

Report on the Effect of Base Closures on Future Mobilization Options



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(Installations)
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EXECUTIVE SUMMARY

Why this report?

This report provides an assessment of the effects of prior BRAC closures and realignments on the ability of DoD to provide infrastructure support to a reconstituted force comparable to that authorized in 1987. It is in response to Section 2815 of the National Defense Authorization Act for Fiscal Year 1995, Public Law 103-337.

Reconstitution Scenario and Assumptions

Using the security assessment in the Quadrennial Defense Review (QDR), this report examines the most demanding scenario – a force structure reconstituted to meet a new global peer competitor emerging in 2015. The specific language of Section 2815 asks for evaluation to 1987 end strength levels. Using this measure would not capture weapons modernization and more efficient use of personnel that has occurred since 1987. To take these into account, this report uses a force structure with equivalent capabilities to the 1987 force.

The 1987 force levels required for study by Section 2815 were used in this report as the basis for the reconstituted force structure. There was no attempt to determine if the pre-BRAC base infrastructure was optimum to support the 1987 force structure. The 1987 forces represent the requirements needed to meet the Cold War threat of the 1980s. The force structure needed to respond to an emerging global peer competitor may be significantly different from the 1987 forces. [Note: the report does not address issues of mobilization needs or infrastructure changes to meet current or projected force or mission requirements. Instead, the report evaluates the types of infrastructure that would be needed to reconstitute 1987 force levels within the post - BRAC 1995 infrastructure.] As described in the Quadrennial Defense Review (pg. 26), the defense posture envisioned:

...exploits new capabilities and operational concepts to achieve battlefield dominance with smaller overall forces, improving our capabilities to respond.

The Department's planning documentation also discusses the substantial upgrade of U.S. warfighting capabilities through the fielding of modernized replacements for existing systems:

Because of increased performance and capability, modernized systems need not be acquired on a one-for-one replacement basis.

In order to focus on the infrastructure implications, we assume that manpower and equipment will be available to support the force structure. In addition, we assume that the current level of forward basing will continue.

To provide a consistent, documented source of data, except where noted, the certified data collected during BRAC 95 was used as the source of base capacity information. While individual base capacity may have changed as a result of post-BRAC 95 actions, overall DoD installation category capacities and ability to expand remain relatively constant.

Analysis Process

The analysis is a series of steps that are designed to identify base categories that have been reduced in size through BRAC, and that may be difficult to increase sufficiently to support equivalent 1987 force levels. Each step acts as a sieve that eliminates some base categories from further consideration.

The first step reviews past BRAC results and identifies base categories that have had little or no reduction in capacity. These categories are eliminated because BRAC has had no effect on their ability to support reconstituted forces.

The next step evaluates each category's use of two types of assets, which we call – “reconstitutable” and “difficult to reconstitute”. “Reconstitutable” assets consist of physical structures, such as buildings, runways and shops. These assets, at some cost, can always be rebuilt. The only issue is whether it has been cost-effective to close facilities that one day may be needed again. Based upon our cost analysis, we show that it has been economical to close this type of asset and later rebuild it when needed to support reconstitution needs. Since they can be reconstituted and it is cost-effective to do so, these facilities are eliminated as constraints on future expansion. The specific projects that will be needed are dependent on the base being expanded and the particular structures needed. With this uncertainty, in this report we describe only the types of infrastructure categories and “reconstitutable” assets requiring expansion, and have not provided a list of military construction projects.

The other type of infrastructure goes beyond physical structures and includes assets that provide access to large, contiguous, unencumbered areas with specific characteristics needed to fulfill a military requirement. These assets are not readily commercially available for military use, and are identified as “difficult to

reconstitute” assets in this report. They include maneuver areas, airspace and aviation training areas, and large deep water ports. “Difficult to reconstitute” assets may also be created from a unique combination of “reconstitutable” assets.

The base categories that remain after elimination of categories with minimal BRAC reductions and those that use only “reconstitutable” assets are examined in more detail in the report. These categories have had BRAC reductions and also use “difficult to reconstitute” assets.

For these categories, the current DoD base infrastructure could accommodate the equivalent 1987 force structure using the available “difficult to reconstitute” assets. Using its military value analysis, DoD was careful to preserve most of these assets during the BRAC process. For most of these categories, additional “reconstitutable” assets are also needed. However, the savings from BRAC actions exceed the cost of these new physical structures.

Report Conclusions

BRAC actions closed “reconstitutable” assets and retained “difficult to reconstitute” assets

Our review of past BRAC actions identified that the Services evaluated the infrastructure’s military value, and focused on closing assets we characterize as “reconstitutable.” When past closures involved bases which had “difficult to reconstitute” assets, in almost all cases these assets were retained by the Service for continued use. This was done by actions such as transferring the minimum essential ranges, facilities, and training areas at a closing Army facility to the Army National Guard or Army Reserve, or placing airspace or aviation training areas used by a closing air facility under the control of another base that remained open.

It is expected that any future BRAC process would continue to use military value as a predominant factor in determining BRAC actions. Military value analysis considers the importance of retaining “difficult to reconstitute” assets to meet potential reconstitution requirements. In fact, some base categories, which use “difficult to reconstitute” assets, may be considered for exclusion from closure during future BRAC round deliberations. However, because of numerous factors (for example, technology advances, joint consolidations, and changing mission requirements) these categories may be subject to significant BRAC actions in the future.

Retained “difficult to reconstitute” assets are critical to reconstituting capacity

Our evaluation reviewed alternative ways to reconstitute closed capacity for categories using “difficult to reconstitute” assets. This demonstrated that using retained assets facilitated the capacity expansion. For example, adding capacity for additional Army maneuver brigades could be accomplished by expanding current Army facilities and by using training areas maintained by the Army National Guard and Army Reserve. Also, the ability of the Navy to increase pilot training rates for strike pilots was facilitated by use of retained airspace, training areas, and outlying airfields. Finally, enhanced cross-Service use of “difficult to reconstitute” assets and use of commercial facilities would be able to make up for the minimal loss of these assets.

Because of the importance of “difficult to reconstitute” assets, some base categories may be excluded from closure actions in future BRAC rounds.

During past BRAC rounds the Services reviewed base categories that use “difficult to reconstitute” assets and excluded some categories from closure consideration. During future BRAC rounds some of the base categories using “difficult to reconstitute” assets may again be excluded from closure.

Reconstitution of all base categories to support an equivalent 1987 force structure can be accommodated using existing bases

The added forces can be supported by DoD’s current base structure. Some categories, particularly Army Maneuver Bases, require the construction of additional structures, and modification or expansion of existing ones to provide the required “reconstitutable” assets.

Savings from BRAC exceed the future cost of rebuilding the closed bases

Assuming a need to rebuild the required “reconstitutable” assets, by 2015, the net present value of the savings is almost \$14 billion. The net present value increases to about \$34 billion if the reconstituted bases are not needed until 2020.

We also evaluated several examples of specific base closures. The costs and savings resulting from their closure were compared to the potential future cost of rebuilding them. Each example shows significant savings, again demonstrating the economic advantage of closing rather than retaining a base for a potential reconstitution need.

In addition to these cost advantages there are qualitative advantages to building new facilities instead of using legacy infrastructure to support new military systems. Using support facilities designed and built specifically for the new military equipment and taking advantage of new materials and technology, provides improved operational effectiveness and reduced costs.

Reduced overseas basing may require added investments

Although not caused by BRAC actions, a reconstitution to 1987 force levels will require additional infrastructure expenditures if the current level of overseas basing continues. These costs are required to create facilities to support forces that were based overseas in 1987, and may be located in the U.S. after reconstitution. These expenditures, however, will only be for “reconstitutable” assets because sufficient “difficult to reconstitute” assets are available. Army maneuver divisions and Air Force small aircraft wings are an example of the forces that are affected by reduced overseas basing. If all or a portion of the reconstituted forces end up at overseas locations, then the added domestic investment will be reduced.

Non-DoD reconstitution alternatives are available

Although they are not needed to support reconstituted forces, a number of alternatives exist using assets from other Federal agencies or the private sector. For example, the Department’s Revolution in Business Affairs will increase the amount of commercial support used by DoD. This may result in greater use of private sector sources of assets that a future reconstitution will use for a portion of its requirements.

