

**THE ARMY BASING STUDY (TABS) GROUP
TABS ANALYTICAL FRAMEWORK (TAF)**

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1.0 INTRODUCTION

This document provides an overview of the TABS analytical process for Base Realignment and Closure (BRAC) 2005, including an introduction to TABS methods, models, model relationships, and data used throughout the process. The major objectives of this document are to provide an understanding of the analytical process used to develop Scenarios and to define the role of TABS analysts within that process.

1.1 Army Vision for BRAC 2005

The Army leadership has approved the following vision for the Army and its BRAC 2005 process:

“Army forces with a Joint and Expeditionary Mindset positioned to provide relevant and ready combat power to Combatant Commanders from a portfolio of installations that projects power, trains, sustains and enhances the readiness and well-being of the Joint Team.”¹

The challenge for TABS is to develop sound recommendations that relocate units, functions, and activities to achieve this vision, recognizing the emphasis placed on Joint use among Service installations.

1.2 Army BRAC 2005 Analytical Objectives

In the Army TABS Group Charter, dated 15 January 2003, Army leadership provided the Army BRAC 2005 process with the following analytical objectives:²

- Comply with the provisions of the Defense Base Closure and Realignment Act, as amended, and other relevant legislation that may be subsequently enacted.
- Comply with guidance from the Office of the Secretary of Defense, the Secretary of the Army, and the Chief of Staff, Army.
- Use installation resources to most effectively and efficiently support the Army Stationing Strategy.
- Ensure the capability of the base structure in the United States to support the training, mobilization, deployment, reconstitution, and sustainment of the Army.
- Provide the Army’s soldiers, family members, and civilian employees with a high-quality base structure in which to work, train, and live.
- Consider all installations equally as candidates for realignment or closure without regard to whether the installation was previously considered or proposed for closure, realignment, or as a receiving installation by a previous round of BRAC.

¹ Approved by the Army Senior Review Group (SRG) on 29 January 2004.

² The analytical objectives listed here are not the same as the Army BRAC Objectives listed in Appendix E. Analytical objectives are used strictly for the development of the Army analytical process, while the Army BRAC Objectives are used during that process.

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- Ensure that Continental U.S. (CONUS) installations can absorb Outside the Continental U.S. forces should they be re-stationed to CONUS.

These process objectives provide the basis for the Army BRAC analysis, products, and recommendations.

1.3 TABS Analytical Framework (TAF) Objectives

The TAF supports the Army BRAC vision and process objectives with a set of analytical tools used to conduct analyses. The TAF also provides an understanding of the analytical process used to develop Scenarios. TABS analysts are responsible for understanding the TAF, following TAF procedures, and ensuring that their work is of the highest possible quality.

1.4 Definitions³

Throughout this paper, we use the following key words:

- **Unit** – A single military organization assigned to an installation.
- **Tenant** – A supporting organization located on an installation.
- **Major Unit** – A collection of units that needs to be stationed as a “group” due to a supporting or mission relationship.
- **Proposal** – Potential unit moves, unit realignment, or installation activity that is proposed for further analysis by a TABS member or group outside of TABS. A collection of related stationing actions.
- **Stationing Action (SA)** – A move of a unit, activity, or function from installation A to installation B.
- **Analytical or Transformational Option** – A SA that must be examined within TABS due to Army guidance.
- **Scenario** – A Proposal that the TABS leadership has approved to be an Army BRAC Scenario.
- **Option** – A collection of Scenarios.
- **Recommendation** – A set of Options.
- **Dependent Group** – A set of SAs that must occur as a set.

1.5 Document Structure

Chapter 2 offers background information about the TAF and states why BRAC 2005 requires a slightly different analytical approach than BRAC 1995. Chapter 3 presents the elements of the TAF process, and Chapter 4 provides an overview of the process steps.

³ A complete list of acronyms used in the TAF is located in Appendix A.

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Chapters 5 and 6 introduce the TABS review and prioritization processes. Appendices offer more details on models and individual processes.

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2.0 TAF BACKGROUND

2.1 Characteristics

The Army process has several enduring characteristics that TABS built within its process to ensure a high level of quality. These characteristics are evident throughout this document. We mention several here due to their importance.

2.1.1 Comprehensive

BRAC encompasses each of the Services, their installations, units, supporting units, and tenants. TABS, therefore, considers the entire Army [Active and Reserve Components (AC and RC)] for BRAC actions, all sister Service installations as potential sites to support Army units, Army installations as potential sites to support sister Service units, and the Joint Cross Service Group (JCSG) analyses as opportunities for better business practices and operating efficiencies among the Services. Such an analysis provides considerable opportunity for imaginative stationing solutions based on a consistent process grounded in BRAC law, guidance, and a limited but necessary set of assumptions.

2.1.2 Predictive

One way to illustrate the expansiveness of the TABS effort, including its completeness, analytical rigor, and level of effort, is through its final products. As a result, the TAF is designed to generate Joint Scenarios across all Army and other-Service installations, providing the maximum military value to the Current and Future Armies. A second measure of the potential value of BRAC Scenarios is the aggregate Net Present Value (NPV) of all examined stationing actions. NPV is the 20-year current value of an action given implementation costs and action benefits (savings). It is considered the standard measure for deciding whether a government program can be justified on economic principles.⁴

2.1.3 Progressive

The Army views BRAC as a transformation enabler, and the TAF ensures transformation is foremost within this analysis by developing and supporting BRAC Objectives based on transformation concepts, Major Command (MACOM) and staff inputs, and BRAC guidance. These Objectives are used throughout the analysis as a basis for all stationing Scenarios.

Owing to the uncertainties in future operational requirements, force structure, and the timing of stationing actions, the TAF includes uncertainty and risk analyses that examine the potential impacts of uncertainty on the analytical results and provide a measure of the inherent risk associated with a potential stationing action.

⁴ Office of Management and Budget, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs," OMB Circular No. A-94, 1992 (Appendix C revised in 2004).

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2.1.4 Auditable

Since BRAC recommendations must be based on analysis, the TAF process must be auditable. TABS works to ensure that the process, data, and models are auditable. Completing an auditable sequence of analysis provides the basis for future BRAC analysis, justification for key assumptions, and credible data with which others can recreate TABS results.

One aspect of being auditable is technical correctness; TAF modeling efforts strive to be technically robust and defensible. Models help examine a complex problem like BRAC, but they cannot capture all aspects of stationing and cannot replace military judgment. The TAF recognizes this inherent modeling limitation, and, though it attempts to capture the quantitative *and* qualitative aspects of stationing analysis, it may not include all stationing factors in its models. The TAF includes those factors that have been shown to consistently influence stationing results and, in some cases, relies on military judgment.

2.2 Changes

While BRAC 1995 provides a foundation for TAF, as the examples in Figure 1 illustrate, there are other influences that have evolved since 1995 that impact the TAF process. The TAF was developed to incorporate an emphasis on transformation, Jointness, homeland defense, and soldier well-being as elements of military value. We also consider the impacts of the information technology revolution.

BRAC 1995	BRAC 2005
Global political environment led to a focus on downsizing the Army following the end of the Cold War.	Current environment focuses on an Army fighting the Global War on Terrorism (GWOT).
Cleaning up previous BRAC decisions.	Focused on Future Force requirements (2025) – changing infrastructure focus to opportunities and expandability.
Military value attributes were “current” focused and existing facilities were considered high value.	Army focus on enduring and immutable characteristics — maneuver lands and permanent characteristics are drivers. Attributes must focus on Current and Future Armies.
Managed by each of the Services; Joint basing efforts had little impact.	Strong emphasis on Joint utilization and linked efforts with the Joint Cross Service Groups (JCSG) and the Joint Action Scenario Team (JAST).
Little emphasis on Well-Being, Force Protection, and Homeland Defense.	Well-Being, Force Protection, and Homeland Defense are key issues for the Current and Future Armies.

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BRAC 1995	BRAC 2005
Limited concern with community encroachment.	Considers the impact of 10 more years of potential community encroachment on installations.
Community awareness and involvement was still maturing.	Local governments are more aware of environmental, economic, and political issues within a BRAC context.

Figure 1. BRAC 1995 versus BRAC 2005

2.3 Process Stages

TABS conducts a three-stage study process for BRAC 2005, starting with a **Preparation** phase, followed by an **Analysis** phase, and ending with a **Support** phase. The TAF document is an explanatory piece that describes the second stage, the **Analysis** phase. The **Preparation** phase includes policy development [law, Department of Defense (DoD) and Army policy], TABS training [trusted agents, TABS and Headquarters of the Department of the Army (HQDA) personnel], model and data development, the Cost of Base Realignment Analysis (COBRA) Joint Process Action Team (JPAT), data calls and collection, and installation coordination and review.⁵ The **Analysis** phase includes numerous required analyses and ends with recommendations. Upon completion of analysis and recommendation development, TABS conducts the **Support** phase, which includes support to HQDA, the Office of the Secretary of Defense (OSD), the BRAC Commission, and the Congress.

This completes a brief introduction to the TAF. The next section discusses each TAF component.

⁵ Each installation will have the opportunity to present its command briefing to TABS at the TABS location or by video teleconference. A list of the installations studied by TABS is provided at Appendix B.

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3.0 TAF COMPONENTS

Figure 2 illustrates the major components within the TAF mapped to the process stages. The components are discussed below; greater detail is provided in the noted appendices. Although the TAF is a fluid, iterative process, its phases generally follow the sequence depicted in Figure 2:

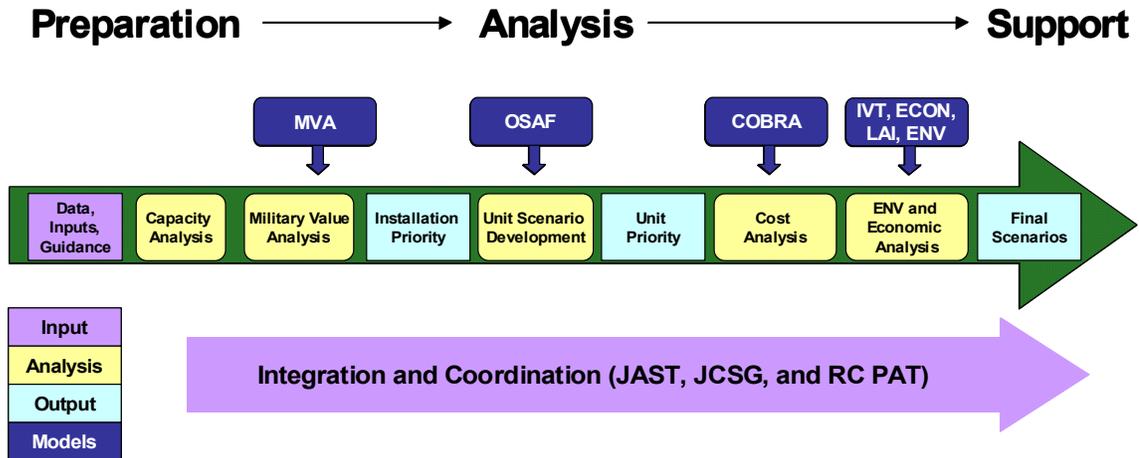


Figure 2. TAF Major Components

3.1 Data, Inputs and Guidance

3.1.1 Data

BRAC relies on a data-intensive process, which requires credible data sources and certified data.⁶ TABS will use corporate databases for some data and conduct data calls that will be integrated throughout the process including a capacity data call (6 January 2004) and a military value data call (April 2004). TABS will conduct additional calls if required. See Appendix C for more details on the data analytical procedures.

3.1.2 Guidance

Army leadership provided TABS guidance through the group's charter and process objectives, the Army Stationing Strategy, and the Senior Review Group (SRG).⁷

3.1.3 Selection Criteria and Supporting Models

Supporting models are designed to satisfy analytical requirements and selection criteria as well as assist the analysts. Figure 3 displays DoD's selection criteria and the TABS-developed models that incorporate the criteria concepts to support the analyst.

⁶ See the TABS Internal Control Plan for additional information on data and certification processes.

⁷ See the TABS Charter and Army Stationing Strategy for additional guidance.

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	DOD Selection Criteria	Models	
1	The current and future mission requirements and the impact on operational readiness of the Department of Defense's total force, including impacts on joint war fighting, training, and readiness.	MVA, Capacity, OSAF	<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">↑</div> <div style="text-align: center;"> <p>MVA</p> <p>Military Value Analyzer</p> </div> <div style="margin-left: 10px;">↓</div> </div>
2	The availability and condition of land, facilities, and associated airspace (including training areas suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas and staging areas for the use of the Armed Forces in homeland defense missions) at both existing and potential receiving locations.	MVA, Capacity, OSAF	
3	The ability to accommodate contingency, mobilization, and future total force requirements at both existing and potential receiving locations to support operations and training.	MVA, Capacity, OSAF	
4	The cost of operations and the manpower implications.	MVA, OSAF	
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.	COBRA	
6	The economic impact on existing communities in the vicinity of military installations.	Economic, IVT	
7	The ability of both the existing and potential receiving communities' infrastructure to support forces, missions, and personnel.	Infrastructure, IVT	
8	The environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance activities.	Environment, IVT	

Figure 3. DoD Selection Criteria and Models

For example, Criterion 1, which addresses operational readiness and Joint operations, is supported with the Military Value Analyzer (MVA), the capacity analysis, and the Optimal Stationing of Army Forces model (OSAF). Each of these models is briefly described in their respective appendices.

