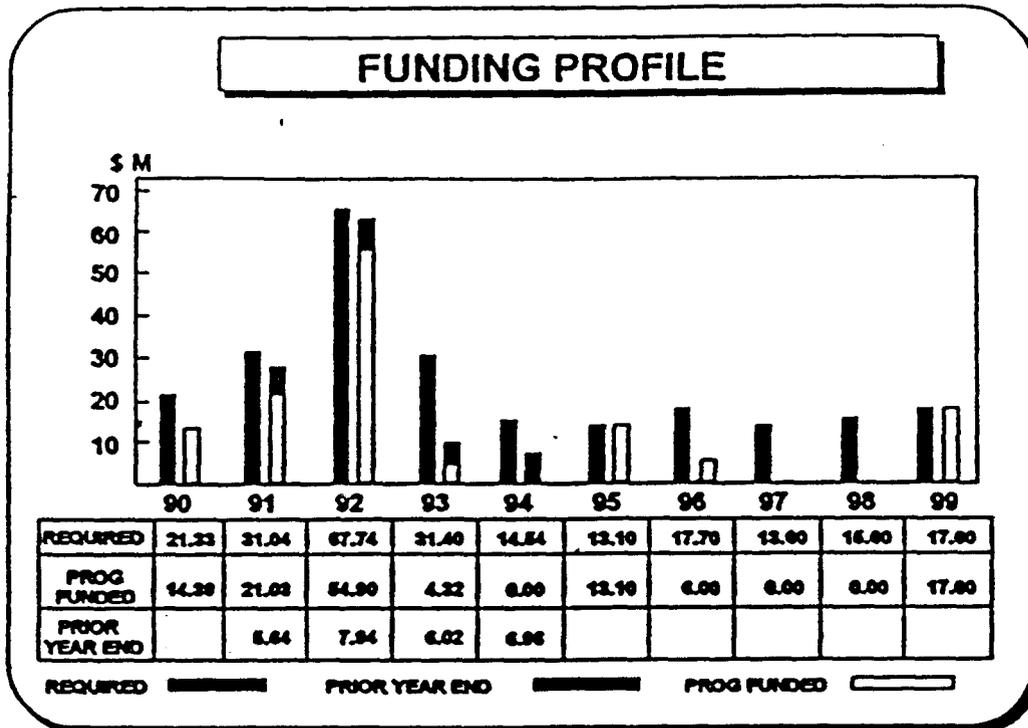
rewarehousing and reconfiguration, conversion to an required versus non-required approach for the wholesale stockpile can result in cost avoidance for ammunition surveillance functions. Depending on stockpile breakouts, most notably with "production offset" stocks, a savings of \$500-2000K per year is projected as early as FY 97.

c) Lot Clustering: Ammunition lot clustering is a procedure to administratively combine homogeneous ammunition lots into groups for the purpose of periodic inspection. Each installation establishes its own clusters IAW with a Letter of Instruction (LOI) jointly developed by DESCOM and AMCCOM and approved by HQ, AMC. Through statistical modeling it has been demonstrated that inspection of one lot in the cluster would apply to all other lots in the cluster, reducing the number of inspections and saving resources without sacrificing quality or safety. The LOI contains specific instructions such as: all lots must be of the same model/series; same manufacture; same lot interfix; similar method of pack; same condition code, and have similar histories. It is estimated that a potential 10-15 percent reduction in inspection requirements can be realized through lot clustering. On the basis of a population of serviceable, unserviceable (minor maintenance), and suspended (emergency combat only) of approximately 185,500 lots, institution of this process represents a potential cost avoidance of \$500-725K per year.

d) Modification of Inspection Intervals: Prior to 1988, periodic inspection of ammunition lots in storage were being conducted at conservatively established intervals of 2 to 5 years depending on the type of munition and expected rate of deterioration. The local chief of surveillance had authority to increase the interval between inspections by up to 2 years if local conditions (such as climate, storage conditions, and previous inspections) so justified. In 1988 an in-depth study of these intervals was initiated at AMCCOM. Goal was to increase intervals between inspections whenever possible without decreasing confidence in knowledge of stockpile serviceability. It was soon established that some intervals could be extended based on findings of the study. Study involved close scrutiny of installation surveillance inspection records to determine the onset of significant deterioration. Taking one item, or family of items, at a time, inspection records were solicited from installations worldwide, carefully compiled and evaluated and a new and statistically sound interval assigned. Thus far, 18 items have been evaluated and intervals extended. The previous (pre 1988) range of lot inspection intervals has been expanded from 2-5 years to the present range of 2-10 years. Authority and guidance to incorporate these new intervals for selected items was most recently detailed to the ammunition community in an AMCCOM Ammunition Information Notice (AIN) 58-93, dated April 1993. The interval study is a continuous process and future cost avoidance associated with this effort could be significant. For example, scrutiny of the 81MM HE, M374 series jungle packed mortar cartridge results in a potential overall cost avoidance of \$7800.00 per year due to a shift from a four to a six year inspection interval. This example assumes a balanced workload distribution and a CONUS stockpile of 222 lot segments.

e. MAINTENANCE

(1) In FY94 the ammunition major maintenance program was zero funded. Obligations of approximately \$7.0M from FY93 year end funding were used to support FY 94 requirements. An additional \$4.0M in high priority requirements remain unfunded and will impact ability to support training and readiness requirements. Overall \$7.5M in priority programs remain unfunded and the preventive maintenance program remains totally unfunded.



(2) The 10 year funding profile chart indicates several trends; (1) in post years, except FY92, where \$47M in SWA dollars were provided, the maintenance program has been funded significantly less than required; (2) since FY91, year end funding has become an increasingly larger portion of the program; (3) outyear funding will not meet our requirements.

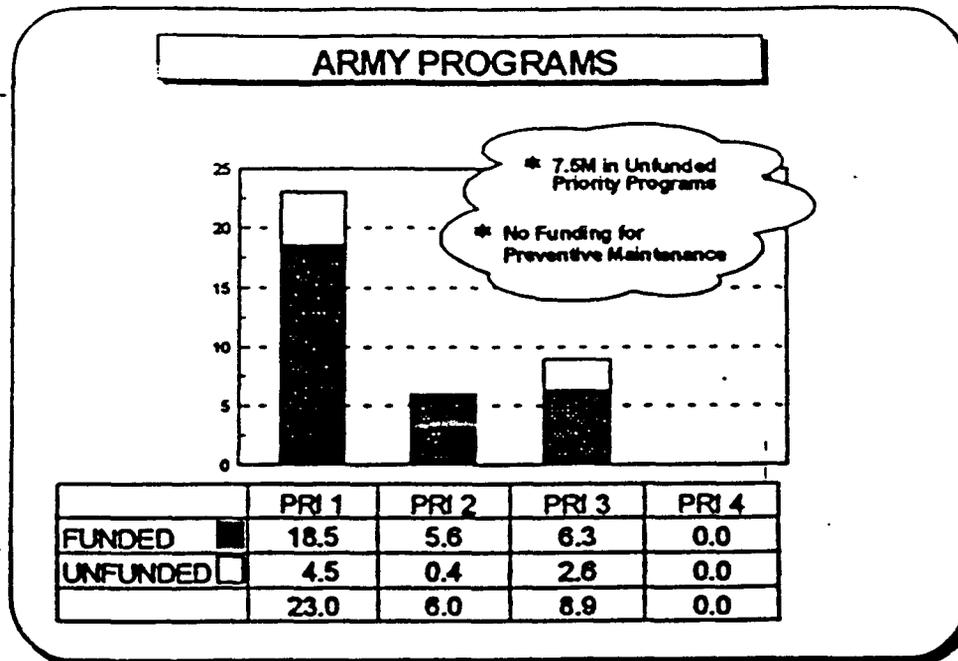
(3) The continual use of year end funds to support maintenance limits management flexibility and does not allow the projection of workloading data to our installations. If funding levels projected for FY 96-98 remain unchanged, there will be a definite impact on training and/or readiness. Additionally, at these funding levels it will be extremely difficult to maintain a maintenance workforce at our facilities, thus resulting in a loss of expertise and capability.

(4) Internally, the AMCCOM National Maintenance Point (NMP) has reorganized the management team structure to improve maintenance planning efforts through development of a prioritized system. The system reflects the required/non-required

concept for maintaining only the training and war reserve stockpile. Only those stocks needed to support immediate training or critical war reserve shortfalls are submitted for renovation funding. Quarterly reviews are conducted on all priority programs, both funded and unfunded, to ensure limited resources are focused on the most urgent needs. If a priority one item remains unfunded, it results in a critical war reserve shortfall or severely impacts training within one year.

(5) Priorities are determined by applying on-hand assets to war reserve and training requirements. Maintenance priority one, for example, are those stocks satisfying less than 25% of the war reserve requirement, or meeting less than one year's training requirements.

<b>ESTABLISHING PRIORITIES</b>			
<b>CONDITIONS</b>			
<b>PRIORITY</b>	<b>WAR RESERVE</b>		<b>TRAINING</b>
<b>1</b>	<b>&lt; 25%</b>	<b>OR</b>	<b>&lt; 1 Year</b>
<b>2</b>	<b>25-49%</b>	<b>OR</b>	<b>&lt; 2 Years</b>
<b>3</b>	<b>50-74%</b>	<b>OR</b>	<b>&lt; 3 Years</b>
<b>4</b>	<b>75-99%</b>	<b>OR</b>	<b>&lt; 4 Years</b>



(6) Current and projected funding levels continue to maintain limited readiness at the expense of mortgaging the stockpile. Lack of preventive maintenance will continue to deteriorate the stockpile and eventually cause these assets to become high priority programs requiring significantly more funding than is currently needed.

(7) Funding of ammunition renovation provides a cost avoidance of approximately 70%-80% of new production cost. It also avoids the cost of demilitarization, and helps support overhead at our installations while maintaining a valuable capability.

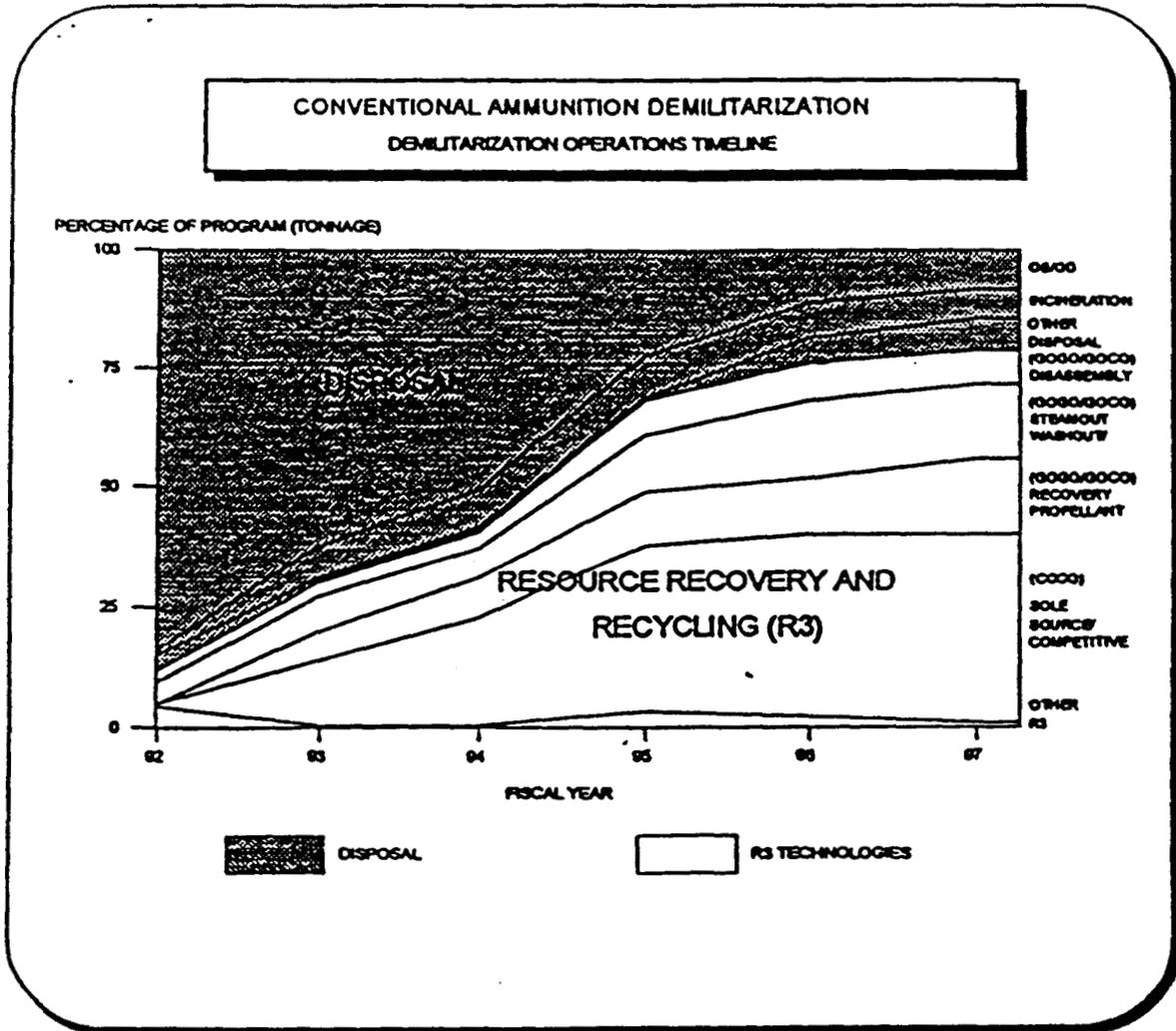
(8) Another concern involves the downsizing of the ammunition industrial base and reduced maintenance funding. There will eventually be a significant loss of expertise and capability to perform a major item maintenance mission. Accordingly, if future funding increases, the ability to provide timely response for renovation of large portions of the stockpile will be limited. Future spikes in funding will not provide an immediate solution to aid a deteriorating stockpile. Efforts to offset a possible reduction in maintenance capability have centered around a refocus of the Ammunition Peculiar Equipment (APE) program to improve depot support and provide new technologies.

## f. DEMILITARIZATION

(1) The conventional ammunition demilitarization program continues to be a major element of the Single Manager for Conventional Ammunition (SMCA) mission. Stockpiles of excess, unserviceable, and/or obsolete munitions are continuing to grow as a result of a myriad of factors, to include global changes in the military community and national environmental issues that are threatening to restrict operations. The Army, as the SMCA, has pursued a number of initiatives and has conducted studies to determine the best strategy to minimize the stockpile while considering environmental and economical factors. Because of this increased emphasis, a demilitarization master plan was developed to serve as a tool in assisting the effective and efficient management of the overall demilitarization program. This plan has been assessed and found to be compatible with the tier depot plan approach. In accordance with the 1982 and 1986 Blue Ribbon Panels (BRP) on Ammunition Demilitarization, a 40,000 short ton stockpile is considered a manageable demilitarization inventory. These parameters, however were based on an inventory level of 150,000 to 200,000 short tons and a standard annual generation rate of 20,000 short tons. The demilitarization climate has changed considerably since the last BRP, and although the ultimate goals may be similar, the factors effecting today's program are significantly distinctive from any other program. Today's inventory level is over 413,000 short tons and has growth potential; annual generations are at an all time high and are likely to continue along that trend. The magnitude of a stockpile backlog of approximately 413,000 short tons can best be visualized using logistical frames of reference. This size of inventory could fill almost 6,883 rail cars, equating to a train that would stretch for 65 miles; or it would require over 20,000 truck trailers to transport, producing a 1,428 mile convoy. In logistics terms, storing the inventory in standard igloos would completely fill Blue Grass, Letterkenny, and Red River Army Depots (2753 igloos) with about 250 igloos remaining. For this reason, demilitarization operations at the installation level have taken on a much more urgent commitment priority in order to meet annual program goals. The loss of authority to hire additional temporary employees will undoubtedly impact the ability to perform demilitarization operations at the Government-owned, Government-operated facilities in a timely and efficient manner. Augmentation of contractor support will alleviate some of these shortfalls by increasing overall capabilities.

(2) Environmental considerations are continuing to be critical components to accomplishing the demilitarization program. The Conventional Ammunition Demilitarization Master Plan presents the SMCA's methodology for migrating from a disposal focus to one of Resource, Recovery and Recycling (R3). The plan is not budget driven, but rather each program element has been evaluated individually to determine funding requirements. The master plan is constrained only by present and projected capabilities. This chart illustrates the trend of the fully funded SMCA demilitarization program for the time period from fiscal year 1992 through 1997. Disposal procedures accounted for 88 percent of the total program in FY 92, a stark contrast to the projected 22 percent in FY 97. Further, one third of those disposal programs planned, offer new environmentally sound procedures that will be brought on

line through on-going research and development efforts, and support the SMCA's pledge to decrease reliance on open burning/open detonation (OB/OD) operations.



(3) Increasing the focus on cost effective resource recovery and recycling (R3) efforts is a goal of the SMCA. Development of new technologies, increased emphasis on contractor and industry support, and establishment of new and improved facilities are some of the means by which the SMCA's goal can be attained. Heavy reliance on OB/OD in the future is not only a negative from a R3 point of view, but is strategically unsound given the increasingly restrictive environmental regulations. This chart graphically depicts major federal environmental legislation and its explosive expansion over the last 20 years.



**(5) END STATE DEMILITARIZATION OBJECTIVES**

a) The first objective for demilitarization is the reduction in the growing backlog allowing for critical storage space within the Tier I and II installations. Reducing the backlog to a level whereby annual generations are equal to annual accomplishments will allow for a 100 percent stable stockpile. Utilizing both government and industrial/contractor support and assuming that funding through the POM can be provided to a level that meets capabilities, the goal is to obtain a 100,000 short ton backlog by FY04.

	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04
<b>COST PER S/TON</b>	1400	1700	2200	1800	1500	1200	1200	1200	1200	1200	1200
<b>REQUIRED (\$M)</b>	70	100	100	110	115	120	80	80	40	40	40
<b>BEGIN BALANCE</b>	412858	422858	389035	368580	332469	280802	205802	164135	122468	114135	105802
<b>GEN</b>	60000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000
<b>ACCOMP</b>	50000	58823	45455	61111	76667	100000	66667	66667	33333	33333	33333
<b>ENDING BALANCE</b>	422858	389035	368580	332469	280802	205802	164135	122468	114135	105802	97469

b) The second program objective is to reduce our reliance on OB/OD methods while gradually increasing reliance on Resource, Recovery and Recycling effort to a 75 percent level by FY97.

c) In order to achieve the above end state objectives, the SMCA has established a strategic plan that involves a short term and long term plan of action.

**1 Short Term:**

a) Our short term emphasis is on maximizing OB/OD opportunities and to clear storage space at Tier I and II installations through innovative ideas and approaches. We are aggressively funding OB/OD projects at all Tier levels when economically feasible and environmentally acceptable. We are fully utilizing our large capacity OB/OD locations to include shipping assets from tier I locations with minimal OB/OD capability.

b One of the innovative ways that we are expanding the capacity of the demilitarization base short term is in the area of contracting for conventional ammunition demilitarization. During FY 93 and FY 94, contracts with 100 percent options which may be exercised in FY 95/96 have been/are being let. Additional contracts are being planned for award in FY 95. These contracts plus the options from previous year contracts will total \$30-40M. The final value of the contracts to be awarded depends upon cost effectiveness weighed against organic government capability to perform demilitarization.

c We are investing heavily in Tier I and Tier II installations in Ammunition Peculiar Equipment (APE) and plant facilitization. A good example of strategic APE placement is that which is being employed in distributing APE 1236 furnaces. Our plans revolve around regionally locating these facilities at Tier I and II installations where the generations and support staff will continue to exist to operate such equipment. Regional dispersion minimizes EPA regional policy impacts on the furnaces while reducing the shipments of hazardous materials. We are also helping to facilitize and workload Tier I and Tier II facilities. Such is the case at Hawthorne Army Ammunition Plant's (HWAAP) Western Area Demilitarization Facility (WADF). We are also planning location of autoclave equipment at certain Tier I and II facilities. Short term we are also utilizing existing wash out and steam out and white phosphorous facilities when economically feasible.

d In addition to utilizing demilitarization, we are actively pursuing propellant and explosive sales. These sales will help to reduce the demilitarization inventory while generating additional funding for future demilitarization efforts.

## **2 Long Term:**

Our long term goal is to establish demilitarization centers of excellence at Tier I and Tier II installations focused on R3. Site selection for transitioning Research and Development (R&D) initiatives will be carefully selected to assure maximum utility. Current R&D projects include such efforts as Super Critical Water Oxidation, Carbon Dioxide Blast Vacuum Demilitarization, Cryofracture Technology and Cryogenic Washout to name a few. At the end state, demilitarization operations will be conducted either commercially or in house depending upon economic factors, with a certain minimum government capability being maintained as insurance for uneconomical or one-time projects. We will also maintain unique government capability such as the Western Area Demilitarization Facility at HWAAP and the White Phosphorus plant at Crane Army Ammunition Activity (CAAA).

## IX. SUMMARY

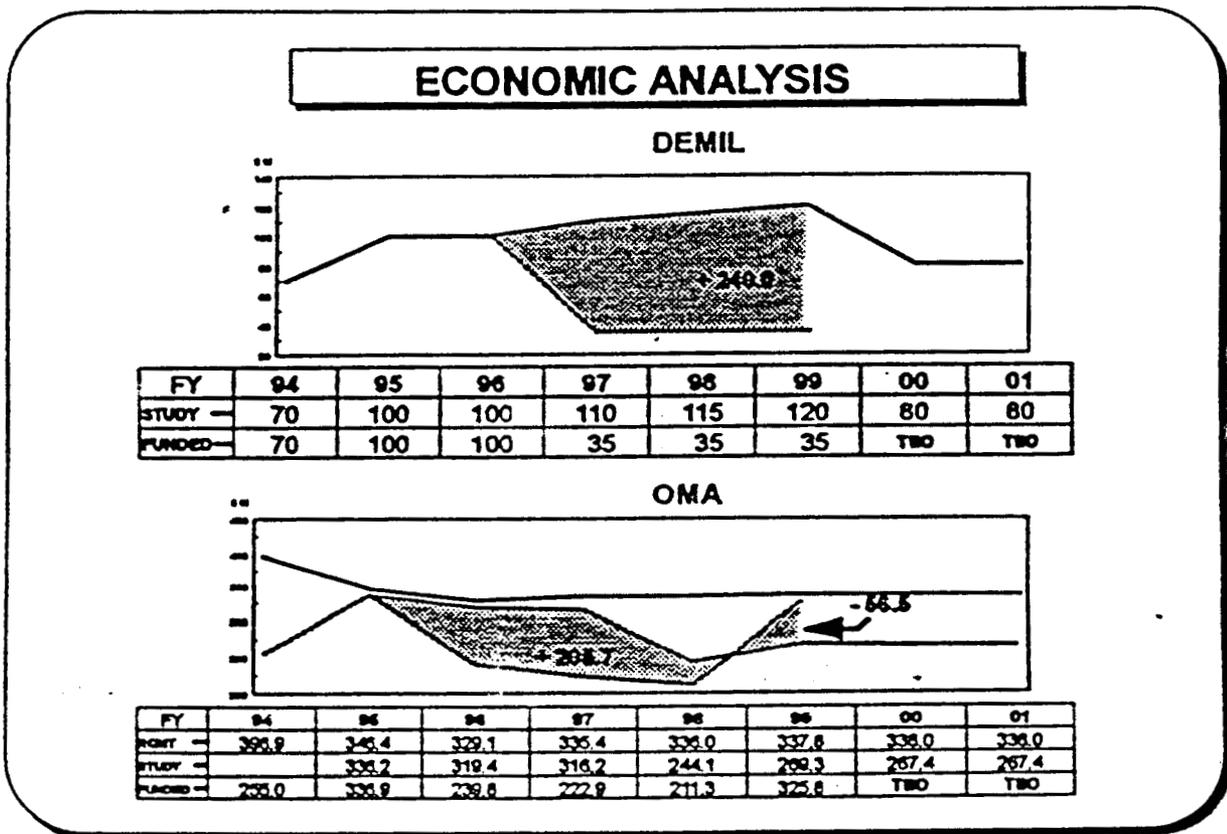
a) This plan documents actions requiring near term investments for achieving long term efficiencies and savings through a smaller, safer stockpile using a reduced level of manpower. It provides a methodology for restructuring the wholesale storage base into fewer installations while, identifying initiatives required to maintain critical power projection capabilities. Additionally, it outlines the limitations in today's environment and identifies the necessary restructuring of ammunition management operations within each functional area.

b) Near term investments are required to achieve long term benefits. Investments to stockpile improvements are made through the OMA appropriation for supply, maintenance, and transportation functions, and PAA for demilitarization functions. The OMA funding is apportioned based on priorities, therefore, lower priority functions can be supported only after higher priority functions are satisfied. Success of this Integrated Management Plan is possible only if the total minimum requirement level is fully funded. Lower funding levels would mean that investments in such areas as inventory, surveillance, rewarehousing, redistribution and maintenance will not be made. Full funding for receipts and issues are required to maintain peacetime capabilities and ultimately lower the overall cost of redistribution by allowing the issue of training stocks from Tier II/III installations. Investments and balancing funding of maintenance and surveillance of required, high priority stocks, are required to maintain readiness and preclude the declining critical skill base. The revised inventory program requires no additional investment over the current requirement, but must be fully funded at the lower requirement level to assure success. The program as outlined in this plan will actually require fewer resources than are being programmed in the POM. On the basis of results in a recent study simulation, a revised ammunition operational management program utilizing the tier realignment structure requires a total of approximately \$206.0 million of additional OMA program funding in FY96-98 (less than the currently programmed requirement). This figure includes all OMA requirements, however, does not include redistribution to maximize outloading capabilities. That program has submitted funding requirements through the ASMP. An investment in these fiscal years will provide the basis for long term efficiencies and results in a \$56.5 million reduction to the anticipated funding level in FY99. This equates to a \$70 million per year cost avoidance in FY99 and beyond.

c) This plan has also outlined the initiatives required to reduce the backlog of the demilitarization stockpile to a manageable 100,000 short tons within a ten year time frame. An aggressive program is required to provide storage space for realignment into a tier infrastructure and allow the operational functional area to perform efficiently and effectively. A program that provides the necessary funding to match capabilities is initially required through FY99. The demilitarization program will then be gradually

reduced to an ultimate goal whereby annual generations equate to annual accomplishments.

d) The economic analysis shown in the following charts is based on rates and workload forecasts available at the time of the tier depot simulation. Changes in the actual rates and workloads will effect actual results. Detailed execution planning beyond the simulation level will be used to update the expected investments and savings, and will be reflected in future editions of this plan.



## ASSESSMENT SUMMARY

PROGRAM	STATUS	CURRENT RQMT FY96-99	REVISED RQMT FY96-99	FUNDED FY96-99	AMBER FX	GREEN FX
<b>OMA:</b>						
RECISS/SDT	RED	\$ 319.5	\$ 360.9	\$ 272.6	\$ 27.0	\$ 88.3
REWHsing	AMBER	50.5	24.2	19.2	N/A	5.0
INVENTORY	AMBER	90.7	47.5	49.3	N/A	-1.8
SURVEIL	RED	98.4	72.8	56.0	0.0	16.8
MAINT	AMBER	64.5	64.5	23.6	N/A	40.9
	<b>TOTAL:</b>	<b>\$ 623.6</b>	<b>\$ 569.9</b>	<b>\$ 420.7</b>	<b>\$ 27.0</b>	<b>\$ 149.2</b>
<b>DEMIL:</b>						
	AMBER	\$ 445.0	\$ 445.0	\$ 205.0	\$ N/A	\$ 240.0

DOLLARS IN MILLIONS

\* Operational Elements Only. Not Total OMA Program

**QUANTITATIVE DATA  
FOR TIER DEPOT ANALYSIS**

# POWER PROJECTION

## OUTLOADING CAPABILITY

### FACTORS

DEPOT	CNTR/SCR	BB/SCR	70-30/SCR
WEIGHT:	4	2	3
ANAD	1040/2.9	800/8	968/2.4
BGAD	2080/5.9	3760/3.7	2584/6.5
CAAA	780/2.2	11300/11.0	3936/9.8
HWAAP	923/2.6	1280/1.2	1030/2.6
LEAD	520/1.5	3480/3.4	1408/3.5
MCAAP	3900/11.0	5560/5.4	4398/11.0
RRAD	728/2.1	2840/2.8	1362/3.4
SEDA	104/3	1060/1.0	391/1.0
SIAD	1144/3.2	2000/1.9	1401/3.5
SVDA	1989/5.6	1700/1.7	1902/4.8
TEAD	1170/3.3	8600/8.4	3399/8.5

MEASUREMENTS ARE IN ST PER DAY BASED ON MAX CAPABILITY OF DEPOT TO OUTLOAD. ARMY GOAL TO GO CONTAINERIZED, THUS GIVING MAX WEIGHT, FOLLOWED BY 70/30 SPLIT, THEN TOTAL BB.

# POWER PROJECTION

## TRANSPORTATION FACTORS

DEPOT	TRUCK/WT	RAIL/WT	AIR/WT	TOTAL	SCR
	WEIGHT: 2	3	1		
ANAD	2/4	1/3	0	7	9
BGAD	2/4	2/6	0	10	11
CAAA	2/4	2/6	0	10	11
HWAAP	0	0	0	0	5
LEAD	1/2	0	0	2	7
MCAAP	2/4	2/6	0	10	11
RRAD	1/2	1/3	0	5	8
SEDA	0	0	1/1	1	6
SIAD	2/4	1/3	1/1	8	10
SVDA	1/2	1/3	0	5	8
TEAD	1/2	2/6	0	8	10

FACTORS BASED ON THE INSTALLATIONS CAPABILITY TO MOVE MUNITIONS  
OUT OF THE GATE BY TRUCK, RAIL, OR AIR.  
RANKINGS ARE BASED ON DEPOT ASSESSMENT FOR EACH FACTOR AS FOLLOWS:

GOOD -- 2 POINTS

FAIR -- 1 POINTS

POOR -- 0 POINTS

# STORAGE CAPABILITY

## FACTORS

DEPOT	NET SQ FT/SCR	ECM SQ FT/SCR
	WEIGHT: 2	1
ANAD	1831200/3.3	1623258/4.0
BGAD	1745600/3.1	1374304/3.4
CAAA	4891200/8.8	3585484/8.9
HWAAP	6136800/11.0	3518186/8.7
LEAD	1693600/3.0	1459635/3.6
MCAAP	5593600/10.0	4430063/11.0
RRAD	1351200/2.4	1073715/2.7
SEDA	1119200/2.0	783846/1.9
SIAD	1929600/3.5	1196800/3.0
SVDA	1892800/3.4	554803/1.4
TEAD	1895200/3.4	1361600/3.4

# LOCATION

## FACTORS

DEPOT	TO SPOE/SCR	TO APOE/SCR	TO TRNG/SCR	\$ TO SPOE
	4	2	3	1
	WEIGHT:			
ANAD	4/5.5	383/5.2	459/11.0	240/7.7
BGAD	5/5.4	551/3.6	600/8.4	221/8.2
CAAA	7/3.1	700/2.8	602/8.4	267/7.0
<u>HWAAP</u>	3/7.3	300/6.6	582/8.7	203/9.2
LEAD	5/4.4	180/11.0	587/8.6	221/8.4
<u>MCAAP</u>	7/3.1	1057/1.9	515/9.8	427/4.4
RRAD	10/2.2	926/2.1	595/8.5	376/4.9
SEDA	6/3.7	233/8.5	705/7.2	258/7.2
SIAD	2/11	233/8.5	527/9.6	169/11.0
SVDA	7/3.1	935/2.1	756/6.7	379/4.9
TEAD	4/5.5	687/2.9	603/8.4	280/6.6

DATA IS # OF RAIL TRANSIT DAYS TO CLOSEST SPOE AND ACTUAL MILEAGE TO CLOSEST APOE. FOR SPOE, MILEAGE DOES NOT NECESSARILY MEAN THE BEST. RAIL MEASURED DUE TO # TONS MOVED. THE COST TO SPOE IS THE COST TO THE CLOSEST SURFACE PORT. IT IS ADDITIVE OF BOTH CONTAINER AND BB (MOTOR AND RAIL). WEIGHTS ASSIGNED: LARGEST TONNAGE OUT OF SPOE, THUS HIGHEST RANKING TRNG IS AVG MILES TO MAJOR TRNG SITES W/I 1000 MILES. (W/I 50MI = SAME)

# COSTS

## FACTORS

DEPOT	R//SCR	INV/SCR	SURV/SCR	MAINT/SCR
	WEIGHT: 4	3	2	1
ANAD	248.66/3.0	14.45/4.6	359.85/4.4	45.55/8.2
BGAD	125.08/5.9	50.17/1.3	504.55/5.2	59.01/6.3
CAAA	66.86/11.0	10.69/6.2	224.69/7.1	40.93/9.1
HWAAP	148.71/4.9	38.33/1.7	144.87/11.0	51.97/7.2
LEAD	130.83/5.6	16.44/4.0	438.20/3.6	33.86/11.0
MCAAP	107.49/6.8	27.22/2.4	146.34/10.9	48.78/7.6
RRAD	134.22/5.5	6.00/11.0	505.24/3.2	49.22/7.6
SEDA	145.75/5.0	90.55/7	794.97/2.0	88.33/4.2
SIAD	142.21/5.2	57.11/1.2	386.05/4.1	59.39/6.3
SVDA	112.34/6.5	101.57/6	535.92/3.0	81.20/4.6
TEAD	122.36/6.0	27.24/2.4	275.56/5.8	55.21/6.7

R/I = COST PER ST; INV = COST PER GRID; SURV = COST PER LOT;  
MAINT = COST PER MANHOUR FIXED.

DEMIL COSTS EXCLUDED DUE TO FUNDING FROM PAA.

ASSIGNED WEIGHTS ARE IN AGREEMENT WITH OMA PRIORITIZATION AS BRIEFED  
IN THE AMMUNITION FAA.

# MAINTENANCE

*MINOR*

## FACTORS

DEPOT	MISSILE/SCR	MULTUSE Bldg /SCR	NEW Limit/SCR	SQ FT Avail/SCR
	WEIGHT: 4	3	2	1
ANAD	Y/11	4/5.5	44000/.4	66895/5.5
BGAD	N/0	3/4.1	128000/1.1	80602/6.7
CAAA	N/0	8/11.0	97700/.8	122360/10.2
HWAAP	N/0	4/5.5	515000/4.4	102537/8.5
LEAD	Y/11	1/1.4	20000/.2	23073/1.9
MCAAP	N/0	6/8.3	1300000/11.0	132606/11.0
RRAD	Y/11	3/4.1	65000/.6	47203/3.9
SEDA	N/0	1/1.4	60000/.5	21200/1.8
SIAD	N/0	2/2.8	37000/.3	17832/1.5
SVDA	N/0	2/2.8	255000/2.2	106920/8.9
TEAD	N/0	5/6.9	139000/1.2	71203/5.9

MISSILE FACTOR: YES OR NO FOR MISSILE MAINTENANCE CAPABILITY.  
 DEPOTS WITH THIS CAPABILITY RECEIVE A SCORE OF 11 BASED UPON ITS  
 IMPORTANCE AS DISCUSSED DURING 17-18 FEB MEETING.  
 MISSILE MAINTENANCE FACILITIES ARE CONSIDERED AS HIGH DOLLAR INVESTMENTS  
 AND ARE UNIQUE TO MISSILE SYSTEM REQUIREMENTS. NOT EASILY INTER-CHANGEABLE.

# INSPECTION/TEST

## FACTOR

DEPOT	FUNCTION	MISSILE	MOD SURV	X-RAY	TOTAL	SCR
	WEIGHT:	4	3	2	1	
ANAD	0	1	0	0	3	8
BGAD	0	0	0	0	0	6
CAAA	1	0	1	1	7	11
HWAAP	1	0	1	1	7	11
LEAD	0	1	1	1	6	10
MCAAP	0	0	1	1	3	8
RRAD	0	1	0	1	4	9
SEDA	0	0	0	0	0	6
SIAD	0	0	0	0	0	6
SVDA	1	0	0	0	4	9
TEAD	0	0	0	1	1	7

RANKING: 1 = HAS CAPABILITY  
0 = HAS NO CAPABILITY

# DEMIL

## FACTORS

DEPOT	RRR/SCR	OB-OD/SCR	DEMIL STORAGE/SCR
	WEIGHT: 3	2	1
ANAD	10/7	1600/0	21073/0.7
BGAD	17/9	300/2	17944/1.9
CAAA	18/10	2000/1.1	30972/3.3
HWAAP	20/11	1600/9	102154/11.0
LEAD	6/6	3200/1.8	29753/3.2
MCAAP	17/9	3300/1.8	88930/9.6
RRAD	12/8	1000/6	7486/8
SEDA	10/7	2100/4	6877/7
SIAD	10/7	20000/11.0	15475/1.7
SVDA	6/6	1800/1.0	7163/8
TEAD	12/8	8400/4.6	8756/9

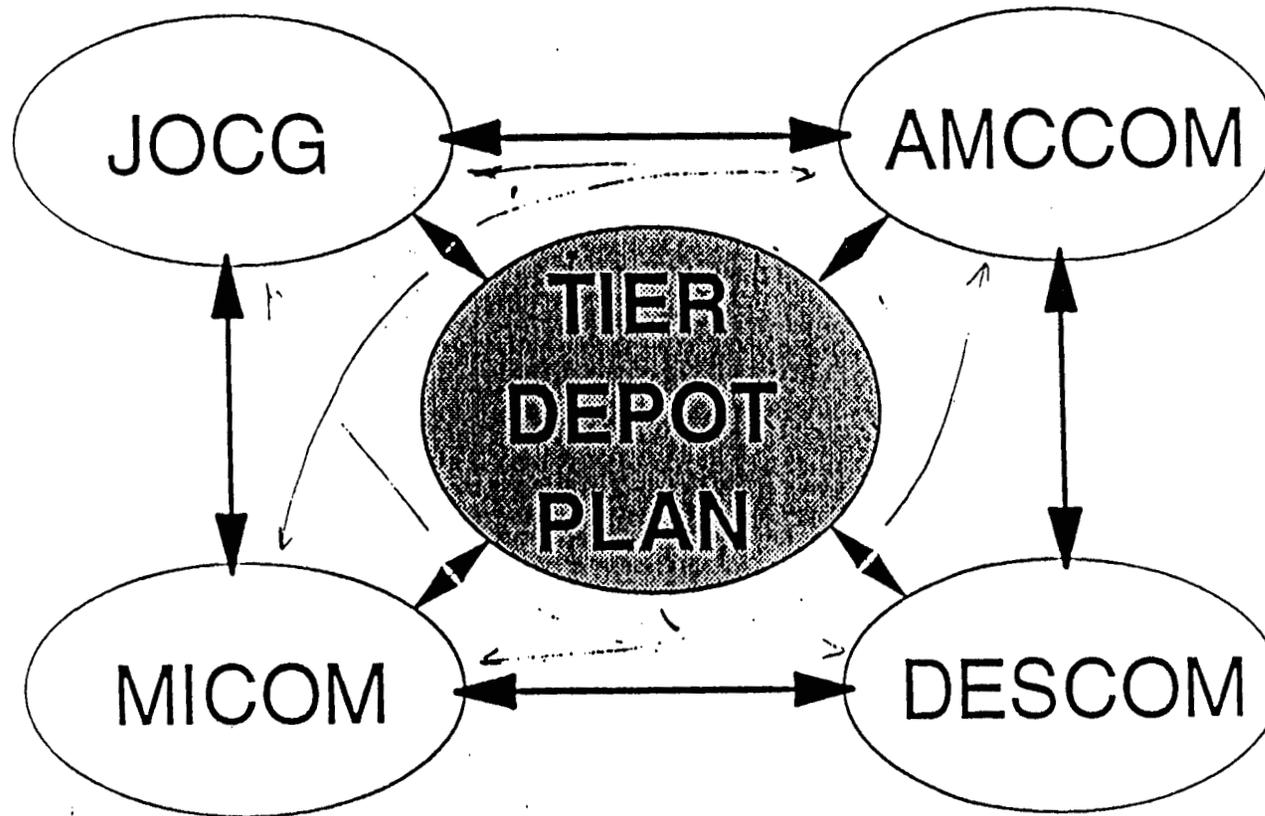
RESOURCE RECOVERY AND RECYCLING CAPABILITY INCLUDES:

DISASSEMBLY, UNIQUE DEMIL CAP, WASHOUT/STEAMOUT/MELTOUT CAP, APE 1236  
OPEN BURN/OPEN DET CAPABILITY INCLUDES;

DEMIL ST IN STORAGE BY LOCATION

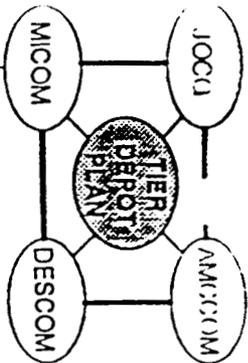
-- TAKING OB/OD AND DEMIL IN STG OUT DOES NOT AFFECT FINAL RANKING ORDER.