The Department of Defense (DoD) is providing this report in response to Section 2815 of the National Defense Authorization Act for Fiscal Year 1995, Public Law 103-337. Section 2815 requires DoD to evaluate the effect of the four rounds of base closure on the ability of the Armed Forces to remobilize to the FY1987 end strengths. The report is also to identify any construction projects needed for remobilization and any defense assets, disposed of during the base closure process, that would be difficult to reacquire. The full text of Section 2815 is in Appendix A.

Effect of BRAC on Military Capabilities

The Report of the Department of Defense on Base Realignment and Closure released in April 1998, included a Joint Staff Assessment of Previous Base Closure Rounds on Military Capabilities and the Armed Forces Ability to Fulfill the National Military Strategy. The conclusion of the Joint Staff was:

This assessment revealed that previous base closure rounds had a net positive effect upon military capabilities and the ability to fulfill the National Military Strategy.

This report provides an opportunity for DoD to respond to the intent of Section 2815 by evaluating the capability of the current defense infrastructure (after all base closures have been implemented) to fulfill the military needs of the worst case scenario described in the QDR's security assessment. That scenario is the future development of a global peer competitor in the period after 2015. Under such conditions, the U.S. would have to build up its force structure and supporting infrastructure.

Report Scenario and Assumptions

To be consistent with the accepted scenarios, this report assumes the emergence of a global peer competitor after 2015. As it has done in the past, the response of the American people to this dangerous change in the world would be to support an increased level of our country's economic resources directed toward defense. To provide some perspective on this, it is useful to consider that the 1987 national defense budget was about \$400 billion in today's dollars, and that included a procurement budget of about \$120 billion. The very large

increase from today's budget of approximately \$268 billion with a procurement budget of about \$53 billion suggests the dramatic change in the security environment that would result if a global peer competitor reappears. This report focuses only on defense infrastructure needs; we assume that manpower and equipment will be available when needed to support the increased force levels.

Infrastructure must be expanded, reconfigured, reallocated, and reconstructed to meet specific needs and threats. The request in Section 2815 was based on a "remobilization" to 1987 end strength. The term mobilization implies the need for a rapid response to an imminent threat of war, such as the period prior to WW II. If the security scenario required that type of rapid response, then there would be the need to rapidly move forces overseas after an expedited training period. Although training facilities would have to be available early, the movement of units would mean that the total force would not have to be bedded down within the U.S. infrastructure. Also, a major redirection of U.S. commercial assets into defense use is likely during a mobilization. Both movement overseas and use of commercial assets reduces the need for construction of new domestic defense facilities. Although we believe that both factors will reduce infrastructure requirements, we have not based our analysis on them. To provide a more demanding assessment of future defense infrastructure needs, this report is based upon the reconstitution of a Cold War-type deterrent force requiring significant domestic basing. Reconstitution, as opposed to mobilization, is more in-line with the QDR global security assessment of potential global threats. Following the requirement in Section 2815, reconstitution to 1987 force levels was analyzed in this report. The specific forces needed for reconstitution to meet a potential global peer competitor, however, may be significantly different than the 1987 force structure. [Note: the report does not address issues of mobilization needs or infrastructure changes to meet current or projected force or mission requirements. Instead, the report evaluates the types of infrastructure that would be needed to reconstitute 1987 force levels within the post-BRAC 1995 infrastructure.]

We also had to define the force size in a way consistent with the modernization of our weapon systems. The specific language of Section 2815 sets the target as the 1987 end-strength levels. Using the 1987 end strength levels would not capture the more efficient use of personnel that has occurred since 1987. Fewer military personnel today are needed to man the same level of forces than in 1987; even fewer will be needed in the future. Therefore, the reconstituted force used in this report is based on a force with equivalent capabilities to 1987, but one that will have fewer military personnel than in 1987. As it turns out, the fewer personnel are not critical to the analysis. Force structure and number of weapon systems tend to define the requirements.

It is difficult to predict the level of overseas basing that would be used if a new global peer competitor emerged. To examine a more demanding domestic basing requirement, the report assumed a continuation of the current level of forward basing. It did not assume that the level of forces based overseas in 1987

would be duplicated for the reconstituted force. To the extent that some of these forces can be based overseas, domestic requirements can be reduced.

Report Organization

The report is organized as follows:

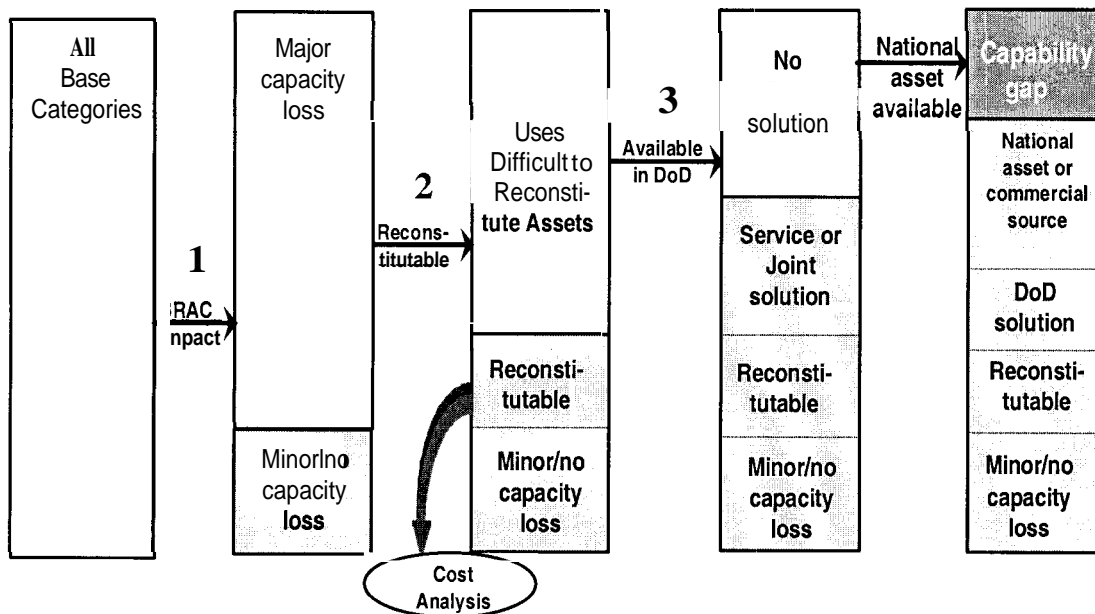
Chapter 2 describes the method of classifying assets into four categories.

Chapters 3 through 6 describe the results of the analysis.

Analysis Overview

The analysis conducted for this report was designed to proceed through a series of steps that eliminate some of the base categories. The analysis results in the identification of those base categories that have had a significant reduction in capacity due to BRAC, and that may be difficult to reconstitute to support the return to 1987 force levels. Figure 1 is a graphical representation of the approach.

Figure 1 - Analysis Plan — Overview



For consistency, we use the same base categories as the April 1998 DoD Report on Base Realignment and Closure. Table 1 displays the base categories.

Table 1 - Base Categories

Army	Navy	Air Force	DLA
Administration	Naval Bases*	Administration	Distribution Depots
Depots	Marine Corps Bases*	Air Force Reserve*	Supply Centers
Industrial	Marine Corps Administration	Air National Guard*	
Major Training Active*	Air Stations*	Depots	
Major Training Reserve*	Ordnance Stations*	Education & Training	
Maneuver*	Supply Installations	Missile*	
Schools	Aviation Depots	Large Aircraft*	
Test and Evaluation*	USMC Logistics Bases	Small Aircraft*	
Labs	Shipyards*	Space Operations*	
	Test & Evaluation*	Product Centers/ Labs	
	Labs	Test & Evaluation*	
	Training Air Stations*		
	Training		
	Construction Battalion Centers		
	Inventory Control Pts		

* Categories that use "difficult to reconstitute" assets

In Step 1, all base categories were examined against the results of the first four BRAC rounds. Those categories with little or no impact from BRAC were eliminated from further study at this step. These base categories should fully support the reconstituted force.

In Step 2, the remaining assets were classified as "reconstitutable" or "difficult to reconstitute" assets (described below). Using the results of an analysis that demonstrated the cost effectiveness of closing excess "reconstitutable" assets and later rebuilding them if needed, base categories that only use "reconstitutable" assets were eliminated as impediments to expansion.

At this point, we were left with installation categories impacted by BRAC and using "difficult to reconstitute" assets. In Step 3, we examined each of the remaining base categories to determine the ability of existing Service or other DoD infrastructure to support the increased force structure.

Step 4 studied means, outside the Defense Department, to provide infrastructure to accommodate the reconstituted forces.