The first four DoD selection criteria constitute the mandated basis for “military value,” while the last four criteria are related to economics and environment. The TABS Modeling Team runs the models related to criteria 1-4 and provides model outputs to aid the analysts. Only after an analyst reviews a Proposal for all eight criteria (and completes the documentation) does the Deputy Assistant Secretary of the Army for Infrastructure and Analysis [DASA (IA)] consider the work on the Proposal complete.

3.1.4 Guiding Principles

Guiding Principles are top-level strategic concepts extracted from the Army vision that foster transformation. The principles are used as a guideline while developing, analyzing, and producing Scenarios. See Guiding Principles in Appendix D.

3.1.5 BRAC Objectives

The Army BRAC Objectives are designed to enable transformation of the current portfolio of Army installations into a portfolio that best supports the Joint Team. Objectives provide the TABS analyst both a starting point and goals for analysis. See BRAC Objectives in Appendix E.

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3.1.6 BRAC Considerations

The Army's BRAC considerations were originally entitled "Imperatives." The ISG approved the Army BRAC Imperatives to inform the BRAC process and provide a basis for stationing restrictions and requirements that the final BRAC Scenarios must consider. However, the ISG later decided that mandating the use of imperatives as absolutes was too constraining and, as a result, unnecessary. Therefore, the Army renamed its Imperatives as "considerations" and uses them to inform the analytical process along with other analyses; TABS can supercede considerations when they conflict with Military Value or military judgment

See BRAC Considerations in Appendix F.

3.1.7 Design Constraints

Army design constraints represent the minimum requirements that TABS needs to ensure that the final portfolio of Army installations can satisfy specific unit requirements. For example, an Army Brigade needs a certain number of maneuver acres for training. A design constraint for this land requirement is used when analyzing the stationing of a Brigade.

Each analyst has access to the Army design constraints as well as other guidance and uses them to help guide his or her analysis. Specifically, design constraints are used in military value, OSAF, capacity analysis, and Scenario Analysis. (Appendix Z).

3.1.8 Transformational Options

Transformational Options are recommendations that must be considered during Scenario development. See Transformational Options in Appendix G.

3.1.9 Force Structure

In order to incorporate force structure into institutional databases and understand stationing impacts with a standard basis of measurement, TABS uses baselines. Baseline force structure analysis for BRAC 2005 includes:

- Baseline 2003 – TABS uses all data calls and the existing 2003 unit locations to establish the 2003 baseline. This is the starting point, or the status quo, for determining current capacity thresholds (shortages and excess).
- Baseline 2003m – TABS uses all data calls and the 2003 force structure, which they augment with current decisions on modularity, the Integrated Global Posture and Basing Strategy (IGBPS), and other announced stationing decisions that take place prior to 2006. This baseline allows TABS to include current force structure stationing decisions into their analysis. Stationing actions that the Army may implement in 2006 or later are examined as proposals within the TABS analysis.

TABS uses the Army 2025 force structure plan during analysis.

- 2025 Force Structure – TABS uses the 2003m Baseline and adds the additional units that are in the 2025 force structure to station the 2025 force. Due to

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changing requirements, TABS assumes that all maneuver brigade structures are SBCT-like in 2025.

For a complete review of force structure, implications, and usage, see Appendix V.

3.2 Capacity Analysis

Capacity analysis provides a measure of an installation's available assets (supply) and the installation's capability to meet a unit's requirements (demand) in terms of measured assets. See Appendix H for details.

3.3 Military Value Analysis

Military value (MV) is the primary consideration in making closure and realignment recommendations. MV consists of two components. The first is an analytical foundation that is based on a decision-analysis approach that TABS developed. The analytics are balanced with military judgment that is informed by BRAC Principles, Objectives, and Imperatives, as well as with experience.

3.3.1 Military Value Analysis (MVA)

At every stage in the TAF, TABS is working at some level with MV analysis. The Military Value Analysis (MVA) is the process that the Army uses to examine MV. MVA consists of two modules, four models, and four distinct products. Each element is described in detail in Appendix I.

3.3.2 Military Value of Installations (MVI)

The MVI is the first step in determining the military value (MV) of an installation. The MVI provides the installation MV and is derived from 40 attributes. MVI does not consider unit stationing nor does it consider implementation costs or requirements. Each attribute measures an installation characteristic and is meant to address capability instead of current use. An installation's MV is calculated once and is used in several different analyses.

MVI consists of a multiple objective decision analysis model (MODA), which provides an installation assessment (in terms of value) of all considered installations. One of the MVI's outputs is a ranking of installations from "1 to n." MV is the summed collective scores across weighted attributes that provide an installation's value.

3.3.3 Military Value Portfolio (MVP)

A Military Value Portfolio (MVP) is a portfolio of installations that best satisfies a set of BRAC Imperatives and design constraints. TABS uses an optimization model (MVP model) that uses the MVI results, capacity results, and requirements as inputs.

3.3.4 Option Value Model (OVM)

Proposals are based on MV, capacity, and other analyses. Once the Scenario is built we determine its overall value with OVM, which includes the MVI inputs, and we introduce unit stationing and implementation costs.

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3.3.5 Option Portfolio Model (OPM)

TABS will combine Scenarios into Options and needs a way to determine the value of each Option. OPM uses the inputs from OVM and determines the value of a set of Scenarios subject to a budget constraint. OPM allows TABS to maximize MV while ensuring that the Option's Scenarios can be funded.

3.3.6 Military Value Capabilities

MV Capabilities represent the key focus areas for the TABS MVA based on the compilation of findings from document research, senior leader interviews, and BRAC Objectives. MV Capabilities are mapped to the DoD selection criteria and the BRAC Objectives (see Appendix E and I).

3.3.7 Military Value Attributes

Military value attributes are installation characteristics that permit TABS to score how well an installation can help support the MV Capabilities. An attribute is based on credible and certified available data, is measurable, is distinguishable between installations, and supports the Current and Future Armies.

3.4 Installation Priority

The "installation priority" step is where the analyst considers BRAC Objectives, input data, capacity analysis results, and MVI results to determine a starting point for installation analysis. The starting point represents the subset of installations where the analyst will first attempt to conduct BRAC actions.

3.5 Unit Scenario Development

3.5.1 Team Discussions

The analyst uses the installation analysis results to start "unit level" analysis. Each unit on an installation with lower MV is considered for stationing on an installation with higher MV and at locations where the Army can take advantage of excess capacity.

One of the inputs during unit level analysis is team analysis, where Subject Matter Experts (SMEs) share information and approaches to create an integrated look.

3.5.2 Optimal Stationing of Army Forces Model (OSAF)

The OSAF model augments team discussions with a starting point for unit-level stationing.

OSAF is an optimization model that minimizes Net Present Cost while meeting Army requirements. See Appendix J for additional information on OSAF.

3.6 Unit Priority

The "unit priority" step establishes the possible installation-unit combinations when re-stationing units. Units can be re-stationed to numerous locations, and each analyst will have numerous possible SAs (e.g., move unit 1 to A, B, C, D...etc.). This step is where

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the SAs are prioritized (e.g., of A, B, C, D...consider C and D). Previous process steps provide the information required to complete unit level evaluations, and OSAF complements this step.

3.7 Cost Analysis

3.7.1 Cost of Base Realignment Actions (COBRA)

COBRA is the DoD-sanctioned cost model for BRAC 2005 and provides the cost and savings information for each Scenario to satisfy DoD Selection Criterion #5. TABS analysis stresses the long-term benefits of a stationing action (SA), which COBRA supports with its net present value calculations. See Appendix K for additional information on COBRA.

3.8 Economic and Environmental Analysis⁸

The following set of analyses have rule-based models to assist the analyst in their SA and Proposal reviews.

3.8.1 Economic Analysis (ECON)

Economic Analysis provides the minimum set of considerations required by the analyst to satisfy DoD Selection Criterion #6 (impact on existing communities). See Appendix L for greater details.

3.8.2 Local Area Infrastructure (LAI)

Local Area Infrastructure Analysis is related to the local area infrastructure's ability to support Army requirements (DoD Criterion #7). See Appendix M for greater detail.

3.8.3 Environmental Analysis (ENV)

Environmental Analysis provides the minimum set of considerations required by the analyst to satisfy DoD Selection Criteria #8. See Appendix N for greater detail.

3.8.4 Installation Visualization Tool (IVT)

IVT is a GIS-based computerized mapping tool that provides the analyst with Proposal awareness of an installation through digital imagery and predefined overlays. See Appendix O for greater detail.

3.9 DoD-Wide Groups

Throughout the TAF, each analyst will coordinate and integrate inputs from the Joint Action Scenario Team (JAST), the JCSGs, and the RC PAT. A description of these interactions can be found in Appendices P-R.

⁸ The ECON, ENV, and LAI models are DoD-standard models that TABS uses for its analysis. These models are not optimization-based, but, rather, rule-based.

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3.10 Uncertainty and Risk Analysis

TABS analysts understand that it is possible to close too many installations in BRAC 2005, which could divest the Army of an asset that the Army may need in the future, and they understand that it is also possible to close too few installations, which would drain resources that could meet other Army requirements. In both cases there are uncertainties that can influence the eventual outcome. TABS developed risk management techniques to safeguard against uncertainty.

TABS analysis is based on the best available information, quality models, and certified installation data. But due to the long-term element of BRAC 2005, there are several uncertainties that TABS needs to consider in detail.

Risk is the possibility of an undesirable event and the level of importance of the risk is correlated to the severity associated with the event’s occurrence. The primary source of uncertainty in TABS analysis is an uncertain future force structure. TABS guards against closing too many installations, which would jeopardize the Army’s ability to meet its needs. These uncertainties create a need for TABS to examine multiple force structures [e.g., # of Units of Action (UA)], their requirements (e.g., land, resources), and the ability of proposed Options to support different structures.

When evaluating a realignment Proposal, analysts must be aware that their data and assumptions need to be reviewed. The Army’s future depends on the ability to choose, with a high degree of consistency, BRAC actions that have a high probability of success, even though future events and requirements are unknown. Given known sources of uncertainty, the TABS Modeling Support Team will test the models listed below for sensitivity in their assumptions, and a risk assessment will be completed that provides information for the TABS Scenario review process (Chapter 5). Figure 4 illustrates the primary sources of uncertainty within the TAF models.

Model	Source of Uncertainty	Analysis Provides
MVA	<ul style="list-style-type: none"> • Priorities • Operational requirements 	Sense of the solution robustness for installation values
COBRA	<ul style="list-style-type: none"> • Some factors 	A range of values for a Scenario’s economics
OSAF	<ul style="list-style-type: none"> • Some factors • Stationing restrictions • Force Structure 	A review of restrictions limit realignments
Capacity	Future requirements for force structure	Range of installation capabilities to support force structure
ENV	Cost assumptions	Range of potential costs

Figure 4. Sources of Uncertainty

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Uncertainty analysis helps TABS review Proposals and examine marginally efficient Proposals in greater detail. The TABS Modeling Team will conduct the uncertainty analysis and provide analysts and leadership with the results. More details on uncertainty analysis and an example can be found in Appendix T.

TABS addresses uncertainty and the risks these uncertainties introduce through:

- Imperatives, design constraints, and other guidance, which ensure that TABS Proposals meet required capabilities
- Uncertainty analysis, which provides a means to check the flexibility of Proposals (discussed above)
- Application of Military judgment

3.11 Analysis Relationships

Models

We have mentioned that the TAF includes several analyses as well as numerous coordinating requirements. Thus, it is essential that the TAF supporting models be linked to ensure consistency among models and analytical results. To accomplish this, each TAF model is linked through data sharing, BRAC Objectives, Imperatives, design constraints, mathematical constraints, and the analyst's military judgment. Figure 5 illustrates the relationship among the primary TAF models.

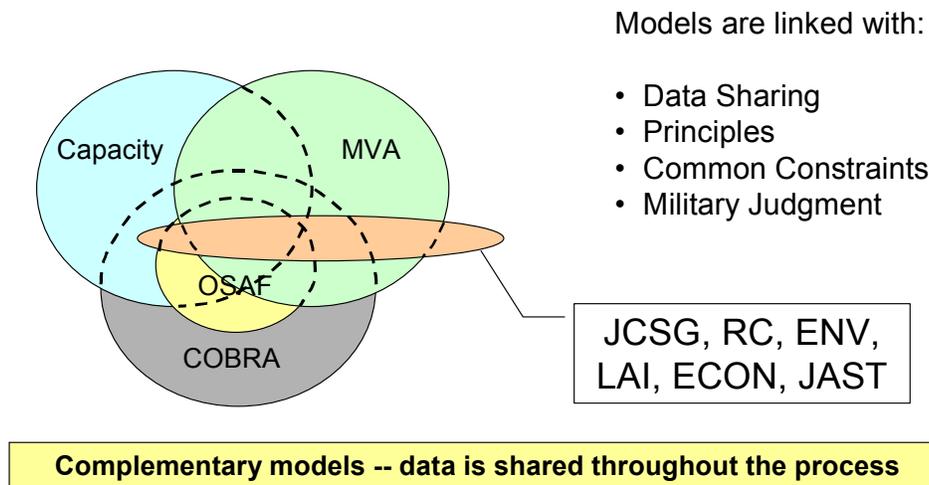


Figure 5. Analysis Relationships

The COBRA model is the cornerstone costing model, because it includes all standard cost factors and data as well as Proposal-specific data. OSAF data stems from COBRA sources. Every element of OSAF resides in COBRA.