# INTEGRATED AMMUNITION STOCKPILE MANAGEMENT PLANNING



**4 April 94**

COL Scott Hull, HQ AMCCOM  
Mr. Ron Herter, HQ, DESCOM

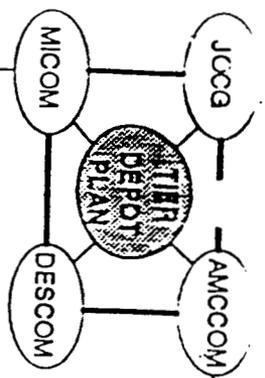


**Background**

# PRE FAA ACTIVITY

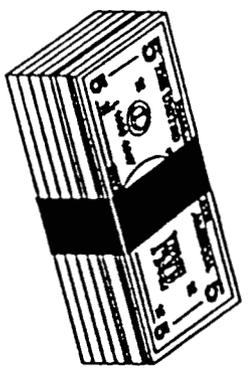
- OMA Shortfall Briefing to DCSLOG Mar 93
- JOCG Initiates WASP Study May 93
- 1st BG Holmes Briefing to CSA Jul 93
- WASP Study Complete Sep 93
- 2nd BG Holmes Briefing to CSA Oct 93
- FAA Tasking Letter Nov 93
- Integrated Management Plan Simulation Nov - Dec 93
- FAA Briefed to VCSA 2 Feb 94

Integrated Planning



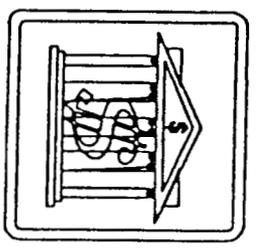
# INTEGRATED PLAN CONCEPT

## NEAR-TERM INVESTMENT

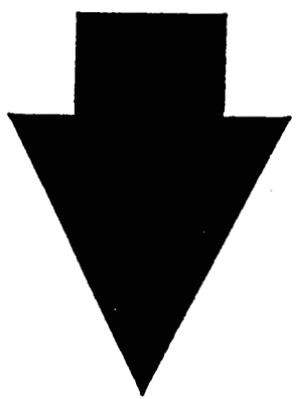


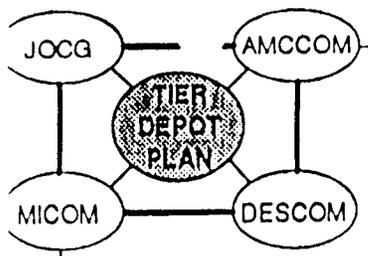
- DISPOSAL
- REWAREHOUSING
- REDISTRIBUTION
- MODERNIZATION

## LONG-TERM SAVINGS



- YIELDS**
- SMALLER, SAFER STOCKPILE
  - LESS STORAGE, FEWER INSTALLATIONS
  - REDUCED MANPOWER
  - ENHANCED READINESS

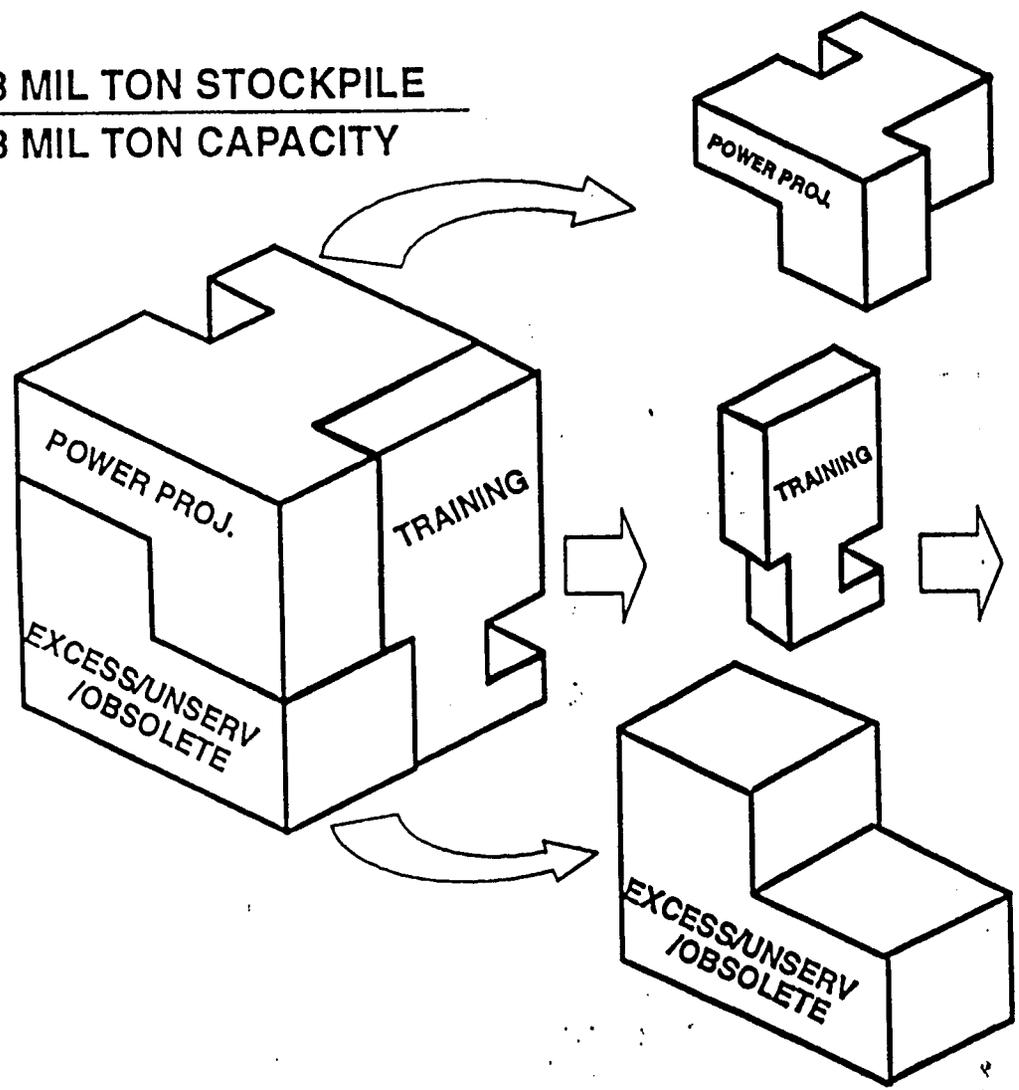




**Integrated Planning**

**STOCKPILE MANAGEMENT CONCEPT**

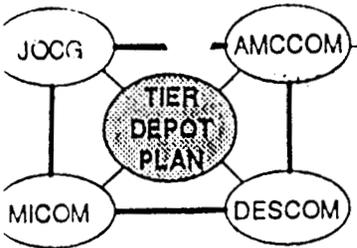
**3 MIL TON STOCKPILE**  
**3 MIL TON CAPACITY**



- POWER PROJECTION**
- SEGREGATED
  - STATIC STORAGE
  - DEPLOYABLE
  - READY FOR WAR
    - INSPECTED
    - CLASSIFIED
    - MAINTAINED

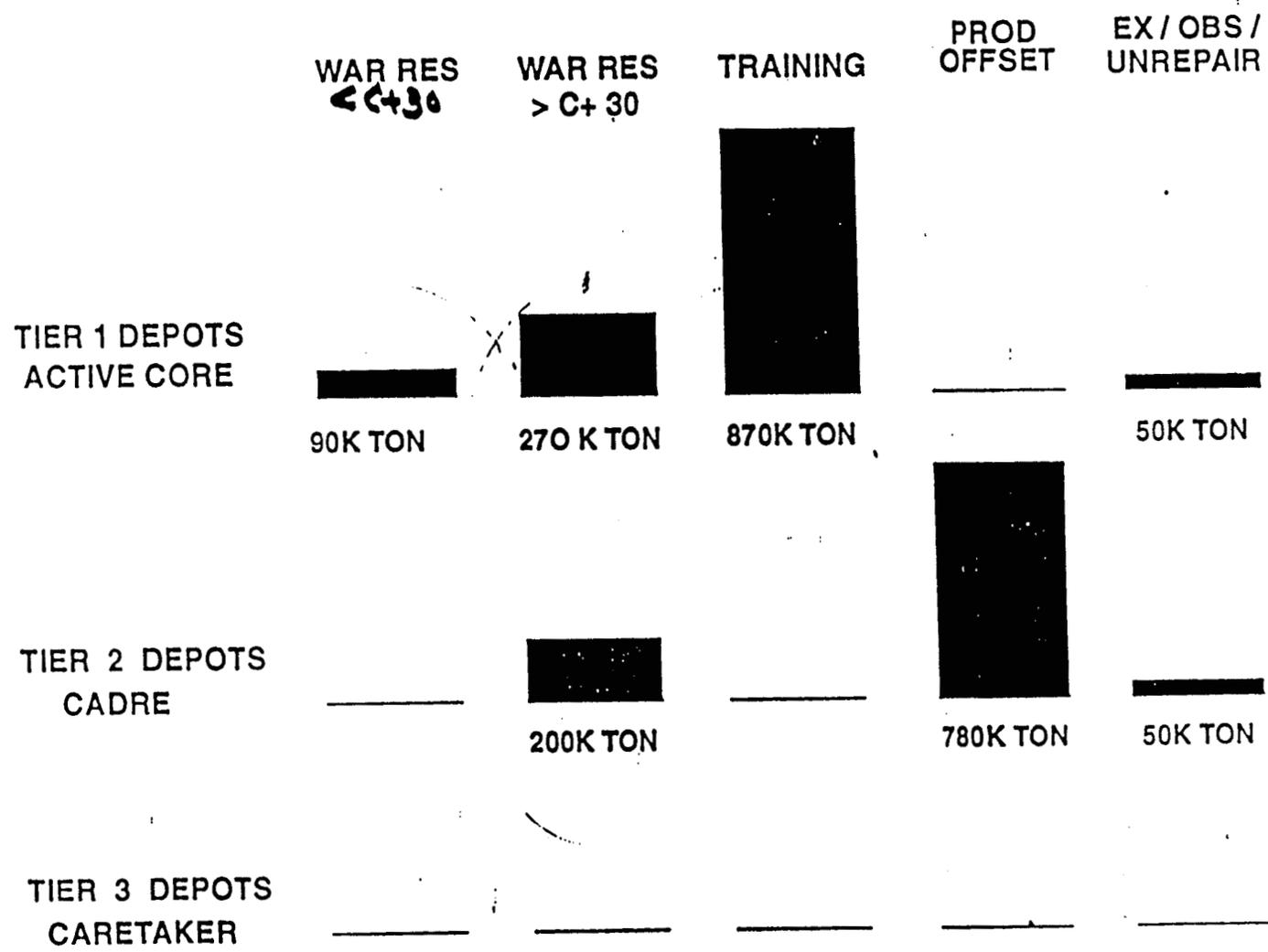
- TRAINING**
- SEGREGATED
  - CONSUMPTION
    - INSPECTED
    - CLASSIFIED
    - MAINTAINED

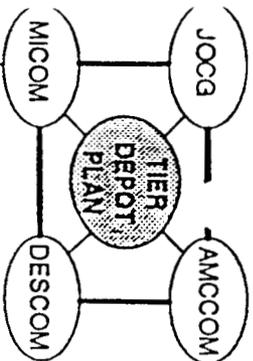
- NON APPLICABLE**
- SEGREGATE
  - DISPOSAL
    - FMS
    - R<sup>3</sup>
    - DEMIL



**Integrated Planning**

# END STATE STRATIFICATION



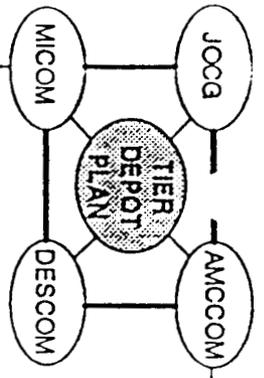


## Tier Depot Analysis

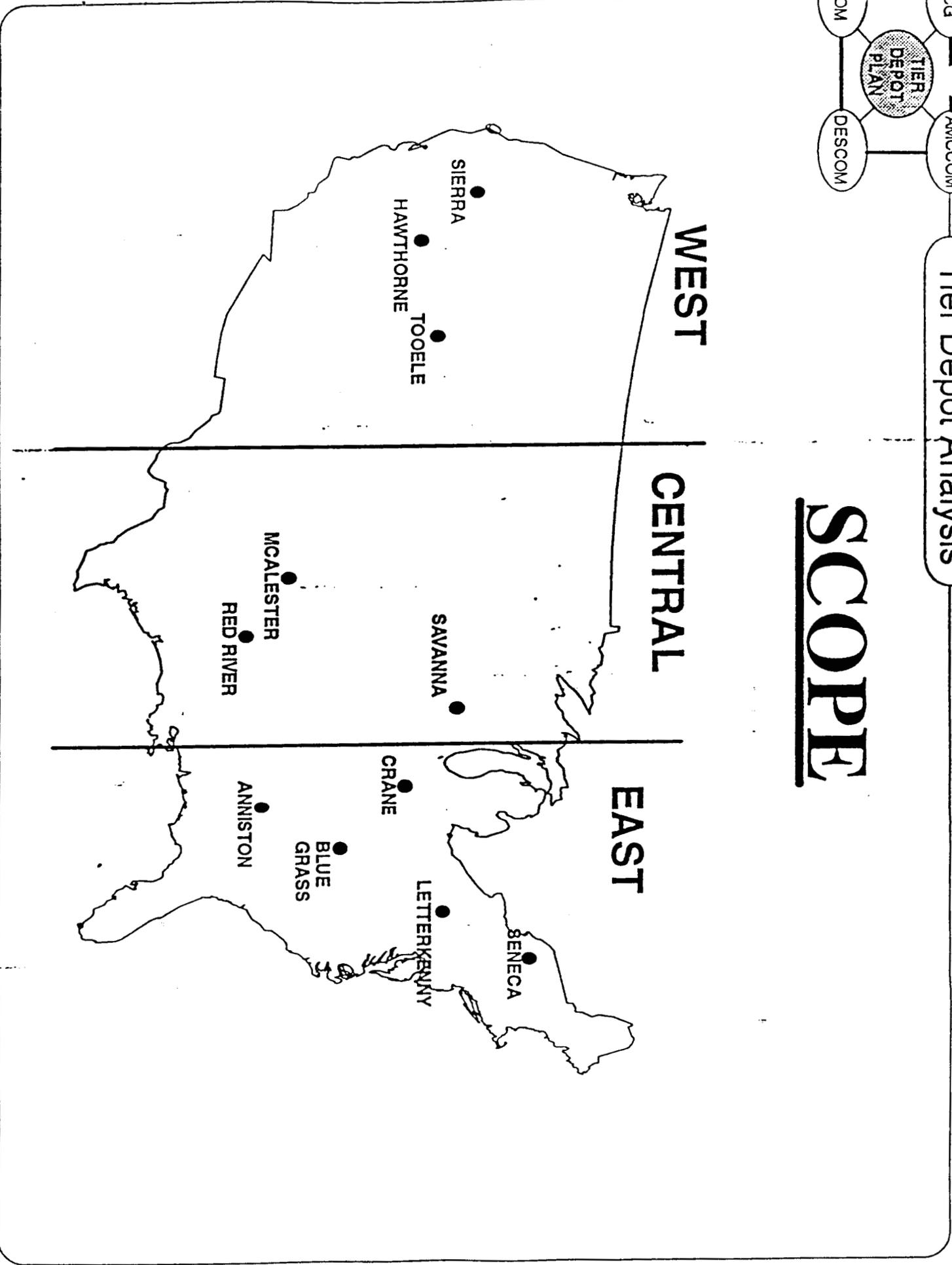
# BACKGROUND

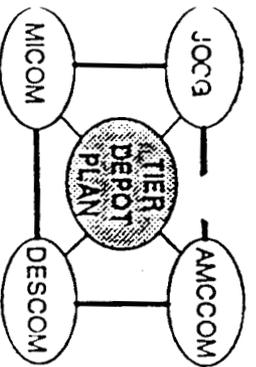
- **OCT 93**
  - ▶ Study Assessment Ranking
- **NOV 93**
  - ▶ Simulation Conducted (All Services, MICOM, DESCOM)
- **17-18 FEB 94**
  - ▶ Joint Service Working Group (All Services, MICOM, DESCOM)
  - ▶ Developed Criteria and Identified Weights
  - ▶ Performed Preliminary Analysis
- **31 MAR 94**
  - ▶ Joint Service review
  - ▶ OSD / AMC / MICOM
- **21 FEB - 4 APR 94**
  - ▶ Developed Detailed Analysis

Tier Depot Analysis



# SCOPE

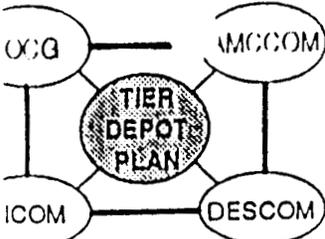




## Tier Depot Analysis

# OBJECTIVES

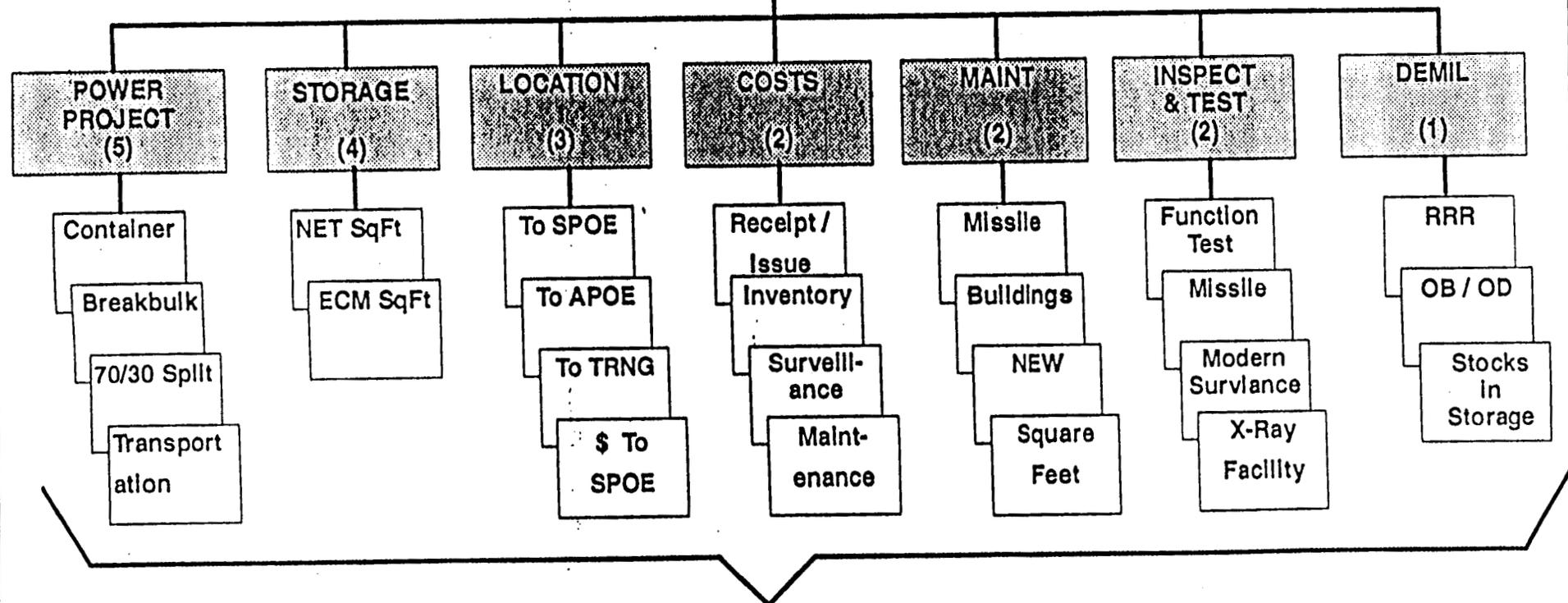
- To Support and Store Training and Power Projection Requirements for Two MRC's as Directed in DOD Planning Guidance
- To distribute Stockpile Within Geographically Oriented Regions
  - EAST
  - CENTRAL
  - WEST
- To Assure End State Asset Distribution Maximizes Outloading Capabilities
- To Develop Storage Base Infrastructure That Supports the Depot Tiering Concept



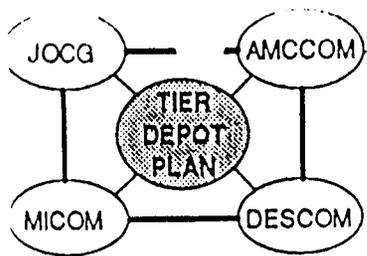
Tier Depot Analysis

# ANALYTICAL APPROACH

## OVERALL RANKINGS



*SUPPORTING QUANTITATIVE DATA*



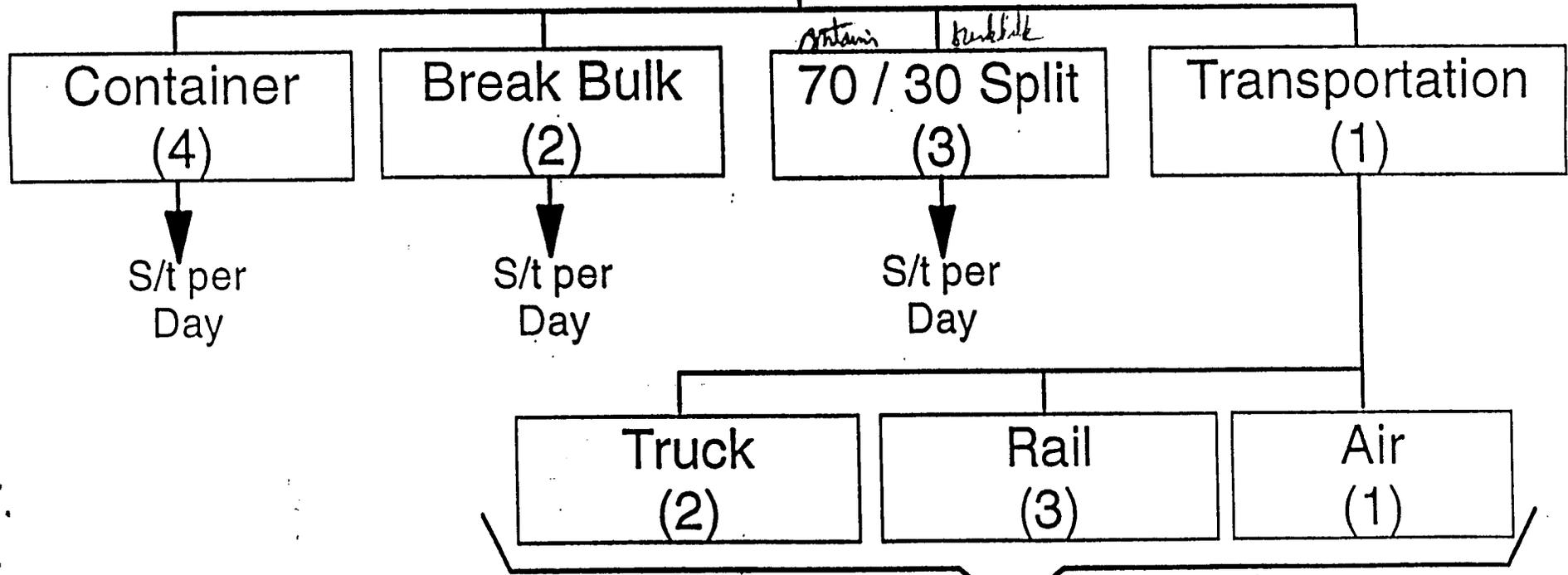
Tier Depot Analysis

# ANALYTICAL APPROACH

• POWER PROJECTION

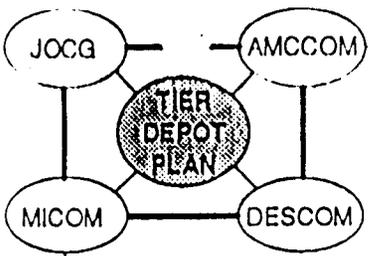
▸ Capability of Installation to Load and Ship Material During a Contingency

## POWER PROJECTION (5)



Assessments:

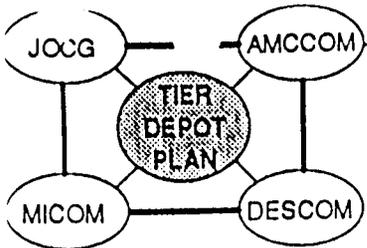
- Good
- Fair
- Poor



Tier Depot Analysis

# POWER PROJECTION CAPABILITIES

	Container Score	Weight	Brk Bulk Score	Weight	70/30 Spllt Score	Weight	Transport Score	Weight	Total Score	Adjusted Score
		4.0		2.0		3.0		1		
ANAD	2.9	11.6	0.8	1.6	2.4	7.2	9	9	29.4	3.3
BGAD	5.9	23.6	3.7	7.4	6.5	19.5	11	11	61.5	6.8
CAAA	2.2	8.8	11.0	22.0	9.8	29.4	11	11	71.2	7.9
HWAAP	2.6	10.4	1.2	2.4	2.6	7.8	5	5	25.6	2.9
LEAD	1.5	6.0	3.4	6.8	3.5	10.5	7	7	30.3	3.4
MCAAP	11.0	44.0	5.4	10.8	11.0	33.0	11	11	98.8	11.0
RRAD	2.1	8.4	2.8	5.6	3.4	10.2	8	8	32.2	3.6
SEDA	0.3	1.2	1.0	2.0	1.0	3.0	6	6	12.2	1.4
SIAD	3.2	12.8	1.9	3.8	3.5	10.5	10	10	37.1	4.1
SVDA	5.6	22.4	1.7	3.4	4.8	14.4	8	8	48.2	5.4
TEAD	3.3	13.2	8.4	16.8	8.5	25.5	10	10	65.5	7.3

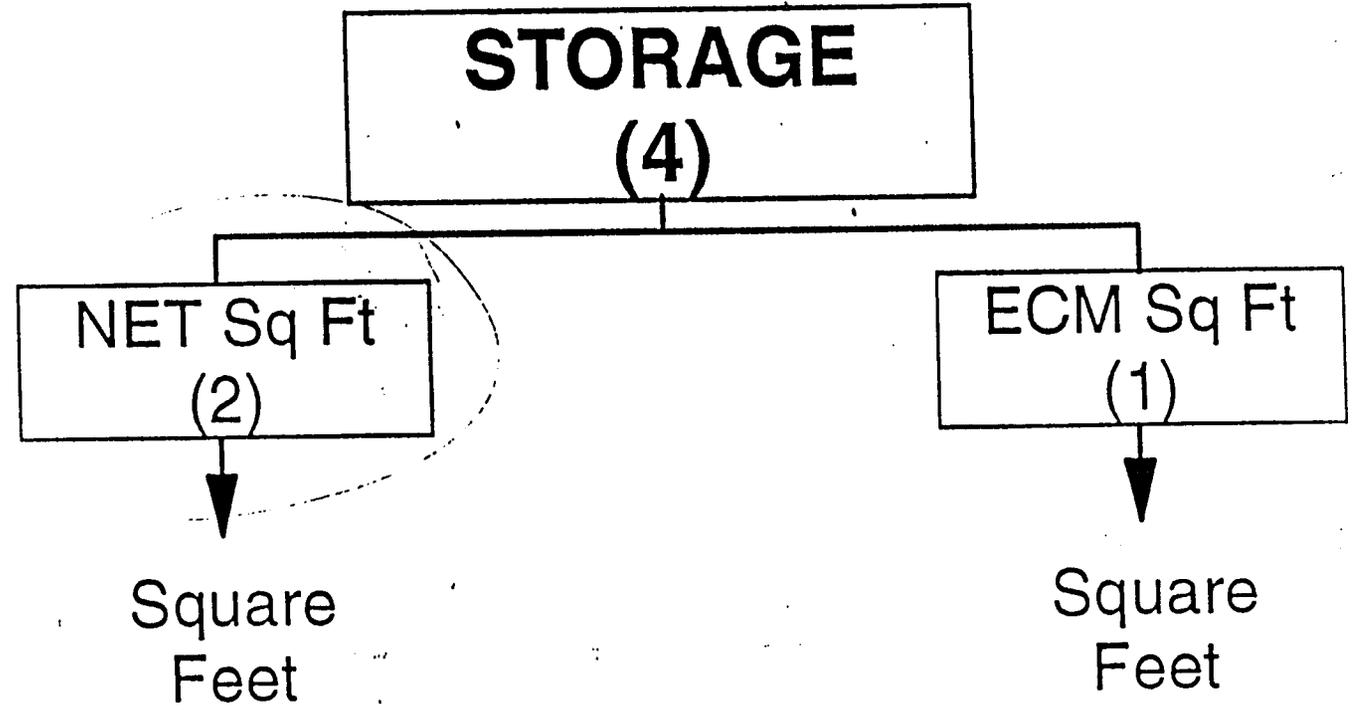


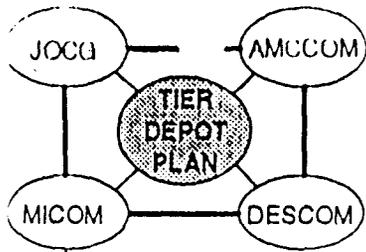
Tier Depot Analysis

# ANALYTICAL APPROACH

- STORAGE

- ▶ The Installations Capability to Store Class V Materiel

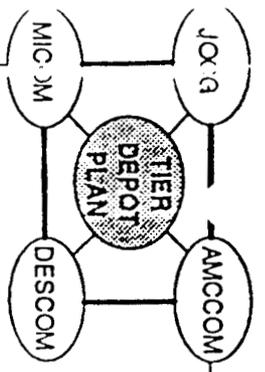




Tier Depot Analysis

# STORAGE CAPABILITIES

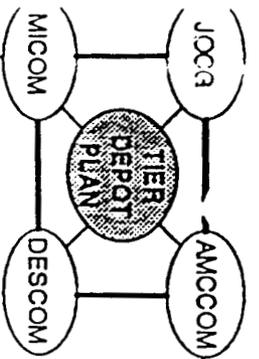
	NET SqFt Score	Weight	ECM SqFt Score	Weight	Total Score	Adjusted Score
		2.0		1.0		
ANAD	3.3	6.6	4.0	4.0	10.6	3.8
BGAD	3.1	6.2	3.4	3.4	9.6	3.4
CAAA	8.8	17.6	8.9	8.9	26.5	9.4
HWAAP	11.0	22.0	8.7	8.7	30.7	10.9
LEAD	3.0	6.0	3.6	3.6	9.6	3.4
MCAAP	10.0	20.0	11.0	11.0	31.0	11.0
RRAD	2.4	4.8	2.7	2.7	7.5	2.7
SEDA	2.0	4.0	1.9	1.9	6.9	2.1
SIAD	3.5	7.0	3.0	3.0	10.0	3.5
SVDA	3.4	6.8	1.4	1.4	8.2	2.9
TEAD	3.4	6.8	3.4	3.4	10.2	3.6



# Tier Depot Analysis

# LOCATION

	To SPOE Score	Weight	To APOE Score	Weight	To Tmg Score	Weight	Cost to SPOE Score	Weight	Total Score	Adjusted Score
		4.0		2.0		3.0		1.0		
ANAD	5.5	22.0	5.2	10.4	11.0	33.0	7.7	7.7	73.1	8.0
BGAD	4.4	17.6	3.8	7.2	8.4	25.2	8.4	8.4	58.4	6.4
CAAA	3.1	12.4	2.8	5.6	8.4	25.2	7.0	7.0	50.2	5.5
HWVAP	7.3	29.2	6.6	13.2	8.7	26.1	9.2	9.2	77.7	8.5
LEAD	4.4	17.6	11.0	22.0	8.6	25.8	8.4	8.4	73.8	8.1
MCAAP	3.1	12.4	1.9	3.8	9.8	29.4	4.4	4.4	60.0	5.5
RRAD	2.2	8.8	2.1	4.2	8.5	25.5	4.9	4.9	43.4	4.7
SEDA	3.7	14.8	8.5	17.0	7.2	21.6	7.2	7.2	60.6	6.6
SIAD	11.0	44.0	8.5	17.0	9.6	28.8	11.0	11.0	100.8	11.0
SVDA	3.1	12.4	2.1	4.2	6.7	20.1	4.9	4.9	41.6	4.5
TEAD	5.5	22.0	2.9	5.8	8.4	25.2	6.6	6.6	59.6	6.5

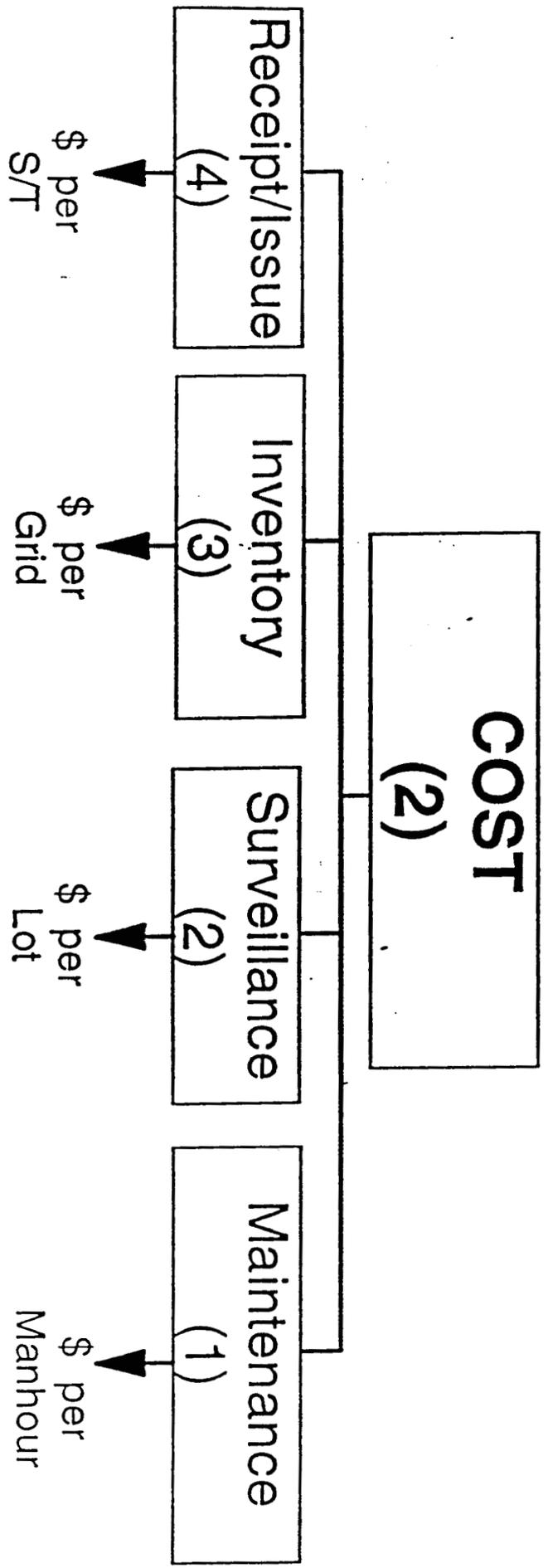


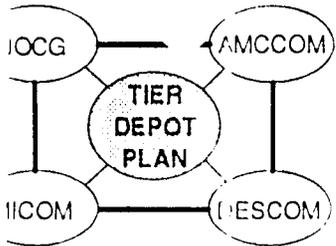
Tier Depot Analysis

# ANALYTICAL APPROACH

- COST

▶ Installations Cost to Perform Ammunition Operations

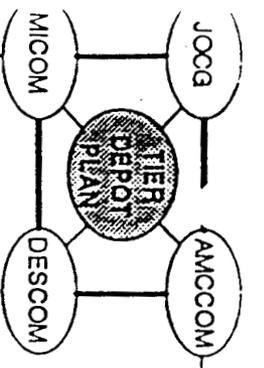




# Tier Depot Analysis

## COSTS

	Rec/Iss Score	Weight	Inv/Grd Score	Weight	Surv/Lot Score	Weight	Maint Fix Score	Weight	Total Score	Adjusted Score
		4.0		3.0		2.0		1.0		
ANAD	3.0	12.0	4.6	13.8	4.4	8.8	8.2	8.2	42.8	5.5
BGAD	5.9	23.6	1.3	3.9	5.2	10.4	6.3	6.3	44.2	5.7
CAAA	11.0	44.0	6.2	18.6	7.1	14.2	9.1	9.1	85.9	11.0
HWAAP	4.9	19.6	1.7	5.1	11.0	22.0	7.2	7.2	53.9	6.9
LEAD	5.6	22.4	4.0	12.0	3.6	7.2	11.0	11.0	52.6	6.7
MCAAP	6.8	27.2	2.4	7.2	10.9	21.8	7.6	7.6	63.8	8.2
RRAD	5.5	22.0	11.0	33.0	3.2	6.4	7.6	7.6	69.0	8.8
SEDA	5.0	20.0	0.7	2.1	2.0	4.0	4.2	1.2	30.3	3.9
SIAD	5.2	20.8	1.2	3.6	4.1	8.2	6.3	6.3	38.9	5.0
SVDA	6.5	26.0	0.6	1.8	3.0	6.0	4.6	1.6	38.4	4.9
TEAD	6.0	24.0	2.4	7.2	5.8	11.6	6.7	6.7	49.5	6.3