“Reconstitutable” and “Difficult to Reconstitute” Assets

A key distinction can be made between two types of assets. One type is made up of “reconstitutable” assets. These are physical facilities and structures that can easily be constructed, and include buildings, hangars, piers, runways and shops. These assets are costly to operate and maintain, and require periodic recapitalization. Past BRAC actions had a significant impact on these assets.

Reconstitution of an equivalent 1987 force structure will require the construction of some new structures and facilities to support the added forces. The specific military construction projects that will be needed are dependent on the particular base where the forces will be located, and the particular type and quantity of structures needed by future units. With this uncertainty, in this report we have described only the types of infrastructure categories that will require expansion. We have focused instead on the economic decision between retaining currently excess infrastructure, and closing the infrastructure later rebuilding it, if needed.

The other asset category consists of infrastructure that is not readily commercially available for military use. We use the term “difficult to reconstitute” to describe them. These assets go beyond physical structures to include elements of topography, and the ability to use the assets as required to fulfill a military requirement. These assets provide access to large, contiguous, unencumbered areas with specific characteristics. “Difficult to reconstitute” assets are land, air and water areas that meet defense requirements for maneuvering, live ordnance exercises, aviation training, hazardous material storage, weapons and systems testing, unique geography, difficult environmental requirements, deep water berthing access, and strategic location of forces. Table 2 lists key elements of “difficult to reconstitute” assets. They are much more challenging to acquire than a “reconstitutable” asset, however, it is possible to add new or modify existing “difficult to reconstitute” assets. “Difficult to reconstitute” assets may be the result of a unique combination of independently “reconstitutable” assets. The base categories that use “difficult to reconstitute” assets are noted on Table 1.

Table 2 - Key Elements of “Difficult to Reconstitute” Assets

Training Airspace	Training Ranges
Access To Proper Space Orbit	Deep Water Ports
Strategic Location	Unique Geography
Weapons Systems Testing	Systems Testing
Maneuver Space	Weapons Storage

DoD and the Services recognize the importance of these latter assets. Past BRAC rounds have had only minimal effect on “difficult to reconstitute” assets. A review of base closures identified a consistent effort by the Services to protect these assets through an evaluation of their military value and careful implementation of the closure actions. We believe that enhanced cross-service use of existing “difficult to reconstitute” assets and use of commercial facilities would be able to make up for the minimal loss of these assets. The following are representative examples of BRAC decisions involving bases that use “difficult to reconstitute” assets.

The Army closed one maneuver base, Fort Ord, but retained most of the maneuver acreage, located at Fort Hunter-Liggett, for use by National Guard and Army Reserve units. Similar retention of training areas occurred after the closure of other Army bases, such as Fort Chaffee, Fort Indiantown Gap, Fort McClellan and Fort Pickett. These retained areas are used to meet current training needs and also could become future maneuver or training bases for reconstituted forces with new construction or renovation of existing “reconstitutable” facilities.

Airspace and related assets, such as outlying airfields, were protected by the Air Force and Navy during previous BRAC rounds. Minimal airspace was given up through the base closure process. Several examples illustrate this. At NAS Key West, the Navy chose to downsize rather than close the base to ensure continued access to its airspace. Airspace used by Reese AFB was transferred to the control of other bases after Reese was closed. Navy and Marine Corps pilots being trained at NAS Kingsville use the airspace formerly used by the now closed NAS Chase Field.

Charts 1-3 depict some “difficult to reconstitute” assets – Army Maneuver areas, Navy deep water ports and current special use airspace. Chart 4 depicts some limited amounts of airspace released back to the National Airspace System as a result of BRAC actions.