Capacity and MVA analyses provide some overlap of data within the different models. For example, a capacity metric may be an MVA metric as well. However, all MVA

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metrics are not based on capacity. Instead, an MVA metric could be based on cost, location, or another installation characteristic.

A link that cuts across all models is the Joint (the JAST process), RC, and JCSG coordination that takes place. Capacity and MVA analyses from these groups need to be coordinated (by TABS liaison officers) and integrated (by TABS Modeling and Mission Teams) to ensure consistent analysis among the different groups from a data, modeling, and process perspective. Consistency does not imply that all groups have identical processes, models, *or* results. In fact, because of uncertainties, inherent judgment, and varying focuses, TABS and the JCSGs should produce an array of Proposals for consideration. Such a result strengthens the overall process because it provides multiple Proposals from several perspectives to help generate Options and recommendations.

It is important to note, that if data or equations (manipulations of data) are used within several models, then the data or equations must be consistent in terms of source and their constraints. This requirement ensures a replicable process that is based on a similar baseline of information.

Proposals

Proposals are potential unit moves, unit realignment ideas, or installation activity that is proposed for further analysis by a TABS member or group outside of TABS. Proposals between analytical groups can be:

- Independent – Proposals are not related.
- Enabling – Proposals strengthen each other through an operational or facility perspective.
- Conflicting – Proposals have different installation destinations for the same unit, both plan on using the same resource, or the Proposals differ in the implied disposition of the installation. All conflicting Proposals will be reviewed for their merit and integrated into another Proposal or examined as an alternative. After completion of analyses, Proposals are prioritized within the Army deliberative process.

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4.0 THE TAF PROCESS

4.1 The Analyst's Task

The primary player within TAF is the TABS analyst. This section explains how the analyst contributes to developing final recommendations and expands on the concepts introduced in Chapter 3.

To complete their work, analysts have numerous inputs, including past military experiences, ideas generated during discussions with others in TABS or with SMEs, and TABS analysis, which results in a multitude of potential SAs. Therefore, the overall task of the analyst is to analyze an array of inputs and converge to a subset of SAs that are efficient and supportive of Army transformation. Efficiency implies that a SA has a balance between economic impact (NPV and Payback), operational impact, environmental impact, and community impact. The following graphic depicts this convergence, as well as models and key inputs available to the analyst to develop efficient Proposals.

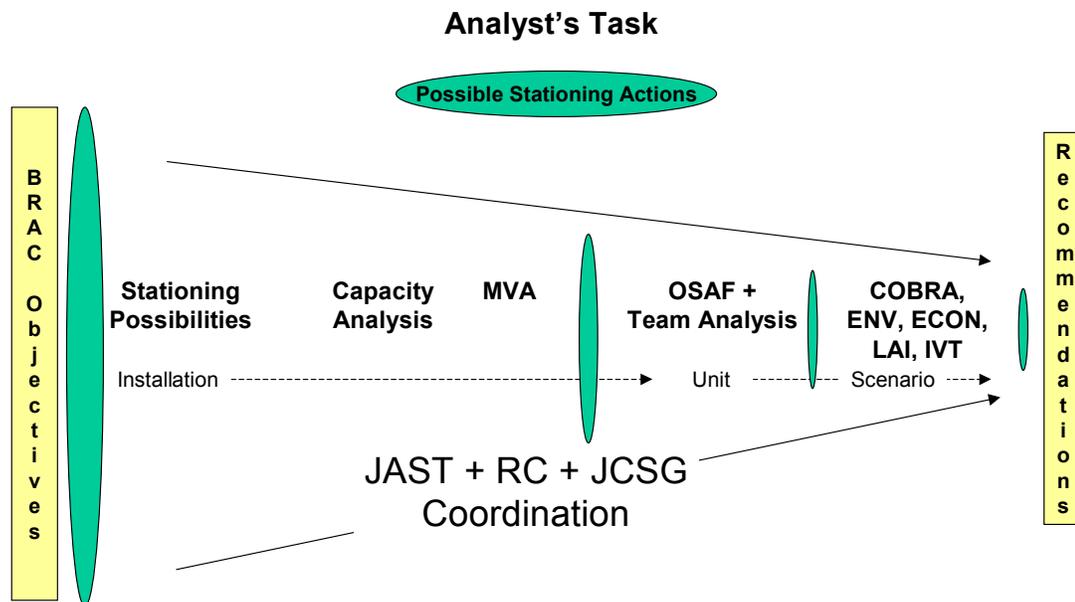


Figure 6. The Analyst Converges to Final Recommendations⁹

The analyst starts with the BRAC Objectives and asks, “What objective am I trying to support?” The analyst uses this answer as the basis for current Proposal development and then conducts installation, unit, and Scenario analyses to filter out less preferred SAs. Figure 6 illustrates how the analyst converges to a smaller set of recommendations through an application of models and coordination with other BRAC offices along the

⁹ The models and analysis attempt to help the analyst prioritize their work. Such tools are needed due to the sheer size of the effort; closing one installation with 40 units has millions of possible SAs.

TABS ANALYTICAL FRAMEWORK (TAF)

way (JAST, RC PAT, JCSGs). Green ovals represent possible SAs. As the analyst completes the work, the number of potential SAs slowly decreases to a smaller set of feasible high-value proposals, which form the basis for Army recommendations.

The analyst's overall mission is to ensure that BRAC recommendations support Army Transformation. Analyst recommendations result from an extensive analytical process in which they examine installations and units within a myriad of SAs and submit their proposals to a review process where internal Army organizations (TABS, ARSTAF, MACOMs) and external agencies (GAO, OSD, the Services) review SAs.

SAs are derived from multiple sources (the analyst's experiences, MV Analysis, MACOM coordination, Army Staff coordination, JCSG integration, etc.), and go through a "transformation filter" along with a series of analyses before they can become a BRAC recommendation. The transformation filter provides a dedicated look at each SA to ensure that it supports BRAC Objectives and complies with BRAC Imperatives.

At the end of the process, the TABS analyst produces a set of analytically defensible BRAC Scenarios that supports BRAC Objectives and enables Army Transformation. The TABS office combines selected Scenarios into Options to present to the Senior Review Group (SRG). During this part of the process, Scenarios will be prioritized (with some being deleted) and combined into Options to form the basis for Army recommendations.

4.2 Specific Requirements

4.2.1 Analyst

Each TABS analyst will:

- Read and thoroughly familiarize themselves with the provisions of BRAC Law, DoD and Army BRAC policies, TABS ICPS, the Army Stationing Strategy (dated 14 August 03), and other relevant documents.
- Assist in the development of BRAC Objectives that support transformational concepts and provide TABS its focus for BRAC 2005.
- Be familiar with Army installation management, organization, and characteristics of each installation as provided by the Installation Management Agency (IMA).
- Be familiar with Joint Service operations, RC operations, and JCSG functions on their installations.
- Develop listings of units and activities (military, tenant, and contractor) and understand their ties to the current installation as well as the units/activities they support.
- Be familiar with the Army force structure.

The requirements cited above provide a minimum understanding of the "solution space" for Scenario development.

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4.2.2 TABS Leadership

The TABS leadership will:

- Support all analysts in the completion of their tasks.
- Ensure that coordination and integration with RC PAT, JCSGs, and other Services are completed.
- Review Proposals for consistency with BRAC Objectives.
- Approve BRAC Proposals as Army BRAC Scenarios. BRAC scenarios will be presented to the BRAC SRG for potential approval as “Candidate Recommendations” for consideration by the Secretary of the Army.

4.3 Installation Analysis

The initial step in the TAF process is the installation analysis phase highlighted in Figure 7. The two primary models that provide inputs for this step are the Capacity and MVA analyses.¹⁰ Figure 7 lists primary inputs for the two analyses:

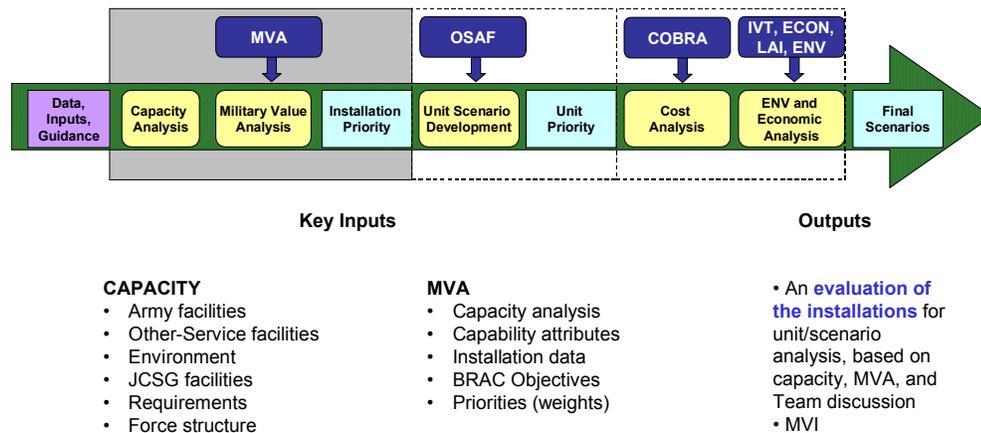


Figure 7. Installation Analysis

Capacity analysis highlights potential opportunities at installations for a BRAC action based on excess facilities. The capacity analysis focuses on Army infrastructure (supply) and Army unit requirements (demand). The results provide an inventory of assets as well as a status quo review of shortages and excess based on *current* stationing and requirements. These shortages and excess provide the analyst an insight for potential SAs because they represent an opportunity for improved efficiency. If the analyst sees

¹⁰ MVA is used at the beginning of the process to determine the MV of Installations (MVI) and Portfolios (MVP).

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excess available and has a requirement that could use the excess, then this situation may merit a SA review. The basic concept is to station units to take advantage of these opportunities. Of course, the capacity results are just one of several inputs that influence SAs.

When combined with MVI, the capacity analysis helps the analyst determine what higher-valued installations have excess capacity. MVI provides a starting point for the analyst by evaluating installations and ranking them from 1 to n using an MV perspective. All installations have value, but the installations with least value should be examined first for potential closure or realignment.

Thus, from the capacity analysis, the analyst can gain the following:

- An inventory listing of facility assets that the Army has on each installation, viewed from both an Army and Joint Service perspective. The inventory determines what the Army can station on that installation and whether there is consolidation potential.
- The calculation of assets minus current requirements provides an estimate of excess that will highlight opportunities for BRAC actions.

And, from the initial stages of MV analysis, the analyst can gain:

- An installation assessment, a ranking of installations by military value capability (e.g., provides a listing of 1 to n for MVI capabilities, see Appendix J), followed by an overall ranking of all installations across all capabilities.
- Application of the approved BRAC Objectives and Imperatives, which provides portfolios of installations that best satisfy Objective guidelines and meet Army requirements (the MVP).

4.3.1 Installation Priority Analysis

Combined, the capacity analysis and MVI provide the inputs required for the analyst to establish installation priorities during the installation evaluation step. The “prioritization” determines the installations (and leases) where the analyst will focus the development of SAs, which is the primary outcome of this part of the process.

For example, the TABS study list has 87 installations and 10 lease sites, but an analyst will focus on a subset of these initially for closure. This subset contains the installations in the analyst’s area of responsibility that have the lowest MV.

4.4 Unit-Stationing Analysis

Following the installation analysis, the analysts conduct unit analysis. The primary model inputs include installation analysis results (capacity and MV), Team analysis, and OSAF results. Figure 8 provides the primary inputs for both Team and OSAF analysis:

TABS ANALYTICAL FRAMEWORK (TAF)

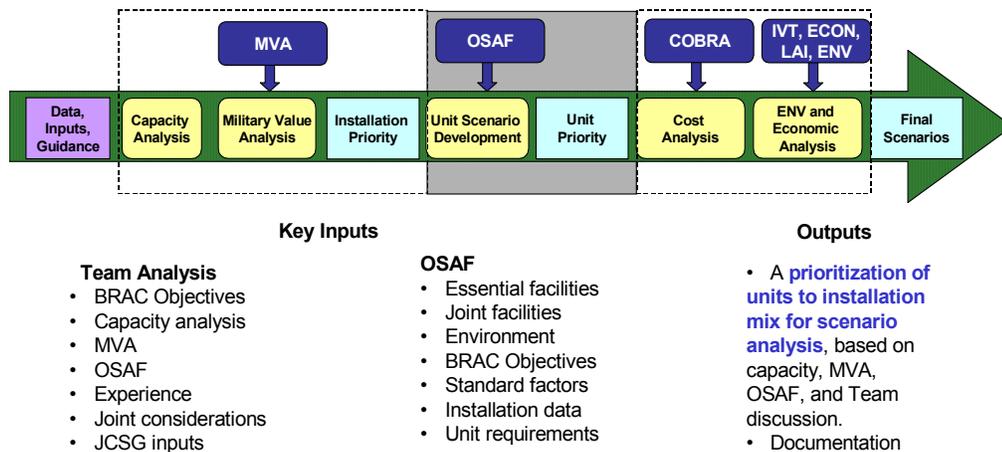


Figure 8. Unit-Stationing Analysis

The output includes a prioritization of units-to-installation mixes for Proposal analysis, based on capacity, MVA, OSAF, and Team discussion. A unit priority list includes units from the installation priority list that the analyst determines could relocate; the unit priority list identifies units to consider for stationing actions. The prior section on installation analysis plays a critical role with unit-level analysis.