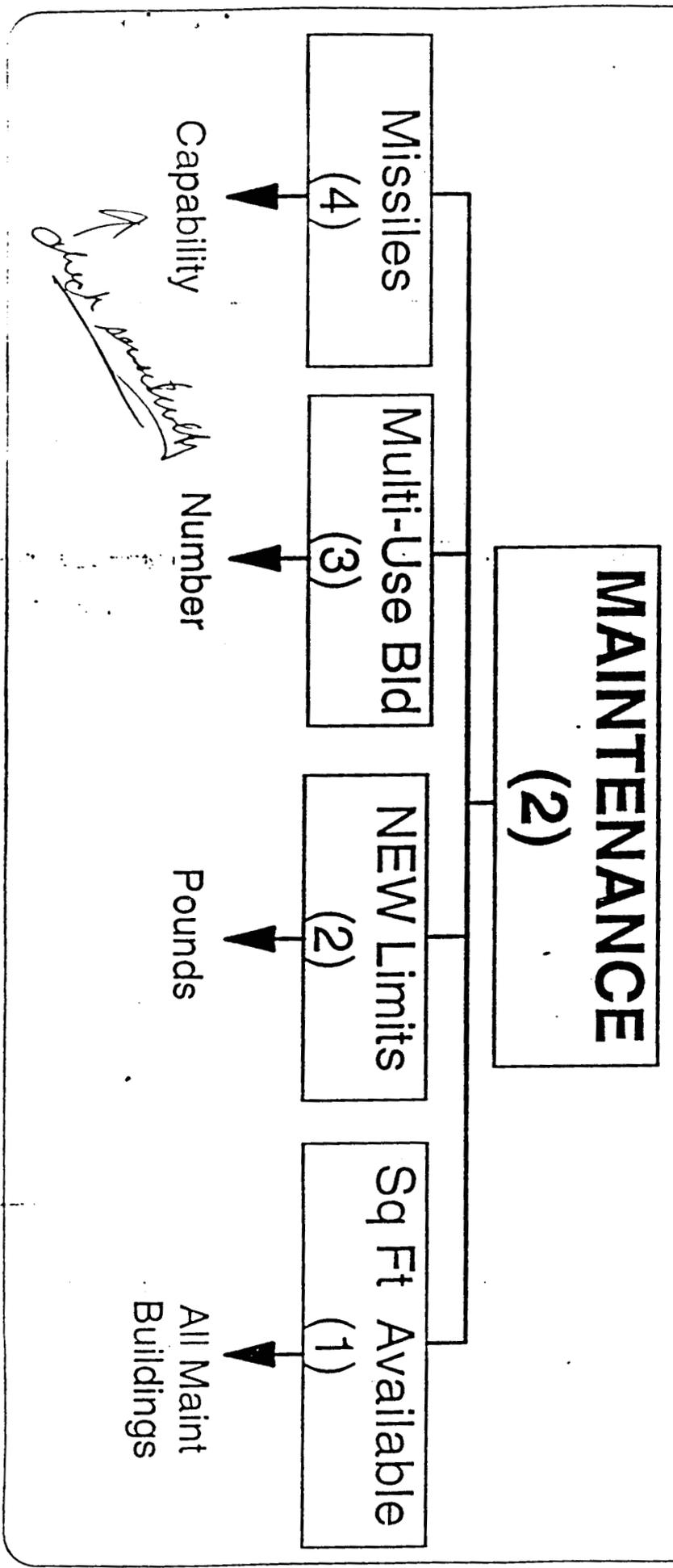


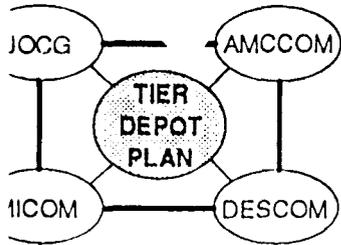
Tier Depot Analysis

# ANALYTICAL APPROACH

• MAINTENANCE

- ▶ Installations Capabilities for Performing Major Ammunition Maintenance

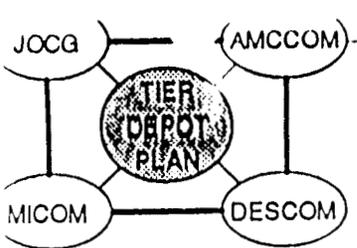




Tier Depot Analysis

# MAINTENANCE

	Missile Score	Weight	MultUseBid Score	Weight	Total NEW Score	Weight	Total SqFt	SqFt Wt	Total Score	Adjusted Score
		4		3.0		2.0		1.0		
ANAD	11	44	5.5	16.5	0.4	0.8	5.5	5.5	66.8	11.0
BGAD			4.1	12.3	1.1	2.2	6.7	6.7	21.2	3.5
CAAA			11.0	33.0	0.8	1.6	10.2	10.2	44.8	7.4
HWAAP			5.5	16.5	4.4	8.8	8.5	8.5	33.8	5.6
LEAD	11	44	1.4	4.2	0.2	0.4	1.9	1.9	50.5	8.3
MCAAP			8.3	24.9	11.0	22.0	11.0	11.0	57.9	9.5
RRAD	11	44	4.1	12.3	0.6	1.2	3.9	3.9	61.4	10.1
SEDA			1.4	4.2	0.5	1.0	1.8	1.8	7.0	1.2
SIAD			2.8	8.4	0.3	0.6	1.5	1.5	10.5	1.7
SVDA			2.8	8.4	2.2	4.4	8.9	8.9	21.7	3.6
TEAD			6.9	20.7	1.2	2.4	5.9	5.9	29.0	4.8



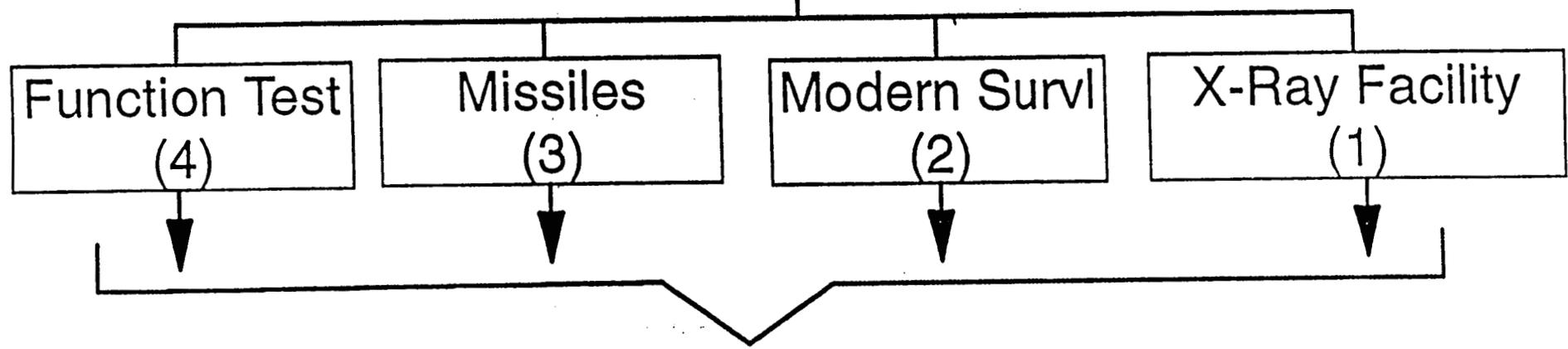
Tier Depot Analysis

# ANALYTICAL APPROACH

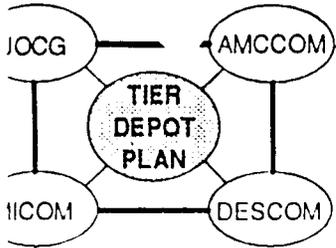
## • INSPECTION / TEST

- ▶ Installations Capabilities Support Major Surveillance Missions

**INSPECTION / TEST  
(2)**



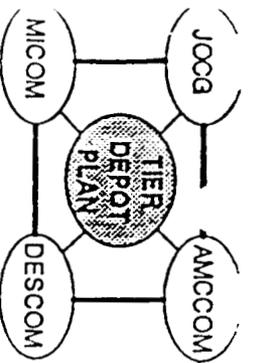
Existing Capabilities



Tier Depot Analysis

# INSPECTION / TEST

	Funct Test Score	Weight	Missiles Score	Weight	Modn Surv Score	Weight	X-Ray Cap Score	Weight	Total Score	Adjusted Score
		4		3		2		1		
ANAD			1	3					3	8
BGAD										6
CAAA	1	4			1	2	1	1	7	11
HWAAP	1	4			1	2	1	1	7	11
LEAD			1	3	1	2	1	1	6	10
MCAAP					1	2	1	1	3	8
RRAD			1	3			1	1	4	9
SEDA										6
SIAD										6
SVDA	1	4							4	9
TEAD							1	1	1	7

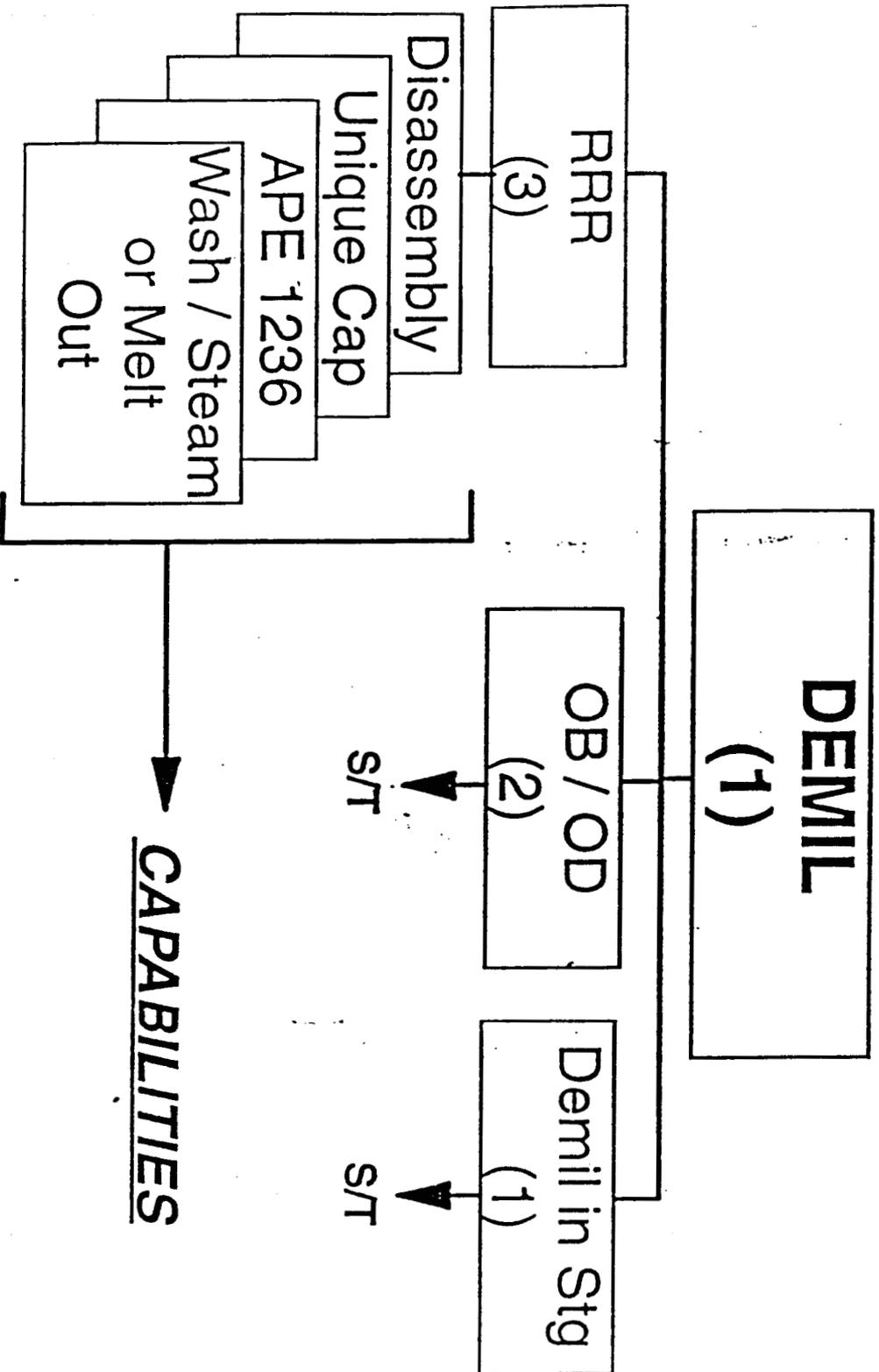


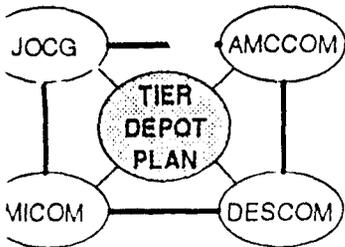
Tier Depot Analysis

# ANALYTICAL APPROACH

- DEMIL

▶ The Installations Capability to Support Demil Operations

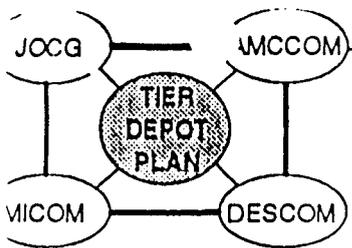




# Tier Depot Analysis

## DEMIL

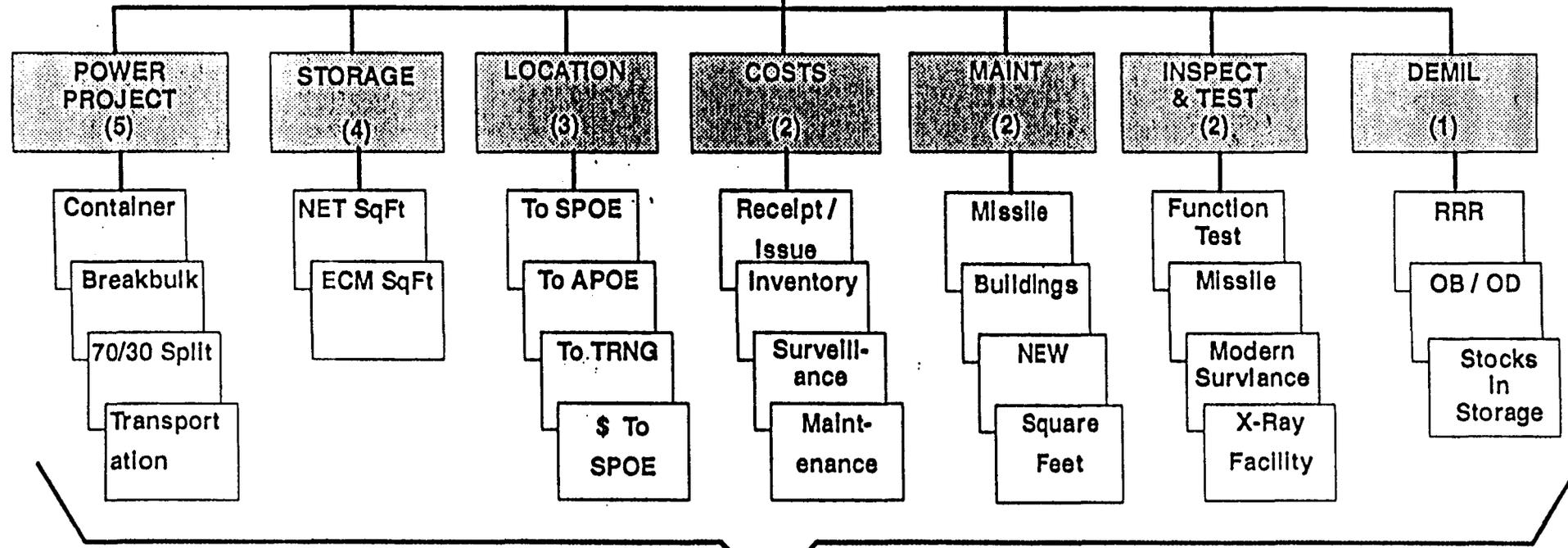
	RRR Cap Score	Weight	OBOD Cap Score	Weight	ST In Stg Score	Weight	Total Score	Adjusted Score
		3		2.0		1.0		
ANAD	7	21	0.9	1.8	2.7	2.7	25.5	6.1
BGAD	9	27	0.2	0.4	1.9	1.9	29.3	7.0
CAAA	10	30	1.1	2.2	3.3	3.3	35.5	8.5
HWAAP	11	33	0.9	1.8	11.0	11.0	45.8	11.0
LEAD	6	18	1.8	3.6	3.2	3.2	24.8	6.0
MCAAP	9	27	1.8	3.6	9.6	9.6	40.2	9.7
RRAD	8	24	0.6	1.2	0.8	0.8	26.0	6.2
SEDA	7	21	0.4	0.8	0.7	0.7	22.5	5.4
SIAD	7	21	11.0	22.0	1.7	1.7	44.7	10.7
SVDA	6	18	1.0	2.0	0.8	0.8	20.8	5.0
TEAD	8	24	4.6	9.2	0.9	0.9	34.1	8.2



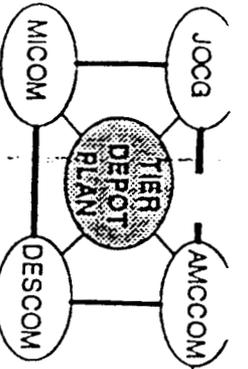
Tier Depot Analysis

# QUANTITATIVE ANALYSIS

## OVERALL RANKINGS



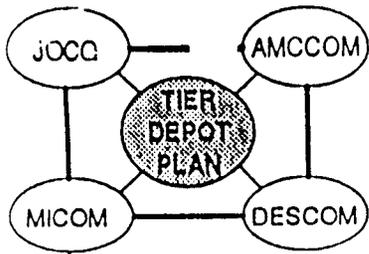
## SUPPORTING QUANTITATIVE DATA



# Tier Depot Analysis

# SUMMARY

	POWER PROJ	WEIGHTED	STORAGE CABABL	WEIGHTED	LOCAT ION	WEIGHTED	COSTS WEIGHTED	MAINTENANCE	WEIGHTED	INSPECTION TEST	WEIGHTED	DEML CAPABL	WEIGHTED	TOTAL WEIGHTED	RANK	
		5.0		4.0		3.0		2.0			2		1.0			
ANAD	3.3	16.5	3.8	15.2	8.0	24.0	6.5	11.0	22.0	8	16	6.1	6.1	110.8	6	
BGAD	6.8	34.0	3.4	13.6	6.4	16.2	6.7	11.4	3.5	7.0	6	12	7.0	7.0	104.2	8
CAAA	7.9	39.5	9.4	37.6	6.5	16.6	11.0	22.0	7.4	14.8	11	22	8.5	8.5	160.9	2
HWAAP	2.9	14.5	10.9	43.6	8.5	25.5	6.9	13.8	6.6	11.2	11	22	11.0	11.0	141.6	3
LEAD	3.4	17.0	3.4	13.6	8.1	24.3	6.7	13.4	8.3	16.6	10	20	6.0	6.0	110.9	5
MCAAP	11.0	55.0	11.0	44.0	6.5	16.6	6.2	16.4	9.5	19.0	8	16	9.7	9.7	176.6	1
RRAD	3.6	18.0	2.7	10.8	4.7	14.1	8.8	17.6	10.1	20.2	9	18	6.2	6.2	104.9	7
SEDA	1.4	7.0	2.1	8.4	6.8	19.8	3.9	7.8	1.2	2.4	6	12	5.4	5.4	62.8	11
SIAD	4.1	20.5	3.5	14.0	11.0	33.0	6.0	10.0	1.7	3.4	6	12	10.7	10.7	103.6	9
SVDA	5.4	27.0	2.9	11.6	4.5	13.5	4.9	9.8	3.6	7.2	9	18	5.0	5.0	92.1	10
TEAD	7.3	36.5	3.6	14.4	6.5	19.5	6.3	12.6	4.8	9.6	7	14	8.2	8.2	114.8	4



Tier Depot Analysis

# REGIONAL SUMMARY

## WEST

HWAAP - 3

TEAD - 4

SIAD - 9

## CENTRAL

MCAAP - 1

RRAD - 7

SVDA - 10

## EAST

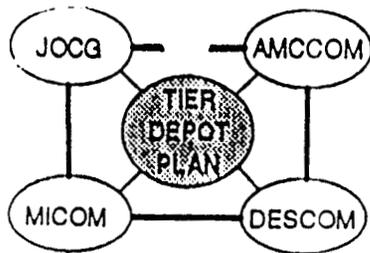
CAAA - 2

LEAD - 5

ANAD - 6

BGAD - 8

SEDA - 11



## Tier Depot Analysis

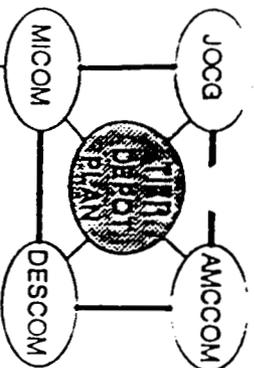
# QUALITATIVE - EAST

## CAAA

- Supports USMC / Navy Training ←
- Good Rail Access to Earth Covered Sites ←
- Active Production
- Tenant on Navy Installation
- Naval Warfare Support Center
- White Phosphorous Demil

## ANAD

- TCM Mission
- Hub of Eastern Region Training Support
- Large Hard Iron Mission
- Tactical Missile System Mission Depot (Class V)
- Air Drop Pallets for XVIII ABN & 75th Rangers ←
- Contractor Presence - North American Rockwell (Hellfire)
- DLA Presence



## Tier Depot Analysis

# QUALITATIVE - EAST

## LEAD

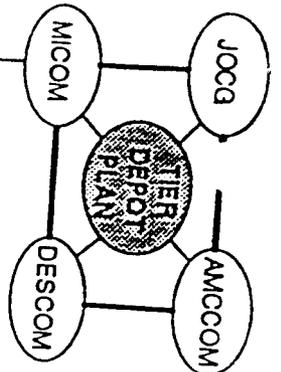
- Primary Mission - Tactical Missile Systems Maintenance Area (Non-Class V)
- DLA Presence
- Contractor Presence - FMC (Paladin), Raytheon (Phoenix and AMRAAM)

## BGAD

- TCM Mission ✓
- Contractors - Raytheon (Stinger Production)
- Chemical Defense Equipment Supply & Maintenance
- Potential ABL Partnership with 101st ABN

## SEDA

- Radiation Decontamination Team ✓
- Depot Activity ✓



**Tier Depot Analysis**

**QUALITATIVE - CENTRAL**

**MCAAP**

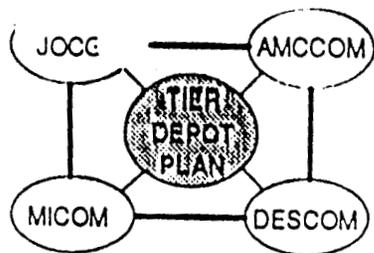
- Hub of Central and Southwest Regional Training Support
- Active Production

**RRAD**

- Large Hard Iron Mission
- Tactical Missile Mission Depot
- DLA Presence
- Contractor - Raytheon
- Potential ABL Partnerships w/ 1st CAV & 3rd ACR

**SVDA**

- APE Fabrication
- CTX for Depleted Uranium Demil
- Depot Activity



## Tier Depot Analysis

# QUALITATIVE - WEST

## TEAD

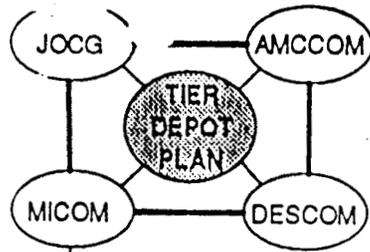
- USAF Desire to Spt Critical Airlift Mission Out of Hill AFB
- TCM Mission
- 25th & 7th ID Airdrop
- Maintenance Mission - BRAC 93
- APE Fabrication / Design / Procurement

## HWAAP

- Contractor Operated - D&Z -
- Western Area Demil Facility (WADF) -
- Mortar Test Range ✓
- Keyport Detachment for Mine Warfare (Navy)

## SIAD

- CTX for Operational Projects
- Primary Site for OB/OD Demil



## Tier Depot Analysis

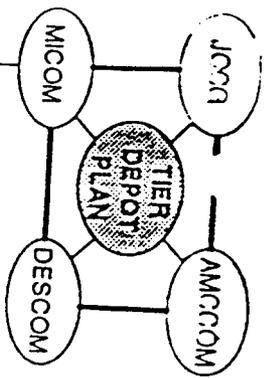
# CONCLUSION - EAST

- **CAAA**

- Quantitative: 2
- Qualitative
  - Supports USMC & USN Trng
  - Active Production
  - WP Demil Capability

- **CONCLUSION**

- **Best Suited for Active Status**
- Supports USMC & USN Concerns
- Good Power Proj Capability



Tier Depot Analysis

# CONCLUSION - EAST

## • LEAD

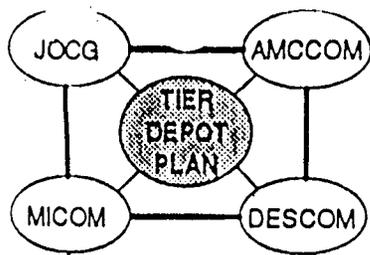
- ▶ Quantitative: 5
- ▶ Qualitative
  - Multi Mission

## • ANAD

- ▶ Quantitative: 6
- ▶ Qualitative
  - Multi Mission
  - Hub for Eastern Region Training
  - Air Drop for XVIII ABN & 75th Rangers
  - Computing Outload with DLA
  - TCM Mission

- ▶ CONCLUSION
  - Best Suited for Cadre status
  - Retain Tactical Missile Maintenance Mission

- ▶ CONCLUSION
  - Best Suited for Active Status
  - Retain Tactical Missile Maintenance Mission
  - Develop Partnerships
  - Strong Qualitative Considerations



## Tier Depot Analysis

# CONCLUSION - EAST

### • **BGAD**

- ▶ Quantitative: 8
- ▶ Qualitative
  - TCM Mission
  - No Multi Mission

### ▶ **CONCLUSION**

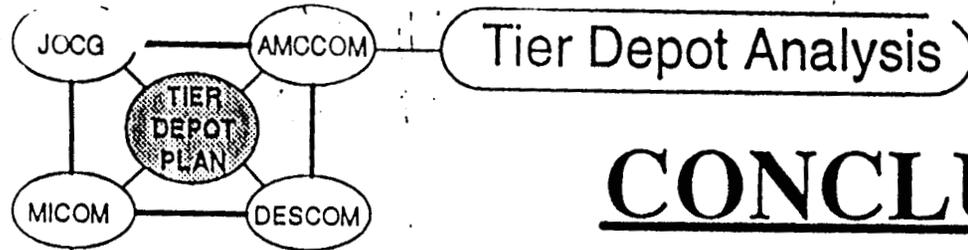
- **Best Suited for Cadre Status**
- Outstanding Power Projection Capabilities
- Required Retention to Meet MRC Outloading Requirements

### • **SEDA**

- ▶ Quantitative: 11
- ▶ Qualitative
  - Radiation Decon Team
  - Depot Activity

### ▶ **CONCLUSION**

- **Best Suited for Caretaker Status**
- Low Overall Capabilities



# CONCLUSION - CENTRAL

## • MCAAP

- Quantitative: 1
- Qualitative
  - Hub for Central / SW Region Training Support
  - Active Production

## ▸ CONCLUSION

- Best Suited for Active status
- Best Overall capabilities

## • RRAD

- Quantitative: 7
- Qualitative
  - Large Multi Mission
  - ABL Partner 1st CAV / 3rd ACR

## ▸ CONCLUSION

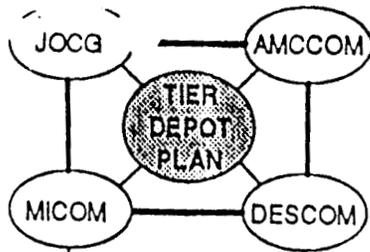
- Best Suited for Cadre Status
- Must Retain Missile Maint Mission
- Strong Qualitative Considerations
- Low Overall Capability

## • SVDA

- Quantitative: 10
- Qualitative
  - APE Mission
  - CTX for DU Demil

## ▸ CONCLUSION

- Best Suited for Caretaker Status
- Low Overall Capabilities



## Tier Depot Analysis

# CONCLUSION - WEST

### • HWAAP

- Quantitative: 3
- Qualitative
  - Western Area Demil Facility
  - Contractor Operated
  - USMC Preference for Tier I

### ▸ CONCLUSION

- Best Suited for Cadre Status
- Very Low Power Proj Capabilities
- Excellent Storage Capabilities for Non-Applicable Stocks

### • TEAD

- Quantitative: 4
- Qualitative
  - TCM Mission
  - Critical AF Requirement
  - 25th ID/7th LID Airdrop
  - APE Mission

### ▸ CONCLUSION

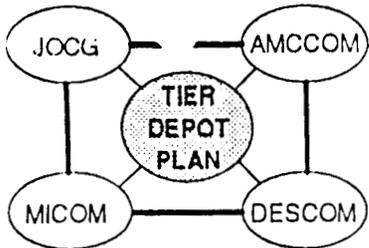
- Best Suited for Active Status
- Good Overall Capabilities

### • SIAD

- Quantitative: 9
- Qualitative
  - Large Op Project Mission

### ▸ CONCLUSION

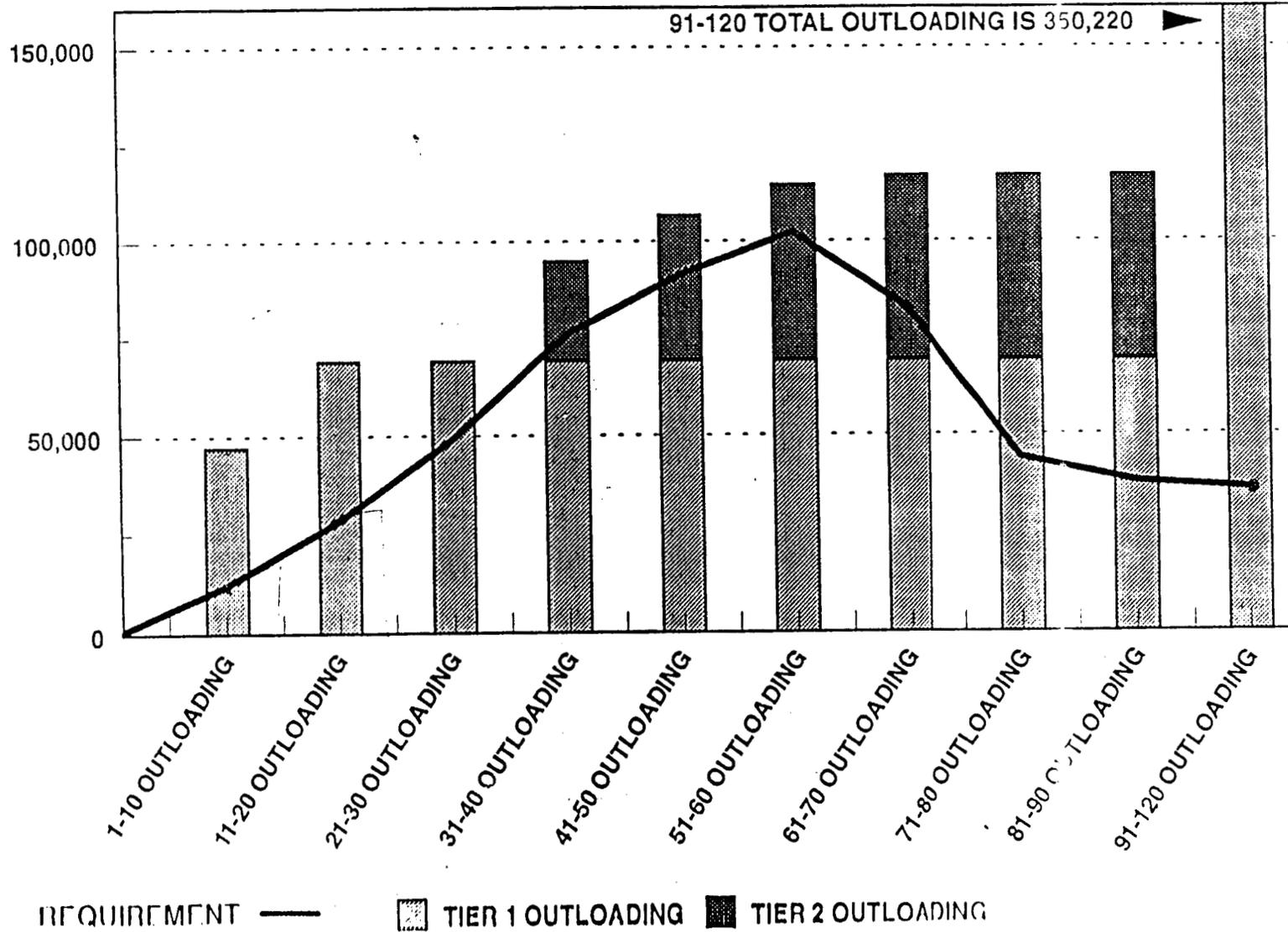
- Best Suited for Caretaker Status
- Low Overall Capabilities



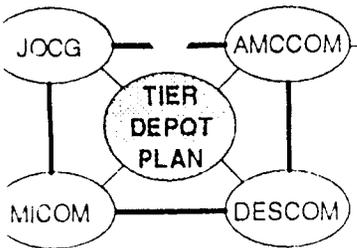
## Tier Depot Analysis

# SUPPORTING TWO MRCs

ST



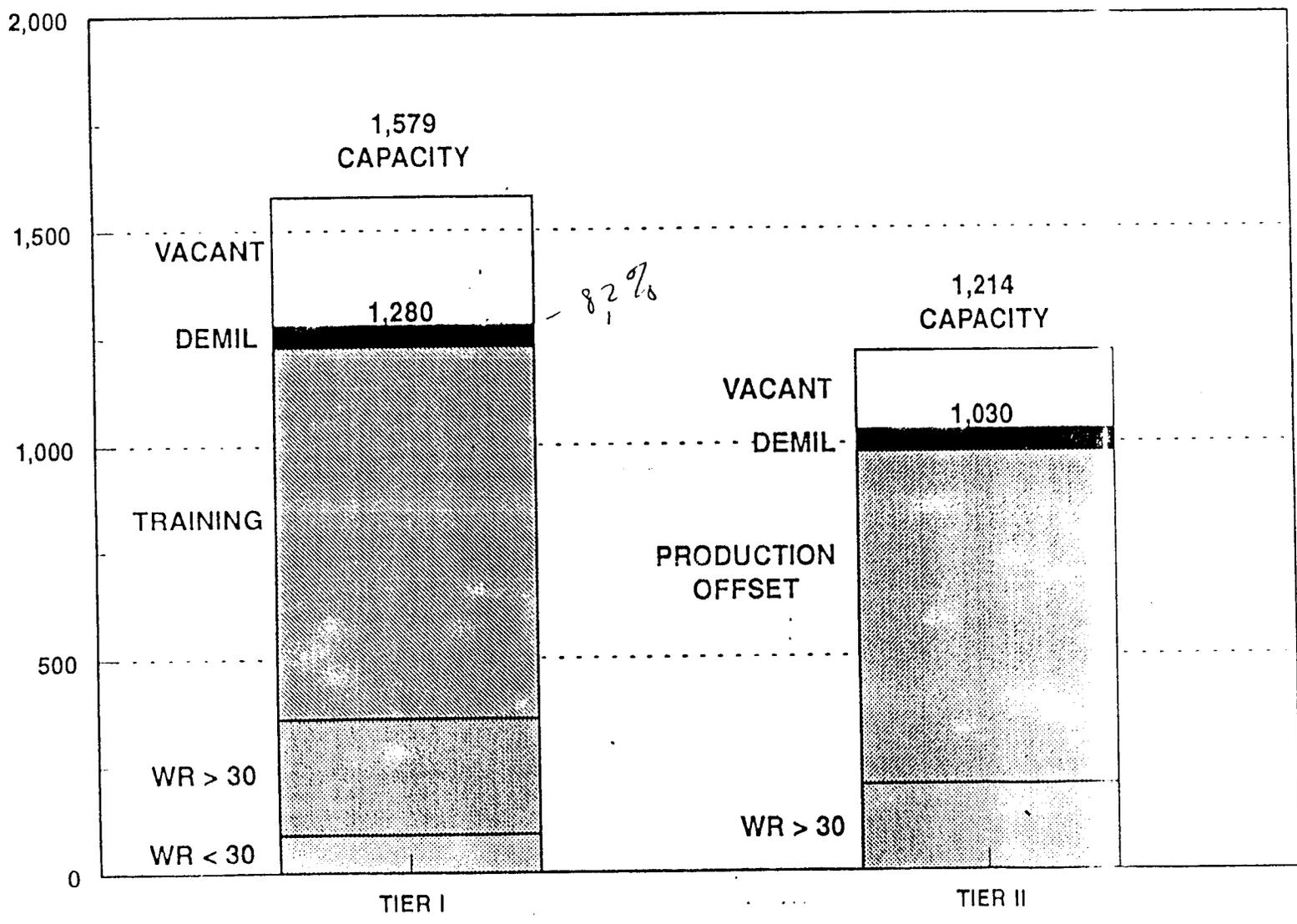
*Handwritten notes:*  
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 61-70  
 71-80  
 81-90  
 91-120

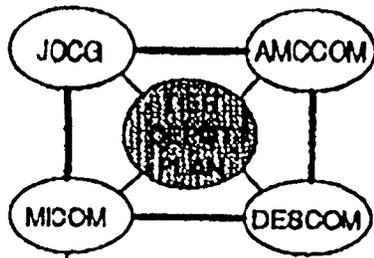


Tier Depot Analysis

# STORAGE REQUIREMENTS

ST (K)





Tier Depot Analysis

# TIER ASSIGNMENT RECOMMENDATION

## WEST

- TEAD - I
- HWAAP - II
- SIAD - III

## CENTRAL

- MCAAP - I
- RRAD - II
- SVDA - III

## EAST

- CAAA - I
- ANAD - II
- LEAD - II
- BGAD - II
- SEDA - III

### TIER III CONSIDERATIONS:

- SEDA: Decon Mission
- SIAD: Op Project Mission
- SVDA: APE and DU Missions

**PLUS: Effects on Tenant Activities**



# TIER ASSIGNMENTS

	WEST	CENTRAL	EAST
TIER 1	TEAD	MCAAP	CAAP BGAD
TIER 2	HWAAP	RRAD	LEAD ANNAD
TIER 3	SIAD	SVDA	SEAD

"Focus and Flexibility"

# Document Separator

Dm



ACQUISITION AND  
TECHNOLOGY

THE UNDER SECRETARY OF DEFENSE

3010 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3010



MAY 31 1994

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS  
CHAIRMAN OF THE JOINT CHIEFS OF STAFF  
UNDER SECRETARIES OF DEFENSE  
COMPTROLLER  
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING  
ASSISTANT SECRETARIES OF DEFENSE  
GENERAL COUNSEL  
INSPECTOR GENERAL  
DIRECTOR, OPERATIONAL TEST AND EVALUATION  
ASSISTANTS TO THE SECRETARY OF DEFENSE  
DIRECTOR OF ADMINISTRATION AND MANAGEMENT  
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: 1995 Base Realignments and Closures (BRAC 95) -- Policy  
Memorandum One

Background

Deputy Secretary of Defense memorandum of January 7, 1994, (attached) established policy, procedures, authorities, and responsibilities for selecting bases for realignment or closure under Public Law (P.L.) 101-510, as amended, for the 1995 base closure process (BRAC 95). This memorandum is the first in a series of Under Secretary of Defense for Acquisition and Technology (USD(A&T)) policy memoranda implementing the Deputy Secretary's BRAC 95 guidance.

Application of P.L. 101-510 Thresholds

This guideline amplifies the DepSecDef January 7, 1994, policy guidance on P.L. 101-510 numerical thresholds.

In determining whether the Act's numerical closure or realignment thresholds are met, independent actions that result in closures or realignments shall be considered separately. In other words, independent actions affecting an individual installation need not be aggregated to apply the numerical thresholds of the Act. However, closure or realignment actions shall not be broken into smaller increments for the purpose of avoiding application of the Act. Subject to the foregoing, independent closure or realignment actions that do not exceed the numerical thresholds set forth in the Act may proceed outside the established BRAC 95 process. Questions regarding whether or not proposed actions are independent should be referred to DoD Components' General Counsel.



Conversely, as the DoD Components review their base structure or conduct functional studies with base closure or realignment impacts, a determination must be made as to whether a comprehensive review or study impacting more than one installation should be considered a single action under P.L. 101-510. To be considered a single action, the review or study must:

- (1) Result in the closure or realignment of at least one installation which would trigger the numerical thresholds of P.L. 101-510; and
- (2) Involve inextricably linked elements, in that failure to proceed with any one element of the action would require reevaluation of the entire action.

#### Capacity/Military Value Analyses

An early step in BRAC 95 evaluations is determining whether a category/subcategory has potential excess capacity for the end state force levels contained in the Force Structure Plan. Should no excess capacity be found in a category/subcategory, there is no need to continue analyzing that portion of the base structure, unless there is a military value or other reason to continue the analysis (such as a cross-category opportunity to look at installations with similar capabilities, but in different categories). Bases in such categories/subcategories shall remain subject to joint cross-service review and remain available as potential receivers of missions or functions.

Conversely, if a DoD Component recommends a base for closure or realignment, the supporting analysis must have considered all bases within that category/subcategory, as well as cross-category opportunities. If, in applying the military value criteria, you find bases that are militarily/geographically unique or mission-essential (such that no other base could substitute for them) you may justify that fact and exclude these bases from further analysis. Bases so excluded shall remain subject to joint cross-service review and remain available as potential receivers of missions or functions.

#### Return on Investment (ROI)

Return on investment must be calculated, considered and reported with DoD Components' justifications for each recommended installation closure or realignment package. All costs and savings attributable over time to a closure or realignment package, subject to the below guidance, should be calculated, including costs or savings at receiving locations. Costs or savings elements that are identified, but determined to be insignificant, need not be calculated. However, DoD Component records should indicate that determination.

The Cost of Base Realignment Actions (COBRA) model calculates return on investment. DepSecDef's January 7, 1994, policy memorandum requires the DoD Components to use the most current COBRA version, in order to ensure consistency in methodology. Although the model does not produce budget quality data, it uses standard cost factors and algorithms to estimate costs and savings over time which permit a consistent comparison of bases in a functional or installation category.

We recognize that DoD Component planning and accounting mechanisms are sufficiently different to warrant some Department/Agency specific standard cost factors in the COBRA model. DoD Component documentation must justify the use of such cost factors, particularly when performing cross-service analysis.

Specific instructions follow for the calculation of discount and inflation rates, health care costs, Homeowners Assistance Program, and savings for input to the COBRA model.

- o Discount and Inflation Rates OMB Circular A-94 specifies the discount and inflation rates to be used in ROI calculations.