Chart 1 - Army Maneuver Areas

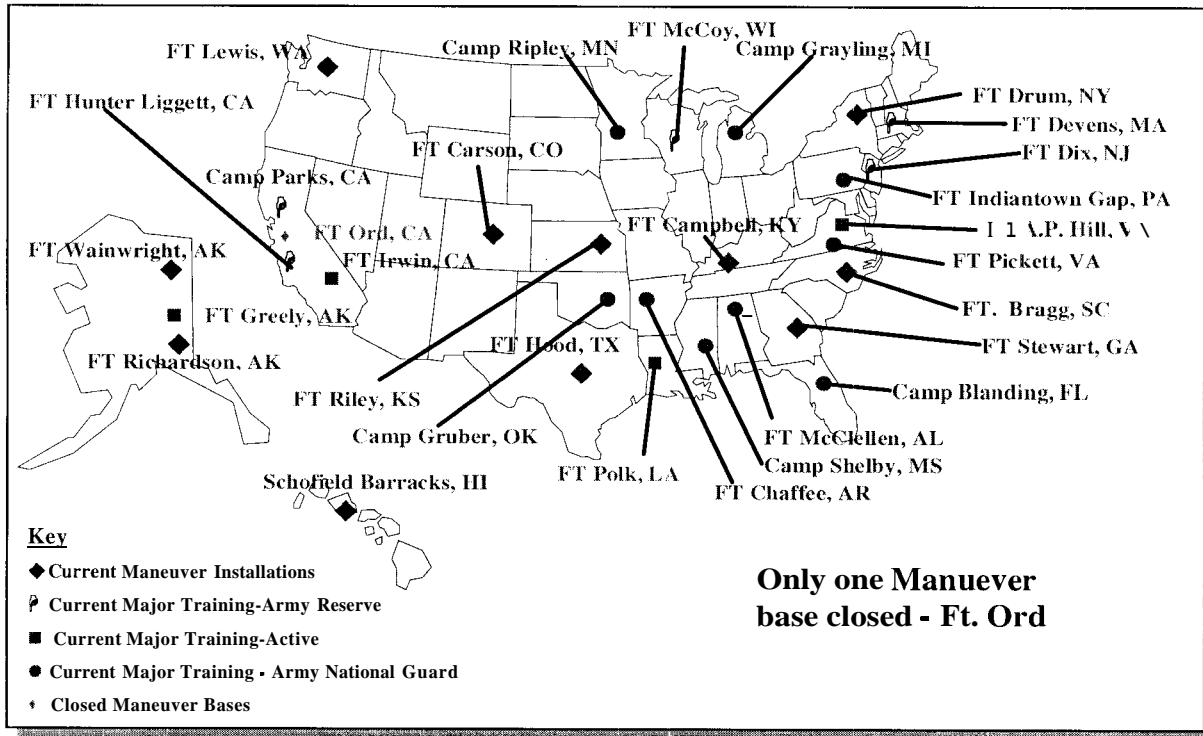


Chart 2: Navy Deep Water Ports

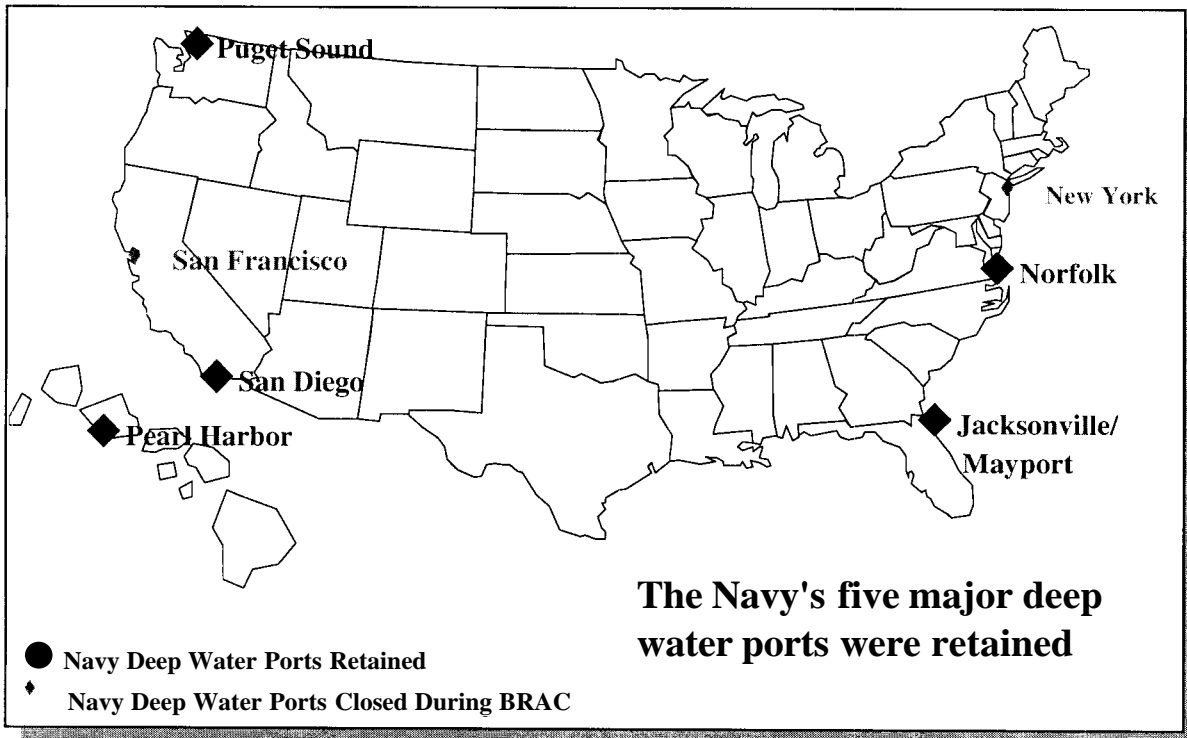


Chart 3: Current Special Use Airspace

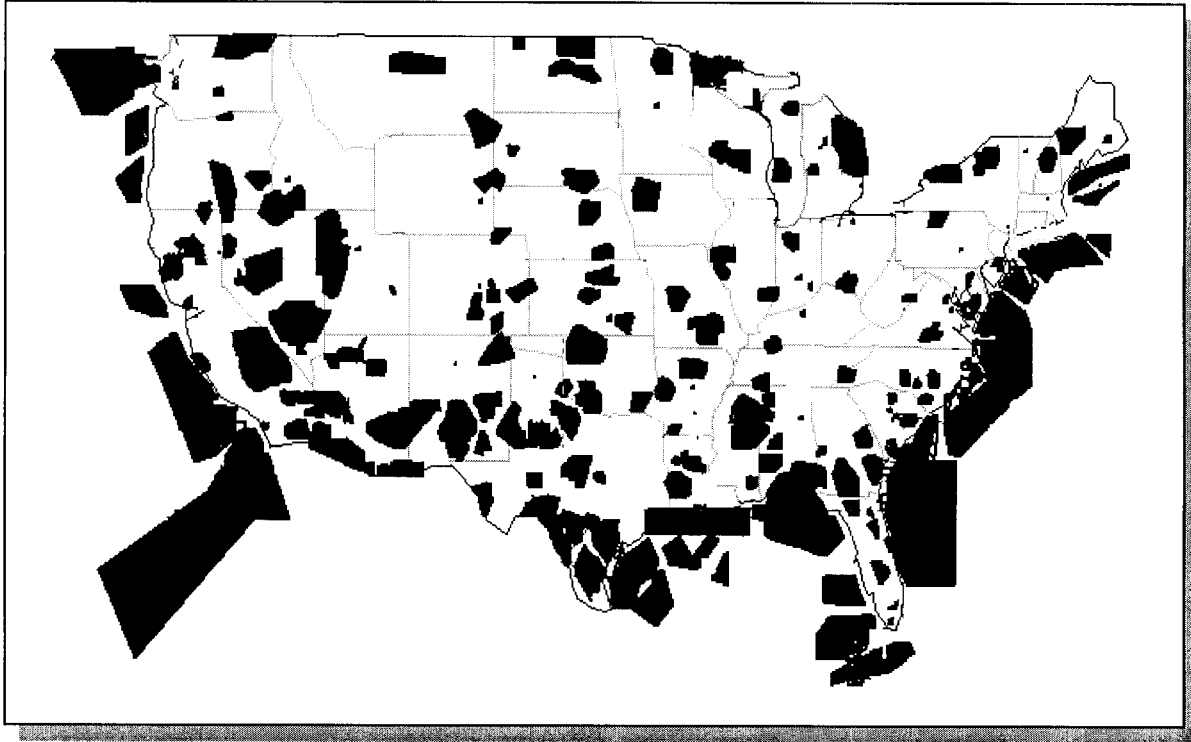
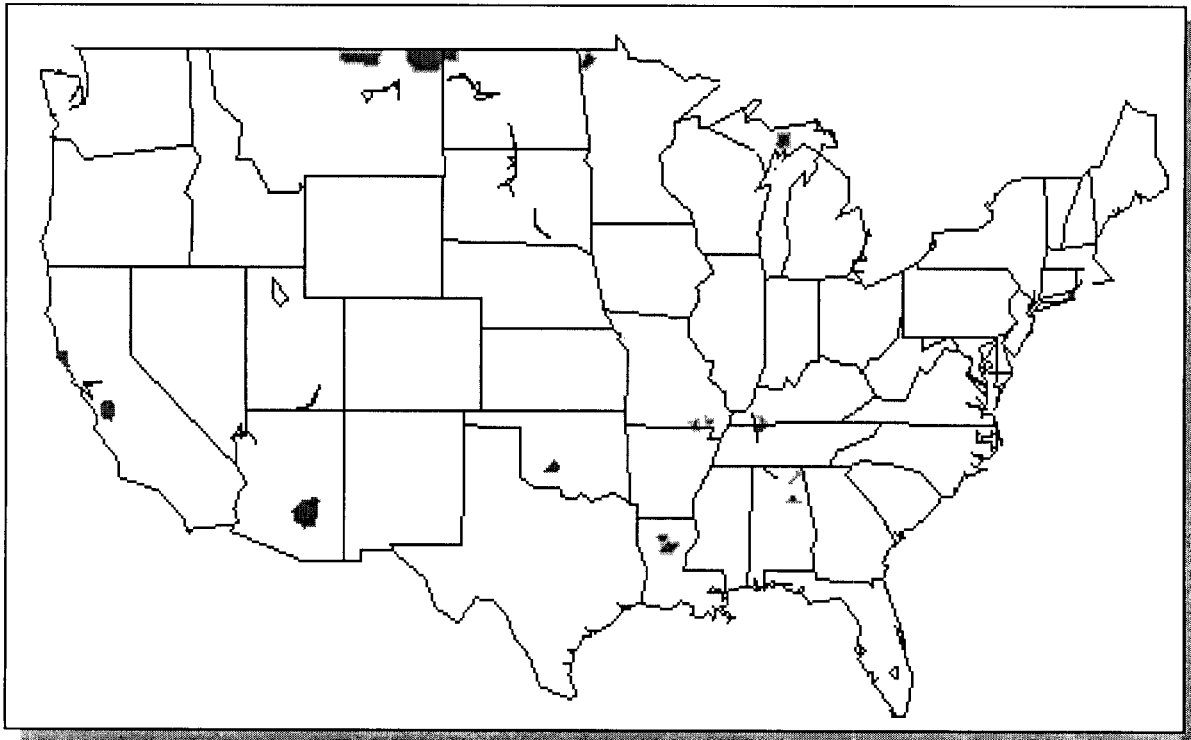


Chart 4 Military Operating Areas "Airspace" Revoked Through BRAC



CHAPTER 3 BRAC REDUCTIONS

Impact of BRAC Reductions on Base Categories

Using the base categories from the April 1998 DoD Base Realignment and Closure Report, the amount of capacity reduction approved during the four BRAC rounds was reviewed for each category. If no capacity reductions or only minimal reductions resulted from BRAC, the category was eliminated from further study for this report. However, because of numerous factors (for example -- technology advances, joint consolidations, and changing mission requirements) these categories may be subject to significant BRAC actions in the future. Table 3 displays the base categories with minimal or no capacity reduction from BRAC.

Table 3 - Base Categories with Minimal or No BRAC Reductions

Army	Navy	Air Force
Major Training Active*	Ordnance Stations*	Administration
Major Training Reserve*	Test & Evaluation*	Air Force Reserve*
Schools	Inventory Control Points	Air National Guard*
Test & Evaluation*	Marine Corps Bases*	Missile*
Labs	Marine Corps Administration	Space Operations*
	Marine Corps Logistics Bases	Product Centers/Labs
		Test & Evaluation*

* Categories that use "difficult to reconstitute" assets

Most of the base categories in Table 3 use "difficult to reconstitute" assets. The very limited past BRAC actions for the categories in Table 3 is, in part, the result of the Service military value analyses that identified the requirement to retain "difficult to reconstitute" assets for both current and potential future needs.

CHAPTER 4 “RECONSTITUTABLE” AND “DIFFICULT TO RECONSTITUTE” ASSETS

Cost Analysis for “Reconstitutable” Assets

To determine if base categories that use only “reconstitutable” assets can be eliminated from the analysis, a cost comparison is needed. If it can be demonstrated that it is cost effective to close the “reconstitutable” assets at a base, and later rebuild those assets when needed to support a reconstituted force structure, then base categories that use only “reconstitutable” assets can be eliminated from further consideration.