4.4.1 Unit-Stationing Analysis Inputs

Primary new inputs to unit analysis are Team and OSAF analysis results. OSAF is built on assumptions, data, and costing model constraints as in COBRA. OSAF considers the stationing of Army units, their requirements (demand), and installation assets (supply) with a focus on non-industrial facilities.

From the OSAF model, the analyst can gain starting points for further Proposal analysis from the following two perspectives:

- Various individual SAs that provide a starting point for unit-specific work.
- A collection of SAs, which represent one Proposal of enabling and dependent moves (looked at as a group or separately), providing a starting point for a multi-unit Proposal-level analysis.

Team analysis is critical to the analyst because it provides numerous reviews of inputs and an extensive amount of experience and perspectives. From Team analysis, the analyst will obtain:

- An initial assessment and ideas for possible alternatives based on military judgment and discussions with other organizations and the TABS staff.

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- Stationing restrictions based on discussions with MACOMs and others concerning an installation’s ability to receive units and unit requirements.

4.4.2 Unit-Stationing Analysis Outputs

Unit-stationing analysis results in a list of units to move to different installations, which, when combined with the installation analysis, should provide multiple SAs for review (and possible Proposals) during Scenario analysis. Up to this point, the analyst has not discarded possible SAs. Rather, the MV criteria, capacity analysis, and team inputs have been used to help develop SAs. Operational constraints provided by the MACOMs have been considered as well. Ideally, the analyst will have a rich selection of documented SAs to take to the next step in the process.

A unit-stationing priority list includes the units from installations with low MV that the analyst has determined could be relocated. The priority list needs to identify the intended unit or group of units to move as well as potential gaining installation(s). This list is a set of possible Proposals.

4.5 Scenario Analysis

The analytical process culminates with the Scenario analysis. Within the Scenario analysis, the analyst reviews Proposals for their impact on DoD criteria 5-8. The primary inputs include COBRA, the Installation Visualization Tool (IVT), and results from the environmental model (ENV, DoD Criterion #8), economic model (ECON, DoD Criterion #6), and local area infrastructure model (LAI, DoD Criterion #7). The primary inputs for these models are listed in Figure 9:

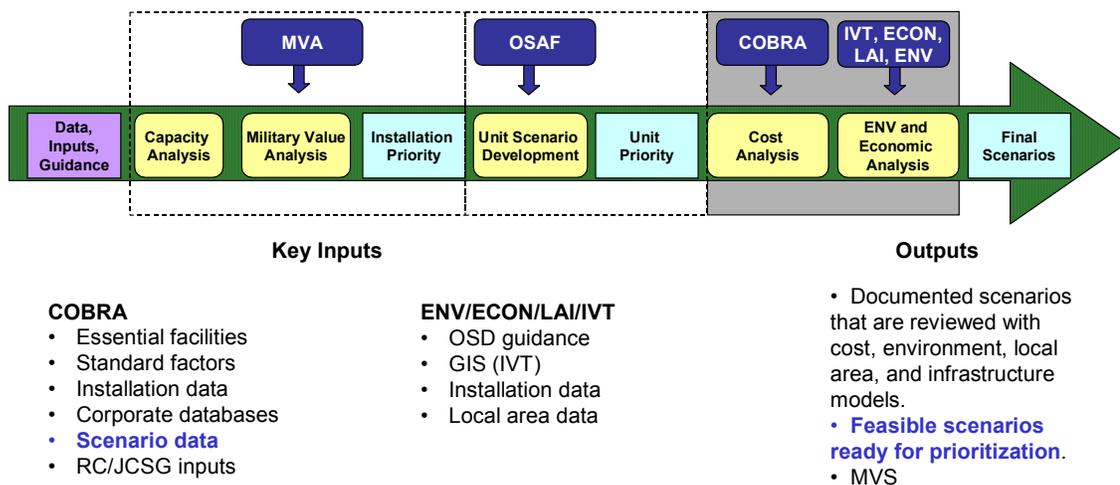


Figure 9. Scenario Analysis

The primary analyst actions within this part of the analysis include:

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- Coordination - include RC, Joint, and JCSG inputs for all Scenario analyses to ensure that recommendations are coordinated and integrated.
- Screening and review – provide stationing restrictions for others to consider and opportunities for possible SAs that have not yet been reviewed. Consider IVT overlays for issues with implementation or opportunities.
- Develop Scenarios – complete a COBRA-documented run with all supporting documentation from the ENV, LAI, and ECON models.

4.5.1 Scenario Analysis Inputs

Scenario analysis benefits from all prior work and uses installation and unit analytical results to support objectives through Scenario development. The COBRA model provides the final cost estimate for a SA or Proposal, which includes the official cost estimate to implement that BRAC action. COBRA is a complex spreadsheet that includes fixed and variable costs that influence BRAC actions. COBRA is primarily concerned with “deltas,” or differences among courses of action, so it reports the *net* present value of an action, which provides an estimate for the increase in cost or savings over a 20-year period for the SA.

The second primary COBRA result is the payback period. The payback period is the number of years between the last BRAC action and the year when the SA’s benefits to outweigh its costs. For example, if the payback period is five years, then all implementation costs are recovered by the fifth year with SA savings.

The ECON model provides a macro view of a Proposal’s impact on the local area, the LAI model provides a macro view of the local area infrastructure’s ability to support the Army requirements of a Proposal, and the ENV model provides a macro view of the environmental impacts and/or costs associated with a Proposal. Each of these three models provides a set of essential questions the analyst must ask to review the SA. DoD provided a standard model to all Services and JCSGs; TABS augmented each model.

IVT provides the analyst with a digital picture, a situational awareness map, of the installation to visualize what buildings and open spaces are on the installation, as well as a set of restrictive overlays (e.g., wetlands, range boundaries). IVT can support a Proposal or highlight an area for further study based on the visual/overlays. TABS has an IVT expert on staff to assist the analyst. The IVT expert may provide the analyst maps, overlays, and assist with drawing IVT insights.

Appendix T provides additional details that describe an analyst’s actions during Scenario analysis. Analyst Procedures discusses the development of Proposals, Scenarios, and the management process that TABS uses to ensure a quality process.

4.5.2 Scenario Building

When an analyst develops a Proposal, the Proposal should be divided into subsets of independent SAs (stand-alone unit moves) and dependent SAs (related unit moves). Identifying the dependencies is essential for future Scenario evaluations and Option development. For example, if a Proposal is considered unsatisfactory, the analyst could

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regroup SAs to improve the overall Proposal. Knowing the dependencies among SAs allows this Proposal building to take place.

An analyst should combine SAs when they are related in some way, either complementary (the SAs support each other and are related at the unit level) or enabling (the SAs are not related by unit, but one SA allows another to take place). There will be cases where a SA could be in multiple Proposals, because there are multiple ways to complete an action.

4.5.3 Scenario Analysis Outputs

The Scenario analysis outputs include:

- Fully documented Proposals that have been reviewed with cost, local area, economic, and environmental models¹¹.
- Economically feasible Proposals ready for prioritization. An economically feasible Proposal has a NPV that shows savings and a payback period of less than a given number of years. Proposal with longer payback periods may also be considered viable due to their transformational impact regardless of economic results. Proposals with environmental restrictions and/or significant local area impact may be economically feasible, but could be considered infeasible due to these additional considerations.
- The MV of the Proposal, or MVS. The TABS Modeling Support Team will determine the MVS based on the installations in the Proposal and their respective values along with other Proposal characteristics, which will help TABS prioritize Scenarios.

4.6 Coordinating Analysis

Coordinating analysis is not a separate step as unit or installation analysis was. Instead, it is a continuous and iterative part of the overall process. Part of this flow of information and analysis is the interaction within the JAST, JCSG, and RC PAT arenas and internal TABS group discussions.

The GAO, RAND, and CAA have shown that “stove-piping” BRAC analysis is inefficient, and by coordinating analyses, DoD is attempting to address this inherent inefficiency. The inefficiency is created when groups review SAs and do not consider all possibilities. For example, each JCSG SA *may* influence an Army SA as well as another JCSG’s SA. For each SA, the Army and JCSGs should integrate their analysis to ensure SAs complement rather than derail each other due to competing for the same resources or opposing actions for the same unit. This integration works both ways; Army SAs could influence JCSGs, RC PAT, and/or other Service Scenario analyses and therefore should also be coordinated and integrated.

¹¹ Appendix U includes documentation on models and the internal process.

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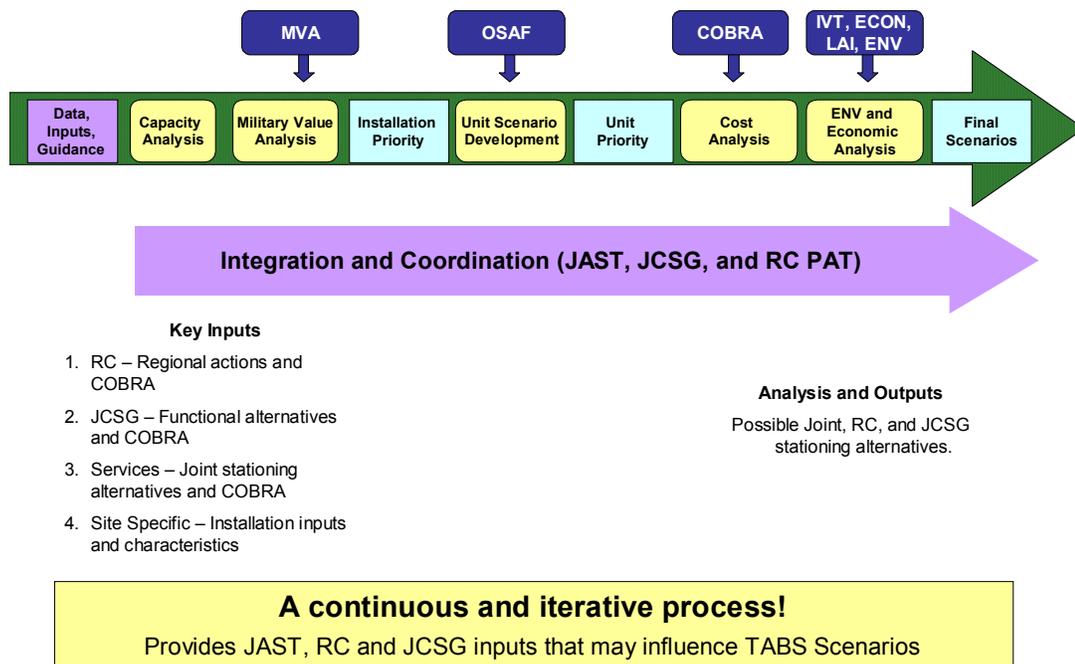


Figure 10. Coordinating Analysis

4.6.1 Analyst Actions for Coordinating Analysis

This step in the process provides JAST, RC PAT, and JCSG inputs that may influence TABS Proposals, including:

- Synchronization of alternatives and opportunities or constraints from the other Services
 - Joint-stationing – locating units on the same installation
 - Joint-training – locating units that can train together in a joint environment
- Possible training relocations for RC units on active installations and possible use of RC lands for AC unit training.
- RC screening, which ensures that any action on an installation does not adversely impact the installation’s ability to conduct its RC mission.
- Minimum enclave requirements to meet RC requirements if needed.
- Consideration and integration of JCSG priorities and opportunities to ensure the Army coordinates and integrates across all JCSGs.

Analysts continually coordinate with these other offices and integrate all opportunities and stationing constraints. They also ensure findings are made available to other TABS

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members. This step is not meant to resolve differences in Proposals with all stakeholders. The intent is to ensure that analysts have taken into account all available information in the development of the SA. Stakeholder opinions, contradictory and supporting, should be noted in the SA documentation and presented along with the SA to TABS leadership.

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5.0 SCENARIO REVIEW

5.1 Internal Review

At any point in the TAF process, TABS can conduct an internal review in order to:

- Ensure consistency of analysis,
 - Avoid duplication of effort,
 - Discuss Proposal efforts in a group to benefit from Team efforts and experience,
 - Review possible Proposals,
- or
- Inform the chain of command.

TABS analysis follows a continuous and iterative process, which so far has been mostly depicted as a sequential effort, but an analyst can revisit and augment prior work at any time as additional information is acquired. One source of additional information will be the TABS review.