- o Health Care Costs

- oo CHAMPUS Costs Base closures and realignments can have an impact on CHAMPUS costs DoD-wide. These net cost impacts must be included in analysis of closures or realignments involving Military Treatment Facilities.

- o Homeowners Assistance Program (HAP) The Secretary of the Army will provide each DoD Component with a list of installations that have a reasonable probability of having a HAP program approved, should the installations be selected for closure or realignment. HAP costs will be included for each of the installations so identified by the Secretary of the Army.

- o Land Value Given existing law and practice regarding the disposal of real property, especially public benefit and economic development transfers, proceeds from the sale of land and facilities generally may not be realized. In cases where some proceeds can be expected, DoD Components must estimate the amount to be received for such real property. Estimated land and facility proceeds will generally be based on the anticipated reuse of the land and facilities, assuming appropriate zoning. Also, where an installation has unique contamination problems, a portion of the installation may have to be segregated from disposal so that community reuse may proceed on the balance. Estimated proceeds should be adjusted: for any such parceling, including discounting proceeds when sale of contaminated property is possible only after the cleanup remedy has been installed and

approved; for reduced prices where property is likely to be sold for restricted uses; or, when significant public benefit or economic development transfers are anticipated.

o Force Structure Savings The savings associated with force structure drawdowns shall not be included in the return on investment calculations. While declining force structure, as depicted in the required Force Structure Plan, will often be the underlying reason for recommending base closures or realignments, the savings associated with closing bases should generally be founded on the elimination of base operating support (BOS), infrastructure and related costs.

o Military Construction DoD Components will describe anticipated construction requirements (barracks square feet, etc.) to implement a BRAC recommendation and not actual projects. These requirements only become projects during the implementation phase after the 1995 Commission reports to the President and after installation site surveys are conducted and formal project documents (DD 1391s) are prepared.

o Construction Cost Avoidances Closing and realigning bases can result in construction cost avoidances. Cost avoidances should include FY96-01 programmed military and family housing construction that can be avoided at the closing or realigning bases, other than new-mission construction.

#### COBRA Model Assumptions

The following statements clarify certain cost assumptions written into the COBRA model:

o Local Moves Moves of less than 50 miles will not incur PCS moving costs.

o Priority Placement System Costs. Sixty percent of all employees will be placed in other jobs through the DoD Priority Placement Program. Fifty percent of all employees placed in other jobs through the Program will be relocated at government expense. These percentages are based on historical data.

o Employee Attrition and Turnover. Fifteen Percent of all employees will not need to be placed or severed due to normal attrition and turnover.

o Retirement Factors. Fifteen percent of all employees are eligible for retirement. Five percent of those are eligible for normal retirement and ten percent are eligible for early retirement.

o Homeowner's Assistance Program (HAP). The HAP home value rate is 22.9 percent. The HAP receiving rate is 5 percent.

o Students For the purposes of return on investment calculations, relocation of students will only impact the COBRA model's calculation of overhead costs, and as appropriate, estimates of military construction requirements.

#### Receiving Bases

DoD Components must identify receiving bases for large units or activities, including tenants, which are to be relocated from closing or realigning bases. Such relocations must be included in DoD Component's recommendations to the Secretary of Defense. The COBRA model will calculate the costs for relocating such units or activities. DoD Components do not need to identify specific receiving bases for units or tenants with less than 100 civilian/military employees. Finding homes for these activities can be left to execution. However, DoD Components should establish a generic "base x" within the COBRA model to act as the surrogate receiving base for the aggregation of these smaller units or activities, in order to ensure completeness of cost and savings calculations.

#### Reserve Enclaves

This expands on the DepSecDef January 7, 1994, policy guidance on Reserve Component impacts.

On each base designated for closure or realignment, the future of guard and reserve units of all Military Departments residing on or receiving support from that base must be considered. Once a decision has been made to include an enclave or to relocate guard and reserve units, the affected unit identifications must be included in the DoD Components' recommendations to the Secretary of Defense. Military construction and repair costs of fitting out an enclave for reserve component or guard use will be estimated and included as part of the return on investment calculations.



R. Noel Longuemare  
Principal Deputy Under Secretary of  
Defense (Acquisition & Technology)



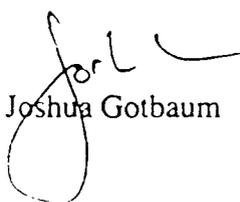
Each JCSG is currently supported in its evaluations by a Joint Cross-Service Working Group (JCSWG), variously referred to as "sub-groups", "study teams" or "technical and support groups." JCSWGs will adapt the linear programming (optimization) model to assist each JCSG in its analysis and aid in developing alternatives. All JCSGs will be supported by a single Tri-Department BRAC Group consisting of representatives from each Military Department, which will execute runs of the linear programming (optimization) model, using certified data, according to the objective functions and policy imperatives provided by the JCSGs and the management controls required by the internal control plan. JCSG alternatives can be derived from any number of combinations of objective functions and policy imperatives as long as they have been previously approved by the Chairman of the BRAC 95 Steering Group.

The Military Departments will conduct their individual BRAC processes in parallel with the JCSG analyses, to determine the relative military value of their installations. JCSG products such as functional value may be used to assist in determining installation military value. If it is useful to a JCSG in developing its alternatives for analysis, a JCSG may solicit the guidance of the Military Departments concerning the military value of installations. It must be recognized that any such guidance must necessarily be preliminary and will not constitute a final determination of military value or of suitability for closure or realignment.

The JCSGs and the Military Departments will then review the sets of optimization model outputs. Working together, the JCSGs and the Military Departments will apply their collective judgment to develop feasible functional alternatives to facilitate cross-service actions that will strive to maximize infrastructure (overhead) reductions at minimal cost. This cooperative work by the JCSGs and the Military Departments should be completed in time for the BRAC 95 Review Group to consider any issues that may be appropriate and to leave sufficient time for the Military Departments to formulate their recommendations. The JCSGs and Military Departments will continue to interact during November and December as the Military Departments consider cross-service alternatives in their respective BRAC analytical processes.

The Military Departments will present their recommendations for closure and realignment to the Secretary of Defense no later than mid-February, 1995. The Military Departments will provide the Secretary of Defense a status report, to include all preliminary closure and realignment candidates, by January 3, 1995. The Office of the Assistant Secretary of Defense for Economic Security will staff the Military Department recommendations within the Office of the Secretary of Defense. The BRAC 95 Review Group or OSD principals may solicit the opinion of or task the JCSG's during this period, if and as appropriate.

The process described above involves appropriate interaction between JCSG and Military Department analyses and permits consideration of joint functional alternatives to be incorporated within the existing BRAC process of the Military Departments. If you have questions concerning the process, please contact Mr. Robert Bayer, Deputy Assistant Secretary of Defense for Installations, 703-697-1771.

  
Joshua Gotbaum

# **Joint Cross-Service Analysis Tool User's Guide**

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## **Executive Summary**

### **Background**

The Deputy Secretary of Defense established policy for the Department of Defense 1995 base realignment and closure (BRAC 95) process with strong emphasis on cross-service opportunities. This document describes operations and capabilities of the common analytical tool to assist Joint Cross-Service Groups (users) in the development of cross-service alternatives as part of the BRAC process.

### **Analytical Tool**

A standard tool often used to develop optimal solutions to complex allocation problems is the mixed-integer, linear program (MILP). The cross-service analysis of allocations of common support functional requirements to Military Department sites and activities is a complex allocation problem.

The MILP formulation described in this document can be used to develop cross-service functional alternatives. The data elements required for this tool are derived from the certified data available to the user. Policy imperatives and other constraints and considerations can be incorporated into the model to allow the tailoring of formulations to accommodate functional attributes and perspectives.

The tool provides the capability to vary the objective function for a formulation in order to obtain families of solutions. A solution defines a set of functional allocations and identification of sites or activities where cross-service functional workload could be assigned. An objective function that combines military value of sites and activities with functional values is discussed in this document. This particular objective function will tend to consolidate common support functions into high military value sites or activities. At the same time, this objective function will assign common support functions to sites having high functional values. The weighting between these two goals can be parameterized to obtain families of solutions for further consideration.

Second and third best alternatives for a given formulation can be obtained using methods described in this document. These alternatives may be considered as additions to the set for further review.

Other objective functions that the user may wish to consider in addition to the one mentioned above, include minimizing excess functional capacity, minimizing the total number of sites performing cross-service functions, and maximizing the sum of functional values. This tool will also allow the user to explore the sensitivity of the optimal solution for a given formulation to particular model inputs.

The MILP formulation described provides the basic analytical tool to generate cross-service functional alternatives.

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## User's Guide Organization

This user's guide provides an overview of the analytical methodology in the next section. That section describes the products of the methodology and discusses terminology relating to what a *site or activity* is relative to a *function*.

Section 2 describes the basic data elements that are used in the methodology. Section 2 also discusses data elements in terms of what these elements are meant to represent.

The different optimization problem formulations that the user may choose to use to explore alternatives are discussed in section 3. These include finding a small set of high military value sites or activities that can perform the functional requirement, minimizing excess capacity, and minimizing the number of sites. All of these formulations are parameterized in such a way that the user can explore trade-offs between different factors, such as military value or excess capacity, and assignments of functional requirement based upon functional value. This section also discusses the incorporation of policy imperatives in the optimization problem formulations.

Section 4 demonstrates the application of each of these formulations to a notional set of data. Section 5 describes the methodology for obtaining the second and third best solutions to a given formulation. Finally, section 6 identifies the commercial software product that was used to solve the optimization example problems. Input files for this solver are included in the appendices.

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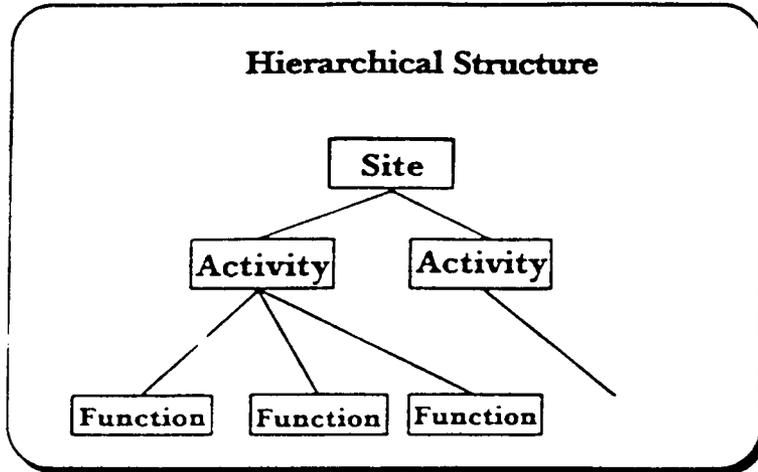
## 1. Analytical Methodology Overview

The optimization formulations described in this document require a set of data elements as inputs. All of the formulations require a functional value and functional capacity for each site capable of performing that specific cross-service function. The DoD requirement for each cross-service function is needed. Some of the formulations will also require the military values for each site.

A preliminary formulation that allocates cross-service functional requirements based upon functional capacities and functional value will be conducted. The objective function of this formulation will assign the DoD requirement for each cross-service function to sites or activities having the highest functional value for each function. These assignments will only be constrained by the functional capacities at each site. This analysis will not require the military values for the sites.

The primary formulations optimize the assignment of cross-service functions based upon military values of sites, functional values, and capacities. These formulations are very flexible in that multiple objective functions and policy imperatives modeled as constraints may be used to explore different solutions.

A standard resource allocation tool comprises the core of this analytical approach. A standard tool used to find optimal solutions to complex allocation problems is the mixed-integer, linear program (MILP). Allocation of common support functional requirements to military department sites and activities subject to constraints is a complex allocation problem.



## 2. Data Elements

The analytical approach assumes that the following data will be available for all of the sites and functions:

Data Elements	Description
$mv_s$	Military value of site $s$ expressed as 3 (high), 2 (medium), or 1 (low).
$fv_{sf}$	Functional value for performing function $f$ at site/activity $s$ expressed as a number from 0 (low) to 100 (high).
$cap_{sf}$	Capacity of site/activity $s$ to perform function $f$ .
$req_f$	The total DoD requirement or goal to perform function $f$ .

The military value of a site,  $mv_s$ , should measure the overall value of the site.

The  $fv_{sf}$  functional value for performing function  $f$  at site (or activity)  $s$  measures the capability and quality of performing work of type  $f$  at site (or activity)  $s$ . Capacity to perform a specialized subfunction that is not one of the functions called out in the formulation can be considered in calculating functional value.

## 3. Optimization Formulations

The mixed integer linear programming (MILP) model formulations, that are described below, serve as the basic analytical tools to assist users in the development of cross-service alternatives, allow for modification of formulations, and incorporation of policy imperatives.<sup>1</sup>

<sup>1</sup>A *policy imperative* is a statement that restricts the solutions that are acceptable and that can be modeled as a constraint in the formulation. An example of a policy imperative is included in one of the examples.

The  $o_s$  variables are included in this formulation only to keep count of the number of sites that actually have some functional requirement assigned to them. Their inclusion in the model does not affect the assignment of the functional requirement to sites or activities. The two constraints involving the  $o_s$  variables are used to ensure that these variables are set to the correct values.

The  $k_{sf}$  variables that are structural variables that indicate whether or not any functional workload of type  $f$  has been assigned to site  $s$ . The  $\alpha$  parameter can be used to prevent small functional workload assignments. If  $\alpha$  is set to 0.01, then the minimum workload assignment of a function to a site, given that any functional workload for this function is made to this site, would be one percent of that site's capacity to perform that function. The  $\alpha$  parameter may be adjusted as required to meet the requirements of the particular user.

### Primary Formulations

These formulations explore potential cross-service functional alternatives. The basic formulation is shown below. Specification of the objective function,  $f(o_s, l_{sf}, k_{sf})$ , will create a different optimization problem.

Minimize  $f(o_s, l_{sf}, k_{sf})$

$o_s, l_{sf}, k_{sf}$

subject to

$$\sum_{s \in S} l_{sf} = req_f : \text{for all functions } f \in F,$$

$$o_s \leq \sum_{f \in F} k_{sf} : \text{for all sites } s \in S,$$

$$0 \leq l_{sf} \leq k_{sf} \times cap_{sf} : \text{for all functions } f \in F \text{ and sites } s \in S,$$

$$k_{sf} \leq o_s : \text{for all sites } s \in S \text{ and } f \in F,$$

$$k_{sf} \leq \frac{l_{sf}}{\alpha \times cap_{sf}} : \text{for all functions } f \in F \text{ and sites } s \in S,$$

$$0 \leq o_s \leq 1, \text{ integer} : \text{for all sites } s \in S,$$

$$0 \leq k_{sf} \leq 1, \text{ integer} : \text{for all sites } s \in S \text{ and functions } f \in F,$$

where

$S =$  The set of all sites under consideration by joint cross-service groups;

$F =$  The set of all functions under consideration by joint cross-service groups;

$\alpha =$  0.01. No assignment of less than one percent of capacity will be allowed.

#### Decision variables

$o_s =$  1 if any cross-service functional requirements are assigned to the site or activity, 0 otherwise;

$l_{sf} =$  amount of the DoD requirement for function  $f$  to be assigned to site or activity  $s$ .

$k_{sf} =$  1 if any DoD requirement for function  $f$  is to be assigned to site  $s$ , 0 otherwise.

Three different optimization formulations that vary only in the specification of the objective function are discussed next.

**The MINNMV Formulation.** This formulation will find a small number of sites having the highest military value that can accommodate the DoD required workload. In addition, it will assign the DoD requirement for each cross-service function to the retained sites (or activities) having the highest functional value for that function. The purpose of this formulation is to assign, to the extent possible, the cross-service functional requirements to sites or activities having high military value and high functional values. The rationale for this approach is that sites having high military value are the ones most likely to be retained by the military departments. The objective function for this formulation is as follows:

$$\text{Minimize } f(o_s, l_{ig}, k_{uh}) = \left(\frac{w}{u_1}\right) \times \sum_{s \in S} o_s \times nmv_s - \left(\frac{100-w}{u_2}\right) \times \sum_{i \in S} \sum_{g \in F} l_{ig} \times fv_{ig}/req_g$$

$o_s, l_{ig}$

where

$0 \leq w \leq 100$       Weight parameter used to vary the emphasis between military value and functional value,

$u_1 \geq 0, u_2 \geq 0$        $u_1 = \sum_{s \in S} (4 - mv_s), u_2 = \sum_{f \in F} \max_{s \in S} fv_{sf}$

$nmv_s =$                $4 - mv_s.$

This formulation will be referred to as the **MINNMV** model since it minimizes the sum of  $4 - mv_s$  for retained sites or activities. Site or activities having a high military value (3) will have 1 as their value. Site or activities with low military value (1) will have 3 as their value.

The parameters  $u_1$  and  $u_2$  are used to scale the two components of the objective function. Scaling the components of the objective function enhances the ability of the solver to find a solution. Apart from the weight parameters, these scaling parameters will scale the components of the objective function to values near 1.0 .

The weight parameter,  $w$ , can be varied to change the emphasis the formulation gives to military value versus functional value. If  $w = 0$ , this formulation matches the preliminary formulation (**MAXFV**) as site military value would have zero weight. Conversely, if  $w$  is set to a large value ( $w = 99$ ), functional value would have little weight. The **MAXFV** and **MINNMV** formulations are the same formulation, only differing in the parameter  $w$  . Varying  $w$  in the formulation allows the model to be used to create a family of solutions. These points are illustrated by an example in the next section.

The component of the objective function that addresses military value of sites,  $\sum_{s \in S} o_s \times nmv_s = \sum_{s \in S} o_s \times (4 - mv_s)$ , affects the optimal solution as follows. (For this discussion we will ignore the functional value component of the objective function,  $-\sum_{i \in S} \sum_{g \in F} l_{ig} \times fv_{ig}/req_g$  .) If there were no constraints in the formulation, i.e., satisfy the DoD requirement, the minimum value of the objective function would be achieved by setting

- assigning functions in groups,
- increasing the average DoD military value of the sites assigned any cross-service functional workload,
- requiring the weighted functional value for a given common support function to be at least as great as some value,
- limiting the number of sites that have any cross-service functional workload assigned to them,
- requiring that each department's average military value is not allowed to go below some level,
- requiring a certain number of sites in a geographic area to remain open, and
- requiring the distribution of functional workload to follow a certain pattern, e.g., in one department, in one location, or on both coasts.

This is not an exhaustive list of the possibilities for policy imperatives. An example of a policy imperative added to the MINNMV formulation is given in the following section.

#### Consistent Alternatives

The functional data and constraints from all of the users may be combined into a single formulation. In the event that two users obtain solutions that are inconsistent (e.g., the solutions have a site or activity receiving cross-service functional workload in one, and losing all of its cross-service functional workload in the other) this capability can be used to resolve the inconsistency.

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#### 4. Optimization Examples

The following examples use representative, notional data to demonstrate the formulations. Three different departments, X, Y, and Z, each have 5 sites (A, B, C, D, and E). Six functions are considered: air vehicles, munitions, electronic combat, fixed-wing avionics, conventional missiles and rockets, and satellites. Table 1 shows the basic data for these sites. Table 1 also shows the DoD requirement by function and the percent of excess capacity. Percent excess capacity is calculated as

$$100 \times \left( \frac{\sum_{s \in S} cap_{sf}}{req_f} - 1 \right).$$

#### Preliminary Formulation (MAXFV).

Results for the MAXFV formulation are shown in table 2. If there is no functional requirement assigned to a site, the capacity for that function is shown as zero at that site even if the site has requirements for other functions assigned. Notice that, for this solution, *all sites have some cross-service functional workload assigned.*

Figure 1 displays this information in graphical form. The figure shows the sharp decrease in the average functional value for conventional missiles and rockets when  $w$  is changed from 20 to 30. The figure also displays the increase in average military value that is achieved by using the MINNMV formulation.

#### Primary Formulation (MINXCAP)

Table 7 shows the output of the MINXCAP formulation with  $w = 99$ . As would be expected, this formulation produces a solution that greatly reduces excess capacity, but the weighted functional values have suffered. The weighted average percent excess capacity has been reduced to almost 6 percent.

#### Primary Formulation (MINSITES)

The results of using the MINSITES formulation with  $w = 99$  are given in table 8. The optimal solution retains only six sites. The sites are different than the sites retained in the MINNMV solution.

#### Primary Formulation (MAXSFV)

The results of using the MAXSFV formulation with the number of retained sites constrained to be no more than six are displayed in table 9.

#### Summary of Formulation Results

The following table summarizes the basic statistics for the five formulations.

Statistics	MAXFV	MINNMV	MINXCAP	MINSITES	MAXSFV
Sites retained	15	6	7	6	6
Weighted avg. percent excess capacity	60.37	31.39	6.11	12.14	24.1
Weighted average FV	84.7	73.9	74.2	76.5	62.9
Average military value	2.2	2.83	2	2.67	2.67

## 5. Generating Alternatives

Alternative solutions, in terms of the retained sites or activities, may be obtained by excluding a set of retained or open sites from a formulation. For example, the optimal solution obtained from the MINNMV formulation (see table 3) retains sites  $XA, XC, XD, ZA, ZB,$  and  $ZD$ . To find another optimal solution with the same objective function value or the next best solution, we define the set  $\Delta_1 = \{XA, XC, XD, ZA, ZB, ZD\}$  and add the following constraints to the MINNMV formulation:

example is given in appendix B. These files are processed by the AMPL/OSL package to produce the outputs discussed in the examples section of this document.

Table 2. MAXFV Model Output

Function	Department															Retained totals	Percent excess
	X					Y					Z						
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E		
Retain=1, Close=0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	15	
Department Mil. Val.	3	3	3	2	1	2	1	3	2	1	3	3	2	3	1		
<b>Capacities</b>																	
Air vehicles	0	7000	0	0	0	0	500	0	0	0	3000	1200	0	2857	0	14557	53.8
Munitions	850	200	4500	0	0	0	0	2000	0	0	1000	0	1000	0	0	9550	73.5
Electronic combat	3000	0	0	0	0	1000	0	0	0	0	0	0	0	1543	20	5563	72.0
Fixed-wing avionics	0	0	0	3500	0	0	0	0	0	0	0	4000	0	0	0	7500	98.7
Conv. missiles/rockets	0	0	0	0	3000	0	0	0	100	2000	0	0	0	0	200	5300	41.6
Satellites	0	0	0	0	0	0	0	0	0	0	250	0	0	300	2200	2750	10.9
																Wgt. avg.	60.37
<b>Workload assigned</b>																Totals	
Air vehicles	0	1906	0	0	0	0	500	0	0	0	3000	1200	0	2857	0	9463	
Munitions	850	200	453	0	0	0	0	2000	0	0	1000	0	1000	0	0	5503	
Electronic combat	671	0	0	0	0	1000	0	0	0	0	0	0	0	1543	20	3234	
Fixed-wing avionics	0	0	0	3500	0	0	0	0	0	0	0	275	0	0	0	3775	
Conv. missiles/rockets	0	0	0	0	1443	0	0	0	100	2000	0	0	0	0	200	3743	
Satellites	0	0	0	0	0	0	0	0	0	0	250	0	0	30	2200	2480	
Department avg. MV			2.4					1.8					2.4				
Percent change			-0.0					0.0					-0.0				
DoD average MV								2.20									
Percent change								0.0									

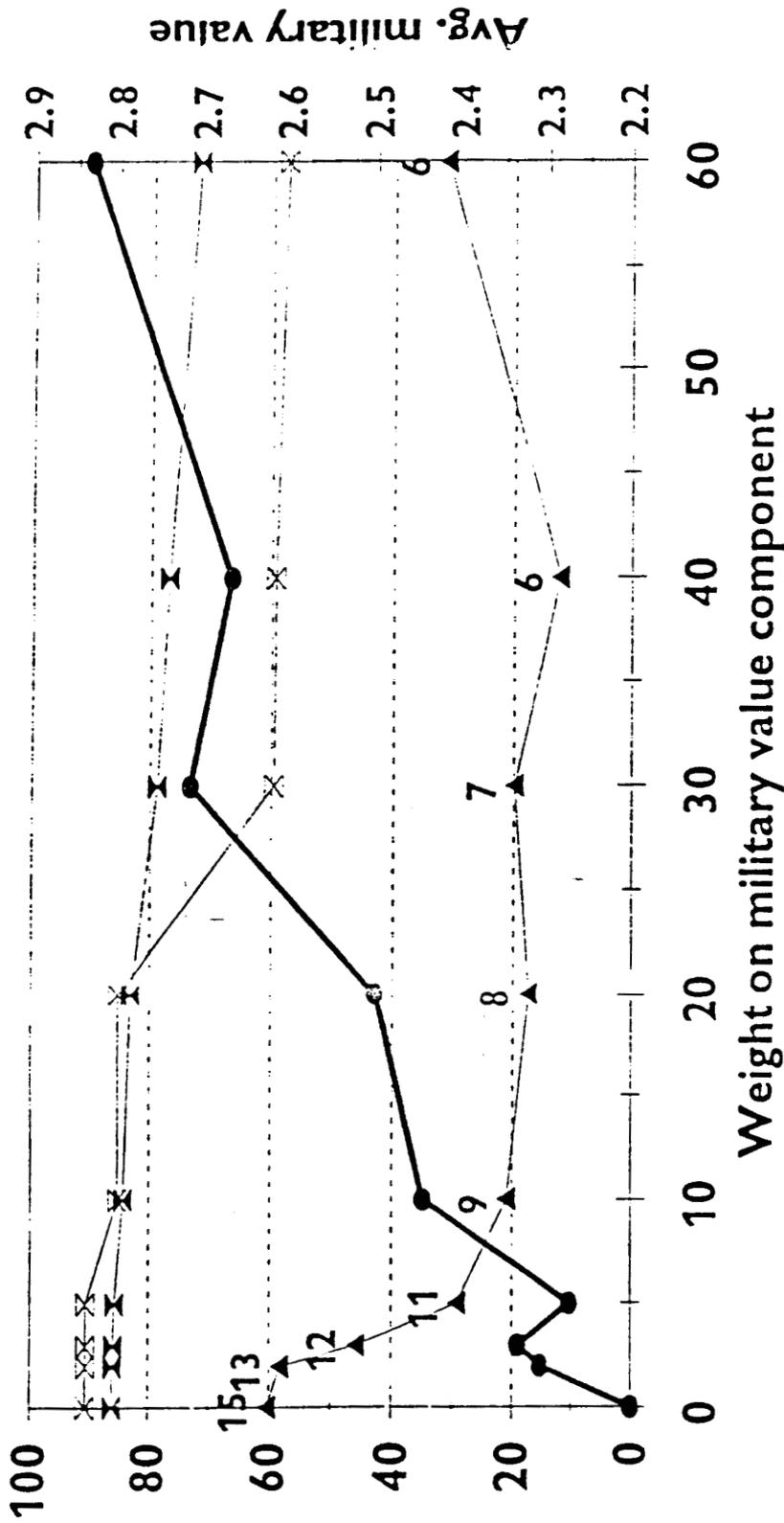
DoD weighted FVs	
Function	Wgt FV
Air vehicles	81.2
Munitions	79.6
Electronic combat	79.7
Fixed-wing avionics	93.9
Conv. missiles/rockets	90.8
Satellites	92.0
Average FV	86.2
Weighted avg. FV	84.7

Table 4. MINNMV Model with Policy Iterative Output

Function	Department															Retained totals	Percent excess
	X					Y					Z						
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E		
Retain=1, Close=0	0	1	1	1	1	0	0	0	0	0	1	0	0	1	0	6	
Department Mil. Val.	3	3	3	2	1	2	1	3	2	1	3	3	2	3	1		
<b>Capacities</b>																	
Air vehicles	0	7000	0	0	0	0	0	0	0	0	3000	0	0	2857	0	12857	35.9
Munitions	0	200	4500	0	0	0	0	0	0	0	1000	0	0	0	0	5700	3.6
Electronic combat	0	0	0	0	0	0	0	0	0	0	2000	0	0	1543	0	3543	9.6
Fixed-wing avionics	0	0	250	3500	0	0	0	0	0	0	1000	0	0	0	0	4750	25.8
Conv. missiles/rockets	0	0	0	0	3000	0	0	0	0	0	3000	0	0	0	0	6000	60.3
Satellites	0	0	300	4000	0	0	0	0	0	0	250	0	0	300	0	4850	95.6
																Wgt. avg.	33.70
<b>Workload assigned</b>																<b>Totals</b>	
Air vehicles	0	3808	0	0	0	0	0	0	0	0	3000	0	0	2857	0	9463	
Munitions	0	200	4303	0	0	0	0	0	0	0	1000	0	0	0	0	5503	
Electronic combat	0	0	0	0	0	0	0	0	0	0	1691	0	0	1543	0	3234	
Fixed-wing avionics	0	0	250	3500	0	0	0	0	0	0	25	0	0	0	0	3775	
Conv. missiles/rockets	0	0	0	0	3000	0	0	0	0	0	743	0	0	0	0	3743	
Satellites	0	0	300	1630	0	0	0	0	0	0	250	0	0	300	0	2480	
Department avg. MV			2.3					0.0					3.0				
Percent change			-6.3					-100.0					25.0				
DoD average MV								2.50									
Percent change								13.6									

DoD weighted FVs	
Function	Wgt FV
Air vehicles	78.3
Munitions	61.0
Electronic combat	64.4
Fixed-wing avionics	93.7
Conv. missiles/rockets	82.4
Satellites	64.1
Average FV	74.0
Weighted avg. FV	74.7

Figure 1. Parameterization of MINNMV



Number of sites open are shown as labels on the excess capacity plot

- ▲ Avg. percent excess capacity
- Average military value
- × Average FV
- ▲ Missile/rocket FV

Table 7. MINXCAP Model Output

Function	Department															Retained totals
	X					Y					Z					
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E	
Retain=1, Close=0	1	0	1	0	1	1	1	0	0	0	0	1	0	0	1	7
Department Mil. Val.	3	3	3	2	1	2	1	3	2	1	3	3	2	3	1	
<b>Capacities</b>	450	0	2500	0	0	5000	500	0	0	0	0	1200	0	0	0	9650
Air vehicles	850	0	4500	0	0	300	0	0	0	0	0	0	0	0	0	5650
Munitions	3000	0	0	0	0	1000	0	0	0	0	0	0	0	0	20	4020
Electronic combat	0	0	0	0	0	0	0	0	0	0	0	4000	0	0	0	4000
Fixed-wing avionics	0	0	200	0	3000	0	0	0	0	0	0	700	0	0	200	4100
Conv. missiles/rockets	0	0	300	0	0	0	0	0	0	0	0	0	0	0	2200	2500
Satellites																Wgt. avg. 6.11
<b>Workload assigned</b>	263	0	2500	0	0	5000	500	0	0	0	0	1200	0	0	0	9463
Air vehicles	850	0	4500	0	0	153	0	0	0	0	0	0	0	0	0	5503
Munitions	2214	0	0	0	0	1000	0	0	0	0	0	0	0	0	20	3234
Electronic combat	0	0	0	0	0	0	0	0	0	0	0	3775	0	0	0	3775
Fixed-wing avionics	0	0	200	0	3000	0	0	0	0	0	0	343	0	0	200	3743
Conv. missiles/rockets	0	0	280	0	0	0	0	0	0	0	0	0	0	0	2200	2480
Satellites																
Department avg MV			2.3					1.5					2.0			
Percent change			-2.8					-16.7					-16.7			
DoD average MV								2.00								
Percent change								-9.1								

Percent excess  
2.0  
2.7  
24.3  
6.0  
9.5  
0.8

Function	Wgt FV
Air vehicles	64.9
Munitions	62.5
Electronic combat	74.5
Fixed-wing avionics	93.0
Conv. missiles/rockets	84.9
Satellites	90.5
Average FV	78.4
Weighted avg. FV	74.2

Table 9. MAXSFV Model Output

Function	Department															Retained totals	Percent excess
	X					Y					Z						
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E		
Retain=1, Close=0	0	0	1	1	0	1	0	0	0	0	1	1	0	1	0	6	
Department Mil. Val.	3	3	3	2	1	2	1	3	2	1	3	3	2	3	1		
<b>Capacities</b>																	
Air vehicles	0	0	2500	0	0	5000	0	0	0	0	3000	0	0	0	0	10500	11.0
Munitions	0	0	4500	0	0	300	0	0	0	0	1000	0	0	0	0	5800	5.4
Electronic combat	0	0	0	0	0	0	0	0	0	0	2000	0	0	1543	0	3543	9.6
Fixed-wing avionics	0	0	250	0	0	0	0	0	0	0	1000	4000	0	2000	0	7250	92.1
Conv. missiles/rockets	0	0	200	0	0	0	0	0	0	0	3000	700	0	0	0	3900	4.2
Satellites	0	0	0	4000	0	0	0	0	0	0	0	0	0	0	0	4000	61.3
																<b>Wgt. avg.</b>	<b>24.10</b>
<b>Workload assigned</b>																<b>Totals</b>	
Air vehicles	0	0	2500	0	0	5000	0	0	0	0	1963	0	0	0	0	9463	
Munitions	0	0	4500	0	0	300	0	0	0	0	703	0	0	0	0	5503	
Electronic combat	0	0	0	0	0	0	0	0	0	0	2000	0	0	1234	0	3234	
Fixed-wing avionics	0	0	250	0	0	0	0	0	0	0	1000	525	0	2000	0	3775	
Conv. missiles/rockets	0	0	43	0	0	0	0	0	0	0	3000	700	0	0	0	3743	
Satellites	0	0	0	2480	0	0	0	0	0	0	0	0	0	0	0	2480	
Department avg. MV			2.5					2.0					3.0				
Percent change			4.2					11.1					25.0				
DoD average MV								2.67									
Percent change								21.2									

DoD weighted FVs	
Function	Wgt FV
Air vehicles	64.9
Munitions	59.6
Electronic combat	61.9
Fixed-wing avionics	73.1
Conv. missiles/rockets	56.6
Satellites	58.0
Average FV	62.3
Weighted avg. FV	62.9

Table 10. MINNMV Model Output: Alternative 1

Function	Department															Retained totals	
	X					Y					Z						
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E		
Retain=1, Close=0	0	0	1	1	0	0	0	1	0	0	1	1	0	1	0	6	
Department Mil. Val.	3	3	3	2	1	2	1	3	2	1	3	3	2	3	1		
<b>Capacities</b>																	
Air vehicles	0	0	2500	0	0	0	0	0	0	0	3000	1200	0	2857	0	9557	<b>Percent excess</b> 1.0
Munitions	0	0	4500	0	0	0	0	2000	0	0	1000	0	0	0	0	7500	36.3
Electronic combat	0	0	0	0	0	0	0	0	0	0	2000	0	0	1543	0	3543	9.6
Fixed-wing avionics	0	0	0	3500	0	0	0	0	0	0	0	4000	0	0	0	7500	98.7
Conv. missiles/rockets	0	0	200	0	0	0	0	200	0	0	3000	700	0	300	0	4400	17.6
Satelites	0	0	300	4000	0	0	0	500	0	0	250	50	0	300	0	5400	117.7
																<b>Wgt. avg.</b>	<b>34.41</b>
<b>Workload assigned</b>																<b>Totals</b>	
Air vehicles	0	0	2406	0	0	0	0	0	0	0	3000	1200	0	2857	0	9463	
Munitions	0	0	2503	0	0	0	0	2000	0	0	1000	0	0	0	0	5503	
Electronic combat	0	0	0	0	0	0	0	0	0	0	1691	0	0	1543	0	3234	
Fixed-wing avionics	0	0	0	3500	0	0	0	0	0	0	0	275	0	0	0	3775	
Conv. missiles/rockets	0	0	200	0	0	0	0	200	0	0	2343	700	0	300	0	3743	
Satelites	0	0	300	1080	0	0	0	500	0	0	250	50	0	300	0	2480	
Department avg. MV			2.5					3.0					3.0				
Percent change			4.2					66.7					25.0				
DoD average MV								2.83									
Percent change								28.8									

DoD weighted FVs	
Function	Wgt FV
Air vehicles	80.6
Munitions	71.4
Electronic combat	64.4
Fixed-wing avionics	93.9
Conv. missiles/rockets	57.8
Satelites	65.4
Average FV	72.3
Weighted avg. FV	74.4

**Appendix A**  
**AMPL Model Input File**

```

param MV {SITE};      # Military value for each site.

param NMV {s in SITE} := 4 - MV[s]; # Negative MV scoring.

param FV {SITE_CAP} >= 0.0; # Functional value by site and function.

param min_assign default 0.001; # Cannot assign less than
                                # min_assign * CAPAC[s,f] of
                                # function f to site s.

#
# Calculate upper bounds for the objective function components.
#

param MINNMV_UB := sum {s in SITE} NMV[s];

param MINSITES_UB := card(SITE);

param MINXCAP_UB := sum {(s,f) in SITE_CAP} CAPAC[s,f]/REQ[f];

param MAXSFV_UB := sum {(s,f) in SITE_CAP} FV[s,f];

param MAXFV_UB := sum {f in FUNC} max {(s,f) in SITE_CAP} FV[s,f];

#
# Use WGT_PCT to weight the functional value and non-functional value
# components of the objective functions.
#

param WGT_PCT >= 0, <= 100, default 99; # Percent of weight to put on
    # non-functional-value portion of the objective function.

param WGT1 := WGT_PCT; # Weight for non-FV portion of the objective
    # functions.

param WGT2 := 100-WGT1; # Weight for FV portion of the objective functions.

#
# Decision variables
#

var OPEN {SITE} binary >= 0;      # Open or closed decision variable for
    # each site.

var SITE_LOAD {(s,f) in SITE_CAP} >= 0.0, <= CAPAC[s,f];
    # Amount of the requirement for function f to
    # be assigned to site s . Amount assigned
    # is limited by capacity of site s to perform
    # function f.

var SITE_FUNC {(s,f) in SITE_CAP} binary;
    # 1 if any assignment of workload for function
    # f is made to site s; 0 otherwise.

# The following variables, ALPHA, BETA, and GAMMA, are used to find
# alternative solutions.