This analysis compared the costs and savings that resulted from the closure of “reconstitutable” assets with the cost of later rebuilding these assets. The timing of the reconstruction requirement was based upon the QDR’s 2015 date for the earliest emergence of a global peer competitor. Following OMB rules, the cost analyses constructed the net present value (NPV) with a four percent discount rate. Using NPV allows the analysis to consider the relatively greater value of costs and savings incurred earlier than those that occur later.

The first comparison was between the cumulative costs and savings from BRAC and the cost of rebuilding all of the BRAC closed facilities. Several adjustments were made to the BRAC steady-state savings figure in DoD budget documents to reflect normal recapitalization requirements at bases, and additional savings in infrastructure funding due to military personnel reductions from BRAC.

“Reconstitutable” assets require periodic recapitalization, and if the assets are closed through BRAC this cost can be avoided. The BRAC savings figures in the budget documents, however, do not include these savings. There is currently a 200 year recapitalization cycle, and although this is a much longer cycle than was typical in the past, it was used to add an annual amount to the budget savings of one-half percent of the adjusted plant replacement value of the closed facilities.

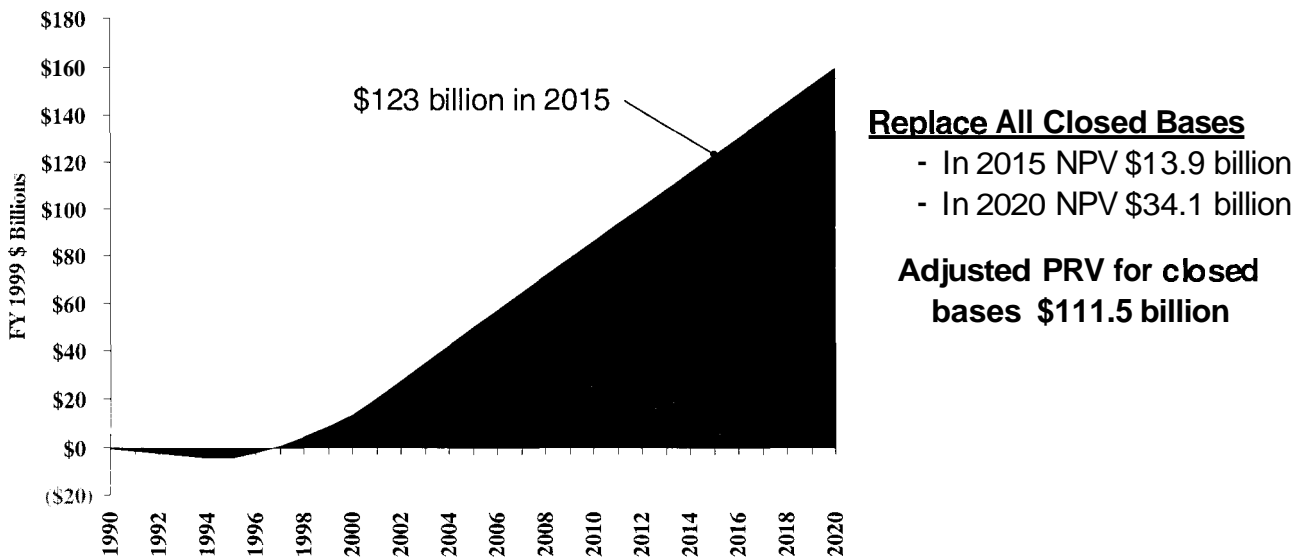
The April 1998 DoD Base Realignment and Closure Report identified additional annual BRAC savings of \$1.2 billion. These savings are in several infrastructure funding categories (central training, installations, and central personnel). Reductions in military end strength associated with BRAC actions allow for less spending for these infrastructure categories. These savings were also added to the annual BRAC savings figure.

Determination of the cost of replacing all the facilities closed by BRAC began with the plant replacement value (PRV) for all the closed bases. During BRAC

implementation, military construction funds were expended to relocate forces and workload to bases that remained open. The cost of replacing the closed bases was then calculated by subtracting the amount spent for BRAC-caused construction of new facilities. The adjusted cost of replacing the closed facilities is \$111.5 billion.

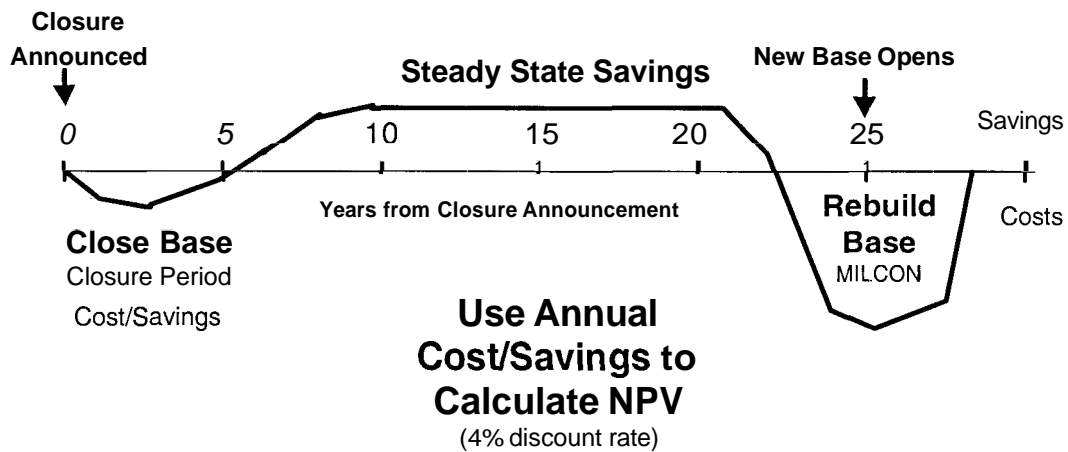
Figure 2 presents the results of this analysis. The cumulative value of the BRAC savings in 2015 is \$123 billion. Even if all the closed bases are completely rebuilt in 2015, this figure exceeds the replacement cost by about \$1.5 billion. Using a net present value analysis (four percent discount rate), the results show a savings of \$13.9 billion.

Figure 2 - Cumulative BRAC Savings



To confirm this general finding, we examined the costs and savings for rebuilding the physical facilities for specific installations. Several base categories were examined using the results from specific base closures. The selected base examples are from categories that include both “reconstitutable” and “difficult to reconstitute” assets. Figure 3 displays a typical model for this analysis.

Figure 3 - Cost Analysis — Close and Later Reconstitute Base



Costs and savings for the selected base closures were adjusted from the budget document figures to reflect an increase due to recapitalization savings (1/2 percent of the facility's PRV). Army savings were also increased to add military personnel savings not included in budget document figures, comparable to savings included in the Navy and Air Force closures. From 20 to 60 percent of the steady state savings for Navy and Air Force closures typically have been from military personnel savings; 30 percent was used to adjust the Army savings.

A variety of sources were used to determine the cost of constructing the "reconstituted" facilities. The Fort Ord analysis used actual military construction expenditures for construction of the new division facilities at Fort Drum; for NAVSTA Staten Island and Mobile we used actual MILCON required to construct these facilities; for NADEP Alameda we used the current PRV for NADEP North Island; and for England AFB we used an estimate to rebuild Homestead AFB after its facilities were destroyed by Hurricane Andrew.

In addition to the cost advantages of closing unneeded infrastructure and rebuilding new facilities if a threat appears, there are qualitative advantages to the new facilities. There is added cost and lower operational effectiveness when adapting legacy support infrastructure to new military systems. Changes in the military equipment supported, and changes in the nature of the support required, can be best met with supporting infrastructure designed and built specifically for that new equipment. The revolution in military affairs brings a significant technological change that the legacy infrastructure is not currently equipped to support. Without a clear picture of what systems would be in place when the threat requires reconstitution of this infrastructure, this advantage is impossible to quantify, but we believe it is substantial.

The changing nature of support also increases the potential savings from closing infrastructure not needed in the short term. The current emphasis on a revolution

in business affairs, with its reliance on support commercially available in the private sector, would serve to mitigate the recapitalization costs when additional infrastructure is required in the long term. In effect, the base closure process can be used to facilitate the transfer of support infrastructure from the public to the private sector.

Table 4 displays the net present value savings of the specific installations examined based on a requirement to reconstitute a replacement facility in 2015.