Review Process

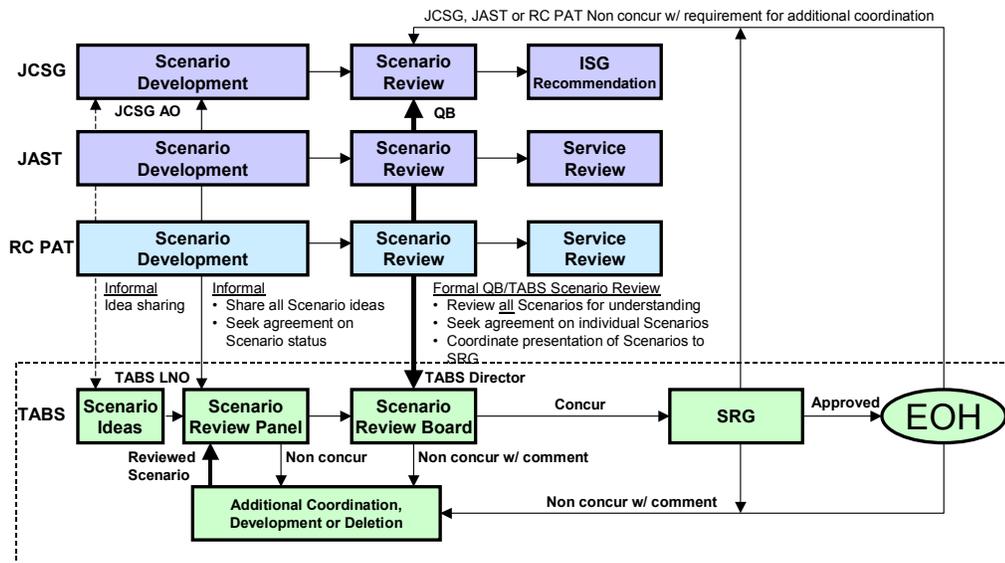


Figure 11. Scenario Review Process

Figure 11 illustrates the TABS review process and its relationship with JCSGs, the JAST, and RC PAT. Informal coordination is part of this process as well as the approval of SAs by the Review Board. Coordination includes analyst discussions with their counterparts

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in the JCSGs as well as the RC PAT and other Services. The remainder of this chapter describes the review process.

5.1.1 Scenario Review Panel

5.1.1.1 Composition

A “review panel” consists of a minimum of two analysts, required support members (e.g., data expert, modeling team, ENV expert, and other supporting staff if required), and at least one Team Chief. JCSG liaisons may attend.

5.1.1.2 An Informal Review

The Proposal review panel is part of an informal process and is meant to help analysts progress with their team efforts. Team Chiefs will conduct panel meetings as required, but all TABS team members can request a panel, through their Team Chief, at any time during the process to discuss analytical results and/or emerging Proposals. The panel’s objective is to help the analyst move to the next step in the process. This is an informal process and is meant to help analysts progress with their team efforts.

5.1.1.3 Installation Analysis

During an installation-analysis review, the panel will review the different installation priority lists from the analysts and discuss the rationale behind such priorities. The analyst will present his/her rationale for focusing on certain installations (e.g., MV, excess capacity).

Panel focus:

- Is the installation list consistent with MVA results?
- Has the analyst considered capacity analysis?

5.1.1.4 Unit-Stationing Analysis

During a unit-analysis review, the panel will review the different unit priority lists from the analyst and discuss the rationale behind such priorities. The analysts will present their rationale for their potential unit-installation possibilities (e.g., unit requirements, operational needs, excess capacity).

Panel focus:

- Does the unit priority list support BRAC Objectives?
- Has the analyst considered unit-special requirements, supporting units, RC impacts, Joint impacts, and stationing restrictions?
- Has the analyst considered possible implications with JCSGs?

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5.1.1.5 Scenario Analysis

During a Scenario-analysis review, the panel will review Proposals, including documentation.

The review has two distinct stages. The first stage occurs when the analysts are *developing* possible SAs to place in a Proposal. This “brainstorming” period is prior to COBRA, ENV, LAI, and ECON analysis. The review panel serves as a screening mechanism to help the analysts focus their efforts. For example, an analyst will present Proposals and integrate with other enabling Proposals or change the Proposal due to an RC, JCSG, or JAST issue.

The review panel’s focus on Proposals includes:

- Does the Proposal support BRAC Objectives and enable transformation?
- Is there duplication of effort among analysts?
- Are there synergies among suggested SAs that can be taken advantage of?
- Are there ENV, ECON, stationing restrictions, RC, JCSG, or Joint concerns with the SA requiring coordination?
- Has the analyst started the coordination with other agencies that this SA will impact?
- Does the analyst need assistance?
- What are the cumulative impacts on an installation due to numerous SAs that involve the installation’s units?

The second stage of Scenario-analysis takes place when the analyst has worked through the required analyses (COBRA, LAI, ENV, ECON) for coordinated SAs.

Panel focus late in this part of the Scenario-analysis includes:

- Has the Proposal been coordinated and integrated with JAST, RC PAT, and JCSG inputs?
- Has the Proposal been screened for environmental and economic risks?
- Does the Proposal have a fully documented COBRA analysis?
- Complexity of the Proposal – can the Army implement the SAs in this Proposal?
- What are the cumulative impacts on an installation due to numerous SAs that involve the installation’s units?
- Is all the required documentation complete?

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5.1.2 Scenario Review Board

5.1.2.1 Introduction

The Review Board is part of the Army deliberative process. It is an internal review that, at a minimum, reviews analytical products and analyst Proposals prior to SRG-level deliberations.

The Board consists of the DASA (IA), the Deputy, Team Chiefs, an environmental analyst, a cost analyst, and others as required.

5.1.2.2 Actions

The Board finalizes documentation and reviews each product for consistency, support of BRAC objectives, and overall analytical quality. The Board prioritizes Proposals based on the process described in Chapter 6.

5.1.3 Internal Review Summary

The internal review process provides the DASA (IA) with a means to ensure consistency, promote efficiency by avoiding duplication of effort, and establish high quality standards for TABS analysis. During the review, each phase of the analysis will be examined. The process is summarized in Figure 12:

Phase	Focus Area	Product
Installation Analysis	<ul style="list-style-type: none"> • Is the installation list consistent with MVA results? • Has the analyst considered capacity analysis? 	Recommended installation priority list
Unit Analysis	<ul style="list-style-type: none"> • Does the unit priority list support BRAC Objectives? • Are the priority units on installations with lower MV? • Has the analyst considered unit-special requirements, supporting units, RC impacts, Joint impacts, and stationing restrictions? • Has the analyst considered possible implications with JCSGs and the other Services? 	Recommended unit priority list
Scenario Analysis	<ul style="list-style-type: none"> • Does the Proposal support BRAC Objectives and enable transformation? • Is there duplication of effort among analysts? • Are there synergies among suggested SAs that can be taken advantage of? • Has the analyst started the coordination with 	Stationing Actions

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Phase	Focus Area	Product
	other agencies that this SA will impact? <ul style="list-style-type: none"> • Does the analyst need assistance? • Has the Proposal been coordinated and synchronized with Joint, RC, and JCSG inputs? • Has the Proposal been screened for environmental, local area, and economic risks? • Does the Proposal have a fully documented COBRA Scenario? • Complexity of the Proposal – can the Army implement the SAs with this Proposal? • Is all required documentation complete? 	

Figure 12. Informal Review Process

Review Panel	Review Board
<ul style="list-style-type: none"> • A Team Chief • Required Supporting Staff 	<ul style="list-style-type: none"> • DASA (IA) • Deputy • Team Chiefs • Environmental analyst • Cost analyst • Legal counsel

Figure 13. Review Process Participants

The SRG and AAA conduct external reviews of the TABS process. The SRG will review and deliberate Scenarios/Options that result from the TABS process. The AAA will review and revise on the development, and implementation of internal controls; conduct audits addressing the accuracy and validity of processes, methodology, assumptions, calculations, and data; and help to ensure BRAC analysis is criteria-based, rigorous, and auditable.

5.2 External Review

The success of the TABS Proposal and Scenario development process depends on close coordination and communication, cooperation, and open sharing of essential information with appropriate analysts both within and outside the organization. External reviews play a prominent role in this coordination.

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Internal reviews are those reviews conducted within the TABS group, while external reviews involve personnel outside of TABS, including the RC-PAT, JAST, JCSG, other MILDEPs, DoD agencies, SRG and EOH, ISG and IEC.

Similar to internal reviews, external reviews ensure consistency of analysis, help preclude duplication of effort, benefit from experience of others, and keep the chain of command informed. External reviews are necessary to coordinate and synchronize multiple efforts, identify and resolve conflicts, or raise issues to senior leadership for resolution.

External reviews provide added value to the Army BRAC process since they involve the views and perspectives of outside entities. These additional assessments provide value in considering regional, functional, Joint operational basing, and specific site aspects that may not have been considered during the internal review process. The external reviews refine the process for a comprehensive assessment of proposals and enable the Army to confidently support the recommended BRAC scenarios that go forward.

The review processes – both internal and external – are continuous and iterative processes that consist of informal communication and formal reviews. At each step of the external review process, the TABS analyst will communicate with the appropriate analysts and liaison officers (informal), providing information and data to ensure the coordination and synchronization of multiple efforts. As the external reviews move forward, they progress from the informal analyst/action officer level to the more formal, involving senior MILDEP and OSD leadership.

The external coordination and review process begins with Proposal Ideas and continues throughout the analytical process as Proposals become Scenarios and Scenarios become recommendations.

5.2.1 Idea Sharing

During the development of Proposals, the TABS analyst coordinates and shares ideas with analysts and liaison officers outside of the TABS group. Although this coordination and informal sharing of ideas is not an “external review” per se, it is the beginning of an important part of the external review process that must continue throughout all stages of the Proposal and Scenario development. This information exchange among the appropriate external points of contact greatly aids in the synchronization of Proposal development efforts and precludes duplication of effort. Through this process the analyst determines if Proposals are independent, enabling, or conflicting and can then integrate stationing actions to form a more complete and supportable Scenario.

5.2.2 Panel

In preparation for the Scenario Review Panel, the TABS analyst continually coordinates. Although the preparation for the panel still remains an informal process, the analyst not only shares ideas, but also seeks agreement on the scenario’s content. Using the Proposal Information Management System (PIMS) tool, the analyst annotates which external coordination is required and the status of that coordination. After the Team Chiefs conduct panel meetings or provide the approval to the analyst to move to the next step in

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the process, the analyst continues conducting analyses, synchronization efforts, and external coordination with appropriate counterparts.

5.2.3 Board

As the analyst conducts and develops a Proposal, the external review process becomes more formal. Formal RC-PAT, JAST, JCSG, and Quarterback reviews occur. During these external reviews, all scenarios are examined for understanding, coordination, and integration. The Proposals are reviewed by the more senior representatives of the external organizations: the Colonel, GS-15, and deputy level members. The objective is still to synchronize multiple efforts, identify and resolve conflicts, and, if unable to resolve conflicts, elevate issues to senior representatives of each group for resolution.

5.2.4 SRG, ISG, and IEC

After the Review Board has evaluated the proposal and the SRG approves it, the Proposal becomes an Army BRAC scenario. Throughout the SRG, ISG, and IEC review phase, the MILDEPs, Defense Agencies, and OSD analyze the scenarios to ensure they achieve Jointness, realize cost savings, support power projection, increase operational capability, or achieve other BRAC objectives.

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6.0 PRIORITIZATION AND SCENARIO SELECTIONS

TABS requires a process to prioritize packages of Scenarios into Options for senior leaders.¹² The Option Determination and Evaluation Module (ODEM) includes the OVM model and the OPM model (see Appendix I). ODEM supports an optimization-based, MODA approach that will assist TABS in the Scenario-packaging process. A combined and complementary set of Scenarios that gives the best overall MV based on the MVI and other analyses outputs, while maintaining a given budget constraint, is referred to as an Option. Fully documented Options that support BRAC Objectives will be proposed by the DASA (IA) to the SRG for approval. Figure 13 illustrates the SA-to-Option process.

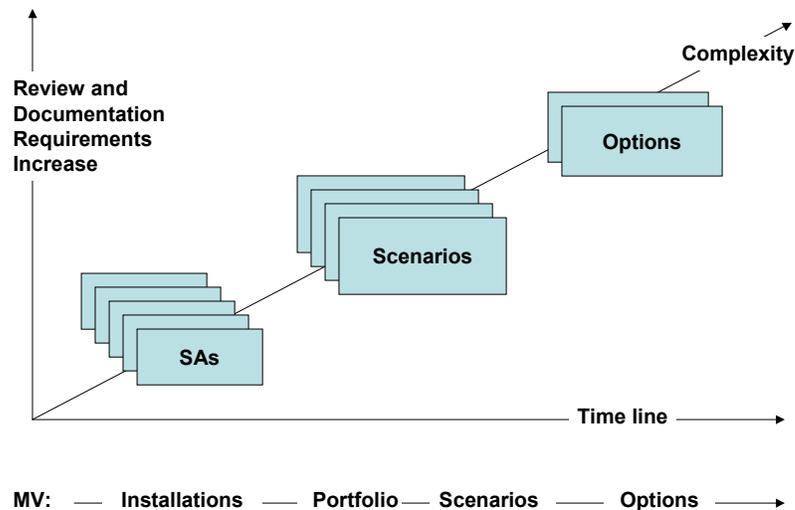


Figure 13. Review Process

As the above illustrates, the complexity of TABS products, as well as the review and documentation requirements, increases as we move through the analytical process. The development of Scenarios from SAs is mainly an analyst task.