```

```

subject to func_assgn {f in FUNC}:
    sum {(s,f) in SITE_CAP} SITE_LOAD[s,f] = REQ[f];

# Cannot assign functional workload to a site unless
# the site is open for assignment of that function.

subject to func_open {(s,f) in SITE_CAP}:
    SITE_LOAD[s,f] <= SITE_FUNC[s,f]*CAPAC[s,f];

# Sites with no functional requirement assigned
# are closed.

subject to site_closed {s in SITE}:
    OPEN[s] <= sum {(s,f) in SITE_CAP} SITE_FUNC[s,f];

# Allocation of functional requirements cannot be made
# to sites that are not open.

subject to site_open {s in SITE}:
    sum {(s,f) in SITE_CAP} SITE_FUNC[s,f] <= OPEN[s] * no_func;

# SITE_FUNC variables are set to 0 if little or no functional
# workload is assigned to a site.

subject to site_func_0 {(s,f) in SITE_CAP}:
    SITE_FUNC[s,f] <= SITE_LOAD[s,f]/(min_assign * CAPAC[s,f]);

# This constraint is an example of a policy imperative.
# Constrain the number of sites doing munitions work.
# This constraint only constrains the model if
#
# missile_sites < card(SITE).

subject to missile_2 {f in MISSLE_FUNC}:
    sum {(s,f) in SITE_CAP} SITE_FUNC[s,f] <= missile_sites;

# This constraint is used to constrain the number of
# open sites in a solution. max_sites has a default
# value equal to card(SITE), i.e., it does not constrain
# the solution unless max_sites is set to a lower value.

subject to no_sites:
    sum {s in SITE} OPEN[s] <= max_sites;

#
# Exclude solutions defined by the sets EXCLD1 and EXCLD2.
#

subject to alt_opt_cond_1:
    sum {s in EXCLD_INTER} OPEN[s] <= excld_num + 1 - ALPHA;

subject to alt_opt_cond_2:
    sum {s in EXCLD_COMPLEMENT} OPEN[s] >= BETA;

subject to alt_opt_cond_3a:
    sum {s in EXCLD_1DIFF2} OPEN[s] >= GAMMA;

```

**Appendix B**  
**AMPL Data Input File**

set MISSLE\_FUNC := Mis;

param CAPAC:	Air_Veh	Mun	E_Cmbt	Avion	Mis	Sat	:=
X_A	450		850	3000		.	.
X_B	7000		200	.		.	.
X_C	2500		4500	.		250	200 300
X_D	.		.	.		3500	.
X_E	.		.	.		.	3000 .
Y_A	5000		300	1000		.	.
Y_B	500		.	.		.	.
Y_C	.		2000	.		400	200 500
Y_D	.		.	.		3500	100 .
Y_E	.		.	.		.	2000 .
Z_A	3000		1000	2000		1000	3000 250
Z_B	1200		.	.		4000	700 50
Z_C	.		1000	.		.	200 .
Z_D	2857		.	1543		2000	300 300
Z_E	.		.	20		500	200 2200;

param FV:	Air_Veh	Mun	E_Cmbt	Avion	Mis	Sat	:=
X_A	50	88	67		.	.	.
X_B	70	71	.		.	.	.
X_C	68	58	.		92	62	71
X_D	.	.	.		94	.	58
X_E	.	.	.		.	89	.
Y_A	57	54	91		.	.	.
Y_B	72	.	.		.	.	.
Y_C	.	88	.		78	59	64
Y_D	.	.	.		69	93	.
Y_E	.	.	.		.	92	.
Z_A	81	72	52		72	56	85
Z_B	92	.	.		93	59	61
Z_C	.	75	.		.	50	.
Z_D	86	.	78		66	65	73
Z_E	.	.	77		71	91	93;

param REQ :=

Air_Veh	9463
Mun	5503
E_Cmbt	3234
Avion	3775
Mis	3743
Sat	2480;

# Banded military values for each site.  
# 3 is good, 1 is bad.

param MV :=

X_A	3
X_B	3
X_C	3
X_D	2
X_E	1
Y_A	2
Y_B	1
Y_C	3
Y_D	2



ECONOMIC  
SECURITY

**ASSISTANT SECRETARY OF DEFENSE**

3300 DEFENSE PENTAGON  
WASHINGTON DC 20301-3300



29 DEC 1994

MEMORANDUM FOR SECRETARIES OF THE MILITARY DEPARTMENTS  
CHAIRMAN OF THE JOINT CHIEFS OF STAFF  
UNDER SECRETARIES OF DEFENSE  
DIRECTOR, DEFENSE RESEARCH AND ENGINEERING  
ASSISTANT SECRETARIES OF DEFENSE  
GENERAL COUNSEL OF THE DEPARTMENT OF DEFENSE  
INSPECTOR GENERAL OF THE DEPARTMENT OF DEFENSE  
DIRECTOR, OPERATIONAL TEST AND EVALUATION  
ASSISTANTS TO THE SECRETARY OF DEFENSE  
DIRECTOR OF ADMINISTRATION AND MANAGEMENT  
DIRECTORS OF THE DEFENSE AGENCIES

SUBJECT: 1995 Base Realignment and Closures (BRAC 95) -- Policy  
Memorandum Three

Background

This memorandum is the third in a series of additional policy guidance implementing the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended, and the Deputy Secretary's 1995 Base Realignment and Closures (BRAC 95) guidance of January 7, 1994.

Final Selection Criteria

The 1995 Base Closure and Realignment (BRAC 95) Selection Criteria at attachment one, required by Section 2903(b) of Public Law 101-510, form the basis, along with the force structure plan, of the base closure and realignment process. These criteria were provided by the Deputy Secretary's November 2, 1994, memorandum. DoD components shall use these criteria in the base structure analysis to nominate BRAC 95 closure or realignment candidates. The criteria will also be used by the 1995 Defense Base Closure and Realignment Commission in their review of the Department of Defense final recommendations.

Activities in Leased Space

This expands on the policy guidance contained in the DepSecDef January 7, 1994, BRAC 95 memorandum.

DoD Component organizations located in leased space are subject to Public Law 101-510. Civilian personnel authorizations of organizations in leased space, which are part of an organization located on a nearby military installation or one within the same metropolitan statistical area (MSA), shall be considered part of the civilian personnel authorization of that



installation. Certain military activities performed in leased facilities constitute an installation because of common mission, permanently authorized personnel, and separate support structure. Each DoD component should aggregate the remaining civilian personnel authorizations of their organizations in leased space within a MSA and consider the aggregate to be a single installation for applying the numerical thresholds of Public Law 101-510. In aggregating leased space activities in the National Capital Region (NCR), the NCR, as defined by the National Capital Planning Act (40 USC 71), will be used as the MSA.

BRAC 95 Investment (201)

This expands on the policy guidance contained in the Under Secretary of Defense (Acquisition and Technology) memorandum of May 31, 1994 (Policy Memorandum One).

- o Medicare Costs Medicare Costs will not be included in DOD Component cost analyses. The Medicare program consists of part A (hospital and related costs) and Part B (supplemental costs). Part A is financed by Medicare payroll taxes. The only appropriated funds used to support Medicare are those portions of the Part B costs that exceed the monthly premiums paid by the members/beneficiaries. Therefore, total Medicare appropriations will not significantly change return on investment calculations.
- o Unemployment Costs The Military Departments and Defense Agencies annually budget unemployment contributions to the Federal Employees Compensation Account for DoD military and civilian employees. DoD Components should include the contributions to this account attributable to closures and realignments in their cost calculations. However, state unemployment costs will not be included in DoD component cost analyses since such costs result only indirectly from BRAC actions and would not be borne by DoD.
- o Costs to other Federal Agencies and State and Local Governments In general, DoD components need not consider costs or savings to other federal agencies and state and local governments in their calculations of BRAC 95 costs and savings.

There are, however, a limited number of circumstances when DoD components should include the costs of BRAC 95 actions to other Federal Agencies in their cost calculations. Costs to other Federal Agencies should be included only when they are measurable, identifiable costs that DoD would incur as a **direct** result of BRAC-related actions. The key distinguishing features of costs to other federal agencies that should be included is (1) DoD is unambiguously responsible for paying such costs and (2) such costs would be incurred as a direct, rather than indirect, result of BRAC actions.

For example, if a BRAC-related action would result in early termination of a lease agreement with the General Services Administration, and the lease agreement contains a provision that requires DoD to pay a penalty for breaking the lease, then the amount of the penalty should be included in cost calculations. Similarly, DoD components should include unemployment insurance costs for which they are liable. Both of these are costs to DoD that result **directly** from BRAC actions. In contrast, DoD components need not consider cost impacts that BRAC actions could have on Federal programs such as Medicare because (1) such costs would not be borne by DoD and (2) they result only indirectly from BRAC actions, or (3) result from base reuse activities, which cannot be known during the early planning processes.

#### COBRA Analyses of Cross-Service/Agency Scenarios

The Military Departments and Defense Agencies will use the following procedure for developing COBRA runs for closure and realignment scenarios involving more than one Military Department or Defense Agency:

- o Military Departments or Defense Agencies having cognizance over a losing base in a cross-service scenario will identify the Departments or Agencies which have cognizance for the gaining bases in the scenario. The losing base Military Department will then task these Military Departments and Agencies to collect the necessary gaining base COBRA data.
- o Each losing base Department or Agency will then prepare a COBRA analysis. Savings associated with eliminated billets/positions, overhead and mission costs should be identified under the Losing Base in the scenario. In scenarios where more than one Department or Agency has a losing base, these separate COBRA runs can then be combined by using a new summarization function of the COBRA model, the Adder.

Interaction among the Departments and Agencies will be necessary to coordinate scenario-specific data elements such as equipment transfers, MILCON requirements, consolidation savings, etc.

#### DoD-wide Standard Factors for COBRA Analyses

As noted in Policy Memorandum One, some standard factors used in the Cost of Base Realignment Actions (COBRA) are sufficiently different to warrant DoD Component-specific cost factors. However, most of the standard factors used in COBRA algorithms reflect standard rates which should be applied consistently in all DoD closure/realignment scenarios. Attachment two contains the DoD-wide COBRA standard factors which should be used in all COBRA analyses.

## Environmental Restoration Costs

Environmental Restoration costs at closing bases are not to be considered in cost of closure calculations. DoD has a legal obligation for environmental restoration regardless of whether a base is closed or realigned. Where closing or realigning installations have known, unique contamination problems requiring environmental restoration, these will be considered as a potential limitation on near-term community reuse of the installation.

## Environmental Compliance Costs

Environmental compliance costs can be a factor in a base closure or realignment decision. Costs associated with bringing existing practices into compliance with environmental rules and regulations can potentially be avoided when the base closes. Environmental compliance costs may be incurred at receiving locations also, and therefore will be estimated.

## Environmental Impacts

For environmental impact considerations, there is no need to undertake new environmental studies. DoD Components may use all available environmental information regardless of when, how or for what purpose it was collected. If a DoD Component should choose to undertake a new environmental study, the study must collect the same information from all bases in the DoD Component's base structure, unless the study is designed to fill gaps in information so that all bases can be treated equally. Attachment three provides a sample of the reporting format used to summarize the environmental consequences of closure or realignment of an installation.

## Economic Impact Calculations

DoD Components shall measure the economic impact on communities of BRAC 95 alternatives and recommendations using (1) the total potential job change in the economic area and (2) the total potential job change as a percent of economic area employment. These measures highlight the potential impact on economic area and also take into account the size of the economic area. In accomplishing this task, Components will follow the detailed guidance at attachment four.

## Base Realignment and Closure Definitions

In order to ensure consistent terminology, DoD Components will use the definitions at attachment five to describe their recommendations.

Reporting Formats

Attachments six and seven describe general reporting formats for: (1) the anticipated DoD report to the 1995 Commission, and (2) Military Department and Defense Agency justification for their March 1, 1995, closure and realignment recommendations.

  
for

Joshua Gotbaum

Attachments

**Department of Defense**  
**Final Selection Criteria**

In selecting military installations for closure or realignment, the Department of Defense, giving priority consideration to military value (the first four criteria below), will consider:

**Military Value**

1. The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force.
2. The availability and condition of land, facilities and associated airspace at both the existing and potential receiving locations.
3. The ability to accommodate contingency, mobilization, and future total force requirements at both the existing and potential receiving locations.
4. The cost and manpower implications.

**Return on Investment**

5. The extent and timing of potential costs and savings, including the number of years, beginning with the date of completion of the closure or realignment, for the savings to exceed the costs.

**Impacts**

6. The economic impact on communities.
7. The ability of both the existing and potential receiving communities' infrastructure to support forces, missions and personnel.
8. The environmental impact.

## COBRA Standard Cost Factor Table

The attached table is a listing of standard cost factors for use in COBRA analyses. These factors, defined below, are categorized as Joint Factors, Joint Methods and Unique Factors, further identified as applicable to gaining or losing bases. Those factors not identified as a gaining or losing factor should be applied consistently in all closure and realignment scenarios.

Joint Factors: Joint Factors are a reflection of standard DoD-wide rates which should be applied consistently in all DoD closure and realignment scenarios. The value for each joint factor is provided in the table.

Joint Methods: These are cost factors that are arrived at in a similar manner by all DoD Components, but the actual value may differ by Component.

Unique Factors: Unique Factors are the result of differing policies and methodologies between the Components.

Gaining: Factors applicable to a gaining (receiving) base in a closure or realignment scenario.

Losing: Factors applicable to a losing base in a closure or realignment scenario.

---

# Document Separator

	STANDARD FACTOR	TYPE FACTOR	VALUE	LOSING/ GAINING BASE
1	Officers Married	JOINT METHOD		LOSING
2	Enlisted Married	JOINT METHOD		LOSING
3	Enlisted Housing Milcon	JOINT METHOD		GAINING
4	Officer Salary	JOINT METHOD		LOSING
5	Officer BAQ w/Dependents	JOINT METHOD		LOSING
6	Enlisted Salary	JOINT METHOD		LOSING
7	Enlisted BAQ w/Dependents	JOINT METHOD		LOSING
8	Average Unemployment Costs	JOINT FACTOR	\$174	
9	Unemployment Eligible	JOINT FACTOR	18	
10	Civilian Salary	JOINT METHOD		LOSING
11	Civilian Turnover	JOINT FACTOR	15%	
12	Civilian Early Retirement	JOINT FACTOR	10%	
13	Civilians Reg Retirement	JOINT FACTOR	5%	
14	Civilian RIF Pay Factor	JOINT FACTOR	39%	
15	Civilian Retirement Pay Factor	JOINT FACTOR	9%	
16	Priority Placement	JOINT FACTOR	60%	
17	PPS Involving PCS	JOINT FACTOR	50%	
18	Civilian PCS Cost	JOINT FACTOR	\$28,800	
19	New Hire Cost	UNIQUE		GAINING
20	National Median Home Price	JOINT FACTOR	\$114.6k	
21	Home Sale Reimburse Rate	JOINT FACTOR	10%	
22	Max Home Sale Reimbursement	JOINT FACTOR	\$22,385	
23	Home Purchase Reimburse Rate	JOINT FACTOR	5%	
24	Max Home Purc Reimburse Rate	JOINT FACTOR	11,191	
25	Civilian Homeowning Rate	JOINT FACTOR	64%	
26	HAP Home Value Rate	JOINT FACTOR	22.9%	
27	HAP Homeowner Rec Rate	JOINT FACTOR	5%	
28	RSE Home Value Reimbures	UNIQUE		LOSING
29	RSE Homeowner Rec Rate	UNIQUE		LOSING
30	RPMA Buildings Index	JOINT FACTOR	.93	
31	BOS Index (Population)	JOINT FACTOR	.54	
32	Program Management	JOINT FACTOR	10%	
33	Caretaker Admin Space	JOINT FACTOR	162SF	
34	Mothball Cost	JOINT FACTOR	\$1.25/SF	
35	Avg Bach Qtrs Size	UNIQUE		GAINING

**Environmental Impact Considerations**

**SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

**RESULTING FROM CLOSURE/REALIGNMENT ACTION AT:**

<u>Installation Name</u>	<u>Location</u>
--------------------------	-----------------

(Provide a summary statement and status for the following environmental attributes at each installation affected by the closure/realignment action, including receiving installations. These key environmental attributes are not meant to be all inclusive. Others may be added as appropriate.)

- o Threatened/Endangered Species
- o Sensitive Habitats and Wetlands
- o Cultural/Historic Resources
- o Land and Air Space Use
- o Pollution Control (Air Emissions, Compliance Issues)
- o Hazardous Materials/Waste (Clean-up Implications/Asbestos, LBPs, PCBs, USTs, Radon)
- o Programmed Environmental Costs/Cost Avoidances

# **GUIDANCE FOR APPLYING THE ECONOMIC IMPACT CRITERION IN THE 1995 BASE REALIGNMENT AND CLOSURE (BRAC 95) PROCESS**

## **PURPOSE**

The purpose of this attachment is to provide guidance for applying the economic impact criterion in decision making processes for the Department of Defense's 1995 recommendations to the Defense Base Closure and Realignment Commission. The goal of this guidance is to apply the economic impact criterion in a reasonable, fair, consistent, and auditable manner that complies with statutory and regulatory requirements. This guidance supersedes the guidance issued on April 4, 1994, by the Chairman of the Joint Cross-Service Group on Economic Impact.

## **BACKGROUND**

The Defense Base Closure and Realignment Act (PL 101-510, as amended) states that the recommendations of the Secretary of Defense for closure or realignment of installations must be based on a force-structure plan and final selection criteria. "The economic impact on communities" is the sixth final selection criterion.

The Joint Cross-Service Group on Economic Impact, which was established by the Deputy Secretary of Defense (January 7, 1994, memorandum on 1995 Base Realignments and Closures (BRAC 95)), was tasked to provide guidance to DoD Components on how to calculate economic impact. The Deputy Secretary of Defense directed the Joint Cross-Service Group on Economic Impact:

"to establish the guidelines for measuring economic impact and, if practicable, cumulative economic impact; to analyze DoD Component recommendations under those guidelines; and to develop a process for analyzing alternative closures or realignments necessitated by cumulative economic impact considerations, if necessary."

## **APPLICATION OF THE ECONOMIC IMPACT CRITERION**

In developing recommendations for BRAC 95 closures and realignments, DoD Components shall consider the economic impact, to include the cumulative economic impact, on communities. The final selection criteria, however, state that priority consideration will be given to military value--the first four final selection criteria.

## MEASURES OF BRAC 95 ECONOMIC IMPACT

DoD Components shall measure the economic impact on communities of BRAC 95 alternatives and recommendations using (1) the total potential job change in the economic area and (2) total potential job change as a percent of total--military and civilian--jobs in the economic area. These measures highlight the potential economic impact on economic areas and also take into account the size of each economic area.

### Definition of Economic Area

The Joint Cross-Service Group on Economic Impact shall review and approve DoD Component assignments of each military installation to a particular economic area. For installations located in metropolitan statistical areas (MSAs), as defined by the Office of Management and Budget, the economic area is generally the MSA. For installations located in nonmetropolitan areas, the economic area is generally the county in which the installation is located. In some cases, the economic area is defined as a multi-county, non-MSA area. The criteria listed at Annex A to this attachment shall be used to guide the assignment of installations to economic areas. These definitions of economic area take into account the area where most of the installation's employees live and most of the labor-market impacts and economic adjustment will occur. (This guidance uses the term "economic area." In earlier BRAC rounds, this concept was also referred to as "region of influence.")

DoD Components will have the opportunity to identify, based on certified data, changes in the assignment of installations to economic areas. Such changes will be reviewed and approved by the Joint Cross-Service Group on Economic Impact.

### Calculation

For each economic area where a BRAC 95 closure or realignment is considered, DoD Components shall identify the total potential job change in the economic area and calculate the total potential job change percentage by dividing total potential job changes by total--military and civilian--jobs in the economic area.

Total potential job change shall be defined as the sum of direct and indirect potential job changes for each BRAC 95 closure or realignment alternative or recommendation.

Direct job changes shall be defined as the sum of the net addition or loss of jobs for each of the following categories of personnel:

- Military Personnel. Permanent authorizations for officer and enlisted personnel. Trainees shall be included on an annual average basis. For example, members of the Guard and Reserve who serve full time (i.e., AGRs, TARs, etc.) should be included. Members of the Guard and Reserve who serve part time (during weekends, during two-weeks a year for active duty training, etc.) should not be included.

- DoD civilian employees. Permanent authorizations for appropriated fund DoD civilian employees are to be included as direct jobs. Direct jobs do not include non-appropriated fund activities, which are treated under indirect jobs.
- On-Base Contractors. Contractors that work on the installation in direct support of the installation's key military missions. These estimates should reflect an annual estimate on a full-time equivalency basis.

As described in the section entitled "Responsibilities" below, the Military Departments and the Defense Agencies will be responsible for providing direct job changes. Only job changes directly associated with base closures and realignments are to be included as direct job changes. Direct job changes shall not reflect job changes that result from planned force structure changes.

Indirect job changes shall be defined as the net addition or loss of jobs in each affected economic area that could potentially occur as a result of direct job changes. As described in the section entitled "Responsibilities" below, the Office of the Deputy Assistant Secretary of Defense for Installations shall provide factors (multipliers) that, when multiplied by the direct job changes, will provide potential indirect job changes.

Authoritative sources shall be used to determine total--military and civilian--jobs in economic areas.

### **MEASURES OF CUMULATIVE ECONOMIC IMPACT**

During BRAC 95, DoD components shall consider the cumulative economic impact on communities for recommended installation closures and realignments as part of the economic impact on communities criterion. Cumulative economic impact shall be considered only as part of the economic impact criterion, which is one of the eight selection criteria.

Cumulative economic impact on a community shall be defined in two different ways:

- First, the cumulative economic impact on an economic area of a DoD Component's BRAC 95 recommendations, plus the future economic impacts (i.e., economic impacts that have not yet been realized) of decisions of all DoD Components from DoD-wide BRAC 88, BRAC 91, and BRAC 93 rounds (hereafter "prior BRAC rounds"); and
- Second, the cumulative economic impact on economic areas when more than one DoD component recommends a BRAC 95 closure or realignment in that economic area, plus the future economic impacts of decisions from prior BRAC rounds.

These calculations will account for circumstances in which basing decisions in one BRAC round have been changed in a subsequent BRAC round.

The cumulative economic impact of actions that have already taken place as a result of prior BRAC rounds (i.e., have already affected economic area employment) will be considered under "Historic Economic Data" discussed below.

#### Cumulative Economic Impact: Prior BRAC Rounds

DoD Components shall include in their consideration of recommendations the cumulative future economic impact of prior BRAC rounds.

When BRAC 95 alternatives occur in the same economic areas that have BRAC-related actions from the prior BRAC rounds, DoD Components shall review their recommendations by taking into account the cumulative future economic impact of prior BRAC rounds. The cumulative economic impact of actions that have already occurred from prior BRAC rounds (i.e., have already affected economic area employment) will be considered in the "Historic Economic Data" section below.

DoD Components shall consider the cumulative economic impacts of prior BRAC rounds that have not yet taken place by ensuring that the measures for economic impact (total potential job change in the economic area and total potential job change as a percent of total--military and civilian--jobs in the economic area) include total potential job changes that have not yet taken place from prior BRAC rounds DoD-wide.

Cumulative economic impact will be considered within the overall context of the approved selection criteria. Such a review shall be conducted so that the cumulative economic impact of prior BRAC rounds will be considered only as part of the economic impact criterion, which shall in turn be considered as part of the eight selection criteria.

The fact that prior BRAC rounds affect an economic area shall not, by itself, cause a recommendation to be changed.

#### Cumulative Economic Impact: Multiple BRAC 95 Recommendations

The Joint Cross-Service Group on Economic Impact will review the BRAC 95 recommendations submitted by the Secretaries of the Military Departments and the Directors of the Defense Agencies to the Secretary of Defense. During this review, the Joint Cross-Service Group shall identify economic areas with multiple proposed BRAC 95 actions.

The Joint Cross-Service Group on Economic Impact shall direct the appropriate DoD Components to review their recommendations submitted to the Secretary of Defense when there are multiple BRAC 95 recommendations in the same economic area that were not considered in the development of their recommendations.

DoD Components will then reassess their BRAC 95 recommendations by taking into account the cumulative economic impact of these multiple BRAC 95 recommendations and by ensuring that the measures for economic impact for the economic area (the total potential job change in the economic area and the total potential job change as a percent of total--military and civilian--jobs in the economic area) include the cumulative economic impact of multiple BRAC 95 recommendations, as well as the cumulative future economic impact of prior BRAC rounds.

Such a review shall be conducted so that the cumulative economic impact of multiple BRAC 95 recommendations will be considered as part of the economic impact criterion, which shall in turn be considered as part of the eight selection criteria. DoD Components will complete such reviews expeditiously in order to facilitate compliance with statutory deadlines for BRAC actions.

DoD Components may consider alternative closures and realignments, or mitigating actions, during this review. After the review is complete, DoD Components will report back to the Joint Cross-Service Group on Economic Impact, with a recommendation as to whether or not to change their initial recommendations.

The existence of multiple BRAC 95 recommendations in an economic area shall not, by itself, cause a recommendation to be changed.

### **HISTORIC ECONOMIC DATA**

DoD Components shall consider the measures described above, viewed in the context of historic economic data, in applying the economic impact criterion. Historic data will, among other things, allow for consideration of the cumulative economic impacts that have already occurred (i.e., have already affected economic area employment) as a result of prior BRAC actions. Because communities' economies are so complex, it is difficult to separate the effects of prior BRAC actions from the effects of other economic factors. To address this analytical difficulty, DoD Components shall use historic data to consider the general conditions of communities' economies. Considering the general conditions of communities' economies will take into account the cumulative economic impacts that have already occurred due to prior BRAC actions, as well as the economic impact of other factors unrelated to BRAC actions.

Historic economic data shall be defined to include the following:

- Economic area civilian employment (1984 to 1993)
- Annualized change in economic area civilian employment, absolute and percent (1984 to 1993),
- Economic area per capita personal income (1984 to 1992)
- Annualized change in economic area per capita personal income, absolute and percent (1984 to 1992), and
- Economic area unemployment rates (1984 to 1993).

The Office of the Deputy Assistant Secretary of Defense for Installations will provide historic data, from authoritative sources, to the Military Departments and Defense Agencies.

### USING MEASURES AND HISTORIC ECONOMIC DATA

This guidance does not establish threshold values for measures and historic economic data. Rather, DoD components will use the measures and historic economic data for relative comparisons of the economic impacts and cumulative economic impacts of recommendations.

### RESPONSIBILITIES

#### Joint Cross-Service Group on Economic Impact

The Joint Cross-Service Group on Economic Impact shall analyze DoD Component recommendations and preliminary candidates to ensure that they are developed in accordance with this guidance, and shall monitor implementation of this and any additional guidance on economic impact that may be issued. The Joint Cross-Service Group on Economic Impact shall also carry out other analyses requested by the BRAC 95 Review Group or Steering Group.

The Joint Cross-Service Group will work closely with DoD Components to resolve issues. Issues that the Joint Cross-Service Group and DoD components cannot resolve will be referred to the BRAC 95 Steering Group.

#### Office of the DASD (Installations)

The office of the DASD (Installations) shall provide to the Military Departments and Defense Agencies a BRAC 95 Economic Impact Database tool that will contain the following:

- A listing of DoD installations
- The economic area to which each installation has been assigned
- Factors (multipliers) to estimate potential indirect job changes
- Historic economic data to include:
  - Economic area civilian employment (1984 to 1993)
  - Annualized change in economic area civilian employment, absolute and percent (1984 to 1993)
  - Economic area per capita personal income (1984 to 1992)
  - Annualized change in economic area per capita personal income, absolute and percent (1984 to 1992), and
  - Economic area unemployment rates (1984 to 1993)

- **The capability to calculate the measures for economic impact and cumulative economic impact described in this guidance based on the information provided by the Military Departments and Defense Agencies**

#### Military Departments and the Defense Agencies

The Military Departments and the Defense Agencies shall provide and enter into the DoD BRAC 95 Economic Impact Database:

- **Current Base Personnel:** As discussed above on page 3, this data will reflect projected billets and positions as of the start of FY 1996 for Officers, Enlisted, Military Students, Civilians, and Contractors, net of planned force structure changes.
- **Job Changes (Out):** the number of authorizations for DoD civilian, military (in training status), military (not in training status), and on-base contractor jobs to be relocated and/or disestablished under each alternative and recommendation, by installation, as a result of BRAC actions, both for DoD Component proposed BRAC 95 actions and for actions yet to be realized (i.e., future) from prior BRAC rounds, by fiscal year, from 1994 through 2001;
- **Job Changes (In):** the number of authorizations for civilian, military (in training status), military (not in training status) and on-base contractor jobs being gained under each alternative and recommendation, by installation, as a result of BRAC actions, both for all proposed BRAC 95 actions and for actions yet to be realized (i.e., future) from prior BRAC rounds, by fiscal year, from 1994 through 2001.

Because of the difficulty of obtaining accurate estimates, contractor job outs and ins may be aggregated into a single year.

DoD Components will provide the projected job changes from prior BRAC rounds and current personnel data to the Office of the Deputy Assistant Secretary of Defense for Installations. In identifying projected job changes associated with prior BRAC actions, the DoD Components shall use plans that are consistent with the President's Fiscal Year 1995 Budget.

The Military Departments and the Defense Agencies shall collect information as necessary for the computer-based tool. Such data shall be collected and handled in accordance with the Internal Control Plan of the Joint Cross-Service Group on Economic Impact and the respective Internal Control Plans of each Military Department and the Defense Agencies.

Shortly after submitting recommendations and preliminary candidates to the Secretary of Defense, the Military Departments and Defense Agencies shall provide to the Joint Cross-Service Group on Economic Impact computer files from the Economic Impact Database for their BRAC 95 recommendations and preliminary candidates.

## DETERMINATION OF ECONOMIC AREAS

In response to changes by the Office of Management and Budget (OMB) in metropolitan area definitions related to the 1990 Census, and a review of earlier BRAC economic area definitions, the Joint Cross-Service Group on Economic Impact has established the following rules to guide the assignment of installations to economic areas for BRAC 95:

1. The economic area should include residences of the majority of the military and civilian employees at the activity.
2. An economic area is generally defined as a metropolitan statistical area (MSA) or a non-MSA county(s) unless there is evidence to support some other definition.
3. In those cases where OMB's 1993 redefinition of an MSA added counties which increased the MSA population by 10 percent or more, then continue to use the old MSA definition unless certified residency data shows that the new MSA definition is more appropriate.
4. An economic area should only be expanded to include an additional county if the resulting percentage increase in the number of employee residences included in the expanded economic area is greater than the resulting percentage increase in the total employment of the expanded economic area.
5. Installations in the same county should be in the same economic area.
6. If the economic area was previously defined (in prior BRAC rounds) as a non-MSA county(s), it should continue to be that county, even if that county has now been incorporated into an MSA.

## Base Realignment and Closure Definitions

### Close

All missions of the base will cease or be relocated. All personnel (military, civilian and contractor) will either be eliminated or relocated. The entire base will be excessed and the property disposed. Note: A caretaker workforce is possible to bridge between closure (missions ceasing or relocating) and property disposal which are separate actions under Public Law 101-510.

### Close, Except

The vast majority of the missions will cease or be relocated. Over 95 percent of the military, civilian and contractor personnel will either be eliminated or relocated. All but a small portion of the base will be excessed and the property disposed. The small portion retained will often be facilities in an enclave for use by the reserve component. Generally, active component management of the base will cease. Outlying, unmanned ranges or training areas retained for reserve component use do not count against the "small portion retained". Again, closure (missions ceasing or relocating) and property disposal are separate actions under Public Law 101-510.

### Realign

Some missions of the base will cease or be relocated, but others will remain. The active component will still be host of the remaining portion of the base. Only a portion of the base will be excessed and the property disposed, with realignment (missions ceasing or relocating) and property disposal being separate actions under Public Law 101-510. In cases where the base is both gaining and losing missions, the base is being realigned if it will experience a net reduction of DoD civilian personnel. In such situations, it is possible that no property will be excessed.

### Relocate

The term used to describe the movement of missions, units or activities from a closing or realigning base to another base. Units do not realign from a closing or a realigning base to another base, they relocate.

### Receiving Base

A base which receives missions, units or activities relocating from a closing or realigning base. In cases where the base is both gaining and losing missions, the base is a receiving base if it will experience a net increase of DoD civilian personnel.

### Mothball, Layaway

Terms used when retention of facilities and real estate at a closing or realigning base are necessary to meet the mobilization or contingency needs of Defense. Bases or portions of bases "mothballed" will not be excessed and disposed. It is possible they could be leased for interim economic uses.

### Inactivate, Disestablish

Terms used to describe planned actions which directly affect missions, units or activities. Fighter wings are inactivated, bases are closed.

**Department of Defense (DoD)  
Base Closure and Realignment  
Report to the Commission**

**DoD Base Closure and Realignment Report (DoD Vol. I)**

OASD (ES)

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OASD (ES)  
Joint Staff  
OASD (ES)  
OASD (ES) & JCRC  
OASD (ES)  
OASD (ES)  
OASD (ES)  
OASD (ES)

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Joint Staff

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1  
**NAME OF RECOMMENDATION**  
(e.g., Name of Activity/Facility/Installation, [State])

**Recommendation:** Describe what is to be closed and/or realigned; functions, activities, units, or organizations that will be eliminated or relocated; identify the receiving installations, if applicable; and describe functions, activities, units, or organizations that will remain on the installation, if applicable.

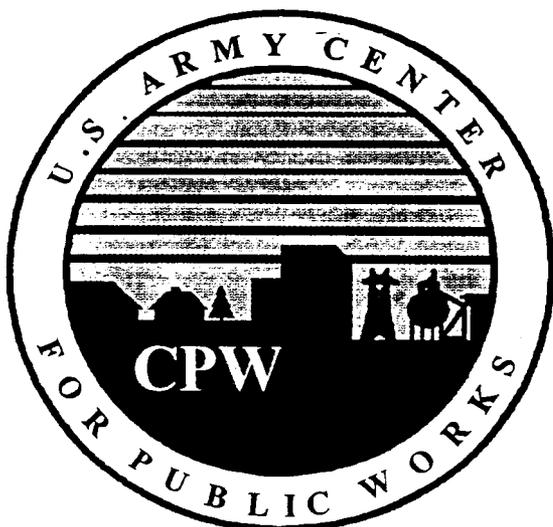
**Justification:** Explain the reasons for the recommendation: i.e., force structure reductions; mission transfer, consolidation, collocation, or elimination; excess capacity; cross-servicing; etc., as applicable.

**Return on Investment:** Include the total estimated one-time costs of implementing the recommendation, expected total one-time savings during the implementation period, expected annual recurring savings after implementation with return on investment years, and the net present value of costs and savings over a twenty year period. Express costs and savings in FY 1996 constant dollars.

**Impact:** Describe the impact the recommendation could have on the local community's economy in terms of total potential job change (direct and indirect) in absolute terms and as a percentage of employment in the economic area. Describe the impact the recommendation could have on the environment.

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# Plant Replacement Value Analysis for Fiscal Year 1993



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**Assistant Chief of Staff for Installation Management**  
**U S Army Center for Public Works**

*From the desk of ...*  
Mr. Joseph S. Vallone  
**The Army Basing Study Office**  
HQDA, OCSA, DACS-TABS

29 JUN 94

SUBJECT: PLANT REPLACEMENT VALUE (PRV)

The following is an "Info Dump" on PRV. In addition, included with this information paper is the newly published Yellow Book (PRV) for FY 93 (red tabs) identifying sections useful for BRAC

◆ **How often do we assess our holdings?**

The PRV analysis is performed & published annually. It is developed by the U.S. Army Center for Public Works (CPW) at FT Belvoir for ACSIM.

◆ **What do we use these numbers for?**

The PRV's main use is for the management of real property, maintenance and construction activities by MACOMs and ARSTAFF elements. More recently, it has become a yardstick for OSD in analyzing the Army's drawdown in Force Structure versus Dollars invested in real property holding.

◆ **How the PRV was computed before FY 92?**

Up until FY 92, PRV was computed by taking the capital investments initially made at installations and inflating them to current dollars. Land cost is not considered in PRV.

**Example:** \$5M for a HQ building built in 1958, + any additional \$ spent due to upgrades or alterations x (inflation factor) = PRV. This was done for all facilities, utilities and infrastructure and then summed up for an installation total PRV. (PRV may also be rolled up in other ways, i.e. by MACOM or facility type within a MACOM etc.)

The problems with this method of calculating PRV was that records were not available for all assets thereby requiring best guess estimates in most cases. In addition, a major flaw was that the technology in construction changed so rapidly, that inflated costs did not take into account the economy of modern construction techniques.

◆ **How the PRV is computed now?**

Now, PRV is computed by using quantity data from Integrated Facilities Systems (IFS) database which is maintained quarterly by the CPW at installations. The IFS database is the Army's corporate system for managing assets, from square feet of various building types to linear feet of waste sewer lines and roads, (IFS also feeds into HQRPLANS when determining construction requirements for BRAC).

**Example:** HQ bldg built in 1958 @ 25,000 sf, + upgrade of 5,000 sf added in 1966 = 30,000 sf. HQ (admin bldg) @ 30,000 sf x \$125/sf (current unit cost factor) = PRV. There are still some cases where there are no useful units of measure available, in such cases the replacement value is calculated via the older method. Overall, this system is more accurate, relying on modern construction technology and the Army's well maintained corporate database.

◆ **How accurate is the PRV?**

The current PRV process is accurate for planning purposes on a macro level, "the big picture" type of analysis, ie. "what would it cost to replace FT Bragg in today's dollars" or "which installation has TRADOC invested the most dollars in as of the current PRV listing".

◆ **What are the Pitfalls of PRV Analysis?**

Using PRV for anything other than macro level planning can cause problems. In addition, misinterpretation of the various types of roll-ups provided in the Yellow Book is a common error. The PRV manual format is being enhanced. Some of the more current changes reflected in the new FY 93 PRV Yellow Book are:

Health Services Command installations, including FT Detrick, are now shown as DoD managed property.

Medical and dental facilities located at USMA and Panama remain as Army managed facilities. All others plus commissaries are now reported as Army property controlled by others.

◆ **PRV reduction versus Force Structure trend.**

Attached to this information paper is:

Pie chart comparing the reductions in troops and PRV from FY 91 projected thru Fy 99

Textual data for the pie chart

Narrative explaining what the charts represent.