Table 4 – Savings from Closure and Later Reconstitution

Base	NPV – Savings (\$millions)	Reconstitution Break Even Year
Army Maneuver Base – Fort Ord	\$248	2010
Naval Station – NAVSTA Staten Island	\$392	2004
Naval Station - NAVSTA Mobile	\$164	1999
Depot – NADEP Alameda	\$526	2004
Air Force Base - England AFB	\$479	2005

All of the net savings are positive and large. The NPV analysis is sensitive to the reconstitution date. For example, all of the above savings figures increase significantly if the base reconstruction is delayed, for example, from 2015 to 2020 because of the additional five years of savings and increased discounting for the future construction cost.

If reconstitution is earlier, net savings decrease and eventually disappear. For example, if a reconstituted maneuver base is needed in 2010 instead of 2015, the Fort Ord case is breakeven. That is, the savings from eliminating the older base equals the cost of constructing a new base. The reconstitution year when the calculation becomes a breakeven is shown in Table 4 for each base example.

Base categories that use only “reconstitutable” assets are displayed in Table 5. In the event that the U.S. were to return to the 1987 force levels, and more capacity would be needed in these categories, the cumulative savings will still justify the closure of bases in these categories.

Table 5 - Base Categories Using Only "Reconstitutable" Assets

Army	Navy	Air Force	DLA
Administration	Supply Installations	Depots	Distribution Depots
Depots	Aviation Depots	Education	Supply Centers
Industrial	Labs		
	Training		
	Construction Battalion Centers		

Note that several of the bases used for the specific installation analysis shown on Table 4 are from categories that are not listed in Table 5 as exclusions. Although we concluded that it was cost-effective to close and later build their "reconstitutable" assets, we still have to address the "difficult to reconstitute" assets used by these types of facilities.

Categories for Further Analysis

At this stage of the analysis, we are left with installation categories that have had significant BRAC drawdown and which use “difficult to reconstitute” assets. “Difficult to reconstitute” assets may be the result of unique combinations of independently “reconstitutable” assets. For example, bases within the Air Forces large aircraft category normally have a number of “reconstitutable” assets, which when combined with geographic location, training areas, and weapons ranges create “difficult to reconstitute” assets. These categories are listed in Table 6.

Table 6 - Base Categories with BRAC Reductions and “Difficult to Reconstitute” Assets

Army	Navy	Air Force
Maneuver	Naval Bases	Large Aircraft
	Shipyards	Small Aircraft
	Air Stations	Pilot Training *
	Training Air Stations	

* Subcategory of Air Force Education and Training Category

For each of these categories, we identified the capacity lost through BRAC. The reduction in the size of the supported force structure between 1987 and now was also calculated. For most of the force structure elements, future forces will be much more capable than those in 1987. Where there is a documented analysis of the improvement in this capability, such as for the current bomber force, an equivalent 1987 force level was used.

We considered a number of options for each category to determine ways to accommodate the larger equivalent 1987 force structure within remaining DoD assets, both “reconstitutable” and “difficult to reconstitute”.

The current domestic base capacity within each Service was first considered. In most cases sufficient space was available, although often requiring the addition of new structures (“reconstitutable” assets). The ability to accommodate the forces is, in part, a reflection of the amount of excess capacity that remains in DoD’s base infrastructure. Other options were often available, including expanding or changing a base’s current missions to include those required by the category.

Additional alternatives are also available through increased interservicing or possible transfer of base property between Services.

Army Maneuver Bases

The Army's division force structure has been reduced from 18 to 10 divisions. The Army would thus need to support 24 additional maneuver brigades (three brigades per division) plus other divisional troops, if the future force structure mirrors the 1987 forces. A return to the 1987 division force structure adds 5 heavy and 3 light divisions.

This potential shortfall, however, principally reflects the loss of overseas bases, not BRAC actions. Only one maneuver base (Fort Ord) was closed through BRAC. The infrastructure shortfall is significantly greater than one base because of the uncertain level of overseas basing for the reconstituted force. In 1987, the Army had about 21 brigade equivalents overseas. It now has 6 brigades permanently stationed overseas. Fifteen fewer Army brigade equivalents are now based overseas when compared to 1987 levels.

During the 1995 BRAC round the Army examined the capacity of its existing division installations. This analysis determined that the existing domestic base structure could accommodate about 38 brigades, although construction of some new structures would be required on many of the installations.

Table 7 lists the installation capacity after construction developed by the Army in 1995. After reviewing current base occupancy, we made a vacancy calculation for each base and added it to the table.

Table 7 - Army Maneuver Base Capacity and Current Vacancies

Base	Brigade Capacity w/ Construction	Current Vacancies (Maneuver Brigades)
Fort Bragg	3*	0
Fort Campbell	3*	0
Fort Carson	3	1
Fort Drum	3*	1*
Fort Hood	5	0
Fort Lewis	3	1
Fort Richardson	1*	0
Fort Riley	2	0
Fort Stewart	2	0

Table 7 - continued

Base	Brigade Capacityw/ Construction	Current Vacancies (Maneuver Brigades)
Fort Wainwright	2*	1*
Schofield Barracks	3*	1*
Fort Benning	1	0
Fort Bliss	4	4
Fort Knox	1	1
Fort Polk	2*	1*
Totals	21 + 17* = 38	7 + 4* = 11

*Light brigade

The vacant capacity on the existing maneuver bases accommodates about 3 of the 8 additional divisions. This still leaves a shortfall of almost 5 divisions; the decrease from the number of units based overseas in 1987 to current overseas basing levels. Changes in the capability and size of future Army division units may make this shortfall much less than it appears.

Current Army plans demonstrate that a future division will be considerably more capable than the 1987 division; a future division will control much greater land area than units did in 1987. They are also expected to be smaller and lighter. Implementation of innovative Army units, such as the Strike Force, may create a smaller Army force structure that is much more effective at meeting future threats than the larger division structure of 1987. Future security conditions may also require a return to greater levels of overseas basing. Developments such as these may totally eliminate the basing shortfall.

However, if there is a need to add more traditionally sized maneuver bases in the future, several alternatives are available. Some of these alternatives are available because the Army chose to retain its "difficult to reconstitute" maneuver areas after closing an active base.

A reasonable solution is to use some of the training areas currently operated by the Army National Guard and U.S. Army Reserve. Many have served as division and brigade installations in the past and retain the minimum essential ranges, facilities, and training areas to accommodate the maneuver base mission. Fort Drum is an example of a reserve base being converted into an active division base with the addition of new or expanded facilities. A candidate for division level training is Fort McCoy, while Camp Shelby and Fort Hunter-Liggett can accommodate brigade level maneuvers. There are other smaller posts that could support individual brigade operations - such as, Camp Blanding and Camp Ripley, all of which are maintained by the Army's Reserve Components.

Inter-servicing opportunities also exist with the Marine Corps which has several installations that are large enough to base Army brigade-size units.

Naval Stations

The Navy has had significant reductions in its fleet since 1987. The fleet then included 2 more aircraft carriers, 103 more surface combatants, 50 more submarines, and 13 more combat logistics ships.

This report followed the Department of the Navy analysis procedure from previous BRAC rounds and calculated berthing requirements for surface combatants, submarines and assault ships using the cruiser equivalent (CG equivalent) measurement for berthing space and service requirements. Carriers, ammunition ships, minesweepers, and strategic submarines all have dedicated piers that are currently adequate for berthing the 1987 force structure. Therefore, they are not included in the berthing calculation.

Using the equivalent 1987 fleet, the total capacity requirement is 338.5 CG equivalents for surface combatants, attack submarines, and assault ships. To take into account the amount of time Navy ships are away from port on deployment and in overhaul, the Navy capacity calculations provide for a 67 percent in-port ratio. This means that 227 CG equivalents are required for the 1987 fleet.

Using Navy Department calculations from the 1995 BRAC round for naval base capacity, Table 8 displays the CG equivalent capacity for the current naval bases.

Table 8 - Naval Base Capacity

Naval Base	Capacity in CG equivalents
New London	5
Norfolk	63
Little Creek	20
Mayport	15
Pascagoula	6
Everett	8
Bremerton	2
San Diego	85.5
Pearl Harbor	27
Total	231.5

With a capacity (231.5 CG equivalents) greater than the requirement (227 CG equivalents) there is an excess of 4.5 CG equivalents when considering berthing the 1987 fleet.