The Modeling Support Team uses OVM to evaluate Scenarios. Analysts can also suggest a combination of Scenarios – an Option, but the OPM model assists TABS in *optimizing* the value of the Option and examining the value of analyst-generated Options. The OVM follows an approach similar to the MVI used earlier in the TABS analytical process to determine an installation’s MV.¹³ OPM then prioritizes BRAC Scenarios using a set of attributes, many of which TABS used to evaluate installations within other TABS models

¹² As defined earlier in the TAF, Section 3.3, Scenarios are groups of stationing actions (SA) that may influence two or more installations, and Options are groups of Scenarios.

¹³ The OVM and OPM are both MODA models, differences are detailed in Appendix I.

TABS ANALYTICAL FRAMEWORK (TAF)

and is analogous to the MVP approach. In fact, TABS Scenarios are products of multiple analyses that are conducted during the Scenario analysis process. The following figure illustrates the steps necessary to develop the Scenarios that, when combined into Options, provide optimal value.

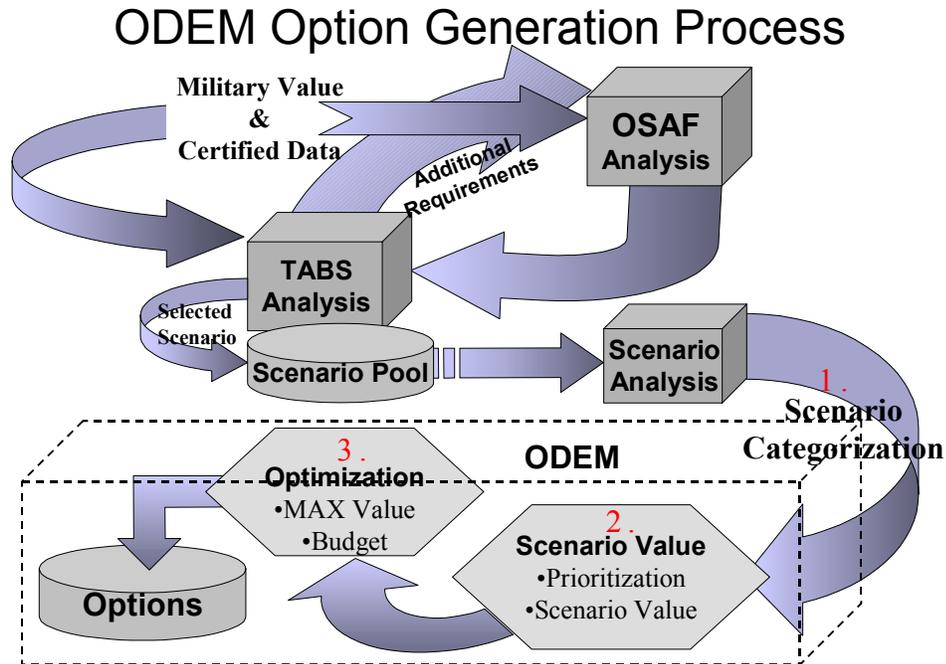


Figure 14. Review Process

After all Scenarios have been analyzed, they are categorized to ensure that the SAs contained within an Option are independent of each other (Step 1).

For example, assume Scenario A contains three SAs: A1, A2, and A6 (stationing actions impact unit 1, unit 2, and unit 6 respectively), and Scenario B contains SAs B3, B4, and B5 (unit 3, unit 4, and unit 5). Because both Scenarios are independent (they include different units), then they can be placed into the same Option. Now suppose we change SA B5, contained within Scenario B, from affecting unit 5 to affecting unit 6 (now B6). Because Scenarios A and B both contain SAs that affect unit 6, then they must be segregated, i.e., not allowed within the same Option.

If Scenarios include SAs that impact the same installation, they are still considered independent.¹⁴ But, when such Scenarios are considered, the cumulative impact on the

¹⁴ The independence between SAs depends on the units within the SAs and not the installations. If installations are similar within the SAs, the SAs are still independent, but the cumulative impact on the installation needs to be considered.

TABS ANALYTICAL FRAMEWORK (TAF)

installation also needs to be considered. Once all Scenarios have been reviewed for like SAs, the process proceeds to Step 2, in which the Scenarios are evaluated using a MODA value model, OVM.

OVM contains the same basic technical elements as the MVA – capabilities, missions, attributes, value functions, and weights. Value functions and weights are assessed using the same methodology as described for the MVA. The value functions for the OVM attributes are based on the outputs of TABS analyses used to develop Scenarios and any prioritization guidance from OSD.

The primary goal for OVM is to determine the value of scenarios. Additional attributes may be added to the final model as necessary.

The scenarios receive a value, which enables Step 3 where scenarios are combined in such a manner to maximize the overall value of an Option (the sum of the Scenario's values contained within the Option), while meeting a budget constraint. This method is analogous to solving a Capital Budgeting problem, where the different alternatives are optimized to maximize total value subject to a budget constraint.

Step 3 may be repeated to examine the impact of different budget constraint values, which inform the DASA (IA) and SRG on what combination of scenarios maximizes value for different budget conditions. Theoretically, this process will determine the efficient frontier of scenario combinations (i.e., the best scenarios under the model considerations) at different budget constraints. The model can identify the impact of adding or subtracting available funds to each Option and the scenarios that can be completed within the Option.¹⁵

The prioritization process is further described in Appendix W.

¹⁵ The MVO assumes that the implementation of the scenarios follows the COBRA Model's timing and does not alter implementation schedules. If those timings were allowed to change it would be possible to include additional SAs due to achieving efficiencies within the implementation schedule.

TABS ANALYTICAL FRAMEWORK (TAF)

7.0 SUMMARY

The TAF provides TABS analysts with an understanding of the analytical process that they will follow to develop Scenarios. Moreover, it explains how they will operate within the DoD-wide BRAC analytical process. This document describes the TAF and its processes, and the appendices provide additional model information as well as examples for TABS analysts to review.

Appendix U provides an outline for the analysts to follow during their analysis. The outline represents the considerations needed for Scenario development.

Other appendices provide additional documentation, model information, and process details. The TAF is augmented by other TABS documents.

A. ACRONYMS

ACRONYM	DEFINITION
AAA	Army Audit Agency
AC	Active Component
ACF	Area Cost Factor
ARSTAF	Army Staff, HQDA
ASA (I&E)	Asst. Secretary of the Army for Infrastructure and Environment
BOS	Base Operating Support
BPR	Business Process Reengineering
BRAC	Base Realignment and Closure
CAA	Center for Army Analysis
COBRA	Cost of Base Realignment Actions
CONUS	Continental United States
DASA (IA)	Deputy Assistant Secretary of the Army, Infrastructure Analysis
DOD	Department of Defense
ECON	Economic
ENV	Environmental
EOH	Executive Office of the Headquarters
GAO	Government Accountability Office
GIS	Geographic Information System
GWOT	Global War on Terrorism
HQDA	Headquarters, Department of the Army
IEC	Infrastructure Executive Council
IMA	Installation Management Agency
ISG	Infrastructure Steering Group
IVT	Installation Visualization Tool
JAST	Joint Action Scenario Team
JCSG	Joint Cross Service Group
JPAT	Joint Process Action Team
LAI	Local Area Infrastructure
LNO	Liaison Officer
MACOM	Major Command
MILCON	Military Construction
MILDEP	Military Department
MODA	Multiple Objective Decision Analysis Model
MV	Military Value
MVA	Military Value Analyzer or Military Value Analysis
MVI	Military Value of Installations
MVO	Military Value of Options
MVP	Military Value Portfolio
MVS	Military Value of Scenarios
NPV	Net Present Value
OCONUS	Outside the Continental United States
ODEM	Option Determination and Evaluation Module

ACRONYM	DEFINITION
OSAF	Optimal Stationing of Army Forces
OSD	Office of the Secretary of Defense
PB	Payback
PIMS	Proposal Information Management System
RC	Reserve Component
RC PAT	Reserve Component Process Action Team
SA	Stationing Action
SME	Subject Matter Expert
SRG	Senior Review Group
TABS	The Army Basing Study
TAF	TABS Analytical Framework
UA	Unit of Action

B. ARMY INSTALLATIONS

Base Realignment and Closure (BRAC) 2005 began with an analytical study of military installations. To understand the process used to analyze installations, there must be a common understanding of installations, their purpose, and the ways in which the Army Stationing Strategy impacts installation requirements. This chapter discusses these topics and lists BRAC 2005 installations, including leased property.

B.1 Definition

The definition of a “military installation” used in this analysis is specified by the Defense Base Closure and Realignment Act¹:

“A military installation means a base, camp, post, station, yard, center, homeport facility for any ship, or other activity under the jurisdiction of the Department of Defense, including any leased facility.”

Under the BRAC legal definition, military installations do not include any facility used primarily for civil works, flood control, river and harbor projects, or other projects not under the primary jurisdiction or control of the Department of Defense (DoD).

All military installations may be examined in the BRAC process. However, Section 2687 states that BRAC is the only process by which to close or realign certain installations. The section created a threshold for military installations at 300 civilian personnel and states that installations above that work level may be closed only through a BRAC recommendation. Installations with less than 300 civilian personnel may be adjusted through other forms of action, but are still subject to examination during the BRAC process. Also, the section states that a realignment of any installation involving a reduction of more than 1,000 or 50 percent may be completed only through the BRAC process.

B.2 Role in Army Mission

The Army's primary mission is to provide necessary forces and capabilities to the Combatant Commanders in support of the National Security and Defense Strategies. The Army does this by providing prompt, sustained land dominance across the full range of military operations and spectrum of conflict in support of combatant commanders. To accomplish this mission, the Army executes titles 10 and 32 United States Code directives, which include organizing, equipping, and training forces. Army installations are “flagships” on which the Army accomplishes these missions.

The Army needs to establish and maintain an installation infrastructure with the capacity and capability to help organize, equip, and train forces effectively and efficiently. The BRAC 2005 process enables the Service to analyze and improve the current installation infrastructure.

¹ BRAC 95, Reference Volume II, Department of the Army Installation Assessment (IA) Process and Supporting Data

B.3 Relation to Army Stationing Strategy

BRAC law states that military value must be the primary consideration for evaluating installations. Army military value (MV) analysis must consider the stationing principles set forth by the Army G3 in the “Army Stationing Strategy.”² Thus, the stationing principles of the Army Stationing Strategy assisted the analysts in assessing installations.

Below is the Army Stationing Vision, stated in the strategy:

“Army forces with a Joint and Expeditionary Mindset positioned to provide relevant and ready combat power to Combatant Commanders from a portfolio of installations that projects power, trains, sustains and enhances the well-being of the Joint Team.”³

This strategy is especially important to any installation MV assessment. First, the attributes selected must, in the aggregate, support this strategy just as they support the DoD Selection Criteria. Second, an installation’s ability to meet specific requirements within the Stationing Strategy should increase the installation’s MV.

B.4 Army Installation Types

The Army Stationing Strategy groups installations into thirteen primary installation categories using each installation’s primary function/mission of currently assigned units as the determining factor. For example, Maneuver Installations are Army power projection platforms that provide facilities and resources to house, sustain, maintain, train and deploy major combat forces to meet the demands of the Defense Planning Guidance. Forts Bragg, Campbell, and Hood fit into this category. These installation categories formed the basis for the BRAC 95 installation MV assessment categories. An alternative approach, and the one adopted for BRAC 2005 (discussed in detail in Chapter 3 of the TAF), estimates the MV of installations *independent* of their current installation category.

B.5 2005 Installation Study List

The TABS installation MV assessment includes the CONUS installations that meet the BRAC 2005 threshold as defined in BRAC Law.⁴ The law also permits the Services to look at additional installations as necessary to complete its analysis. In addition to Army-owned installations, the BRAC 2005 analysis included leased facilities.

Figure 1 provides the list of 87 Army installations and 10 leased facilities, listed by Installation Management Agency (IMA) region that BRAC 2005 evaluated with a quantitative military value analysis. Military Value of Installations (MVI) determined the MV of these installations; once developed, the MVI remains constant throughout the BRAC process.

² Army Stationing Strategy, Army G-3, August 14, 2003.

³ Ibid.

⁴ 10 USC Section 2687, Base Closures and Realignment.