**PLANT REPLACEMENT VALUE REPORTS  
FISCAL YEAR 1993**

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CHAPTER ONE

ARMY OWNED AND CONTROLLED PROPERTY

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	9,211,708,586	7,945,218,065	713,864,586	552,625,934
02	COMMUNICATIONS	2,306,558,697	2,074,631,857	156,725,089	75,201,751
03	WATERFRONT OPNS	1,435,357,676	1,362,631,909	71,679,975	1,045,792
04	OTHER OPNS	1,087,057,839	888,204,091	178,988,796	19,864,952
05	TRAINING	8,636,908,401	6,634,302,873	772,102,962	1,230,502,566
06	AVIATION MAINT	1,410,836,418	1,201,288,222	182,215,100	27,333,096
07	SHIPYARD MAINT	211,788,048	200,826,139	6,803,635	4,158,274
08	OTH MAINT/PROD	17,061,035,676	12,396,582,411	3,570,883,565	1,093,569,700
09	R D T & E	2,471,710,317	1,982,502,614	409,646,875	79,560,829
10	POL SUPPLY/STOR	1,191,312,650	881,131,494	126,154,025	184,027,131
11	AMMO SPLY/STOR	9,247,339,782	8,859,996,191	329,590,053	57,753,538
12	OTHER SPLY/STOR	10,339,496,710	6,531,444,876	2,372,664,020	1,435,387,814
13	MEDICAL/DENTAL	134,678,499	133,964,787	401,671	312,041
14	ADMINISTRATIVE	8,165,911,551	6,155,992,896	781,600,855	1,228,317,799
15	TROOP HSG/MESS	16,675,078,662	11,797,083,663	1,847,670,067	3,030,324,933
16	OTH PERSONNEL	11,368,994,059	8,726,529,738	1,279,033,442	1,363,430,880
17	UTILITIES	26,246,980,526	23,823,777,148	1,824,010,382	599,192,996
18	RE & ROADS/GRND	17,295,869,911	14,462,248,383	1,993,845,649	839,775,879
20	FAMILY HOUSING	17,658,223,258	17,206,099,203	344,452,619	107,671,436
		<u>162,156,847,268</u>	<u>133,264,456,561</u>	<u>16,962,333,368</u>	<u>11,930,057,340</u>

REPLACEMENT VALUE REPORT  
 ARMY OWNER AND CONTROLLED PROPERTY  
 CONUS INSTALLATIONS ONLY SUMMARY  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	6,136,912,472	5,424,175,701	298,901,247	413,835,524
02	COMMUNICATIONS	1,726,131,908	1,587,767,802	75,958,365	62,405,741
03	WATERFRONT OPNS	957,420,736	904,524,657	51,900,728	995,352
04	OTHER OPNS	701,646,880	600,257,788	84,597,249	16,791,842
05	TRAINING	7,341,604,034	5,691,813,246	541,680,760	1,108,110,028
06	AVIATION MAINT	1,016,302,687	929,355,018	67,262,684	19,684,985
07	SHIPYARD MAINT	191,695,681	182,853,463	5,901,003	2,941,215
08	OTH MAINT/PROD	13,438,567,252	9,501,208,666	2,963,676,850	973,681,736
09	R D T & E	2,414,806,707	1,948,222,300	392,155,691	74,428,715
10	POL SUPPLY/STOR	714,566,356	412,863,663	118,259,637	183,443,056
11	AMMO SPLY/STOR	7,411,241,992	7,188,959,016	185,861,283	36,421,693
12	OTHER SPLY/STOR	7,239,561,821	4,702,060,491	1,355,683,158	1,181,818,171
13	MEDICAL/DENTAL	44,345,182	43,741,463	401,671	202,048
14	ADMINISTRATIVE	5,860,927,267	4,219,758,955	515,468,742	1,125,699,570
15	TROOP HSG/MESS	10,983,860,204	7,553,775,540	541,747,113	2,888,337,551
16	OTH PERSONNEL	5,905,608,891	4,302,683,213	491,391,448	1,111,534,231
17	UTILITIES	19,070,381,148	18,143,991,223	673,613,321	252,776,604
18	RE & ROADS/GRND	13,540,935,320	12,023,313,779	1,036,813,329	480,808,212
20	FAMILY HOUSING	9,981,010,705	9,798,190,433	118,564,375	64,255,897
		<u>114,677,527,242</u>	<u>95,159,516,418</u>	<u>9,519,838,655</u>	<u>9,998,172,170</u>

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 OCONUS INSTALLATIONS ONLY SUMMARY  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	3,074,796,113	2,521,042,364	414,963,339	138,790,410
02	COMMUNICATIONS	580,426,789	486,864,055	80,766,724	12,796,010
03	WATERFRONT OPNS	477,936,940	458,107,253	19,779,247	50,441
04	OTHER OPNS	385,410,959	287,946,303	94,391,547	3,073,110
05	TRAINING	1,295,304,368	942,489,627	230,422,202	122,392,538
06	AVIATION MAINT	394,533,731	271,933,203	114,952,417	7,648,111
07	SHIPYARD MAINT	20,092,367	17,972,676	902,632	1,217,059
08	OTH MAINT/PROD	3,622,468,424	2,895,373,746	607,206,715	119,887,963
09	R D T & E	56,903,611	34,280,313	17,491,184	5,132,113
10	POL SUPPLY/STOR	476,746,294	468,267,830	7,894,388	584,075
11	AMMO SPLY/STOR	1,836,097,790	1,671,037,174	143,728,771	21,331,845
12	OTHER SPLY/STOR	3,099,934,890	1,829,384,385	1,016,980,862	253,569,643
13	MEDICAL/DENTAL	90,333,317	90,223,324	0	109,993
14	ADMINISTRATIVE	2,304,984,284	1,936,233,941	266,132,113	102,618,230
15	TROOP HSG/MESS	5,691,218,458	4,243,308,123	1,305,922,953	141,987,381
16	OTH PERSONNEL	5,463,385,168	4,423,846,525	787,641,994	251,896,649
17	UTILITIES	7,176,599,378	5,679,785,925	1,150,397,061	346,416,392
18	RE & ROADS/GRND	3,754,934,591	2,438,934,604	957,032,320	358,967,667
20	FAMILY HOUSING	7,677,212,553	7,407,908,770	225,888,244	43,415,539
		<u>47,479,320,026</u>	<u>38,104,940,143</u>	<u>7,442,494,713</u>	<u>1,931,885,170</u>

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY BY COMMAND  
 AS OF 30-SEP-93

USING AGENCY	CMD	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
AA	CE	18,244,783	18,244,037	0	746
AF	AFRC	273,163,656	264,635,494	7,975,684	552,477
EA	MDW	2,068,251,178	1,915,115,534	49,434,913	103,700,732
FA	MTMC	1,794,988,309	1,574,300,377	219,389,942	1,297,990
GA	NG	2,433,971,266	1,356,966,229	561,539,164	515,465,873
HT	SPS	278,369	278,369	0	0
JA	FCOM	33,950,615,458	27,121,002,191	1,137,710,141	5,691,903,126
M3	VIITC	2,673,447,796	1,972,951,818	561,365,295	139,130,684
MB	XXISC	9,311,310,010	7,956,047,943	1,187,529,494	167,732,574
MD	SETAF	785,852,863	774,584,016	232,829	11,036,018
MF	USABE	1,445,950,073	1,264,287,662	176,907,769	4,754,642
MS	VIIC	10,399,153,182	9,624,195,963	643,777,483	131,179,735
MT	TAMMC	566,172,328	479,191,971	86,788,500	191,858
MV	VC	11,426,735,584	10,531,793,794	629,156,671	265,785,119
MX	XXVI	1,303,680,976	1,144,905,138	133,043,495	25,732,343
NJ	ARJ	2,592,271,347	1,641,159,457	899,404,954	51,706,936
NS	SCOM	2,089,071,146	1,925,174,577	108,530,815	55,365,754
NW	PACOM	8,746,974,257	7,790,255,939	462,620,544	494,097,775
PB	AVSCH	815,577,150	727,171,597	81,486,870	6,918,684
PC	CECOM	846,198,487	695,759,506	96,253,031	54,185,950

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY BY COMMAND  
 AS OF 30-SEP-93

USING AGENCY	CMD	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
PD	MICOM	1,696,698,411	1,597,430,101	37,003,007	62,265,303
PE	TACOM	971,213,479	891,145,311	59,217,605	20,850,563
PF	LABCM	264,209,397	261,110,365	3,099,032	0
PG	DSCOM	9,680,522,203	8,730,915,449	868,048,022	81,558,732
PH	TECOM	4,727,454,900	3,857,722,427	707,228,376	162,504,097
PJ	AMCCM	21,523,976,118	16,914,104,668	4,282,745,953	327,125,497
RA	USMA	2,043,415,024	1,954,739,698	67,236,113	21,439,213
SG	EUSA	4,238,965,577	219,988,958	2,953,781,636	1,065,194,983
SM	USAR	3,729,714,416	3,372,058,786	88,992,182	268,663,448
TD	TDOC	18,958,093,271	16,015,526,822	784,139,114	2,158,427,335
UA	ISC	386,547,876	317,368,937	62,569,817	6,609,123
		<u>161,762,718,888</u>	<u>132,910,133,131</u>	<u>16,957,208,449</u>	<u>11,895,377,308</u>

REPLACEMENT VALUE REPORT  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93  
 CORPS OF ENGINEERS

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	0	0	0	0
08	OTH MAINT/PROD	1,307,667	1,307,667	0	0
09	R D T & E	11,057,448	11,057,448	0	0
10	POL SUPPLY/STOR	135	135	0	0
12	OTHER SPLY/STOR	1,636,315	1,636,315	0	0
14	ADMINISTRATIVE	13,426	13,426	0	0
16	OTH PERSONNEL	976,762	976,762	0	0
17	UTILITIES	1,942,796	1,942,050	0	746
18	RE & ROADS/GRND	1,310,234	1,310,234	0	0
		----- 18,244,783	----- 18,244,037	----- 0	----- 746

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
A F REC CENTERS

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
	-----	-----	-----	-----	-----
01	AVIATION OPNS	1,493,813	1,493,813	0	0
02	COMMUNICATIONS	1,220,638	1,220,638	0	0
04	OTHER OPNS	106,185	0	23,250	82,935
05	TRAINING	12,143,462	12,143,462	0	0
08	OTH MAINT/PROD	8,463,644	8,463,644	0	0
12	OTHER SPLY/STOR	10,202,585	10,110,512	79,300	12,773
14	ADMINISTRATIVE	11,866,315	11,866,315	0	0
15	TROOP HSG/MESS	14,598,844	14,075,998	522,845	0
16	OTH PERSONNEL	126,121,798	119,624,794	6,190,498	306,505
17	UTILITIES	78,300,661	77,487,790	806,075	6,795
18	RE & ROADS/GRND	8,645,712	8,148,527	353,715	143,469
		-----	-----	-----	-----
		273,163,656	264,635,494	7,975,684	552,477

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
MIL DISTRICT OF WASHINGTON

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	35,727,568	29,789,915	340,781	5,596,873
02	COMMUNICATIONS	14,731,711	14,501,736	57,217	172,758
03	WATERFRONT OPNS	31,302,278	31,233,174	0	69,103
04	OTHER OPNS	3,564,689	3,464,089	0	100,599
05	TRAINING	142,059,736	132,934,801	4,186,258	4,938,677
06	AVIATION MAINT	21,522,222	16,137,354	3,470,371	1,914,498
08	OTH MAINT/PROD	111,187,462	100,793,667	2,227,752	8,166,043
09	R D T & E	206,128,528	194,612,454	8,661,546	2,854,528
10	POL SUPPLY/STOR	52,347	45,556	0	6,792
11	AMMO SPLY/STOR	3,234,175	1,635,896	1,598,279	0
12	OTHER SPLY/STOR	65,544,293	39,110,133	11,769,089	14,665,071
14	ADMINISTRATIVE	223,407,475	184,160,748	6,360,685	32,886,043
15	TROOP HSG/MESS	170,980,463	157,293,574	221,174	13,465,715
16	OTH PERSONNEL	171,679,118	150,199,101	10,330,186	11,149,831
17	UTILITIES	474,865,597	471,798,031	77,960	2,989,606
18	RE & ROADS/GRND	188,646,073	187,773,193	89,826	783,054
20	FAMILY HOUSING	203,617,443	199,632,112	43,788	3,941,543
		2,068,251,178	1,915,115,534	49,434,913	103,700,732

REPLACEMENT VALUE REPORT  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93  
 MIL TRAFFIC MGMT COMMAND

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	26,049,778	4,929,606	21,120,172	0
02	COMMUNICATIONS	2,469,163	2,426,648	42,515	0
03	WATERFRONT OPNS	552,806,797	552,762,068	44,729	0
04	OTHER OPNS	659,923	629,056	30,867	0
05	TRAINING	10,968,600	10,968,600	0	0
07	SHIPYARD MAINT	175,740,670	169,839,667	5,901,003	0
08	OTH MAINT/PROD	34,226,232	10,375,567	23,849,665	0
10	POL SUPPLY/STOR	9,829,805	9,829,805	0	0
12	OTHER SPLY/STOR	377,002,818	227,432,679	149,186,169	383,970
14	ADMINISTRATIVE	146,173,001	142,473,360	3,503,943	195,698
15	TROOP HSG/MESS	10,490,965	10,409,159	0	81,806
16	OTH PERSONNEL	44,607,477	33,383,349	10,651,751	572,378
17	UTILITIES	153,977,490	150,357,681	3,619,809	0
18	RE & ROADS/GRND	224,785,957	223,632,626	1,119,327	34,003
20	FAMILY HOUSING	25,200,631	24,850,505	319,991	30,135
		1,794,988,309	1,574,300,377	219,389,942	1,297,990

REPLACEMENT VALUE REPORT  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93  
 NATIONAL GUARD

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
	-----	-----	-----	-----	-----
01	AVIATION OPNS	141,406,872	91,098,061	22,198,867	28,109,945
02	COMMUNICATIONS	11,497,377	4,090,203	883,978	6,523,197
03	WATERFRONT OPNS	49,818	49,818	0	0
04	OTHER OPNS	191,033,181	127,785,108	62,774,505	473,567
05	TRAINING	280,198,101	138,114,167	102,692,571	39,391,363
06	AVIATION MAINT	30,328,253	28,503,189	1,544,657	280,408
08	OTH MAINT/PROD	159,154,253	103,322,468	22,675,276	33,156,509
09	R D T & E	866,408	393,138	0	473,271
10	POL SUPPLY/STOR	386,264	371,828	0	14,437
11	AMMO SPLY/STOR	308,090,820	298,613,536	7,205,180	2,272,103
12	OTHER SPLY/STOR	206,131,246	106,701,907	64,155,967	35,273,372
14	ADMINISTRATIVE	100,616,905	58,608,694	25,167,105	16,841,106
15	TROOP HSG/MESS	530,597,906	125,739,556	190,758,192	214,100,158
16	OTH PERSONNEL	78,764,174	22,008,326	13,576,590	43,179,258
17	UTILITIES	148,080,176	113,763,312	9,962,742	24,354,122
18	RE & ROADS/GRND	240,822,740	133,040,358	37,447,186	70,335,196
20	FAMILY HOUSING	5,946,771	4,762,561	496,348	687,862
		-----	-----	-----	-----
		2,433,971,266	1,356,966,229	561,539,164	515,465,873

REPLACEMENT VALUE REPORT  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93  
 SPECIAL SERVICES

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
16	OTH PERSONNEL	278,369	278,369	0	0
		278,369	278,369	0	0

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
U S ARMY FORCES COMMAND

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	2,543,727,051	2,210,390,533	67,062,680	266,273,838
02	COMMUNICATIONS	577,738,143	547,428,905	9,890,536	20,418,701
03	WATERFRONT OPNS	22,143,248	16,728,588	4,850,644	564,016
04	OTHER OPNS	101,365,116	91,733,179	2,817,407	6,814,530
05	TRAINING	2,672,641,596	1,780,136,366	216,124,263	676,380,966
06	AVIATION MAINT	507,796,364	473,141,179	27,533,817	7,121,368
07	SHIPYARD MAINT	4,626,436	4,494,919	0	131,517
08	OTH MAINT/PROD	2,060,136,989	1,429,982,454	81,153,589	549,000,946
09	R D T & E	89,859,450	55,540,358	5,005,452	29,313,640
10	POL SUPPLY/STOR	24,729,348	24,713,954	1,361	14,033
11	AMMO SPLY/STOR	211,300,659	193,998,799	7,121,789	10,180,071
12	OTHER SPLY/STOR	1,615,744,918	883,813,946	174,787,461	557,143,512
14	ADMINISTRATIVE	1,741,840,391	1,037,324,465	132,490,803	572,025,124
15	TROOP HSG/MESS	5,504,063,550	3,441,795,541	143,724,768	1,918,543,241
16	OTH PERSONNEL	2,212,271,808	1,505,647,865	87,872,231	618,751,712
17	UTILITIES	4,943,882,108	4,769,489,059	68,500,624	105,892,426
18	RE & ROADS/GRND	4,398,878,768	3,991,094,319	96,457,861	311,326,587
20	FAMILY HOUSING	4,717,869,515	4,663,547,763	12,314,855	42,006,897
		33,950,615,458	27,121,002,191	1,137,710,141	5,691,903,126

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AREUR 7TH ARMY TRNG COMMAND

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	122,819,051	79,566,614	38,444,117	4,808,319
02	COMMUNICATIONS	14,470,185	13,047,197	1,342,338	80,649
04	OTHER OPNS	9,456,512	8,503,834	728,557	224,121
05	TRAINING	298,980,320	189,969,032	67,265,820	41,745,467
06	AVIATION MAINT	7,842,688	0	2,575,343	5,267,346
08	OTH MAINT/PROD	173,106,917	145,151,460	23,356,314	4,599,142
10	POL SUPPLY/STOR	57,584	0	57,584	0
11	AMMO SPLY/STOR	24,927,957	14,508,753	9,454,130	965,074
12	OTHER SPLY/STOR	102,016,644	67,481,978	23,992,867	10,541,799
14	ADMINISTRATIVE	59,996,405	52,859,443	6,065,168	1,071,794
15	TROOP HSG/MESS	419,263,798	200,893,022	217,854,927	515,849
16	OTH PERSONNEL	232,616,863	182,894,201	41,679,726	8,042,936
17	UTILITIES	467,805,913	426,242,471	37,594,003	3,969,438
18	RE & ROADS/GRND	379,346,824	260,173,551	62,401,778	56,771,494
20	FAMILY HOUSING	360,740,136	331,660,260	28,552,622	527,255
		2,673,447,796	1,972,951,818	561,365,295	139,130,684

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AREUR 21ST SUPPORT COMMAND

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	646,335,467	592,652,833	48,977,176	4,705,458
02	COMMUNICATIONS	88,818,120	82,196,394	5,527,635	1,094,091
03	WATERFRONT OPNS	35,391,323	34,272,511	1,118,813	0
04	OTHER OPNS	23,119,048	20,017,087	2,949,502	152,459
05	TRAINING	92,213,447	62,859,400	8,391,844	20,962,202
06	AVIATION MAINT	39,762,305	25,707,418	14,054,887	0
07	SHIPYARD MAINT	8,372,516	7,469,884	902,632	0
08	OTH MAINT/PROD	1,170,802,173	1,010,004,192	158,080,972	2,717,009
09	R D T & E	10,917,012	10,821,730	95,281	0
10	POL SUPPLY/STOR	4,529,966	1,021,319	3,504,893	3,754
11	AMMO SPLY/STOR	1,089,085,634	1,043,926,793	39,208,909	5,949,931
12	OTHER SPLY/STOR	1,211,924,525	760,282,825	441,521,645	10,120,054
14	ADMINISTRATIVE	332,302,980	310,279,092	11,855,879	10,168,009
15	TROOP HSG/MESS	737,364,225	678,614,192	49,870,569	8,879,465
16	OTH PERSONNEL	680,111,064	620,851,769	51,239,526	8,019,769
17	UTILITIES	1,449,504,129	1,176,527,573	214,297,435	58,679,121
18	RE & ROADS/GRND	830,252,202	658,634,057	135,336,893	36,281,252
20	FAMILY HOUSING	860,503,876	859,908,873	595,002	0
		9,311,310,010	7,956,047,943	1,187,529,494	167,732,574

REPLACEMENT VALUE REPORT  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93  
 AREUR SOUTH EUROPE TASK FORCE

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	44,929,245	43,786,915	0	1,142,330
02	COMMUNICATIONS	27,043,218	27,043,218	0	0
03	WATERFRONT OPNS	611,351	611,351	0	0
04	OTHER OPNS	2,804,140	2,804,140	0	0
05	TRAINING	3,087,908	3,072,851	0	15,058
06	AVIATION MAINT	3,047,931	3,047,931	0	0
08	OTH MAINT/PROD	36,507,988	35,644,726	0	863,262
09	R D T & E	543,590	543,590	0	0
11	AMMO SPLY/STOR	86,999,766	83,548,803	0	3,450,962
12	OTHER SPLY/STOR	58,565,609	56,917,534	187,857	1,460,217
14	ADMINISTRATIVE	42,604,409	41,764,865	0	839,544
15	TROOP HSG/MESS	62,403,768	62,386,843	0	16,925
16	OTH PERSONNEL	131,925,983	129,724,956	44,972	2,156,055
17	UTILITIES	95,169,926	94,413,283	0	756,643
18	RE & ROADS/GRND	72,713,914	72,378,892	0	335,022
20	FAMILY HOUSING	116,894,116	116,894,116	0	0
		785,852,863	774,584,016	232,829	11,036,018

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
BERLIN BRIGADE

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	3,014,752	2,117,564	897,188	0
02	COMMUNICATIONS	18,430,580	18,349,931	80,649	0
04	OTHER OPNS	1,194,826	1,140,572	54,254	0
05	TRAINING	46,192,429	36,931,786	9,260,643	0
08	OTH MAINT/PROD	54,500,601	53,847,088	551,035	102,478
10	POL SUPPLY/STOR	931,404	680,330	251,028	46
11	AMMO SPLY/STOR	7,798,934	6,753,683	0	1,045,251
12	OTHER SPLY/STOR	55,154,026	51,981,832	2,576,186	596,008
14	ADMINISTRATIVE	69,259,158	68,340,927	637,172	281,060
15	TROOP HSG/MESS	227,631,580	227,213,250	134,445	283,885
16	OTH PERSONNEL	220,774,652	214,441,919	5,936,936	395,797
17	UTILITIES	192,513,228	189,305,700	1,285,433	1,922,095
18	RE & ROADS/GRND	222,501,600	67,262,219	155,160,457	78,924
20	FAMILY HOUSING	326,052,302	325,920,860	82,343	49,099
		1,445,950,073	1,264,287,662	176,907,769	4,754,642

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AREUR VII CORPS

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	896,429,480	854,815,141	37,753,848	3,860,491
02	COMMUNICATIONS	115,829,095	109,513,262	6,235,183	80,649
04	OTHER OPNS	84,288,869	11,566,250	71,849,227	873,392
05	TRAINING	300,074,880	225,626,782	46,632,120	27,815,978
06	AVIATION MAINT	139,580,283	131,344,370	7,989,301	246,612
08	OTH MAINT/PROD	650,609,261	620,523,026	28,014,959	2,071,277
09	R D T & E	1,173,959	1,173,959	0	0
10	POL SUPPLY/STOR	3,345,026	2,321,460	1,023,566	0
11	AMMO SPLY/STOR	158,549,911	156,921,215	1,628,696	0
12	OTHER SPLY/STOR	389,399,760	335,974,798	24,670,418	28,754,544
14	ADMINISTRATIVE	468,113,678	461,962,099	4,521,297	1,630,282
15	TROOP HSG/MESS	1,349,835,095	1,349,376,310	210,473	248,312
16	OTH PERSONNEL	1,298,722,153	1,227,521,696	46,089,009	25,111,449
17	UTILITIES	1,869,670,752	1,667,564,751	195,784,186	6,321,814
18	RE & ROADS/GRND	574,798,515	390,982,045	163,580,268	20,236,201
20	FAMILY HOUSING	2,098,732,464	2,077,008,798	7,794,933	13,928,733
		10,399,153,182	9,624,195,963	643,777,483	131,179,735

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AREUR 200TH TAMMC

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	754,801	619,343	135,459	0
02	COMMUNICATIONS	107,532	0	107,532	0
03	WATERFRONT OPNS	5,813	5,813	0	0
04	OTHER OPNS	160,044,368	158,762,893	1,281,475	0
05	TRAINING	72,657	0	0	72,657
08	OTH MAINT/PROD	4,376,164	4,278,936	97,229	0
10	POL SUPPLY/STOR	304,727,016	304,727,016	0	0
11	AMMO SPLY/STOR	23,069	23,069	0	0
12	OTHER SPLY/STOR	2,841,824	1,384,822	1,457,003	0
14	ADMINISTRATIVE	2,239,792	2,061,149	178,642	0
15	TROOP HSG/MESS	21,274	21,274	0	0
16	OTH PERSONNEL	310,594	0	310,594	0
17	UTILITIES	58,871,855	5,809,171	53,062,683	0
18	RE & ROADS/GRND	31,775,569	1,498,485	30,157,883	119,201
		566,172,328	479,191,971	86,788,500	191,858

# Document Separator

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AREUR V CORPS

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	784,363,915	732,218,548	32,809,351	19,336,015
02	COMMUNICATIONS	102,829,439	96,201,806	5,820,114	807,519
03	WATERFRONT OPNS	3,134,423	0	3,134,423	0
04	OTHER OPNS	54,140,547	50,625,449	3,324,386	190,713
05	TRAINING	248,471,177	178,579,234	61,567,614	8,324,329
06	AVIATION MAINT	93,684,331	76,375,716	17,103,656	204,959
07	SHIPYARD MAINT	2,179,710	2,179,710	0	0
08	OTH MAINT/PROD	806,565,743	734,349,558	62,519,992	9,696,194
09	R D T & E	8,981,424	8,359,785	0	621,639
10	POL SUPPLY/STOR	8,290,804	7,263,027	1,014,045	13,732
11	AMMO SPLY/STOR	236,226,246	215,105,010	19,745,407	1,375,829
12	OTHER SPLY/STOR	488,374,927	359,831,140	67,071,790	61,471,997
14	ADMINISTRATIVE	497,417,026	466,599,539	25,553,335	5,264,152
15	TROOP HSG/MESS	1,347,797,140	1,310,505,320	32,172,055	5,119,765
16	OTH PERSONNEL	1,447,264,735	1,303,913,607	115,045,673	28,305,455
17	UTILITIES	1,553,221,130	1,472,860,793	74,752,771	5,607,566
18	RE & ROADS/GRND	820,146,248	634,342,821	66,358,172	119,445,254
20	FAMILY HOUSING	2,923,646,619	2,882,482,730	41,163,889	0
		----- 11,426,735,584	----- 10,531,793,794	----- 629,156,671	----- 265,785,119

REPLACEMENT VALUE REPORT  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93  
 AREUR 26TH SUPPORT GROUP

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	51,010,996	38,063,807	10,853,893	2,093,296
02	COMMUNICATIONS	24,005,295	23,873,059	132,236	0
04	OTHER OPNS	2,324,624	1,761,834	543,905	18,885
05	TRAINING	8,863,358	8,773,540	65,319	24,500
06	AVIATION MAINT	4,009,459	1,110,497	2,232,515	666,447
08	OTH MAINT/PROD	34,161,936	25,511,002	742,072	7,908,862
10	POL SUPPLY/STOR	28,070	23,070	0	0
11	AMMO SPLY/STOR	90,039	90,039	0	0
12	OTHER SPLY/STOR	28,874,549	19,295,107	3,749,339	5,830,103
14	ADMINISTRATIVE	188,918,268	182,003,225	5,978,389	936,654
15	TROOP HSG/MESS	96,225,198	96,215,371	0	9,827
16	OTH PERSONNEL	206,036,825	197,838,047	4,629,825	3,568,953
17	UTILITIES	263,313,433	179,866,927	82,976,018	470,488
18	RE & ROADS/GRND	47,908,206	22,576,974	21,126,904	4,204,328
20	FAMILY HOUSING	347,915,718	347,902,638	13,080	0
		1,303,680,976	1,144,905,138	133,043,495	25,732,343

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
U S ARMY JAPAN

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
	-----	-----	-----	-----	-----
01	AVIATION OPNS	79,871,212	46,091,056	33,616,591	163,565
02	COMMUNICATIONS	27,224,571	22,587,002	4,637,569	0
03	WATERFRONT OPNS	398,483,117	398,479,747	0	3,370
04	OTHER OPNS	30,923,618	30,751,447	172,171	0
05	TRAINING	4,602,064	168,480	3,791,653	641,931
06	AVIATION MAINT	5,781,143	5,781,143	0	0
07	SHIPYARD MAINT	5,457,614	5,377,190	0	80,424
08	OTH MAINT/PROD	251,662,301	182,351,770	61,343,768	7,966,763
09	R D T & E	7,426,957	4,562,855	2,864,102	0
10	POL SUPPLY/STOR	129,569,007	129,569,007	0	0
11	AMMO SPLY/STOR	159,804,619	95,721,765	58,103,983	5,978,871
12	OTHER SPLY/STOR	365,826,831	65,444,262	289,673,728	10,708,841
14	ADMINISTRATIVE	180,262,438	148,123,431	31,761,251	377,756
15	TROOP HSG/MESS	92,939,352	73,977,546	18,961,806	0
16	OTH PERSONNEL	214,463,123	97,510,555	104,394,495	12,558,073
17	UTILITIES	334,921,657	169,758,529	159,003,463	6,159,665
18	RE & ROADS/GRND	164,308,371	119,304,057	41,660,509	3,343,805
20	FAMILY HOUSING	138,743,350	45,599,614	89,419,865	3,723,871
		-----	-----	-----	-----
		2,592,271,347	1,641,159,457	899,404,954	51,706,936

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
USA SOUTHERN COMMAND

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	124,821,752	122,190,202	1,762,908	868,642
02	COMMUNICATIONS	85,974,295	85,468,002	506,293	0
03	WATERFRONT OPNS	5,779,834	5,557,796	174,966	47,071
04	OTHER OPNS	1,274,683	457,087	738,310	79,286
05	TRAINING	182,391,146	178,889,012	130,572	3,371,563
06	AVIATION MAINT	28,566,129	28,566,129	0	0
07	SHIPYARD MAINT	2,713,931	1,896,189	0	817,742
08	OTH MAINT/PROD	104,542,409	55,422,063	43,927,909	5,192,437
09	R D T & E	9,099,907	8,818,394	0	281,513
10	POL SUPPLY/STOR	22,600,961	22,600,961	0	0
11	AMMO SPLY/STOR	50,857,365	50,621,077	76,971	159,317
12	OTHER SPLY/STOR	98,712,225	66,497,433	26,906,999	5,307,794
13	MEDICAL/DENTAL	90,333,317	90,223,324	0	109,993
14	ADMINISTRATIVE	128,795,819	122,100,164	6,233,533	462,121
15	TROOP HSG/MESS	190,699,641	177,618,565	1,588,183	11,492,893
16	OTH PERSONNEL	281,892,903	260,355,216	19,867,017	1,670,670
17	UTILITIES	162,528,356	160,896,337	536,063	1,095,956
18	RE & ROADS/GRND	160,363,712	160,167,411	49,841	146,459
20	FAMILY HOUSING	357,122,762	326,829,215	6,031,249	24,262,297
		2,089,071,146	1,925,174,577	108,530,815	55,365,754

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
PACIFIC COMMAND

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	1,035,364,062	992,830,308	20,256,667	22,277,086
02	COMMUNICATIONS	253,289,694	248,913,004	1,200,010	3,176,680
03	WATERFRONT OPNS	53,897,904	53,897,904	0	0
04	OTHER OPNS	185,720,933	184,727,907	71,247	921,779
05	TRAINING	223,374,673	108,619,416	50,111,437	64,643,820
06	AVIATION MAINT	133,651,750	103,316,549	29,790,943	544,258
08	OTH MAINT/PROD	407,841,227	310,700,908	26,280,940	70,859,379
09	R D T & E	17,759,937	14,860,210	2,899,728	0
10	POL SUPPLY/STOR	125,613,485	124,458,489	1,154,996	0
11	AMMO SPLY/STOR	87,279,982	78,010,924	1,184,525	8,084,532
12	OTHER SPLY/STOR	444,469,512	253,112,481	73,014,935	118,342,096
14	ADMINISTRATIVE	330,865,185	245,492,763	27,865,437	57,506,985
15	TROOP HSG/MESS	707,117,443	668,941,377	22,720,636	15,455,431
16	OTH PERSONNEL	620,740,315	471,849,527	52,146,133	96,744,656
17	UTILITIES	1,590,350,093	1,544,186,960	27,664,388	18,498,745
18	RE & ROADS/GRND	671,015,769	570,403,213	90,525,371	10,087,185
20	FAMILY HOUSING	1,858,622,293	1,815,933,999	35,733,151	6,955,144
		8,746,974,257	7,790,255,939	462,620,544	494,097,775

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AMC-AVIATION

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	5,063,710	5,051,236	0	12,474
02	COMMUNICATIONS	1,656,996	1,656,996	0	0
04	OTHER OPNS	2,656,876	2,656,876	0	0
05	TRAINING	2,824,484	2,824,484	0	0
06	AVIATION MAINT	73,951,493	71,166,342	2,785,151	0
08	OTH MAINT/PROD	31,496,866	25,288,979	4,781,007	1,426,879
09	R D T & E	149,322,551	149,322,551	0	0
10	POL SUPPLY/STOR	758,364	758,364	0	0
11	AMMO SPLY/STOR	59,345	59,345	0	0
12	OTHER SPLY/STOR	209,974,910	202,018,806	6,607,324	1,348,779
14	ADMINISTRATIVE	78,377,713	70,598,987	6,115,462	1,663,264
15	TROOP HSG/MESS	11,168,509	11,168,509	0	0
16	OTH PERSONNEL	28,179,993	15,942,376	9,834,970	2,402,647
17	UTILITIES	133,578,030	91,213,113	42,300,277	64,641
18	RE & ROADS/GRND	49,972,997	41,352,078	8,620,919	0
20	FAMILY HOUSING	36,534,314	36,092,554	441,760	0
		815,577,150	727,171,597	81,486,870	6,918,684

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AMC-COMM & ELEC

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	15,019,719	12,740,504	1,467,713	811,501
02	COMMUNICATIONS	23,879,925	20,732,522	1,287,381	1,860,023
03	WATERFRONT OPNS	0	0	0	0
04	OTHER OPNS	203,264	167,611	35,654	0
05	TRAINING	19,279,127	14,822,795	2,265,937	2,190,395
08	OTH MAINT/PROD	40,366,563	28,810,121	3,665,426	7,891,016
09	R D T & E	101,643,924	83,725,065	13,770,106	4,148,753
10	POL SUPPLY/STOR	378,138	378,138	0	0
11	AMMO SPLY/STOR	273,247	189,288	0	83,958
12	OTHER SPLY/STOR	32,444,208	13,546,025	10,742,423	8,155,759
14	ADMINISTRATIVE	177,766,000	126,042,153	29,730,036	21,993,811
15	TROOP HSG/MESS	76,515,728	74,305,995	0	2,209,733
16	OTH PERSONNEL	72,697,061	54,154,846	14,393,845	4,148,370
17	UTILITIES	100,564,629	99,585,594	620,762	358,273
18	RE & ROADS/GRND	63,301,973	45,967,165	17,265,304	69,504
20	FAMILY HOUSING	121,864,983	120,591,684	1,008,446	264,853
		846,198,487	695,759,506	96,253,031	54,185,950

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AMC-MMISSLE COM

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	31,174,712	28,783,579	1,403,348	987,785
02	COMMUNICATIONS	8,889,816	8,796,099	93,717	0
03	WATERFRONT OPNS	15,976,874	15,976,874	0	0
04	OTHER OPNS	766,827	756,930	0	9,897
05	TRAINING	65,644,668	62,192,082	2,988,765	463,822
06	AVIATION MAINT	3,774,531	3,774,531	0	0
08	OTH MAINT/PROD	248,284,555	234,827,718	9,593,365	3,863,472
09	R D T & E	130,899,005	126,121,153	3,825,549	952,303
10	POL SUPPLY/STOR	1,956,822	1,956,822	0	0
11	AMMO SPLY/STOR	121,178,080	120,868,216	309,864	0
12	OTHER SPLY/STOR	86,703,291	67,692,829	15,056,978	3,953,484
14	ADMINISTRATIVE	172,911,326	123,138,771	0	49,772,555
15	TROOP HSG/MESS	54,178,885	54,141,773	13,495	23,617
16	OTH PERSONNEL	54,297,319	48,899,476	3,656,823	1,741,019
17	UTILITIES	354,294,309	354,150,549	0	143,759
18	RE & ROADS/GRND	273,236,191	272,847,738	34,863	353,590
20	FAMILY HOUSING	72,531,202	72,504,962	26,241	0
		1,696,698,411	1,597,430,101	37,003,007	62,265,303

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AMC-TANK-AUTO COM

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
	-----	-----	-----	-----	-----
01	AVIATION OPNS	4,851,564	4,844,684	6,880	0
02	COMMUNICATIONS	1,835,334	1,835,334	0	0
04	OTHER OPNS	82,977,900	82,878,178	0	99,722
05	TRAINING	3,734,008	221,004	0	3,513,004
08	OTH MAINT/PROD	231,706,412	221,634,841	7,100,059	2,971,513
09	R D T & E	69,055,964	63,402,416	0	5,653,548
10	POL SUPPLY/STOR	338,547	338,547	0	0
12	OTHER SPLY/STOR	65,588,060	25,198,227	37,638,643	2,751,191
14	ADMINISTRATIVE	131,965,596	120,121,244	7,977,334	3,867,018
15	TROOP HSG/MESS	14,489,636	12,625,687	1,411,059	452,890
16	OTH PERSONNEL	31,550,262	28,735,778	1,640,070	1,174,414
17	UTILITIES	190,996,843	187,567,119	3,255,109	174,616
18	RE & ROADS/GRND	52,278,238	51,897,140	188,451	192,647
20	FAMILY HOUSING	89,845,113	89,845,113	0	0
		----- 971,213,479	----- 891,145,311	----- 59,217,605	----- 20,850,563

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
LABORATORY COM

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
	-----	-----	-----	-----	-----
01	AVIATION OPNS	488,356	488,356	0	0
02	COMMUNICATIONS	382,402	361,948	20,455	0
03	WATERFRONT OPNS	2,804,032	2,804,032	0	0
04	OTHER OPNS	281,961	281,961	0	0
05	TRAINING	668,023	668,023	0	0
08	OTH MAINT/PROD	7,282,250	6,512,667	769,583	0
09	R D T & E	135,905,137	135,752,551	152,586	0
10	POL SUPPLY/STOR	174,874	174,874	0	0
11	AMMO SPLY/STOR	216,551	154,560	61,990	0
12	OTHER SPLY/STOR	5,555,174	5,156,979	398,195	0
14	ADMINISTRATIVE	24,698,133	24,425,713	272,420	0
16	OTH PERSONNEL	6,401,888	6,401,888	0	0
17	UTILITIES	50,265,939	49,832,641	433,298	0
18	RE & ROADS/GRND	27,546,476	26,555,971	990,504	0
20	FAMILY HOUSING	1,538,200	1,538,200	0	0
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		264,209,397	261,110,365	3,099,032	0

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AMC-DEPOT SYS COM

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	350,154,683	299,616,660	45,837,735	4,700,289
02	COMMUNICATIONS	107,533,198	100,389,588	6,553,930	589,680
04	OTHER OPNS	7,601,837	6,873,196	522,169	206,473
05	TRAINING	69,954,230	60,746,407	7,814,149	1,393,675
06	AVIATION MAINT	917,798	312,216	0	605,582
07	SHIPYARD MAINT	227,448	227,448	0	0
08	OTH MAINT/PROD	995,622,526	877,299,828	115,471,357	2,851,340
09	R D T & E	38,843,694	20,201,519	18,034,709	607,466
10	POL SUPPLY/STOR	1,544,163	1,544,163	0	0
11	AMMO SPLY/STOR	3,337,812,939	3,320,502,175	6,417,072	10,893,693
12	OTHER SPLY/STOR	1,926,294,940	1,432,543,103	463,579,236	30,172,602
14	ADMINISTRATIVE	288,295,398	228,744,480	55,080,120	4,470,798
15	TROOP HSG/MESS	72,142,954	42,952,067	22,508,805	6,682,082
16	OTH PERSONNEL	175,417,110	97,781,945	65,476,496	12,158,670
17	UTILITIES	886,349,197	855,645,946	26,299,373	4,403,878
18	RE & ROADS/GRND	1,360,269,982	1,331,421,813	28,563,053	285,115
20	FAMILY HOUSING	61,540,105	54,112,898	5,889,818	1,537,389
		9,680,522,203	8,730,915,449	868,048,022	81,558,732

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AMC-TEST & EVAL COM

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	247,952,016	210,437,226	28,599,851	8,914,939
02	COMMUNICATIONS	148,799,236	148,311,024	414,081	74,131
03	WATERFRONT OPNS	37,251,941	37,251,941	0	0
04	OTHER OPNS	10,810,733	7,297,990	3,384,707	128,036
05	TRAINING	123,807,703	100,556,329	8,782,719	14,468,655
06	AVIATION MAINT	15,506,756	14,655,874	850,882	0
07	SHIPYARD MAINT	142,976	142,976	0	0
08	OTH MAINT/PROD	145,331,323	109,174,850	26,348,424	9,808,049
09	R D T & E	1,047,418,343	694,030,853	326,807,557	26,579,933
10	POL SUPPLY/STOR	1,631,375	1,545,127	85,930	318
11	AMMO SPLY/STOR	70,480,758	64,348,252	4,905,966	1,226,540
12	OTHER SPLY/STOR	243,072,901	196,345,043	27,581,115	19,146,744
14	ADMINISTRATIVE	333,034,407	257,468,001	48,995,252	26,571,154
15	TROOP HSG/MESS	206,535,444	171,950,005	4,093,408	30,492,031
16	OTH PERSONNEL	179,869,250	140,956,125	29,555,518	9,357,607
17	UTILITIES	744,989,806	653,258,016	78,551,175	13,180,615
18	RE & ROADS/GRND	895,481,084	775,735,707	118,271,791	1,473,585
20	FAMILY HOUSING	275,338,847	274,257,088	0	1,081,760
		4,727,454,900	3,857,722,427	707,228,376	162,504,097

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
AMC-ARMS, MUNITIONS COM

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	234,490,517	158,021,971	59,227,456	17,241,091
02	COMMUNICATIONS	112,707,905	97,203,676	15,479,408	24,820
03	WATERFRONT OPNS	472,884	472,884	0	0
04	OTHER OPNS	51,917,373	36,771,419	13,366,430	1,779,524
05	TRAINING	77,649,256	65,937,984	11,284,164	427,109
06	AVIATION MAINT	2,171,156	0	0	2,171,156
08	OTH MAINT/PROD	7,345,921,530	4,744,514,390	2,570,946,904	30,460,236
09	R D T & E	274,398,895	269,908,534	4,462,508	27,853
10	POL SUPPLY/STOR	500,690,627	202,397,448	115,281,780	183,011,400
11	AMMO SPLY/STOR	3,191,157,214	3,050,066,706	140,991,091	99,417
12	OTHER SPLY/STOR	1,064,408,903	776,013,433	249,248,160	39,147,311
14	ADMINISTRATIVE	592,700,539	490,142,691	100,146,372	2,411,477
15	TROOP HSG/MESS	33,463,601	25,695,390	5,060,246	2,707,965
16	OTH PERSONNEL	412,954,603	299,774,320	110,461,126	2,719,158
17	UTILITIES	5,360,922,503	4,963,306,605	360,754,307	36,861,591
18	RE & ROADS/GRND	2,173,011,258	1,676,303,960	489,309,152	7,398,146
20	FAMILY HOUSING	94,937,354	57,573,260	36,726,850	637,244
		21,523,976,118	16,914,104,668	4,282,745,953	327,125,497

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
U S MILITARY ACADEMY

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	5,658,235	4,112,844	40,757	1,504,634
02	COMMUNICATIONS	63,728,576	62,523,384	1,125,952	79,240
03	WATERFRONT OPNS	6,189,709	6,189,709	0	0
04	OTHER OPNS	1,285,783	1,285,783	0	0
05	TRAINING	175,829,790	166,622,895	7,106,065	2,100,831
06	AVIATION MAINT	10,593,602	10,593,602	0	0
08	OTH MAINT/PROD	35,457,393	33,779,333	0	1,678,060
10	POL SUPPLY/STOR	2,921,977	2,921,977	0	0
11	AMMO SPLY/STOR	1,619,709	1,540,984	78,725	0
12	OTHER SPLY/STOR	30,483,136	27,936,716	1,030,421	1,515,999
13	MEDICAL/DENTAL	44,345,182	43,741,463	401,671	202,048
14	ADMINISTRATIVE	150,369,426	148,676,420	1,119,044	573,962
15	TROOP HSG/MESS	334,076,921	301,002,012	30,656,214	2,418,695
16	OTH PERSONNEL	328,815,232	318,193,322	2,362,403	8,259,508
17	UTILITIES	418,728,757	418,289,055	66,870	372,833
18	RE & ROADS/GRND	137,386,104	132,099,368	2,553,331	2,733,404
20	FAMILY HOUSING	295,925,490	275,230,832	20,694,659	0
		2,043,415,024	1,954,739,698	67,236,113	21,439,213