For the previous BRAC rounds, the Navy required a dedicated berth for each carrier. With at least one carrier in overhaul at any one time, and others on deployment, this is a very conservative figure. However, the current carrier berthing capacity still allows for a dedicated berth for each carrier in the reconstituted fleet.

Ammunition ships are berthed at naval ordnance stations for safety reasons. None of these stations were closed through BRAC, and sufficient capacity remains for these ships. Minesweepers and strategic submarines have their own dedicated bases, also, with sufficient capacity to berth the 1987 fleet. Combat Logistic Ships are civilian manned and can be berthed at commercial or Navy piers. Because of this flexibility, they are not included in the Navy's ship berthing requirements.

Naval Shipyards

The maintenance requirements for a fleet reconstituted to equivalent 1987 force structure size were estimated for both nuclear and non-nuclear workloads. Table 9 shows the maximum annual demand for nuclear and non-nuclear shipyard workload, by fleet, in thousands of Direct Labor Mandays (DLMD x 000).

Table 9 - 1987 Equivalent Force Annual Shipyard Demand (DLMDx000)

Fleet	Nuclear	Non-nuclear
Atlantic	2,035	1,560
Pacific	2,290	1,558
Total	4,325	3,118

The Navy calculated shipyard capacity during the 1993 BRAC round. Table 10 displays the capacity for the four remaining public shipyards.

Table 10 - Existing Annual Naval Shipyard Capacity (DLMDx000)

Shipyard	Nuclear Capacity	Non-Nuclear Capacity	Total
Portsmouth NSY	1,046	249	1,295
Norfolk NSY	1,210	851	2,061
Puget Sound NSY	1,760	797	2,557
Pearl Harbor NSY	532	530	1,062
Total	4,548	2,427	6,975

Two assumptions were made to evaluate the capacity of the existing shipyards to support the equivalent 1987 fleet. The first was that Naval Shipyards could perform all nuclear work. The other was that commercial shipyards could perform a substantial amount of the required non-nuclear workload. Indeed, commercial shipyards are currently performing approximately 90 percent of the non-nuclear workload. This amount is expected to continue to exceed 2100 (DLMD x 000) annually.

Table 11 shows that sufficient capacity exists in the Naval Shipyards to perform all the nuclear workload and a very substantial portion of the non-nuclear workload.

Table 11 - 1987 Equivalent Force Shipyard Demand vs. Existing Capacity Comparison (DLMDx000)

	Nuclear	Non-Nuclear	Total
Existing Naval Yard Capacity	4,548	2,427	6,975
1987 Equivalent Demand	4,325	3,118	7,443
Commercial Yards Workload Required	0	691	691
Commercial Peak Workload Capacity	5,000	5,500	10,500

The analysis demonstrates that, despite the closure of four naval shipyards during BRAC, the remaining Navy shipyards have sufficient capacity to perform the expected nuclear repair workload. The analysis shows that the Navy shipyards would be able to perform all but approximately 700 (DLMD x 000) of the non-nuclear repair work. Considering the substantial excess capacity within

the commercial ship repair industry, and considering that the commercial ship repair industry is currently performing approximately three times this amount of Navy non-nuclear repair work, this required workload could easily be performed in the private sector. Table 11 displays the peak workload capacity of commercial shipyards to perform Navy nuclear and non-nuclear ship repair.

A further review was made of current drydock capacity to accommodate the special needs of nuclear carriers and nuclear submarines. Four carrier drydocks remain in use, along with substantial excess capacity to meet nuclear submarine drydocking requirements.

Naval Air Stations

The 1987 force structure included three more carrier airwings and 18 more maritime patrol squadrons than are included in the current force. With ten Naval and Marine Corps Air Stations closed through BRAC, there has been a substantial aviation infrastructure reduction. However, the key factors determining air station capacity were carefully considered during the BRAC process. Most training airspace and training areas used by these closing bases were retained for continued military aviation use. Naval aviation is also very dependent on the use of outlying airfields (OLF) for training, and some of these facilities were also retained for use by other air stations.

The current air stations have the capacity to accommodate the training requirements of the reconstituted force levels because of the retention of the training airspace and training areas. Additional facilities, such as hangars, parking apron, and support facilities would, however, be required for the added units. The existing air stations have the capacity to add these facilities and have access to the necessary "difficult to reconstitute" assets, such as airspace, to support the additional aircraft.

The level of reconstitution for the maritime patrol squadrons would be based upon the extent of the future submarine threat and advancing technology which could make significant changes in the way this mission is performed in the future. Compared to other naval aircraft, maritime patrol squadrons require relatively little training airspace. While it is not expected that the potential threat would require a complete restoration of these units, reconstituted forces could be supported at existing bases with the construction of added structures.

Naval Training Air Stations

Only one training air station was closed through BRAC, and its mission was to perform strike training. The Navy's capacity to do primary and other specialized pilot training was not affected by BRAC.

Annual strike pilot training rates (PTR) varied from about 400 to 460 in the late 1980s. Despite the closure of one training air station, current training capacity exceeds this rate because of an improved training process and the retention of the special use airspace from the closed air station.

Since BRAC 95, the Navy has converted to a new aircraft, T-45, to train strike pilots. The T-45 requires about 29 percent fewer flight operations than training with the older T-2 and T-4 aircraft. Training capacity at the two remaining air stations as shown in Table 12 reflects the T-45 efficiencies. The total capacity of 542 exceeds the peak PTR experienced in the late 1980s.

Table 12 - Strike Pilot Training Capacity

Training Air Station	Training Capacity (PTR)
NAS Kingsville	271
NAS Meridian	271
Total	542

The Navy and Air Force have begun to do some joint pilot training. If the reconstituted force required additional training capacity, more interservicing could support that requirement.

Air Force Large Aircraft

Through BRAC the Air Force closed 11 bases that support large aircraft. Two other large aircraft bases were converted into reserve bases. Twenty-two primary large aircraft bases remain in the Air Force inventory.

As a result of START and the end of the Cold War, the real and perceived strategic threat has been reduced. The U.S. subsequently made decisions to adjust the Strategic Triad accordingly. Thus, some long-range bomber platforms were retired, some sea-based strategic platforms were retired or inactivated, and some fixed land-based systems were inactivated. Given that the majority of the 1987 long-range bomber fleet was dedicated to strategic rolls, these decisions drastically impacted the bomber force. The outcome has been the reduction of long-range bomber platforms from almost 400 to less than 200.

These reductions have not impacted U.S. readiness and abilities to respond as validated by recent Defense-related studies, such as the QDR, which supported reductions of strategic platforms, including large reductions in the B-52 inventory. It is not expected that future threats will require extensive reconstitution of

strategic forces. The reduced and enhanced long-range bomber inventory is adequate to meet current and projected future threats. This enhanced bomber capability was highlighted in the U.S. Air Force White Paper on Long Range Bombers, dated March 1, 1999. The following quotes were taken from the Air Force's White Paper:

Page 10 "The long-range aerospace power of today's Air Force is a potent force for deterrence of both conventional and nuclear conflict."

Page 13 "Major programmed and future improvements continue to enhance lethality, force availability, survivability, versatility and flexibility."

Page 13 "The shift from unguided bombs to precision munitions produces a tenfold increase in bomber lethality."

Air Force large aircraft bases also support aerial refueling and airlift forces. Major changes have not been made to these force levels or their bases. Some systems have been retired and new systems brought onboard. Current infrastructure is adequate to support the current and projected inventory.

Capacity analysis collected and used by the Air Force during BRAC 95 identified the ability of several large aircraft bases to expand the number of large aircraft supported. Table 13 uses this BRAC 95 data to show the potential increased capacity for several randomly selected large aircraft bases. Additional expansions are possible at other Air Force locations.

Table 13 - Air Force Large Aircraft Base Expansion Capability

Air Force Base	Expansion Potential (additional aircraft)
Andersen AFB	16
Barksdale AFB	10
Beale AFB	36
Dyess AFB	16

Table 13 - continued

Air Force Base	Expansion Potential (additional aircraft)
Ellsworth AFB	32
Fairchild AFB	16
Hickam AFB	20
March ARB	32
Minot AFB	26
Offutt AFB	4
Total	208

To summarize, large aircraft infrastructure reductions to date have been predominantly facilities that can be replicated, and DoD has retained installations, training areas and airspace that enjoy minimum encroachment and environmental concerns, and are capable of expansion.

Air Force Small Aircraft

The Air Force has significantly reduced the number of small aircraft in its inventory. Correspondingly, six bases supporting small aircraft have been closed or converted to other missions through BRAC. Fifteen primary small aircraft bases remain. In addition, numerous other base categories support small aircraft, e.g., depots, product centers and laboratories, and test and evaluation.