NORTHEAST	NORTHWEST	SOUTHEAST	SOUTHWEST
Ft Eustis	USAG Selfridge	Ft Knox	McAlester AAP
Ft A. P. Hill	Lake City AAP	Ft Bragg	Ft Sill
Ft Lee	Ft Leonard Wood	MOT Sunny Point	Ft Bliss
Ft Monroe	Lima Tank Center	Ft Jackson	Corpus Christi AD
Ft Myer	Umatilla Chem Depot	Holston AAP	Ft Hood
Ft Lesley J. McNair	Deseret Chem Depot	Milan AAP	Ft Sam Houston
Radford AAP	Dugway PG	Ft Buchanan	Lone Star AAP
West Point	Tooele AD	Anniston AD	Red River AD
Walter Reed AMC	Ft Lewis	Redstone Arsenal	Louisiana AAP
Aberdeen PG	Ft McCoy	Ft Rucker	Riverbank AAP
Ft Detrick	Ft Carson	Ft Benning	Ft Huachuca
Adelphi Labs	Rock Island Arsenal	Ft Gordon	Yuma PG
Ft Meade	Newport Chem Depot	Ft McPherson	Pine Buff Arsenal
Soldier Support Center	Crane AAP	Ft Gillem	Ft Irwin
Ft Dix	Iowa AAP	Ft Stewart/Hunter	Presidio of Monterey
Ft Monmouth	Ft Leavenworth	Bluegrass AD	Sierra AD
Picatiny Arsenal	Ft Riley	Ft Campbell	Ft Polk
Ft Drum	Detroit Arsenal	Mississippi AAP	Hawthorne AD
Ft Hamilton	Kansas AAP	Lease	White Sands MR
Watervliet Arsenal	Lease	PEO STRICOM	
Charles E. Kelly Support Center	ARPERCEN	Army Research Office	
Carlisle Barracks			
Letterkenny AD	PACIFIC		
Scranton AAP	Ft Richardson		
Tobyhanna AD	Ft Wainwright		
Ft Belvoir	Ft Shafter		
Lease	Schofield Barracks		
Army JAG Agency	Tripler AMC		
Army JAG School			
Bailey's Crossroads			
HQ, ATEC			
Crystal City Complex			
Rosslyn Complex			
Hoffman Complex			

Figure B-1. BRAC 2005 Army Installation List by IMA Region

B.6 Reserve Component BRAC Installations

Reserve Component installations were also examined by the Army during BRAC 2005. The Chief, Army Reserve, the Director, Army National Guard, and the Director, TABS established the Reserve Component Process Action Team (RC PAT) to accomplish the task of reviewing the RC footprint and conducting a study about potential enclave

requirements. The RC PAT solicited the participation of field representatives in developing and evaluating proposals for restationing RC forces into joint or multi-component facilities in an effort to reduce footprint and increase efficiency.

The RC PAT reviewed 4,020 Army RC facilities, which included Army National Guard properties and Title 10 USC 2687 properties belonging to the Army Reserve. These were all sub-threshold facilities and constituted the RC portion of the TABS installation inventory.

Field representatives provided the initial review of RC installations within their state (for ARNG) or Region (Regional Readiness Commands for USAR), and the RC PAT provided further examination of installations included in recommendations.

Military value of RC installations was determined using a multi-phase approach including initial determination by field representatives and further determination by the RC PAT. More information regarding RC military value analysis can be found in Appendix R of the TAF.

C. DATA ANALYTICAL PROCEDURE

C.1 INTRODUCTION

The BRAC 2005 analytical process required an extensive amount of installation-level data. In addition, all information used to develop and make realignment and closure recommendations submitted to the Secretary of Defense was required to be certified as accurate and complete to the best of the certifiers' knowledge and belief. Whenever practical, Army corporate databases served as the source. However, in many cases, the burden fell on the installations to collect, review, and certify the data.

From January 2004 through March 2005, The Army Basing Study (TABS) Group collected and maintained over 1.2 gigabytes of certified data from 87 Army Installations, 10 leased complexes, and more than 50 agencies.¹ A data collection effort of this magnitude required more than the discipline of a full-time TABS Data Support Team—it required the continuous support of a network of dedicated Installation Administrators (IAs), as well as Major Command (MACOM) and Installation Management Agency (IMA) Region trusted agents (TAs).

This Appendix provides an overview of the Army's approach to the identification, collection, and maintenance of BRAC 2005 data. The following are the key elements of this approach:

- Reliance on readily-available, certified data (corporate databases, open sources) to the maximum extent practical
- Use of web-based technology to gather data required from the installation
- Certification by senior Army officials at the time of collection
- Integration of data using standard relational database software
- Army Audit Agency review and endorsement at each step

C.2 IDENTIFYING DATA REQUIREMENTS

As in previous BRAC rounds, the Army periodically tasked each installation on its study list to answer specific questions. The geneses of the questions were the data required to support approved capacity and military value methodologies, as well as specific requests to support scenario analyses. Proponents for specific questions included analysts from:

- TABS
- Joint Cross Service Groups (JCSGs)
- Joint Process Action Teams (JPATs) for Community and Environmental Impacts
- Joint Action Scenario Team (JAST)
- Other Military Departments (MILDEPs)

¹ The 50 agencies in the National Capital Region outside the Pentagon, also referred to as OA22. TABS collected data from these agencies for the HSA JCSG.

To identify capacity or military value data requirements, proponents were required to type their questions into an Input Question Tool (IQT)—a Microsoft Access-based application developed by the Office of the Secretary of Defense (OSD) BRAC Office. All questions for a respective data call were then collected, reviewed, and approved by an OSD Data Standardization Team (DST). Upon approval of the final question set, the DST issued a final IQT for the data call. For scenario analyses, the DST process was not used. Instead, data input screens for the Cost of Base Realignment Actions (COBRA) model identified the data requirements.

C.3 COLLECTING THE DATA

C.3.1 Planned Data Calls

The collection of installation-level data was planned around three OSD-directed data-collection efforts—capacity data (Data Call #1), military value data (Data Call #2), and COBRA data (Scenario Data Calls). These data calls are further described below:

- Data Call #1: Capacity data call issued on 5 January 2004 and closed on 5 April 2004. It consisted of 552 questions that were targeted to all 87 installations on the Army's study list.² An additional 36 questions were sent to leased sites and headquarters activities.
- Data Call #2, Phase I: Military value data call issued on 20 April 2004 and closed on 7 June 2004. It consisted of 35 questions for TABS targeted to all 87 installations on the Army's study list.
- Data Call #2, Phase II: Military value data call issued on 2 June 2004 and closed on 16 August 2004. It consisted of 21 questions for JPAT 7, 87 questions for the Headquarters and Support Activities JCSG, 351 questions for the Industrial JCSG, 57 questions for the Medical JCSG, and 58 questions for the Supply and Storage JCSG. With the exception of the JPAT 7 questions that went to all the installations on the Army's study list, Phase II questions were targeted to specific installations of interest to the respective JCSG.
- Data Call #2, Phase III: Military value data call issued on 9 July 2004 and closed on 30 August 2004. It consisted of 178 questions, 72 to Air Force and 106 to Navy installations, for the JAST, and 161 questions for the Education and Training JCSG. Like Phase II, these questions were targeted by the JCSG to a subset of the installations on the Army's study list.
- Data Call #2, Phase IV: Military value data call issued on 21 August 2004 and closed on 18 September 2004. It consisted of 30 questions for the Technical JCSG targeted to a subset of the installations on the Army's study list.
- Data Call #2, Phase V: Supplemental capacity questions issued on 4 August 2004 and closed on 7 September 2004. It consisted of 10 capacity questions for the Technical JCSG targeted to the same installations as Phase IV. Since this capacity data was urgently needed by the JCSG to complete its capacity report, Phase V was accelerated and released prior to Phase IV.
- Supplemental Capacity: Capacity data call issued on 9 July 2004 and closed on 2 August 2004. It consisted of 37 questions for the Headquarters and Support Activities JCSG, 132 questions for the Industrial JCSG, 9 questions for the Medical JCSG, and 69 questions for the Education and Training JCSG. Unlike the original Capacity Data Call (Data Call #1), these questions were targeted to specific installations.

² The installation list was later reduced to 87 installations (and 10 lease sites) when Louisiana Army Ammunition Plant was transferred to the State of Louisiana.

- Scenario Data Calls: Scenario data calls began on 15 November 2004 and closed 11 March 2005. They consisted of COBRA input data for 221 specific scenarios. These data calls were targeted to the specific installations cited in the proposal.

Generally, for each data call, TABS imported the questions into its data collection tool—ODIN—and assigned them to the appropriate installations. Exceptions to the above process occurred for three reasons. First, the targeted responder was not an ODIN user. This occurred when the questions were addressed to the leased sites or the various Army agencies. In these cases, the questions were asked and answered via spreadsheets or word documents. The second exception occurred when the required data resided in one of the Army’s certified corporate databases. In these cases, TABS extracted the necessary data directly, reducing the burden on the installations. Finally, due to their sensitive nature, the scenario data calls were not conducted over the internet. Each of these processes are discussed separately below.

C.3.2 ODIN Data Collection

ODIN, the Army’s data collection tool, is a web-based application that is built on an Oracle 9i database. This database (hosted at the Chief Technology Office (CTO) on Ft. Belvoir, Virginia) stores both the questions and each installation’s answers to those questions. Because the table structure of the ODIN database differs from that of the IQT, TABS was required to follow a repeatable process for converting questions that were provided in the IQT format into the ODIN format. Once TABS completed this process in the development working environment, it reviewed the questions for accuracy and completeness. TABS then sent the appropriate database files and scripts to the CTO. The CTO imported the database files and ran the scripts to perform the question import and assignment on the ODIN database.

ODIN allowed users at the MACOM, IMA Region, and Installation levels to log in to the application via a secured web site using their Army Knowledge Online (AKO) accounts. The permissions associated with each user’s ODIN user role determine what actions that user can and cannot perform. Table 1 below lists the key ODIN user roles and the actions that each can perform.

User Role	Permissions
Responder	<ul style="list-style-type: none"> • View questions and answers assigned to them • Answer questions assigned to them
Functional Proponent (FP)	<ul style="list-style-type: none"> • View questions and answers assigned to them or their subordinates • Create responders • Assign questions to the responders that they created • Answer questions assigned to them or their responders • Edit and approve answers assigned to them or their responders, prior to approval by a senior user

Garrison Commander (GC)	<ul style="list-style-type: none"> • View questions and answers across entire installation • Create FPs and Responders • Assign questions to the users that they created • Answer questions across entire installation • Edit and approve answers across entire installation, prior to Precertification • Precertify answers
Installation Administrator (IA)	<ul style="list-style-type: none"> • View questions and answers across entire installation • Create FPs and Responders • Assign questions to the users that they created • Answer questions across entire installation • Edit and approve answers across entire installation, prior to Certification
Trusted Agent (TA)	<ul style="list-style-type: none"> • View questions and answers for installation(s) assigned to them, after Precertification
Senior Mission Commander (SMC)	<ul style="list-style-type: none"> • View questions and answers for installation(s) assigned to them, after Precertification • Edit answers to installation(s) assigned to them, after Precertification and prior to Certification • Certify answers

Table 1. ODIN User Roles and Permissions

All questions were initially assigned to the garrison commander (GC) of each installation that participated in the data call. The GC or the installation administrator then created functional proponents (FPs) to whom the questions were assigned for data collection. The FPs had the ability to create responders and reassign the questions to those responders if they chose to do so. Once the FPs or responders had submitted answers, those answers were approved through the chain of command. When the GC was satisfied with the answers, he or she precertified them, thereby submitting them to the senior mission commander and opening them for a review period by MACOM and IMA Region trusted agents (TAs). These TAs had the opportunity to review each installation’s answers and recommend changes to the senior mission commander (SMC), who in turn accepted or rejected the recommendations. Once the review period expired, the SMC certified all of the answers for the installation.

Upon certification of each phase of the data calls, TABS generated an OSD export database file, in an MS Access format, of that phase’s certified data. The format of the OSD export database was prescribed by OSD and agreed to by all of the MILDEPs. Because the table structure of the ODIN database differs from that of the OSD export file, TABS was required to follow a repeatable process for converting database tables from ODIN into an OSD export format. Once the OSD export file was complete, it was compressed into a password-protected zip file and transmitted to OSD over a secure file transfer protocol (FTP) site.

C.3.3 Data Collection from Non-ODIN Users

When the targeted responder was at a leased site, or at one of the various Army agencies and not an ODIN user, the questions were asked and answered via spreadsheets or Word documents. The exact question in ODIN was prepared with an Excel spreadsheet or Word document and transmitted via e-mail to an identified trusted agent at the leased site

or Army agency. A senior official at the site or agency would certify the response, and the data was transmitted back to TABS via e-mail. The responses were then consolidated into one spreadsheet and provided on CD ROM to the requesting JCSG.

C.3.4 Data Collection from Corporate Databases

When the required data resided in one of the Army's certified corporate databases, TABS extracted the necessary data directly, reducing the burden on the installations. The primary databases used by TABS were the Real Property Planning and Analysis System (RPLANS) database, the Army Stationing and Installation Plan (ASIP) database, and the Installation Status Report (ISR) database. Each of these databases was certified by the database proponent.

- RPLANS: The RPLANS database was used to analyze facility assets at each installation and to evaluate the impact of proposed stationing actions. RPLANS provided a profile of each installation at the facility level by providing gross square footage excess and shortages. In addition, RPLANS provided a detailed break down of the parcels of property that are included as a part of each installation. This parcel breakdown was instrumental in the development of the TABS Army installations study list.
- ASIP: The ASIP database provided information on authorized strength by personnel category by installation. The ASIP database provided the breakdown of personnel used to establish the TABS stationable packages. ASIP was also used as a basis for developing Base Operations (BASOPS) requirements and to develop facility allowances in RPLANS.
- ISR: The ISR database provided a full picture of infrastructure readiness as it provided the quality component in evaluating an installation's infrastructure to meet current and proposed mission requirements. The ISR measures an installation's infrastructure and services against Army-wide standards and evaluates these facilities based on Red, Amber, or Green ratings.

C.3.5 Scenario Data Collection

From November 2004 through March 2005 TABS collected installation data needed to run COBRA models for specific scenarios developed by the Army and the JCSGs. During this time period 221 scenario-specific data calls were received and processed. Due to the nature of the Scenario Data Calls (SDCs), neither ODIN nor traditional non-ODIN collection methods using e-mail were viable options for processing these requests. Therefore, OSD developed a web-based portal for upload/download of all SDC information. In order to enable e-mail processing of SDC questions, TABS developed a set of generic questions that could be forwarded to the targeted installations.