REPLACEMENT VALUE REPORT  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93  
 EIGHTH US ARMY

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	309,838,878	1,532,976	206,820,297	101,485,605
02	COMMUNICATIONS	69,427,156	5,318,830	53,375,224	10,733,102
03	WATERFRONT OPNS	34,475,798	19,124,753	15,351,045	0
04	OTHER OPNS	15,345,397	1,167,566	12,726,511	1,451,320
05	TRAINING	49,229,735	658,083	29,416,652	19,155,001
06	AVIATION MAINT	72,259,462	0	70,996,715	1,262,747
07	SHIPYARD MAINT	318,893	0	0	318,893
08	OTH MAINT/PROD	307,812,797	7,122,884	222,771,598	77,918,314
09	R D T & E	18,760,762	0	14,531,801	4,228,961
10	POL SUPPLY/STOR	2,600,528	0	2,043,272	557,256
11	AMMO SPLY/STOR	18,717,718	800,435	15,510,675	2,406,609
12	OTHER SPLY/STOR	250,675,242	5,498,052	127,736,989	117,440,202
14	ADMINISTRATIVE	302,150,980	57,376,460	164,685,781	80,088,740
15	TROOP HSG/MESS	1,102,009,519	17,197,237	972,186,169	112,626,113
16	OTH PERSONNEL	571,017,416	29,476,659	383,894,363	157,646,393
17	UTILITIES	599,718,668	9,658,478	330,099,921	259,960,269
18	RE & ROADS/GRND	398,884,952	2,494,413	279,399,365	116,991,174
20	FAMILY HOUSING	115,721,676	62,562,133	52,235,260	924,284
		4,238,965,577	219,988,958	2,953,781,636	1,065,194,983

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
US ARMY RESERVE

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	140,402,878	136,630,959	2,888,283	883,636
02	COMMUNICATIONS	112,478,796	110,601,144	373,511	1,504,141
03	WATERFRONT OPNS	14,712,785	12,836,339	1,514,214	362,232
04	OTHER OPNS	2,069,023	1,734,126	86,402	248,494
05	TRAINING	1,576,464,445	1,495,947,577	42,662,074	37,854,794
06	AVIATION MAINT	61,472,080	61,472,080	0	0
07	SHIPYARD MAINT	4,368,829	1,559,131	0	2,809,698
08	OTH MAINT/PROD	598,627,818	583,988,354	3,742,861	10,896,603
09	R D T & E	3,433,978	2,763,429	670,549	0
10	POL SUPPLY/STOR	28,670,557	27,140,574	1,529,983	0
11	AMMO SPLY/STOR	11,728,030	9,958,604	1,408,023	361,403
12	OTHER SPLY/STOR	98,106,793	69,795,955	6,822,982	21,487,856
14	ADMINISTRATIVE	100,025,699	81,690,013	5,481,451	12,854,235
15	TROOP HSG/MESS	195,947,851	42,092,962	10,040,953	143,813,936
16	OTH PERSONNEL	45,909,807	23,100,835	4,616,213	18,192,759
17	UTILITIES	335,909,398	321,054,999	3,599,363	11,255,036
18	RE & ROADS/GRND	390,420,333	382,958,564	3,386,393	4,075,375
20	FAMILY HOUSING	8,965,318	6,733,142	168,928	2,063,248
		3,729,714,416	3,372,058,786	88,992,182	268,663,448

REPLACEMENT VALUE REPORT  
 WORLDWIDE SUMMARY  
 AS OF 30 SEP 93  
 TRNING & DOCTRINE COMMAND

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	1,318,422.407	1,230,546.787	31,027.500	56,848.120
02	COMMUNICATIONS	276,845.339	207,577.749	41,285.221	27,982.370
03	WATERFRONT OPNS	219,867.748	174,376.607	45,491.141	0
04	OTHER OPNS	55,373.855	48,033.660	1,334.643	6,005.552
05	TRAINING	1,944,039.726	1,593,899.647	89,562.325	260,577.754
06	AVIATION MAINT	154,616.681	146,282.102	1,286.864	7,047.716
07	SHIPYARD MAINT	7,639.025	7,639.025	0	0
08	OTH MAINT/PROD	887,557.885	585,485.884	70,871.507	231,200.493
09	R D T & E	104,178.520	99,589.831	771.267	3,817.421
10	POL SUPPLY/STOR	8,566.603	8,275.491	161.802	129.310
11	AMMO SPLY/STOR	65,018.354	47,771.770	14,045.545	3,201.039
12	OTHER SPLY/STOR	725,836.069	348,950.623	71,418.665	305,466.781
14	ADMINISTRATIVE	1,175,886.694	817,686.521	36,510.054	321,690.118
15	TROOP HSG/MESS	3,094,364.311	2,434,946.318	118,733.394	540,684.598
16	OTH PERSONNEL	1,447,689.637	1,085,838.600	80,292.709	281,558.328
17	UTILITIES	2,994,614.037	2,922,295.917	37,389.162	34,928.957
18	RE & ROADS/GRND	2,360,824.392	2,148,986.562	139,458.349	72,379.481
20	FAMILY HOUSING	2,116,751.990	2,107,343.728	4,498.965	4,909.297
		18,958,093.271	16,015,526.822	784,139,114	2,158,427,335

REPLACEMENT VALUE REPORT  
WORLDWIDE SUMMARY  
AS OF 30 SEP 93  
INFORMATION SYSTEMS COMMAND

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	9,956,864	9,641,796	315,068	0
02	COMMUNICATIONS	12,219,832	11,967,428	252,404	0
04	OTHER OPNS	274,633	101,414	173,219	0
05	TRAINING	944,194	944,194	0	0
08	OTH MAINT/PROD	9,540,017	9,540,017	0	0
09	R D T & E	34,034,927	26,940,792	7,094,134	0
10	POL SUPPLY/STOR	332,666	288,881	43,785	0
11	AMMO SPLY/STOR	788,654	255,421	533,233	0
12	OTHER SPLY/STOR	12,716,981	10,734,580	2,138	1,980,263
14	ADMINISTRATIVE	102,365,608	68,751,934	32,189,972	1,423,702
15	TROOP HSG/MESS	18,155,061	13,928,811	4,226,250	0
16	OTH PERSONNEL	38,465,992	32,439,035	2,843,746	3,183,211
17	UTILITIES	95,136,133	84,419,020	10,717,112	0
18	RE & ROADS/GRND	26,653,222	22,664,498	3,978,179	10,544
20	FAMILY HOUSING	24,963,095	24,751,116	200,576	11,403
		386,547,876	317,368,937	62,569,817	6,609,123

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY BY COMMAND AND FUND TYPE  
 AS OF 30 SEP 93

USER	FUND TYPE	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
CE	RDTE	18,244,783	18,244,037	0	746
AFRC	OMA	240,055,279	231,543,974	7,975,684	535,621
	OTHER	33,108,377	33,091,521	0	16,856
MDW	AFH	203,617,443	199,632,112	43,788	3,941,543
	OMA	1,783,467,822	1,634,568,649	49,391,124	99,508,049
	OTHER	81,165,913	80,914,772	0	251,140
MTMC	OMA	1,794,988,309	1,574,300,377	219,389,942	1,297,990
NG	AFH	5,946,771	4,762,561	496,348	687,862
	OMAR	55,219,317	19,334,292	35,584,836	300,189
	OMNG	2,372,805,178	1,332,869,376	525,457,979	514,477,822
SPS	OMA	278,369	278,369	0	0
FCOM	AFH	4,739,311,655	4,683,694,198	13,555,430	42,062,028
	OMA	28,671,011,010	21,963,185,446	1,071,865,382	5,635,960,182
	OMAR	439,075,521	374,744,312	51,998,124	12,333,086
	OTHER	101,217,272	99,378,235	291,206	1,547,830
VIITC	AFH	363,332,697	334,155,325	28,552,622	624,749
	OMA	2,310,115,100	1,638,796,492	532,812,673	138,505,935
XXISC	AFH	883,027,018	877,923,130	4,800,041	303,848
	OMA	8,428,282,992	7,078,124,813	1,182,729,453	167,428,726
SETAF	AFH	116,894,116	116,894,116	0	0
	OMA	668,958,746	657,689,899	232,829	11,036,018

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY BY COMMAND AND FUND TYPE  
 AS OF 30 SEP 93

USER	FUND TYPE	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
USABE	AFH	393,287,320	391,978,620	1,143,350	165,350
	OMA	981,747,752	806,798,436	170,369,224	4,580,092
	OTHER	70,915,001	65,510,605	5,395,195	9,201
VIIC	AFH	2,468,337,035	2,411,449,087	38,567,008	18,320,941
	OMA	7,909,591,191	7,191,586,185	605,146,212	112,858,794
	OTHER	21,224,956	21,160,692	64,264	0
TAMMC	OMA	501,215,443	431,301,347	69,740,788	173,307
	OTHER	64,956,885	47,890,623	17,047,711	18,551
VC	AFH	3,555,608,224	3,473,986,397	67,837,522	13,784,305
	OMA	7,847,119,598	7,037,462,577	558,497,843	251,159,178
	OTHER	24,007,761	20,344,821	2,821,306	841,635
XXVI	AFH	347,915,718	347,902,638	13,080	0
	OMA	955,765,258	797,002,499	133,030,415	25,732,343
ARJ	AFH	242,186,766	76,450,976	160,340,430	5,395,359
	OMA	2,350,084,581	1,564,708,481	739,064,524	46,311,576
SCOM	AFH	357,122,762	326,829,215	6,031,249	24,262,297
	OMA	1,731,948,384	1,598,345,362	102,499,565	31,103,457
PACOM	AFH	1,865,122,033	1,819,772,426	35,846,756	9,502,851
	OMA	6,874,370,314	5,967,641,405	422,268,182	484,460,728
	RDTE	7,481,911	2,842,108	4,505,606	134,196
AVSCM	AFH	41,798,231	41,356,471	441,760	0

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY BY COMMAND AND FUND TYPE  
 AS OF 30 SEP 93

USER	FUND TYPE	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
AVSCM	OMA	388,988,401	303,756,695	78,980,203	6,251,503
	PA	232,094,467	230,227,990	1,866,476	0
	RDTE	152,696,052	151,830,441	198,431	667,181
CECOM	AFH	122,040,825	120,767,527	1,008,446	264,853
	OMA	724,157,662	574,991,980	95,244,585	53,921,097
MICOM	AFH	72,531,202	72,504,962	26,241	0
	OMA	1,624,167,209	1,524,925,140	36,976,766	62,265,303
TACOM	AFH	102,454,140	102,454,140	0	0
	OMA	649,673,779	577,414,004	52,105,156	20,154,620
	PA	219,085,559	211,277,168	7,112,449	695,943
LABCM	AFH	1,538,200	1,538,200	0	0
	RDTE	262,671,196	259,572,164	3,099,032	0
DSCOM	AFH	61,540,105	54,112,898	5,889,818	1,537,389
	AIF	9,541,436,322	8,601,064,835	861,351,760	79,019,727
	OMA	77,545,776	75,737,716	806,444	1,001,616
TECOM	AFH	275,338,847	274,257,088	0	1,081,760
	OMA	154,106,284	147,108,812	6,921,116	76,357
	RDTE	4,298,009,768	3,436,356,527	700,307,260	161,345,981
AMCCM	AFH	95,713,115	58,349,021	36,726,850	637,244
	AIF	3,139,113,904	2,960,191,220	174,459,397	4,463,287
	OMA	384,656,344	197,726,368	186,751,956	178,020

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY BY COMMAND AND FUND TYPE  
 AS OF 30 SEP 93

USER	FUND TYPE	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
AMCCM	OPA	3,225,658,267	1,840,433,285	1,328,078,139	57,146,843
	PA	13,918,718,402	11,107,625,555	2,549,379,365	261,713,482
	RDTE	760,116,086	749,779,219	7,350,246	2,986,621
USMA	AFH	295,925,490	275,230,832	20,694,659	0
	OMA	1,747,489,533	1,679,508,866	46,541,454	21,439,213
EUSA	AFH	115,721,676	62,562,133	52,235,260	924,284
	OMA	4,123,243,900	157,426,825	2,901,546,377	1,064,270,699
USAR	AFH	10,128,297	7,896,121	168,928	2,063,248
	OMA	7,510,762	7,510,762	0	0
	OMAR	3,712,075,357	3,356,651,903	88,823,254	266,600,200
TDOC	AFH	2,116,751,990	2,107,343,728	4,498,965	4,909,297
	OMA	16,603,433,249	13,763,532,864	709,875,269	2,130,025,116
	OMAR	237,908,033	144,650,230	69,764,880	23,492,922
ISC	AFH	24,963,095	24,751,116	200,576	11,403
	HA	105,074,860	70,962,878	33,302,786	809,196
	OMA	256,509,922	221,654,943	29,066,456	5,788,524
		<u>161,762,718,888</u>	<u>132,910,133,131</u>	<u>16,957,208,449</u>	<u>11,895,377,308</u>

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY BY FUND TYPE  
 AS OF 30 SEP 93

FUND TYPE	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
AFH	18,878,312,346	18,268,583,487	479,119,124	130,609,735
AIF	12,680,550,226	11,561,256,055	1,035,811,157	83,483,014
HA	105,074,860	70,962,878	33,302,786	809,196
OMA	100,184,453,776	79,758,924,265	10,014,954,540	10,410,574,971
OMAR	4,444,278,227	3,895,380,737	246,171,094	302,726,396
OMNG	2,372,805,178	1,332,869,376	525,457,979	514,477,822
OPA	3,225,658,267	1,840,433,285	1,328,078,139	57,146,843
OTHER	396,596,165	368,291,269	25,619,683	2,685,213
PA	14,369,898,428	11,549,130,713	2,558,358,291	262,409,425
RDTE	5,499,219,797	4,618,624,497	715,460,575	165,134,725
	<u>162,156,847,268</u>	<u>133,264,456,561</u>	<u>16,962,333,368</u>	<u>11,930,057,340</u>

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY BY COMMAND  
 OMA FUNDS ONLY  
 AS OF 30 SEP 93

MACOM CODE	CMD	TOTAL	PERMANENT	SEMI-PERMANENT	TEMPORARY
		REPLACEMENT COST-DOLLARS	CONSTRUCTION REPLACEMENT COST-DOLLARS	CONSTRUCTION REPLACEMENT COST-DOLLARS	CONSTRUCTION REPLACEMENT COST-DOLLARS
EA	MDW	1,783,467,822	1,634,568,649	49,391,124	99,508,049
FA	MTMC	1,794,988,309	1,574,300,377	219,389,942	1,297,990
JA	FCOM	28,673,294,234	21,970,974,577	1,068,260,665	5,634,058,992
MA	AREUR	29,842,851,358	25,870,306,223	3,260,535,121	712,010,014
NS	SCOM	1,731,948,384	1,598,345,362	102,499,565	31,103,457
NW	PACOM	9,224,454,895	7,532,349,886	1,161,332,705	530,772,304
PA	AMC	4,397,266,262	3,755,955,694	462,911,145	178,399,423
RA	USMA	1,747,489,533	1,679,508,866	46,541,454	21,439,213
SG	EUSA	4,128,749,807	157,426,825	2,905,151,093	1,066,171,889
TD	TDOC	16,603,433,249	13,763,532,864	709,875,269	2,130,025,116
UA	ISC	256,509,922	221,654,943	29,066,456	5,788,524
		<u>100,184,453,776</u>	<u>79,758,924,265</u>	<u>10,014,954,540</u>	<u>10,410,574,971</u>

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 WORLDWIDE SUMMARY  
 OMA FUNDS ONLY  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	8,029,213,530	6,989,394,800	550,463,667	489,355,063
02	COMMUNICATIONS	1,796,662,638	1,598,675,948	131,674,599	66,312,091
03	WATERFRONT OPNS	1,337,338,162	1,309,011,182	27,643,420	683,560
04	OTHER OPNS	727,920,056	609,243,893	101,793,114	16,883,049
05	TRAINING	6,448,688,032	4,723,099,126	593,047,428	1,132,541,478
06	AVIATION MAINT	1,173,256,888	976,524,716	172,898,250	23,833,922
07	SHIPYARD MAINT	198,107,067	189,954,856	6,803,635	1,348,576
08	OTH MAINT/PROD	7,633,577,517	5,802,996,491	833,434,083	997,146,943
09	R D T & E	772,920,826	671,387,823	49,660,698	51,872,305
10	POL SUPPLY/STOR	693,363,133	616,331,085	76,045,224	986,824
11	AMMO SPLY/STOR	2,381,102,477	2,158,544,960	179,657,134	42,900,383
12	OTHER SPLY/STOR	6,762,377,548	3,914,397,781	1,563,611,290	1,284,368,477
13	MEDICAL/DENTAL	134,678,499	133,964,787	401,671	312,041
14	ADMINISTRATIVE	6,553,764,720	4,870,909,352	520,381,851	1,162,473,517
15	TROOP HSG/MESS	15,370,419,610	11,144,344,749	1,600,438,324	2,625,636,537
16	OTH PERSONNEL	9,919,785,296	7,650,101,889	1,008,839,974	1,260,843,433
17	UTILITIES	18,269,010,362	16,456,168,828	1,304,970,993	507,870,541
18	RE & ROADS/GRND	11,957,066,783	9,919,021,494	1,292,869,194	745,176,095
20	FAMILY HOUSING	25,200,631	24,850,505	319,991	30,135
		<u>100,184,453,776</u>	<u>79,758,924,265</u>	<u>10,014,954,540</u>	<u>10,410,574,971</u>

CHAPTER TWO

ARMY REPORTED PROPERTY  
CONTROLLED BY OTHER AGENCIES

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 AS OF 30 SEP 93

USING AGENCY	CMD	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
BA	DNA	10,679,334	2,033,297	8,646,038	0
CA	DLA	3,407,628,947	2,859,473,630	472,700,615	75,454,702
CC	DECA	808,796,305	750,931,511	30,907,506	26,957,287
CP	PENT	795,642,209	795,642,209	0	0
DA	HSC	5,289,536,023	4,758,982,715	186,589,878	343,963,430
HA	NSA	92,084,559	32,151,060	59,933,499	0
KA	SPTS	996,969	996,969	0	0
VA	SDC	1,680,487,366	1,524,282,152	133,949,896	22,255,319
		<u>12,085,851,712</u>	<u>10,724,493,542</u>	<u>892,727,431</u>	<u>468,630,738</u>

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 BA -- DNA  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
04	OTHER OPNS	12,454	0	12,454	0
08	OTH MAINT/PROD	1,378,266	1,135,318	242,948	0
12	OTHER SPLY/STOR	637,930	637,930	0	0
14	ADMINISTRATIVE	8,355,176	260,049	8,095,127	0
15	TROOP HSG/MESS	209,460	0	209,460	0
16	OTH PERSONNEL	86,048	0	86,048	0
		10,679,334	2,033,297	8,646,038	0

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 CA -- DLA  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	124,311,226	112,868,516	11,041,564	401,146
02	COMMUNICATIONS	75,569,046	75,569,046	0	0
03	WATERFRONT OPNS	38,940	38,940	0	0
04	OTHER OPNS	3,556,760	3,473,994	80,099	2,666
05	TRAINING	9,673,537	9,021,032	147,939	504,566
06	AVIATION MAINT	4,634,131	4,634,131	0	0
08	OTH MAINT/PROD	159,144,022	141,996,209	13,604,616	3,543,198
09	R D T & E	12,831,635	12,831,635	0	0
10	POL SUPPLY/STOR	1,794,592	1,184,264	610,328	0
11	AMMO SPLY/STOR	2,568,852	2,568,852	0	0
12	OTHER SPLY/STOR	1,978,818,636	1,558,190,186	362,202,043	58,426,407
14	ADMINISTRATIVE	357,122,375	319,852,382	30,886,916	6,383,077
15	TROOP HSG/MESS	8,467,866	4,448,714	3,960,556	58,597
16	OTH PERSONNEL	83,347,986	68,174,295	11,326,844	3,846,847
17	UTILITIES	264,173,700	257,062,592	6,976,397	134,711
18	RE & ROADS/GRND	301,095,147	267,454,291	31,593,180	2,047,676
20	FAMILY HOUSING	20,480,496	20,104,552	270,132	105,812
		----- 3,407,628,947	----- 2,859,473,630	----- 472,700,615	----- 75,454,702

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 CC -- DECA  
 AS OF 30 SEP 93

INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT - COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
21 COMMISSARIES	808,796,305	750,931,511	30,907,506	26,957,287
	808,796,305	750,931,511	30,907,506	26,957,287

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 CP -- PENT  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	1,672,198	1,672,198	0	0
03	WATERFRONT OPNS	1,687,222	1,687,222	0	0
04	OTHER OPNS	26,536	26,536	0	0
12	OTHER SPLY/STOR	110,205	110,205	0	0
14	ADMINISTRATIVE	739,286,171	739,286,171	0	0
16	OTH PERSONNEL	7,186,725	7,186,725	0	0
17	UTILITIES	14,955,729	14,955,729	0	0
18	RE & ROADS/GRND	30,717,424	30,717,424	0	0
		----- 795,642,209	----- 795,642,209	----- 0	----- 0

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 DA -- HSC  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	716,524	487,064	0	229,460
02	COMMUNICATIONS	36,660,655	33,102,357	1,465,523	2,092,774
04	OTHER OPNS	2,454,234	2,370,389	18,292	65,552
05	TRAINING	19,400,875	4,304,695	163,281	14,932,900
08	OTH MAINT/PROD	20,492,168	9,795,579	4,353,268	6,343,321
09	R D T & E	110,311,991	104,269,233	2,689,248	3,353,510
10	POL SUPPLY/STOR	227,972	210,168	17,804	0
11	AMMO SPLY/STOR	111,399	0	53,050	58,349
12	OTHER SPLY/STOR	18,769,826	8,335,566	1,609,049	8,825,211
13	MEDICAL/DENTAL	4,454,694,071	4,062,197,484	151,769,893	240,726,693
14	ADMINISTRATIVE	107,536,955	65,174,798	5,885,583	36,476,574
15	TROOP HSG/MESS	38,462,566	24,884,825	10,656,243	2,921,499
16	OTH PERSONNEL	80,014,192	47,094,723	5,924,787	26,994,683
17	UTILITIES	297,078,550	295,121,909	1,927,511	29,130
18	RE & ROADS/GRND	49,896,873	48,672,420	30,848	1,193,605
20	FAMILY HOUSING	54,225,430	54,102,119	25,498	97,813
		5,291,054,281	4,760,123,330	186,589,878	344,341,073

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 HA -- NSA  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
01	AVIATION OPNS	12,924,234	9,843,256	3,080,978	0
02	COMMUNICATIONS	5,015,103	2,968,039	2,047,064	0
04	OTHER OPNS	66,701	0	66,701	0
05	TRAINING	14,426	0	14,426	0
08	OTH MAINT/PROD	2,399,663	0	2,399,663	0
09	R D T & E	7,491,884	7,491,884	0	0
10	POL SUPPLY/STOR	18,456	18,456	0	0
12	OTHER SPLY/STOR	2,949,039	0	2,949,039	0
14	ADMINISTRATIVE	4,426,734	1,487,300	2,939,434	0
15	TROOP HSG/MESS	6,445,736	0	6,445,736	0
16	OTH PERSONNEL	13,711,729	5,060	13,706,669	0
17	UTILITIES	16,122,335	7,085,436	9,036,899	0
18	RE & ROADS/GRND	11,156,873	3,251,629	7,905,244	0
20	FAMILY HOUSING	9,341,644	0	9,341,644	0
		92,084,559	32,151,060	59,933,499	0

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 KA -- SPTS  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
04	OTHER OPNS	8,845	8,845	0	0
08	OTH MAINT/PROD	265,032	265,032	0	0
14	ADMINISTRATIVE	13,821	13,821	0	0
17	UTILITIES	104,813	104,813	0	0
18	RE & ROADS/GRND	396,284	396,284	0	0
20	FAMILY HOUSING	208,173	208,173	0	0
		----- 996,969	----- 996,969	----- 0	----- 0

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 VA -- SDC  
 AS OF 30 SEP 93

	INVESTMENT CATEGORY	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
	-----	-----	-----	-----	-----
01	AVIATION OPNS	243,322,949	242,476,996	783,299	62,654
02	COMMUNICATIONS	28,383,230	26,394,525	1,741,303	247,402
03	WATERFRONT OPNS	53,768,455	52,498,760	0	1,269,696
04	OTHER OPNS	4,003,731	3,120,033	771,750	111,948
05	TRAINING	184,971	0	184,971	0
06	AVIATION MAINT	21,374,467	18,456,440	2,918,027	0
07	SHIPYARD MAINT	9,914,379	2,192,977	7,721,401	0
08	OTH MAINT/PROD	42,663,720	22,739,010	18,761,378	1,163,332
09	R D T & E	248,462,742	216,161,518	26,422,409	5,878,815
10	POL SUPPLY/STOR	23,505,158	22,871,837	633,321	0
11	AMMO SPLY/STOR	2,836,576	2,456,077	380,499	0
12	OTHER SPLY/STOR	60,371,571	32,940,741	26,153,707	1,277,122
14	ADMINISTRATIVE	69,403,444	59,399,497	9,682,921	321,026
15	TROOP HSG/MESS	101,855,158	93,691,404	6,713,141	1,450,613
16	OTH PERSONNEL	101,141,402	76,812,006	15,377,982	8,951,413
17	UTILITIES	552,783,949	541,036,913	10,609,680	1,137,356
18	RE & ROADS/GRND	32,662,504	32,246,113	32,449	383,942
20	FAMILY HOUSING	83,848,962	78,787,304	5,061,658	0
		-----	-----	-----	-----
		1,680,487,366	1,524,282,152	133,949,896	22,255,319

CHAPTER THREE

COMMAND SUMMARIES

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 ARMY CONUS BY MAJOR COMMAND  
 AS OF 30 SEP 93

MACOM CODE	CMD	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
AA	CE	22,079,880	22,079,134	0	746
EA	MDW	2,076,692,148	1,922,970,933	49,884,908	103,836,307
FA	MTMC	1,794,988,309	1,574,300,377	219,389,942	1,297,990
GA	NG	2,052,116,708	1,063,439,421	498,610,176	490,067,111
JA	FCOM	36,545,347,583	29,435,722,133	1,173,162,554	5,936,462,896
NW	PACOM	8,754,056,747	7,797,338,429	462,620,544	494,097,775
PA	AMC	41,381,389,455	34,422,297,731	6,192,653,679	766,438,044
RA	USMA	2,043,415,024	1,954,739,698	67,236,113	21,439,213
TD	TDOC	19,610,682,259	16,639,098,094	793,661,200	2,177,922,965
UA	ISC	396,759,129	327,530,468	62,619,539	6,609,123
		<u>114,677,527,242</u>	<u>95,159,516,418</u>	<u>9,519,838,655</u>	<u>9,998,172,170</u>

REPLACEMENT VALUE REPORT  
 ARMY OWNED AND CONTROLLED PROPERTY  
 ARMY OVERSEAS BY MAJOR COMMAND  
 AS OF 30 SEP 93

MACOM CODE	CMD	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
GA	NG	125,589,041	97,941,504	19,527,929	8,119,609
JA	FCOM	236,918,963	202,959,385	30,867,443	3,092,135
MA	AREUR	38,185,466,468	34,012,593,797	3,426,777,220	746,095,450
NS	SCOM	2,089,071,146	1,925,174,577	108,530,815	55,365,754
NW	PACOM	2,597,802,925	1,646,281,923	899,404,954	52,116,049
SG	EUSA	4,244,471,483	219,988,958	2,957,386,353	1,067,096,173
		<u>47,479,320,026</u>	<u>38,104,940,143</u>	<u>7,442,494,713</u>	<u>1,931,885,170</u>

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 DOD CONUS BY AGENCY  
 AS OF 30 SEP 93

MACOM CODE	CMD	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
BA	DNA	10,679,334	2,033,297	8,646,038	0
CA	DLA	3,407,628,947	2,859,473,630	472,700,615	75,454,702
CC	DECA	463,165,435	438,804,970	7,204,891	17,155,574
CP	PENT	795,642,209	795,642,209	0	0
DA	HSC	4,233,100,034	3,789,620,203	104,320,373	339,159,459
HA	NSA	30,421,542	30,269,896	151,645	0
KA	SPTS	996,969	996,969	0	0
VA	SDC	269,737,980	261,020,713	8,602,789	114,479
		<u>9,211,372,450</u>	<u>8,177,861,886</u>	<u>601,626,351</u>	<u>431,884,213</u>

REPLACEMENT VALUE REPORT  
 ARMY PROPERTY CONTROLLED BY OTHER AGENCIES  
 NOT INCLUDED IN CHAPTER 1  
 DOD OCONUS BY AGENCY  
 AS OF 30 SEP 93

MACOM CODE	CMD	TOTAL REPLACEMENT COST-DOLLARS	PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	SEMI-PERMANENT CONSTRUCTION REPLACEMENT COST-DOLLARS	TEMPORARY CONSTRUCTION REPLACEMENT COST-DOLLARS
CC	DECA	345,630,870	312,126,542	23,702,615	9,801,713
DA	HSC	1,192,632,746	1,104,467,914	82,671,177	5,493,655
HA	NSA	61,663,017	1,881,163	59,781,853	0
VA	SDC	1,410,749,386	1,263,261,439	125,347,107	22,140,840
		<u>3,010,676,019</u>	<u>2,681,737,058</u>	<u>291,502,752</u>	<u>37,436,208</u>

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
ABERDEEN PROVING GROUND	1,945,878.979	1,945,878.979
ALABAMA AAP	64,793.386	64,793.386
ANNISTON ARMY DEPOT	915,838.824	869,467.620
ARMY MATERIALS TECHNOLOGY LAB	135,096.354	135,096.354
BADGER ARMY AMMUNITION PLANT	1,516,174.801	1,516,174.801
BAYONNE MOT	862,436.262	862,436.262
BELVOIR FORT	1,547,389.012	1,538,219.633
BENNING FORT	2,134,288.958	2,075,802.023
BLISS FORT	2,291,029.351	1,985,247.848
BRAGG FT	2,825,624.330	2,729,984.478
CAMERON STATION	154,507.532	151,532.327
CAMP STANLEY STOR ACTIV	78,052.678	78,052.678
CAMPBELL FT	2,535,492.064	2,484,932.097
CARLISLE BARRACKS	151,532.571	151,532.571
CARSON FORT	1,938,144.785	1,739,923.693
CHAFFEE FORT	630,327.293	630,327.293
CHARLES MELVIN PRICE SPT CTR	397,437.449	388,066.712
CORNHUSKER AR AMMUNITION PLT	513,818.215	513,818.215
DEF CONSTR SUP CTR	483,636.712	483,636.712
DEF GEN SUPPLY CENTER	414,500.394	414,500.394
DEF PERS SUPPORT CTR	250,487.728	250,487.728

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
DEFENSE DEPOT MEMPHIS	490,332,413	374,905,478
DEFENSE DEPOT OGDEN	562,968,913	562,968,913
DEFENSE DEPOT TRACY	383,953,523	383,953,523
DETRICK FORT	400,539,881	400,539,881
DETROIT ARSENAL	603,600,504	337,808,041
DEVENS FORT	1,472,613,851	1,103,931,634
DIX FORT	1,465,346,973	1,337,012,417
DRUM FORT	2,197,235,067	1,977,700,647
DUGWAY PROVING GROUND	427,916,031	427,916,031
EUSTIS FORT	1,138,238,314	908,942,794
FITZSIMMONS AMC	355,515,453	355,515,453
FORT HUNTER LIGGETT	312,195,948	312,195,948
GORDON FORT	1,146,228,969	1,132,017,552
GREELY FORT	752,746,995	715,949,042
HAMILTON FORT	391,684,807	178,615,717
HARRISON FORT BENJAMIN	742,388,266	661,461,154
HARRY DIAMOND LABS	129,212,650	111,029,500
HAWTHORNE AAP	1,900,793,448	1,900,793,448
HAYS ARMY AMMO PLANT	40,748,223	40,748,223
HILL FORT A P	312,578,568	312,578,568
HOLSTON ARMY AMMO PLT	998,234,095	998,234,095

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
HOOD FORT	3,518,394,237	3,449,669,913
HOUSTON FORT SAM	1,133,157,769	998,561,781
HUACHUCA FORT	1,332,159,324	1,312,988,066
HUNTER ARMY AIRFIELD	579,624,429	575,452,303
INDIANA ARMY AMMUNITION PLANT	1,233,164,335	1,233,164,335
INDIANTOWN GAP FORT	782,883,629	646,575,337
IOWA AAP	1,438,517,609	1,438,517,609
IRWIN FORT	955,821,721	955,543,352
JACKSON FORT	1,229,664,672	1,200,532,630
JEFFERSON PROVING GROUND	156,624,261	156,624,261
JOLIET AAP KANKAKEE	1,242,387,488	472,917,716
KANSAS AAP	445,862,180	445,862,180
KELLY SUPPORT CENTER	353,872,472	93,566,102
KNOX FORT	2,387,785,551	2,234,336,701
LAKE CITY ARMY AMMUNITION PLT	457,822,764	457,822,764
LEAVENWORTH FORT	786,417,643	781,998,834
LEE FORT	700,113,246	700,113,246
LETTERKENNY ARMY DEPOT	964,594,064	964,594,064
LEWIS FORT	3,543,931,492	2,836,741,534
LEX-BLUE GRASS AD	749,363,231	208,660,506
LIMA ARMY TANK CEN	195,533,508	195,533,508

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
LONE STAR ARMY AMMUNITION PLT	753,418,605	753,418,605
LONGHORN AAP	277,611,341	277,611,341
LOUISIANA AAP	550,553,523	550,553,523
MCALESTER AAP	1,245,946,050	1,245,946,050
MCCLELLAN FORT	784,137,567	746,027,371
MCCOY FORT	1,788,014,724	908,416,257
MCNAIR FORT LESLEY J	150,170,196	150,170,196
MCPHERSON FT	692,472,005	198,562,040
MEADE FORT GEORGE G	1,143,633,770	1,059,449,871
MICKELSON STANLEY R SITES	269,737,980	52,871,141
MILAN ARMY AMMUNITION PLANT	665,708,730	665,708,730
MISSISSIPPI AAP	256,879,337	256,879,337
MONMOUTH FORT	735,488,471	420,629,643
MONROE FORT	323,996,028	281,659,994
MOT SUNNY POINT	296,863,998	296,863,998
MYER FORT	1,104,454,999	231,568,673
NATICK R & D CENTER	160,071,149	151,433,813
NATIONAL SECURITY AGENCY	19,667,796	10,494,366
NAVAJO DEPOT ACTIVITY	462,117,359	462,117,359
NEW CUMBERLAND ARMY DEPOT	440,099,240	440,099,240
NEWPORT AAP	374,273,569	374,273,569

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
OAKLAND ARMY BASE	585,681,227	585,681,227
ORD FORT	2,707,166,660	2,472,665,963
PICATINNY ARSENAL	777,139,310	777,139,310
PICKETT FORT	642,761,507	609,895,861
PINE BLUFF ARSENAL	539,459,912	539,459,912
POLK FORT	2,151,677,758	2,068,744,909
PRESIDIO OF MONTEREY	254,038,309	254,038,309
RADFORD AR AMMO PLT,	1,488,476,600	1,431,391,024
RAVENNA ARMY AMMUNITION PLANT	1,099,600,138	1,099,600,138
RED RIVER ARMY DEPOT	869,764,922	869,481,495
REDSTONE ARSENAL	1,801,945,292	1,723,363,577
REED WALTER AMC	773,707,748	633,278,262
RICHARDSON FORT	1,532,210,597	1,525,395,798
RILEY FORT	1,721,199,767	1,646,004,035
RITCHIE FT	292,893,423	127,029,500
RIVERBANK AAP	192,190,171	192,190,171
ROCK ISLAND ARS     HIST	1,002,851,615	1,002,851,615
ROCKY MTN ARS	395,646,638	395,646,638
RUCKER FORT	1,328,830,464	996,101,396
SACRAMENTO ARMY DEP	330,081,240	329,641,657
SAN FRAN PRES OF	1,284,318,475	937,647,219

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
SAVANNA DEPOT ACT	702,922,869	702,922,869
SCRANTON ARMY AMMUNITION PLANT	44,661,644	44,661,644
SENECA ARMY DEPOT	688,148,483	688,148,483
SHAFTER FORT	4,252,625,017	444,153,358
SHARPE ARMY DEPOT	395,071,533	395,071,533
SIERRA ARMY DEPOT	1,085,668,475	1,085,668,475
SILL FORT	1,692,275,304	1,594,135,961
ST LOUIS AAP	28,688,573	28,688,573
STEWART FORT	1,505,138,420	1,450,951,291
STRATFORD ARMY ENG PLT	217,320,868	217,320,868
SUNFLOWER AAP	1,142,157,473	1,142,157,473
TOBYHANNA ARMY DEPOT	405,925,736	405,925,736
TOOELE ARMY DEPOT	2,917,885,440	964,964,997
TWIN CITIES AAP	617,805,506	617,805,506
US ARMY GARRISON SELFRIDGE	178,863,311	127,703,218
VINT HILL FARMS STA	143,928,496	143,316,473
VOLUNTEER AAP	307,997,149	297,141,204
WAINWRIGHT FORT	2,337,700,890	2,312,828,712
WATERVLIET ARSENAL	385,127,093	380,056,596
WEST POINT MIL RES	2,087,964,565	1,808,319,215
WHITE SANDS MSL RG	1,735,840,602	1,694,121,344

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
WHITTIER ANCHORAGE PIPELINE	319,864,844	114,746,044
WOOD FORT LEONARD	1,687,167,974	1,487,145,734
YUMA PROVING GROUND	499,888,078	499,888,078

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
ABERDEEN PROVING GROUND	1,928,392,853	1,928,392,853
ALABAMA AAP	64,793,386	64,793,386
ANNISTON ARMY DEPOT	914,849,290	868,478,087
ARMY MATERIALS TECHNOLOGY LAB	135,096,354	135,096,354
BADGER ARMY AMMUNITION PLANT	1,514,722,040	1,514,722,040
BAYONNE MOT	861,424,660	861,424,660
BELVOIR FORT	1,489,659,200	1,480,489,822
BENNING FORT	2,060,261,659	2,002,126,273
BLISS FORT	2,177,632,716	1,872,380,374
BRAGG FT	2,751,451,262	2,655,985,793
CAMERON STATION	141,086,067	138,110,863
CAMP STANLEY STOR ACTIV	77,849,969	77,849,969
CAMPBELL FT	2,431,284,485	2,393,693,788
CARLISLE BARRACKS	145,033,219	145,033,219
CARSON FORT	1,818,694,817	1,620,979,531
CHAFFEE FORT	590,747,807	590,747,807
CHARLES MELVIN PRICE SPT CTR	390,424,954	381,054,216
CORNHUSKER AR AMMUNITION PLT	512,975,891	512,975,891
DETROIT ARSENAL	602,917,236	337,124,773
DEVENS FORT	1,420,994,152	1,052,311,935
DIX FORT	1,387,232,514	1,258,897,957

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
DRUM FORT	2,161,719,187	1,942,184,766
DUGWAY PROVING GROUND	420,814,475	420,814,475
EUSTIS FORT	1,107,286,716	880,078,870
FORT HUNTER LIGGETT	309,670,518	309,670,518
GORDON FORT	1,036,024,381	1,021,812,963
GREELY FORT	741,275,531	704,477,579
HAMILTON FORT	376,323,079	170,320,824
HARRISON FORT BENJAMIN	712,346,565	631,419,453
HARRY DIAMOND LABS	129,113,043	110,929,893
HAWTHORNE AAP	1,899,010,675	1,899,010,675
HAYS ARMY AMMO PLANT	40,628,769	40,628,769
HILL FORT A P	311,811,572	311,811,572
HOLSTON ARMY AMMO PLT	997,018,176	997,018,176
HOOD FORT	3,413,819,022	3,345,094,699
HOUSTON FORT SAM	1,023,279,562	888,960,035
HUACHUCA FORT	1,300,361,279	1,281,190,021
HUNTER ARMY AIRFIELD	566,005,025	561,832,900
INDIANA ARMY AMMUNITION PLANT	1,231,031,159	1,231,031,159
INDIANTOWN GAP FORT	751,802,618	615,494,326
IOWA AAP	1,437,821,859	1,437,821,859
IRWIN FORT	930,636,702	930,358,333