In 1987, the Air Force had 36.7 fighter wings of active and reserve component aircraft and another 11 NORAD fighter squadrons, while the QDR depicts 20.6 fighter wing equivalents (FWE) of active and reserve component aircraft and another 4 NORAD fighter squadrons. There is no direct correlation between a fighter wing reduction and closure of a base. For example, most of the reserve component reductions (Air Force Reserve or Air National Guard) were reductions in unit sizes – from 18 aircraft to 12 or 15 aircraft per unit – or mission changes. Additionally, Air National Guard and Air Force Reserve reductions normally did not result in base closures, because most of these forces operate as tenants on civilian airports, and the reduced unit sizes or mission changes did not create significant excess DoD facilities. Therefore, potential increases in Air Reserve Component (ARC) fighter inventory or a return to 1987 numbers could largely be accomplished within the existing ARC infrastructure.

Active-duty fighter reductions involved worldwide assets, whereas BRAC actions dealt strictly with domestic basing. Therefore, the reduction in active-duty small aircraft of about 12 wings impacted both domestic and international basing. The result was the closure or realignment of six domestic small aircraft bases through

BRAC. Expansions at existing small aircraft bases, adding small aircraft capacity at other bases, increasing forward-deployed forces, reconversions of small aircraft capable bases, expanding joint basing, and increasing collocation of **ARC** and active-duty units are all methods that could be used to accommodate a reconstituted force. For example, analysis performed and used by the Air Force during BRAC 95 support the ability of bases to expand their capacity. Table 14 uses these BRAC 95 capacity analyses to show the expansion capability of several randomly selected bases. This 378 aircraft expansion identified below equates to 5.25 FWEs and is possible at minimal cost.

Table 14 - Air Force Small Aircraft Base Expansion Capability

Air Force Base	Expansion Potential (additional aircraft)
Cannon AFB	18
Davis-Monthan AFB	36
Eielson AFB	36
Hill AFB	30
Holloman AFB	18
McChord AFB	18
McConnell AFB	36
Moody AFB	72
Mountain Home AFB	18
Pope AFB	18
Shaw AFB	60
Whiteman AFB	18
Total	378

If several methods of accommodating a reconstituted force are implemented, e.g., increasing forward-deployed forces (2+ FWEs), reconversions of small aircraft capable bases (2+ FWEs), expansions at other small aircraft capable bases, plus increasing collocations of ARC and active-duty units and expanding joint basing, the existing infrastructure has the ability to accommodate the equivalent 1987 force.

Air Force Pilot Training

Two pilot training bases were closed by the Air Force through BRAC. During implementation of these closures the Air Force retained most of the airspace and training areas associated with these bases.

While pilot training rates have fallen since 1987, the Air Force is now projecting a large pilot shortfall. To meet pilot training requirements, the Air Force is planning to significantly increase future training rates to levels approaching those in 1987 when the Air Force produced 1453 active-duty pilots. The Air Force is accommodating this increased pilot production by maximizing existing training base capacities. Additional pilot training is possible by using some excess capacity available at other facilities in the Air Force base structure and by increasing aviation cross-service training. Table 15 displays the current maximum active-duty Air Force pilot training rate capacities at the Specialized Undergraduate Pilot Training (SUPT) bases (Columbus AFB, Laughlin AFB, and Vance AFB) and Sheppard AFB. This existing capacity, along with potential increases available at other Air Force bases or through increased interservicing, demonstrate the capacity of existing infrastructure to meet the reconstituted force requirements and current pilot training needs.

Table 15 - Undergraduate Pilot Training Capacity

Training Location	Maximum Pilot Training M e
SUPT Bases	1,218
Sheppard AFB	142
Total	1,360

In summary, this chapter finds that reconstituted forces can be supported in those infrastructure areas that use “difficult to reconstitute” assets. The “reconstitutable” assets at those installations exist or can be rebuilt. The “difficult to reconstitute” assets are mostly intact and more than adequate to support any reconstitution.

Requirement for Non-DoD Assets

This report did not identify any base infrastructure category that cannot accommodate the reconstituted force structure on existing DoD bases, although this may require the construction of new or expanded facilities. This does not mean, however, that there might not be an equal or better solution to provide future basing support through the use of non-DoD assets.

There are many assets outside the Federal Government. For example, many DoD aviation units, primarily reserve and guard units, already are tenants at commercial airports. Charleston AFB is one of several examples of a major active-duty base that shares aviation facilities with its community airport. Logistics ships operated by MSC are often berthed at commercial piers. In the future it is likely that there will be additional examples of military units using commercial instead of defense infrastructure to more cost effectively support their operations. Increased shared use of facilities (commercial, community and military) would provide an even greater source of infrastructure expansion potential for DoD to use to meet reconstitution needs.

Other Federal agencies may also be good sources of facility support during reconstitution. For example, there are already areas of overlap identified within technical facilities operated by DoD, DOE and NASA. DoD and the VA are studying increased cooperation in the area of health care.

Land Availability

In the past many communities offered property for defense use. In a time of sufficient threat to justify a return to a peak Cold War level of defense effort, it is reasonable to assume that communities and states will again be generous with their support for military basing in their areas through the contribution of land.

Several recent examples demonstrate that, even without the concern generated by the emergence of a new global peer competitor, communities are interested in providing land for military use. In the mid-1980s the Navy Strategic Homeport Program received offers from many communities to become a homeport site. In the Gulf Coast area alone, 17 cities submitted proposals. More recently, DoD requested expressions of interest in providing facilities for one of several planned DFAS centers. Scores of communities submitted attractive proposals to support the new centers, many offering significant property to DoD.

Expansion of Difficult to Reconstitute Assets

This report has discussed the importance of “difficult to reconstitute” assets. While it is important to retain these assets, even after base closures, it is often critical that the assets be enhanced to meet the evolving needs of military forces. Two recent and ongoing efforts by the Air Force illustrate the need to change these assets to meet current training requirements. They also demonstrate that, while these assets may be “difficult to reconstitute,” it is not impossible to modify or expand them to meet a defense need.

Force readiness is directly dependent on adequate training, and training effectiveness is dependent on the availability of appropriately sized, unencumbered training areas and airspace. DoD goes to great lengths to ensure adequate training area availability, and carefully considered these requirements during the BRAC process.

Special emphasis is placed on updating, modifying and consolidating training areas to meet the changing training requirements of modern weapons systems. For example, during the late 1980s, training areas near Mountain Home AFB became increasingly limited in meeting the needs of newly assigned aircraft. In response, the Air Force initiated actions to expand and improve existing training areas near the base. These resulted in the “Enhance Training in Idaho” initiative which enlarges and updates training areas, and adds another air-to-ground drop area. In addition, the closure of many northern tier and coastal bomber bases increased the need for enhanced training opportunities for the remaining bomber bases in the south-central U.S. The improved training requirements also needed to support the increased emphasis on long-range bomber delivery of conventional weapons. The Realistic Bomber Training Initiative now being studied resulted from this training requirement. One of the initiative’s alternatives being considered uses airspace, including retained airspace from a closed base, to enhance and produce a cost-effective and operationally superior training capability located near long-range bomber bases.

Increased Use of Commercial Support

As DoD implements its Revolution in Business Affairs it will increase the use of commercial sources for support activities. This allows DoD to take advantage of existing commercial facilities instead of funding, constructing and operating defense-unique infrastructure. Future reconstitution actions may be able to eliminate some of the facility requirements that have traditionally been built by DoD on military installations.

Section 2815 of the National Defense Authorization Act for 1995

Sec. 2815. Report of Effect of Base Closures on Future Mobilization Options.

- (a) **REPORT REQUIRED** – The Secretary of Defense shall prepare a report evaluating the effect of base closures and realignments conducted since January 1, 1987, on the ability of the Armed Forces to remobilize to the end strength levels authorized for fiscal year 1987 by sections 401, 403, 411, 412, and 421 of the National Defense Authorization Act for Fiscal Year 1987 (Public Law 99-661; 100 Stat. 3859). The report shall identify those military construction projects, if any, that would be necessary to facilitate such remobilization and any defense assets disposed of under a base closure or realignment, such as air space, that would be difficult to reacquire in the event of such remobilization.

- (b) **TIME FOR SUBMISSION** – Not later than January 31, 1996, the Secretary shall submit to the congressional defense committees the report required by this section.

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