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
JACKSON FORT	1,166,675.193	1,137,543.150
JEFFERSON PROVING GROUND	156,260.384	156,260.384
JOLIET AAP KANKAKEE	1,239,344.896	471,533.135
KANSAS AAP	445,166.248	445,166.248
KELLY SUPPORT CENTER	351,708.838	91,402.468
KNOX FORT	2,285,622.599	2,132,173.748
LAKE CITY ARMY AMMUNITION PLT	456,946.689	456,946.689
LEAVENWORTH FORT	755,386.159	750,967.350
LEE FORT	672,796.768	672,796.768
LETTERKENNY ARMY DEPOT	964,045.208	964,045.208
LEWIS FORT	3,268,705.527	2,563,517.262
LEX-BLUE GRASS AD	743,107.235	203,751.409
LIMA ARMY TANK CEN	195,533.508	195,533.508
LONE STAR ARMY AMMUNITION PLT	752,547.058	752,547.058
LONGHORN AAP	276,939.042	276,939.042
LOUISIANA AAP	549,848.048	549,848.048
MCALESTER AAP	1,245,323.947	1,245,323.947
MCCLELLAN FORT	755,315.921	717,205.724
MCCOY FORT	1,771,767.296	900,564.725
MCNAIR FORT LESLEY J	146,109.944	146,109.944
MCPHERSON FT	666,034.150	184,778.197

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
MEADE FORT GEORGE G	1,092,401,395	1,008,217,497
MILAN ARMY AMMUNITION PLANT	664,946,457	664,946,457
MISSISSIPPI AAP	256,439,099	256,439,099
MONMOUTH FORT	705,397,725	390,538,898
MONROE FORT	318,049,039	275,713,006
MOT SUNNY POINT	296,695,608	296,695,608
MYER FORT	296,464,457	219,220,340
NATICK R & D CENTER	158,922,432	150,285,096
NAVAJO DEPOT ACTIVITY	461,410,930	461,410,930
NEWPORT AAP	373,835,962	373,835,962
OAKLAND ARMY BASE	576,450,934	576,450,934
ORD FORT	2,608,810,888	2,374,310,191
PICATINNY ARSENAL	774,329,248	774,329,248
PICKETT FORT	638,616,626	605,750,979
PINE BLUFF ARSENAL	537,715,195	537,715,195
POLK FORT	2,080,747,225	1,997,814,377
PRESIDIO OF MONTEREY	250,056,207	250,056,207
RADFORD AR AMMO PLT	1,487,410,834	1,430,325,258
RAVENNA ARMY AMMUNITION PLANT	1,098,027,849	1,098,027,849
RED RIVER ARMY DEPOT	868,777,103	868,493,676
REDSTONE ARSENAL	1,774,749,429	1,696,698,411

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
REED WALTER AMC	106,980,898	0
RICHARDSON FORT	1,513,874,773	1,507,059,974
RILEY FORT	1,656,340,345	1,581,144,613
RITCHIE FT	289,778,231	124,641,426
RIVERBANK AAP	190,593,903	190,593,903
ROCK ISLAND ARS      HIST	997,593,742	997,593,742
ROCKY MTN ARS	394,128,380	394,128,380
RUCKER FORT	1,286,785,883	954,056,814
SACRAMENTO ARMY DEP	329,167,510	328,727,927
SAN FRAN PRES OF	1,066,438,952	721,863,781
SAVANNA DEPOT ACT	702,612,050	702,612,050
SCRANTON ARMY AMMUNITION PLANT	44,500,462	44,500,462
SENECA ARMY DEPOT	684,812,068	684,812,068
SHAFTER FORT	3,966,095,505	441,672,194
SIERRA ARMY DEPOT	1,079,540,893	1,079,540,893
SILL FORT	1,629,283,252	1,531,143,909
ST LOUIS AAP	28,688,573	28,688,573
STEWART FORT	1,450,068,728	1,395,881,599
STRATFORD ARMY ENG PLT	216,683,585	216,683,585
SUNFLOWER AAP	1,141,289,938	1,141,289,938
TOBYHANNA ARMY DEPOT	402,548,557	402,548,557

REPLACEMENT VALUE REPORT  
 SELECTED INSTALLATIONS IN THE UNITED STATES  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	REPLACEMENT COST-DOLLARS WITH SUBS	REPLACEMENT COST-DOLLARS PARENT ONLY
TOOELE ARMY DEPOT	2,913,495.745	962,936.906
TWIN CITIES AAP	617,057.894	617,057.894
US ARMY GARRISON SELFRIDGE	172,762.734	121,602.641
VINT HILL FARMS STA	140,800.762	140,188.739
VOLUNTEER AAP	307,801.130	296,945.186
WAINWRIGHT FORT	2,261,007.485	2,236,135.307
WATERVLIET ARSENAL	384,109.029	379,038.533
WEST POINT MIL RES	2,076,963.813	1,797,318.463
WHITE SANDS MSL RG	1,726,135.260	1,684,416.002
WHITTIER ANCHORAGE PIPELINE	319,864.844	114,746.044
WOOD FORT LEONARD	1,617,150.656	1,417,218.211
YUMA PROVING GROUND	495,851.929	495,851.929

REPLACEMENT VALUE REPORT  
 COMMUNITIES OUTSIDE THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	TOTAL REPLACEMENT COST-DOLLARS
200TH TAMMC	566,172,328
220TH BSB (FULDA)	664,850,489
221ST BSB (WIESBADEN)	1,792,274,570
222ND BSB (BAUMHOLDER)	1,715,024,631
233RD BSB (DARMSTADT)	1,323,435,200
234TH BSB (GIESSEN)	1,874,657,327
235TH BSB (ANSBACH)	1,502,612,958
236TH BSB (AUGSBURG)	1,834,800,921
279TH BSB (BAMBERG)	907,055,900
280TH BSB (SCHWEINFURT)	1,199,327,394
281ST BSB (VILSECK)	863,696,096
282ND BSB (HOHENFELS)	712,551,396
283RD BSB (WILDFLECKEN)	713,416,305
291ST BSB (KARLSRUHE)	1,168,283,351
293RD BSB (MANNHEIM)	2,226,801,977
294TH BSB (PIRMASENS)	1,040,071,855
409TH BSB (GRAFENWOEHR)	1,133,477,049
410TH BSB (BAD KREUZNACH)	695,222,266
411TH BSB(P) (HEIDELBERG)	1,365,069,429
412TH BSB(P) (VICENZA)	423,815,582
414TH BSB (HANAU)	1,515,422,895

REPLACEMENT VALUE REPORT  
 COMMUNITIES OUTSIDE THE UNITED STATES  
 ALL PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	TOTAL REPLACEMENT COST-DOLLARS
415TH BSB(P) (KAISERSLTN)	2,284,708,780
417TH BSB(P) (WJERZBURG)	1,830,387,079
418TH BSB(P) (FRANKFURT)	1,830,984,374
ARMED FORCES REC CENTERS	107,028,148
BELGIUM	504,878,003
BERLIN	1,545,625,761
CAMP CARROLL	291,388,806
CAMP CASEY	759,444,901
CAMP FALLING WATER	547,037,954
CAMP GIANT	362,329,749
CAMP HENRY	391,424,308
CAMP HUMPHREYS	479,914,885
CAMP PAGE	268,124,067
CAMP ZAMA	1,916,305,858
FORT BUCHANAN	243,849,187
FORT CLAYTON ARMY RES	2,100,734,997
HIALEAH	134,256,838
KWAJALEIN MISSILE RG	1,423,472,885
LIVORNO	393,943,186
NSA UK	62,331,413
NUERNBERG BSB(P)	1,929,675,233

REPLACEMENT VALUE REPORT  
COMMUNITIES OUTSIDE THE UNITED STATES  
ALL PROPERTY  
AS OF 30 SEP 93

PARENT NAME	TOTAL REPLACEMENT COST-DOLLARS
OKINAWA	691.689.624
PUERTO RICO NG	128.069.588
STUTTGART	1.506.807.292
THE NETHERLANDS	2.320.381.140
YONGSAN GARRISON	1.101.297.173

REPLACEMENT VALUE REPORT  
 COMMUNITIES OUTSIDE THE UNITED STATES  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	TOTAL REPLACEMENT COST-DOLLARS
200TH TAMMC	566,172,328
220TH BSB (FULDA)	650,560,676
221ST BSB (WIESBADEN)	1,769,388,294
222ND BSB (BAUMHOLDER)	1,615,161,893
233RD BSB (DARMSTADT)	1,300,017,011
234TH BSB (GIESSEN)	1,845,747,895
235TH BSB (ANSBACH)	1,466,781,769
236TH BSB (AUGSBURG)	1,745,493,686
279TH BSB (BAMBERG)	898,818,675
280TH BSB (SCHWEINFURT)	1,183,501,500
281ST BSB (VILSECK)	848,577,617
282ND BSB (HOHENFELS)	703,709,522
283RD BSB (WILDFLECKEN)	698,699,499
291ST BSB (KARLSRUHE)	1,152,725,168
293RD BSB (MANNHEIM)	2,207,470,486
294TH BSB (PIRMASENS)	994,466,141
409TH BSB (GRAFENWOEHR)	1,121,160,657
410TH BSB (BAD KREUZNACH)	639,512,888
411TH BSB(P) (HEIDELBERG)	1,303,680,976
412TH BSB(P) (VICENZA)	402,686,623
414TH BSB (HANAU)	1,481,419,719

REPLACEMENT VALUE REPORT  
 COMMUNITIES OUTSIDE THE UNITED STATES  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

PARENT NAME	TOTAL REPLACEMENT COST-DOLLARS
415TH BSB(P) (KAISERSLTN)	2,164,562.974
417TH BSB(P) (WUERZBURG)	1,715,827.252
418TH BSB(P) (FRANKFURT)	1,710,443.889
ARMED FORCES REC CENTERS	103,308.916
BELGIUM	496,818.265
BERLIN	1,445,950.073
CAMP CARROLL	286,898.659
CAMP CASEY	750,195.536
CAMP FALLING WATER	541,017.229
CAMP GIANT	358,086.541
CAMP HENRY	383,724.942
CAMP HUMPHREYS	473,944.356
CAMP PAGE	264,968.873
CAMP ZAMA	1,901,952.813
FORT BUCHANAN	236,918.963
FORT CLAYTON ARMY RES	2,089,071.146
HIALEAH	134,105.094
KWAJALEIN MISSLE RG	1,410,749.386
LIVORNO	383,166.239
NSA UK	61,663.017
NUERNBERG BSB(P)	1,804,363.955

REPLACEMENT VALUE REPORT  
 US ARMY INSTALLATIONS IN CONUS  
 WHERE REPLACEMENT VALUE IS GREATER THAN ONE BILLION DOLLARS  
 ALL PROPERTY  
 AS OF 30 SEP 93

*HI cost = 4.2*

	TOTAL REPLACEMENT COST DOLLARS .....	
3.4	3,449,669,913	HOOD FORT
2.8	2,836,741,534	LEWIS FORT
2.7	2,729,984,478	BRAGG FT
2.5	2,484,932,097	CAMPBELL FT
2.5	2,472,665,963	ORD FORT
2.3	2,312,828,712	WAINWRIGHT FORT
2.2	2,234,336,701	KNOX FORT
2.1	2,068,744,909	POLK FORT
2.1	2,057,709,681	BENNING FORT
2.0	1,985,247,848	BLISS FORT
2.0	1,977,700,647	DRUM FORT
1.9	1,945,878,979	ABERDEEN PROVING GROUND
1.9	1,900,793,448	HAWTHORNE AAP
1.8	1,808,319,215	WEST POINT MIL RES
1.7	1,739,923,693	CARSON FORT
1.7	1,723,363,577	REDSTONE ARSENAL
1.7	1,694,121,344	WHITE SANDS MSL RG
1.6	1,646,004,035	RILEY FORT
1.6	1,594,135,961	SILL FORT
1.5	1,538,219,633	BELVOIR FORT

REPLACEMENT VALUE REPORT  
 US ARMY INSTALLATIONS IN CONUS  
 WHERE REPLACEMENT VALUE IS GREATER THAN ONE BILLION DOLLARS  
 ALL PROPERTY  
 AS OF 30 SEP 93

TOTAL REPLACEMENT COST DOLLARS	
-----	
1,525,395,798	RICHARDSON FORT
1,516,174,801	BADGER ARMY AMMUNITION PLANT
1,487,145,734	WOOD FORT LEONARD
1,450,951,291	STEWART FORT
1,438,517,609	IOWA AAP
1,431,391,024	RADFORD AR AMMO PLT
1,337,012,417	DIX FORT
1,312,988,066	HUACHUCA FORT
1,245,946,050	MCALESTER AAP
1,233,164,335	INDIANA ARMY AMMUNITION PLANT
1,200,532,630	JACKSON FORT
1,142,157,473	SUNFLOWER AAP
1,132,017,552	GORDON FORT
1,103,931,634	DEVENS FORT
1,099,600,138	RAVENNA ARMY AMMUNITION PLANT
1,085,668,475	SIERRA ARMY DEPOT
1,059,449,871	MEADE FORT GEORGE G
1,002,851,615	ROCK ISLAND ARS HIST

REPLACEMENT VALUE REPORT  
 US ARMY INSTALLATIONS IN CONUS  
 WHERE REPLACEMENT VALUE IS GREATER THAN ONE BILLION DOLLARS  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

TOTAL REPLACEMENT COST DOLLARS .....	
3,345,094,699	HOOD FORT
2,655,985,793	BRAGG FT
2,563,517,262	LEWIS FORT
2,393,693,788	CAMPBELL FT
2,374,310,191	ORD FORT
2,236,135,307	WAINWRIGHT FORT
2,132,173,748	KNOX FORT
1,997,814,377	POLK FORT
1,984,033,931	BENNING FORT
1,942,184,766	DRUM FORT
1,928,392,853	ABERDEEN PROVING GROUND
1,899,010,675	HAWTHORNE AAP
1,872,380,374	BLISS FORT
1,755,002,294	WEST POINT MIL RES
1,696,698,411	REDSTONE ARSENAL
1,684,416,002	WHITE SANDS MSL RG
1,620,979,531	CARSON FORT
1,581,144,613	RILEY FORT
1,531,143,909	SILL FORT
1,514,722,040	BADGER ARMY AMMUNITION PLANT

REPLACEMENT VALUE REPORT  
 US ARMY INSTALLATIONS IN CONUS  
 WHERE REPLACEMENT VALUE IS GREATER THAN ONE BILLION DOLLARS  
 ARMY OWNED AND CONTROLLED PROPERTY  
 AS OF 30 SEP 93

TOTAL  
 REPLACEMENT  
 COST DOLLARS  
 -----

1,507,059,974	RICHARDSON FORT
1,480,489,822	BELVOIR FORT
1,437,821,859	IOWA AAP
1,430,325,258	RADFORD AR AMMO PLT
1,417,218,211	WOOD FORT LEONARD
1,395,881,599	STEWART FORT
1,281,190,021	HUACHUCA FORT
1,258,897,957	DIX FORT
1,245,323,947	MCALESTER AAP
1,231,031,159	INDIANA ARMY AMMUNITION PLANT
1,141,289,938	SUNFLOWER AAP
1,137,543,150	JACKSON FORT
1,098,027,849	RAVENNA ARMY AMMUNITION PLANT
1,079,540,893	SIERRA ARMY DEPOT
1,052,311,935	DEVENS FORT
1,021,812,963	GORDON FORT
1,008,217,497	MEADE FORT GEORGE G

# Document Separator



DEPARTMENT OF THE ARMY  
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS  
WASHINGTON, DC 20310-0400



REPLY TO  
ATTENTION OF

DAMO-FDO

134

JAN 1994

MEMORANDUM THRU CHIEF OF STAFF, ARMY

FOR SECRETARY OF THE ARMY

SUBJECT: U.S. Army Combined Arms Support Command (CASCOM)  
Reorganization--ACTION MEMORANDUM

1. Purpose. To obtain Secretary of the Army approval to reorganize CASCOM and clearance to announce the action.

2. Discussion.

a. As a result of declining resources, CASCOM proposes to reorganize by consolidating most combat service support functions at Fort Lee, Virginia. Specifically, the combat developments, training developments, proponency offices, evaluation and standardization, and selected school overhead and support functions will be centralized at CASCOM headquarters.

b. The concept reduces authorizations at: the Ordnance Missile & Munitions Center and School, Redstone Arsenal, Alabama; the Aviation Logistics School, Fort Eustis, Virginia; the Transportation School, Fort Eustis, Virginia; the U.S. Army Transportation Center, Fort Eustis, Virginia; the Quartermaster Center & School and the Army Logistics Management College, both located at Fort Lee, Virginia; the Ordnance Center & School, Aberdeen Proving Ground, Maryland; the Soldier Support Center, Fort Benjamin Harrison, Indiana; and the Chaplain Center & School, Fort Monmouth, New Jersey. With the exception of the Soldier Support Center and Chaplain School, only instructors and command and control elements will remain at the various schools. (Although Fort Benjamin Harrison will lose spaces during the reorganization, there will be no associated diversion of Soldier Support Center spaces to Fort Lee.)

c. The CASCOM reorganization is a reportable action under the provisions of Army Regulation 5-10, Reduction and Realignment Action Reporting Procedures. With a proposed effective date of 1 October 1994, the reorganization results in a net savings of 980 spaces (559 military, 421 civilian) throughout U.S. Army Training and Doctrine Command (TRADOC). CASCOM Realignment briefing charts are provided at Tab C.

12 JAN 1994

DWIGHT E. THOMAS

LTC GS

MILITARY ASSISTANT TO THE

SECRETARY OF THE ARMY

DAMO-FDO

SUBJECT: U.S. Army Combined Arms Support Command (CASCOM)  
Reorganization--ACTION MEMORANDUM

d. Members of Congress should be notified immediately to preclude any degradation of functional capability during reorganization. Tab A informs the Secretary of Defense of the CASCOM reorganization and provides the associated information for Members of Congress. Tab B provides IMC supplemental charts, Memorandum for Correspondents, Questions and Answers, and Congressional Interest List. Additionally, Tab D and Tab E attached as reminder of CSA commitment to contact Senator Thurmond and Representative Spence prior to a final decision on the CASCOM reorganization.

e. Required environmental documentation from CASCOM has been submitted to HQDA, reviewed, and found satisfactory. There are no significant environmental problems associated with this stationing action.

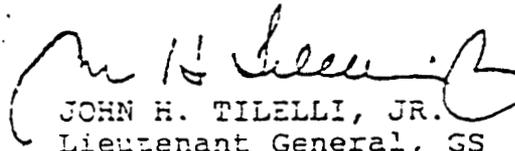
f. This action has been coordinated with SAILE, SAFM, SAMR, SALL, SAPA, PAE, GGC, OTJAG, OACSIM, ODCSPER, ODCSLOG, AMC, and OTSG.

3. Recommendations.

a. That the Chief of Staff, Army contact Senator Thurmond and Representative Spence.

b. That the Secretary of the Army approve the CASCOM reorganization, and forward the memorandum (Tab A) and information to Members of Congress (Tab A, Enclosure 1) to the Secretary of Defense.

5 Encis



JOHN H. TILELLI, JR.  
Lieutenant General, GS  
Deputy Chief of Staff  
for Operations and Plans

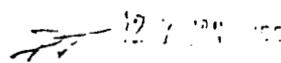
27 JUN 1954

APPROVED 156j

DISAPPROVED \_\_\_\_\_

OTHER \_\_\_\_\_

APPROVED BY  
SECRETARY OF THE ARMY



DWIGHT E. THOMAS  
LTC, GS  
MILITARY ASSISTANT TO THE  
SECRETARY OF THE ARMY

LTC Emison/x37946

DEPARTMENT OF THE ARMY  
UNITED STATES ARMY COMBINED ARMS SUPPORT COMMAND  
AND FORT LEE  
FORT LEE, VIRGINIA 23801-6000



REPLY TO  
ATTENTION OF



JAN 11 1994

ATCL-F

MEMORANDUM FOR DEPUTY CHIEF OF STAFF OPERATIONS AND PLANS,  
ATTN: DMO-FDC, 400 ARMY PENTAGON,  
WASHINGTON, DC 20310-0400

SUBJECT: Combined Arms Support Command (CASCOM) Reorganization  
Study (AR 5-10)

1. Reference memorandum, Office of the General Counsel (HQDA),  
7 Jan 94, subject: CASCOM Reorganization.
2. In conjunction with DA DCSOPS action officer, we reworked the  
AR 5-10 package to incorporate the comments of the General  
Counsel documented in reference 1. Additionally, we updated the  
package to reflect the CSA decision regarding the Soldier Support  
Center and made other minor adjustments totalling 20 spaces.
3. Our POCs are Mr. Bob Goebel, DSN 539-0585 or CPT(P) Staufer,  
DSN 539-0581.

FOR THE COMMANDER:

  
MICHAEL E. VELTEN  
Colonel, TC  
Director, Force Development  
and Evaluation

11 Jan 94



**REALIGNMENT SUMMARY**  
**REORGANIZATION OF CASCOM ELEMENTS**

1. Nature of the Action.

a. This action reorganizes the combat developments, training developments, proponenty offices, evaluation and standardization, and selected school overhead/support functions of the Ordnance Missile and Munitions Center and School, Redstone Arsenal, AL; the Transportation School, Fort Rustis, VA; the Transportation Center, Fort Eustis, VA; the Quartermaster Center and School, Fort Lee, VA; and Army Logistics Management College, Fort Lee, VA; the Ordnance Center and School, Aberdeen Proving Ground, MD, to the Combined Arms Support Command (CASCOM), Fort Lee, VA. Authorizations will be eliminated at the schools and reorganized at CASCOM. Further, the Aviation Logistics School's selected aviation unique elements of the above stated functions will be realigned to Fort Rucker, AL. The Chaplain Center and School, Fort Monmouth, NJ, and the Soldier Support Center, Fort Benjamin Harrison, IN, will restructure but retain all these functions in their respective schools with fewer personnel.

b. The functions above will be performed centrally and will maintain the unique character of each branch. The existing school brigades will be augmented from school assets to absorb the functions previously associated with the school secretary. Only instructors and command and control elements will remain at the "schoolhouse" whose primary mission will be instruction. The Soldier Support Center and Chaplain Center and School will only be impacted through reduced personnel authorizations.

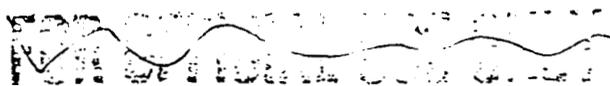
c. This reorganization does not break the Defense Base Closure and Realignment (BRAC) act of 1990 (Public Law 101-510) at any of the installations involved. Accordingly, the reorganization need not be in the statutory Base Closure and Realignment process. See information at Tab A.

d. This reorganization action will be fully implemented by 1 October 1994.

2. Rationale for Taking Action.

a. Army downsizing as it relates directly to authorized military end strength and civilian budget authority has already degraded the ability of CASCOM schools to accomplish their fundamental TRADOC missions. Under current organizational structure, the expected reductions in FY 94 and FY 95 will make proponent schools incapable of accomplishing combat developments, training developments, proponenty, and evaluation and standardization. Cutbacks are concentrated in these areas since the instructional department integrity must be maintained to meet programmed student training. Action must be taken now to modify the way we do business to continue the viability of the noninstructional functions in the TRADOC CSS mission area.

b. The consolidations undertaken in this reorganization have been carefully designed to ensure that the essence of the vitally important branch proponent role in these functional areas remains to the maximum extent possible as it was before consolidation. The proponent's office at CASCOM, with the exception of the Chaplain School and the



Soldier Support Center, will oversee and direct work done in these functional areas by expert branch cells in existing CASCOM directorates. The proponent will travel from his residence at the primary branch schoolhouse to CASCOM as required. This is not a significant change for our branch proponents since they now spend a majority of their time away from home station visiting other branch affiliated schools, Department of the Army agencies, field units and other locations as required to conduct branch business.

The consolidation of training developments offers a unique opportunity to fully integrate this function and gain efficiencies in shared development that were not possible in decentralized school locations. The required military instructor expertise in combat and training developments will be maintained through the rotation of Combined Logistics Officer Advanced Course instructors at Fort Lee.

d. This reorganization complements previous functional consolidations. The force development and logistics automation functions now are almost completely consolidated at Fort Lee for our proponent schools. Our forecasted savings were based upon similar efficiencies that we achieved in these areas. The bottom line is that the blueprint for this consolidation creates an organization capable of accomplishing the branch missions in these functional areas in a resource constrained environment.

### 3. Alternatives to the Proposed Action.

a. No Action. This is not a feasible course of action since the forecasted reductions will make CSS schools incapable of accomplishing assigned mission under the current decentralized organizational structure.

b. Partial Consolidation. Consolidate Training Developments and Evaluation and Standardization at CASCOM, as the larger activities, with the other activities (Proponency and Combat Developments) remaining at the schoolhouse, provides only a partial solution. It would only be a partial cut, maintaining an inordinate amount of overhead at the schools, and dilute functional advocacy of the branches. Furthermore it does not achieve enough savings to meet the forecasted resource profiles in our schools.

c. Consideration of alternate sites. For the following reasons, consolidation of these functions at an alternative site was not considered:

(1) The purpose of the reorganization is to consolidate like functions performed at a variety of schools and to delete duplication of administrative and overhead support. Because HQ CASCOM is located at Fort Lee, an umbrella organization already exists to provide administrative and overhead support necessary to realize significant savings in personnel costs. The installations at which the various schools are located do not have a similar umbrella organizational structure. Whereas the reorganization plan will result in an estimated increase of 174 civilian personnel authorizations at Fort Lee, VA, a relocation of this function to a site other than Fort Lee will result in a move of an additional 331 civilian personnel and 235

military personnel authorizations. Replicating this function at a site other than Fort Lee may be considered a transfer of function. Accordingly, additional costs to relocate both civilian and military personnel will eliminate some of the projected savings by an estimated \$18 million (estimated at 50% acceptance of transfer of affected civilians).

(2) Fort Lee offers a central location, enhancing the ability to centralize these functions. As noted above, HQ CASCOM, as well as two of the schools involved in the consolidation plan, are located at Fort Lee. Additionally, three other schools are within a 3-hour commuting distance from Fort Lee.

(3) Facilities Impact. Fort Lee can absorb the increase in personnel without incurring major construction costs. Renovation costs, to include the purchase of new furniture is estimated to be \$2.2 million.

#### 4. Strategic and Operational Implications.

a. This action will have no major impact on current U.S. military contingency plans involving strategy, strategic mobility, mobilization, and wartime or emergency operations.

b. This is a bold approach to a serious problem and will have profound implications on the way combat service support doctrine and training are managed. However, we must act now to enable the TRADOC CSS community to posture itself to accomplish assigned missions with reduced manpower. This is clearly the best solution available for this problem.

#### 5. Estimated Manpower Impacts. The 0194 TDA was used as the baseline.

a. Military. The reorganization of CASCOM functions will result in a net military savings of 559 authorizations. Changes in workload/permanent party supported would result in a net decrease of 5 military authorizations for BASOPS at TRADOC installations (see para 5f.)

b. Civilian. The reorganization of CASCOM functions will result in gross civilian savings of 569 authorizations. However, Redstone Arsenal Support Activity (RASA) has indicated they would require 118 civilian authorizations to assume functions presently being accomplished by the Ordnance Missile and Munitions Center and School (OMMCS). This results in RASA expanding its BASOPS mission by 118 authorizations thereby reducing total Army savings by 118. The Aberdeen Proving Ground Support Activity (APGSA) has indicated that they would require 30 civilian authorizations to assume functions presently being accomplished by the Ordnance School. This results in APGSA expanding its BASOPS mission by 30 authorizations thereby reducing total Army savings by 30. Net Army civilian savings are then 421. Changes in workload/permanent party supported would result in a net decrease of 9 civilian authorizations for BASOPS at TRADOC installations (see paragraph 5f).

c. All civilian and military manpower spaces eliminated as a result of this action will be withdrawn by FY 95.

d. Tab A displays the manpower space impacts in a migration diagram.

e. Health Services Command (HSC) was solicited for any impact this action would have on their organizations at the affected locations. The impact of this action would realign the medical allocations as follows:

FROM:	Off	EM	Civ	Total
WRMCO (Aberdeen Proving Gnd.)		-1	-1	-2
Redstone	-1		-1	-2
TO:				
Fort Lee	+1	+1	+2	+4

f. The associated increase or decrease of permanent party and workload at the affected installations have the following effect on the BASOPS authorizations based on the application of the Manpower Estimating Relationship (MER) and Cost Estimating Relationship (CER) from the TRADOC Resource Factor Handbook (RFH). These would be recurring costs/savings.

Installation	Personnel	Cost (Incl Pers & Non Pers)
Fort Eustis	-4 EM -8 Civ	-\$755,179
Fort Ben Harrison	-3 EM -5 Civ	-\$551,607
Fort Lee	+2 EM +4 Civ	+\$376,035
Fort Monmouth	No Impact	
Aberdeen Proving Gnd	+30 Civ*	-\$1,953,900**
Redstone Arsenal	+118 Civ*	+\$4,211,161

\*Addressed in para 5b.

\*\*Includes building lease cost savings of \$3.2 million.

Only nonTRADOC installation BASOPS have been included in the steady state annual recurring savings and costs because of their large numbers, and crossing of MACOM lines.

g. A cell of resource management (RM) personnel will continue to be located at the "schoolhouse" but will be documented on the CASCOM TDA. Exceptions to this follow: The Transportation and Aviation Logistics Schools' resource managers, located at Fort Eustis, will be documented on the Fort Eustis Garrison TDA to conform to the one central resource management concept. The Chaplain School will maintain its own resource management functions until implementation of BRAC 93 which moves the school to Fort Jackson. The Fort Jackson DRM will be provided five additional civilian authorizations to support the Soldier Support Institute's arrival at Fort Jackson under BRAC 91 implementation and to absorb the Chaplain School upon its arrival at Fort Jackson under BRAC 93.

6. Estimated Personnel Impacts.

a. Military. This action will affect approximately 559 military personnel. Cross leveling to fill existing vacancies at their present location will be accomplished to the maximum extent possible to avoid excessive military moves. Personnel on orders to eliminated authorizations need to be diverted to another assignment.

b. Civilian. The reorganization of CASCOM functions will eliminate civilian authorizations at the CSS Schools and create positions at Fort Lee. These eliminations may cause an estimated 227 permanent employees to be involuntarily separated. Personnel from the schools will be provided the opportunity to compete for the positions created at CASCOM. Strong consideration will be given to affected personnel in the schools in filling newly created positions at CASCOM. Affected civilians will fall under normal reduction-in-force procedures. There will be no transfer of functions under this reorganization.

c. Tab B summarizes civilian employee impacts (faces). Number of personnel on board figure reflects total civilian employees within each specific organization.

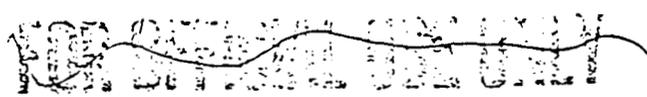
7. Anticipated Cost Savings.

a. The reorganization is expected to achieve net annual savings of \$37.0M. Personnel dollar savings are as follows: Civilian savings have been adjusted to the projected funding level for each installation. Military (MPA) are calculated at 100 percent of the authorizations.

b. One time costs are \$17.94M. Reduction in Force (RIF) and Permanent Change of Station (PCS) costs are computed at the highest levels possible. Any employee hired at Fort Lee in the new organization will incur PCS costs; however, RIF costs will then be offset. Where Fort Lee employees are selected for new positions, RIF costs will be saved and no PCS costs incurred.

c. Tab C is a summary display of steady state annual recurring savings and costs in detail. The following table displays in summary form, the costs and savings as a result of this action:

	\$ MILLION RECURRING NET ANNUAL SAVINGS FROM REALIGNMENT	ONE-TIME COSTS
Soldier Support Center	4.0	.334
Ordnance	5 18.7*	55.605
CMXCS	15.2**	4.920
Chaplain	1.6	.074
Transportation School	4.9	1.562
AVLOG	2.0	1.333
Ft Eustis Garrison	2.2	.151
ALMC	.8	.013
Quartermaster	8.7	1.346



CASCOM	<u>(21.2)</u>	<u>2.500***</u>
Total	\$ 37.0	\$17.940

\*Includes a \$2.0 savings at Aberdeen Proving Ground Support Activity (APGSA).

\*\*Includes a \$4.2 cost at Redstone Arsenal Support Activity (RASA).

\*\*\*Includes \$1.3 cost for five civilian spaces to go to Fort Jackson DRM to support SSI, Chaplain.

8. Facilities Requirements.

a. Since Fort Lee can absorb the increase in personnel without incurring construction costs, consolidating the functions at CASCOM Headquarters instead of other installations having CASCOM schools results in substantial avoidance of new construction costs.

b. Consolidating the functions at Fort Lee requires facility renovation costs estimated to be \$2.2 million. There are no construction costs associated with consolidation at Fort Lee. Facilities vacated by the downsizing of the Quartermaster School can absorb the net increase of personnel at CASCOM. The reorganization increase at CASCOM specifically affects building 1109 (Curriculum Development Center and Logistics Exercise and Simulation Center), Building 10500 (CMD Group, CSSO, Battle Lab, C&D, M&T, and LAD) and building 12400 (FD&E and R&M). The one time costs to prepare the area for reoccupancy include:

Automation upgrade	\$1.1M (OPA)
Communications and power upgrade	0.2 (OMA)
Site prep materials (includes paint, carpet, etc)	0.3 (OMA)
Furniture	<u>0.6 (OMA)</u>
	\$2.2M

c. Consolidation of functions at CASCOM provides an Army cost savings at APG of \$3.2 million as a result of reduced leased space. Facility cost savings at other losing installations are minimal due to reuse plans of vacated space.

d. Reorganization and consolidation of functions at any location other than Fort Lee would result in a move of an estimated additional 131 civilian personnel authorizations and 235 military personnel authorizations from CASCOM Headquarters. Facilities do not exist at Fort Eustis, Fort Monmouth, Fort Ben Harrison, APG, or RSA that could accommodate the increased personnel caused by the relocation of CASCOM Headquarters. By consolidating these functions at Fort Lee, the large cost associated with new MCA is avoided.

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9. Environmental Impacts. This action will have no environmental impact and falls under Categorical Exclusion A-14 of AR 200-2. A Record of Environmental Consideration (REC) for all installations are included at Tab D.

10. Potential Problems and Other Relevant Factors.

a. A reorganization of this magnitude can be expected to generate extensive political intervention.

b. The 1991 BRAC recommended the relocation of the Soldier Support Center to Fort Jackson, SC. The SSC will continue to go to Fort Jackson however, as a result of this action there will be a reduction of 70 military and 53 civilian authorizations. These eliminations represent approximately 7 percent of the present 761 civilian authorizations and approximately 11 percent of the 663 military authorizations. The restructuring of the SSC, as part of the CASCOM reorganization, does not meet BRAC thresholds for mandatory inclusion in the BRAC process. An EA was prepared for the relocation of the SC as part of the 1991 BRAC action. The EA conducted for the BRAC 91 move concluded there would be no significant effect on the Fort Jackson region. Therefore, the restructuring should not alter that conclusion. However, an updated EA will be accomplished by the HQ TRADOC BRAC Office as part of the BRAC 1993 process.

c. The BRAC 93 commission recommended the Chaplain School be relocated from Fort Monmouth, NJ to Fort Jackson, SC. This reorganization, which does not break any BRAC threshold, will be fully implemented prior to the movement of the Chaplain School. The projected move date is the first half of fiscal year 1997.

d. Expedient action on this realignment is essential. CASCOM must use FY 94 programmed reductions to posture for this reorganization and FY 95 resource levels to structure the organization. Delays will place mission accomplishment in the affected functional areas in serious jeopardy.

e. There is a HQDA approved initiative at Fort Eustis to relocate the Maintenance Manager/Maintenance Test Pilot Course to Fort Rucker. This initiative is expected to save 160 military and 9 civilian authorizations at Fort Eustis. It is anticipated the move will be implemented in FY 94.

f. The Aviation Logistics School located at Fort Eustis, VA is undergoing a redesignation to be called the Aviation Maintenance Training Activity (AMTA). The name AMTA appears on the data display. The missions accomplished by the AMTA are interwoven between aviation and logistics. Because of this, the functions addressed in the CASCOM reorganization are also split. There are 85 positions (53 military and 32 civilians) that would be realigned to Fort Rucker. Only 24 (15 military and 9 civilians) would have duty station at Fort Rucker.

11. Milestones.

Oct 93

- Develop/finalize implementation plan

- Dec 93 - PERSCOM notified to divert/reassign  
military personnel
- Dec 93 - Job descriptions for new position written  
and approved
- Dec 93 - Jan 94 - Budgetary documents submitted
- Jan 94 - Armywide notification of reorganization
- Jan - Mar 94 - New LDAs documented
- Feb 94 - Unions notified
- Feb - Apr 94 - Affected employees notified
- Feb - Apr 94 - Initiate recruitment action for new  
positions at CASCOM
- Mar - Sep 94 - Realign responsibility for TD, CD, DOES,  
Proponency functions to CASCOM
- Aug - Sep 94 - Effect RIF actions
- 1 Oct 94 - Implementation complete

**FOR OFFICIAL USE ONLY**

# COMBAT SERVICE SUPPORT MIGRATION DIAGRAM

ET EUSTIS GAR <sup>1,2</sup>			
	MIL	CIV	TOT
BEFORE	46	93	139
PROG ADJ	-10	6	-5
ELIM	-22	-38	-60
AFTER	14	60	74

CHAP SCH			
	MIL	CIV	TOT
BEFORE	125	60	175
PROG ADJ	1	0	1
ELIM	-28	-19	-47
AFTER	98	31	129

ORDC&S <sup>6</sup>			
	MIL	CIV	TOT
BEFORE	1,216	371	1,586
PROG ADJ	-40	-5	-45
ELIM	-216	-187	-403
AFTER	959	179	1,138

(APG)

TRANS SCH			
	MIL	CIV	TOT
BEFORE	376	181	557
PROG ADJ	7	3	10
ELIM	-68	-35	-103
AFTER	315	149	464

QMC&S			
	MIL	CIV	TOT
BEFORE	996	281	1,276
PROG ADJ	-97	-32	-129
ELIM	-80	-112	-192
AFTER	818	137	955

OMMCS <sup>5</sup>			
	MIL	CIV	TOT
BEFORE	937	413	1,350
PROG ADJ	-81	-25	-106
ELIM	-241	-232	-473
AFTER	61	166	267

(distro) (no)

AVNLOG <sup>3</sup>			
	MIL	CIV	TOT
BEFORE	616	163	779
PROG ADJ	40	2	42
ELIM	-14	-42	-56
AFTER	642	123	765

ALMC			
	MIL	CIV	TOT
BEFORE	44	302	346
PROG ADJ	28	4	32
ELIM	-2	-15	-17
AFTER	70	291	361

SSC <sup>1</sup>			
	MIL	CIV	TOT
BEFORE	467	139	606
PROG ADJ	26	-4	22
ELIM	-70	53	-123
AFTER	423	82	505

1. SSC & Ft Eustis Gar figures do not include BASOPS. Only activities affected by CSS reorganization are included.
2. Ft Eustis Gar figures include RMO forwards of TSch and AVNLOG.
3. AVNLOG figures include US positions (63 MIL & 12 CIV) that would be documented on Ft Rucker, & IDA. Only 29 (15 MIL & 9 CIV) would have duty station Ft Rucker.

CASCOM <sup>4</sup>			
	MIL	CIV	TOT
BEFORE	266	643	909
PROG ADJ	-31	-312	-343
ELIM	-22	-10	-32
GAINS!	206	174	380
AFTER	410	405	815

4. CASCOM figures include RMO Forwards of SSC, OMMCS, ORDC, ALMC, & QMCS.
5. RASA requires 118 CIV auth to assume functions presently accomplished by OMMCS.
6. ALG A requires 30 CIV auth to assume functions presently accomplished by ORDC&S.

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