Each SDC was downloaded from the OSD portal and provided to the TABS analyst for review and development of scenario questions. In most cases the same set of generic questions pertaining to personnel, facilities, and equipment was e-mailed to the affected installation using Excel spreadsheets. The installations response was certified by the Garrison Commander or senior official at a lease site or agency where applicable and e-mailed back to TABS.

The TABS analyst would consolidate the information and provide the complete SDC package for submission to the appropriate JCSG. Once all information had been obtained the completed SDC package was forwarded back to the requesting JCSG via the OSD portal.

C.3.6 Installation Assistance

Two separate help desks were established by TABS to assist the Installation Administrators. The first was a technical helpdesk, manned by the ODIN contractor, to answer questions relating to the use and functionality of ODIN. The second helpdesk, located at TABS, assisted in the processing of requests for question clarification. The process for question clarification was as follows:

- If an IA felt additional guidance was needed before a particular question could be answered, a request for clarification was submitted to the TABS help desk via email.
- The help desk reviewed the request to determine if it was acceptable (i.e., understandable and complete). If the question was accepted, the helpdesk assigned an Army tracking number to the request and sent an e-mail to the IA verifying that the question had been received. If the help desk was unable to accept the request, the IA was contacted for additional information and asked to re-submit the request.
- Accepted requests were posted on the web in an OSD BRAC query database. The database automatically tasked the appropriate proponent (i.e., owner of the question) to provide the requested clarification and informed the TABS help desk when the tasking was complete.
- To close the loop and ensure consistency, the proponent's response was sent directly to the IA who requested the information, and was also posted in the ODIN library for all users to read.

C.4 MAINTAINING THE DATA

Once all of the installations had answered and certified their data for a particular data call, TABS compiled the data and generated an MS Access database file in a format prescribed by OSD. This MS Access file was transferred to OSD for use by the JCSGs and other MILDEPs. Once a week, an update file was transmitted to OSD to reflect changes to the data that occurred as a result of audits or requests for answer clarification. In addition to transmitting the data to OSD, TABS imported the data into a local analytical database to store, update, retrieve, and generate weekly OSD updates.

C.4.1 Data Changes

Even though the OSD database contained installation-certified data, it was reasonable for the analysts to occasionally challenge the accuracy of some of the installations' responses. This was especially true when the installation responded with a "0" or "N/A" answer. To maintain the integrity of the process, the following standard procedures were instituted when clarification of an installation's response was requested:

- The JCSG contacted the Army help desk via email with the answer to be clarified and reason for clarification.
- The help desk received the request and created a folder which included a tracking number, installation, and JCSG requesting clarification.
- The help desk then sent an email explaining to the installation what question needed to be reviewed, as well as the tracking number. The installation was given a 48-hour suspense to answer the question and return the updated answer back to the help desk. The email was also sent to the JCSG that requested clarification in order for it to have verification that the question had been sent to the installation.
- When the installation returned the updated data accompanied by a certification memorandum, the help desk filed the answer and the certification memorandum in the installation's folder, and updated the installation's response in the data base. In addition to updating the data base, the help desk sent an email with the answer to the JCSG who had requested the clarification.

C.4.2 Data Storage And Retrieval

The TABS Analytical Database consisted of a Microsoft SQL Server 2000 backend database and a customized user interface. Through the user interface TABS analysts could view, export, and update data, as well as generate OSD data update files and change reports.

To control access to the data, read and write permissions were only granted on the SQL Server database to users who were specifically authorized by TABS leadership. In addition, authorized users were required to log on to the TABS local area network in order to access the application and its data.

For each of the seven distinct capacity and military value data calls, analysts viewed the data for a particular installation and question by drilling down from a list of functional areas to question numbers, and selecting one or more installations. Once the data was

displayed, users could export it to an MS Excel workbook in order to conduct detailed analysis.

The user interface also provided an easy method for making changes to the data, as required by the Request for Clarification process. Users who were explicitly granted write permissions on the database used the edit feature in the interface to change data. Then, on a weekly basis, the analytical database administrator generated a data change file in the format prescribed by OSD. Once the OSD export file was completed, it was zipped into a password-protected .zip file and transmitted to OSD over a secure file transfer protocol (FTP) site. Through the interface, TABS analysts also generated delta reports that showed, by installation and question number, which answers had been changed in the database during any user-defined period of time.

On a weekly basis, OSD provided to TABS the Capacity Analysis Data (CAD) and Military Analysis Data (MAD) for Navy and Air Force sites that were critical to Army analysis. This data was imported into the Analytical Database by converting the OSD export file database tables into the Analytical Database structure. Once imported, it was available to TABS analysts for viewing and exporting to Excel in the same manner described above for the seven distinct data calls.

There were instances during the data analysis when TABS analysts required specific datasets in special formats that were unavailable directly from the user interface. In these cases, the Analytical Database administrator wrote and executed customized queries on the SQL Server database, then transformed the query results into the requested format. One such format is an On-Line Analytical Processing (OLAP) data cube. Created with a special querying tool on the SQL Server database, data cubes allowed analysts to view and manipulate data multi-dimensionally.

Using this analytical database and its supporting processes to store and retrieve the data, TABS ensured that its BRAC 2005 data was located, controlled, and maintained in a centralized, secure manner. This method also ensured that the data was easily retrievable by any analyst and consistent for all analysts. All of these characteristics contributed to the data integrity and quality analysis that TABS maintained throughout the BRAC 2005 process.

D. BRAC PRINCIPLES

Army BRAC Principles are strategic concepts that foster transformation, embrace change, and avoid capacity reductions that reduce essential military capabilities. The principles are broadly written to enumerate the essential elements of military judgment that were applied to the BRAC process. This Appendix describes the Army BRAC Principles and the process TABS used to develop the Principles.

D.1 Development of Army BRAC Principles

TABS developed an initial draft set of BRAC Principles after reviewing available guidance and prioritizing the concepts that support Army transformation efforts. The key documents included the Army Plan, Army Campaign Plan, Army Program Guidance Memorandum FY05-09, Army Stationing Strategy, DOD Strategic Planning Guidance, and The BRAC 2005 DOD Selection Criteria. The initial draft principles were presented to Major Command (MACOM) Commanders during a series of briefings conducted by the TABS Director. Each meeting with a Commander resulted in valuable commentary on the principles, which was incorporated into the development process.

At the end of the briefing round, the draft final BRAC Principles were presented to the Army Senior Review Group (SRG), on 4 May 2004. The SRG reviewed the principles as well as the process TABS used to develop them. The SRG approved the BRAC Principles as presented.

D.2 Army BRAC Principles

The final Army BRAC Principles are provided below.

Army BRAC Principles

A campaign quality Joint and Expeditionary Army positioned to provide relevant and ready combat power to Combatant Commanders from a portfolio of installations that:

- ***Projects Power***—The Army requires secure installations and facilities to plan for and execute mobilization and deployment of forces and reach-back operations.
- ***Trains***—Installations provide sustainable maneuver, live fire, and other training space in a wide variety of geographic, topographic, and climatic conditions in support of collective and institutional training and combat and doctrine development.
- ***Sustains***—Installation activities, in partnership with industry, provide Joint, responsive and flexible worldwide logistics support and provide critical reach-back capability to Combatant Commanders.
- ***Enhances Readiness***—The Army requires responsive Research, Development, Test, and Evaluation facilities to meet current and future threats opposing land forces.
- ***Enhances Well-Being***—Soldiers and their families deserve a quality of life at least equal to that of the citizens they defend.

Figure D-1 Army BRAC Principles

D.3 OSD BRAC Principles

The Army BRAC Principles were provided as input to OSD. The final DoD BRAC Principles are provided below:

DoD BRAC Principles

Recruit and Train: The Department must attract, develop, and retain a highly skilled and educated total force (active, reserve, and civilian) that has access to effective, diverse, and sustainable training areas in order to ensure current and future readiness, to support advances in technology, and to respond to anticipated developments in joint and service doctrine and tactics.

Quality of Life: The Department must provide a quality of life, to include quality of work place that supports recruitment, learning and training, and enhances retention.

Organize: The Department needs force structure located to match the demands of the National Military Strategy as reflected by the force’s size and composition, effectively and efficiently supported by properly aligned headquarters and other DoD organizations and that take advantage of opportunities for joint basing.

Equip: The Department needs research, development, acquisition, test, and evaluation capabilities that are sized appropriately to efficiently and economically support efforts to place superior technology in the hands of the warfighter to meet current and future threats and facilitate knowledge-enabled and net-centric warfare.

Supply, Service, and Maintain: The Department needs access to logistical and industrial infrastructure capabilities optimally integrated into a skilled and cost efficient national industrial base that provides agile and responsive global support to operational forces.

Deploy & Employ (Operational): The Department needs secure installations that are optimally located for mission accomplishment (including homeland defense), that support power projection, rapid deployable capabilities, and expeditionary force needs for reach-back capability, that sustain the capability to mobilize and surge, and that ensure strategic redundancy.

Intelligence: The Department needs intelligence capabilities to support the National Military Strategy by delivering predictive analysis, warning of impending crises, providing persistent surveillance of our most critical targets, and achieving horizontal integration of networks and databases.

Figure D-2 OSD BRAC Principles

E. BRAC OBJECTIVES

This Appendix describes the Army BRAC Objectives and the process TABS used to develop the Objectives. These Objectives are initiatives that the Army through BRAC to support Transformation and Jointness and to ensure a more efficient and effective fighting force.

Objectives are linked to the DoD Selection Criteria and derived from the key capabilities that installations provide to the Army. Objectives are also linked to military value attributes, which are those installation characteristics that enable TABS to evaluate installations. Through this linkage, TABS a consistent basis for the evaluation of BRAC scenarios, as depicted below in Figure E-1.

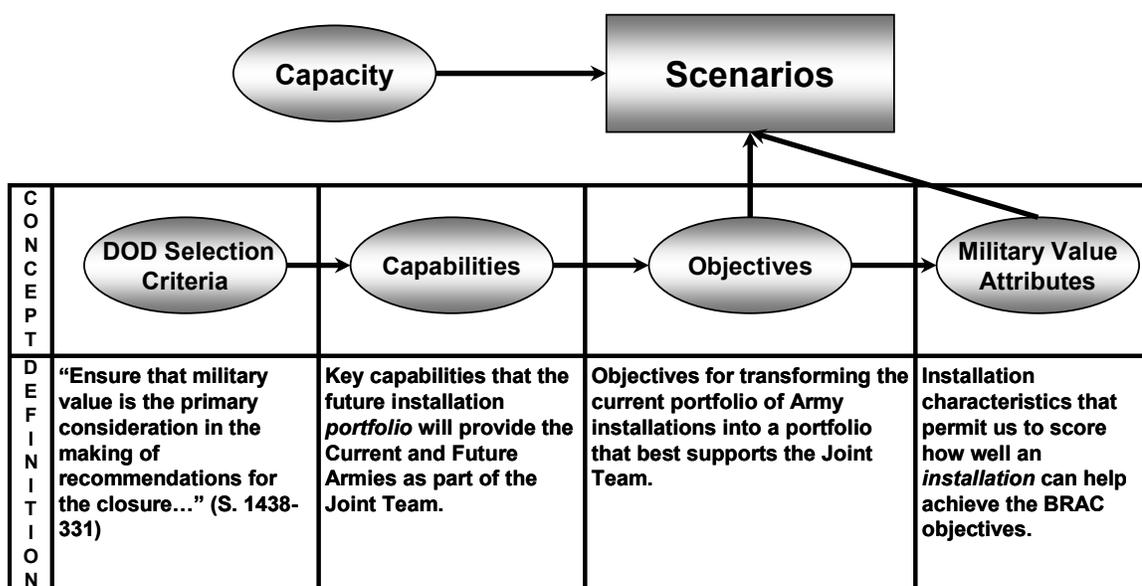


Figure E-1. Objectives and linkage to other TABS Processes

E.1 Assumptions

To provide direction and guide the overall Army BRAC effort, TABS developed a framework of assumptions. These assumptions are listed below.

- Our Army is serving a Nation at war – BRAC must support that contribution.
- The Army will leverage BRAC to enable a campaign-quality Army with a Joint and Expeditionary Mindset – what’s good for America is good for the Army.
- The Army will pursue Joint (multi-component, multi-Service, interagency) options before Army-only options when they add value to the Joint Team.
- The Army will ensure that it can satisfy its Homeland Defense mission.

- The Reserve Components will play a vital role in BRAC 2005.
- A smaller forward presence consistent with DoD guidance will increase the need for more flexible deployment capabilities.
- The Army will retain unique and critical capabilities that cannot be replicated elsewhere.
- Army end strength will not fall below current levels through 2025.
- The Future Army will require more maneuver space and capabilities than the Current Army.
- Unit manning and force-stabilization policies increase the importance of effective well-being programs.
- The Office of the Secretary of Defense (OSD) will require the Army to fund proposed recommendations that are not funded from the BRAC dollars that OSD provides.¹

These assumptions are consistent with Army literature and guidance and guide the TABS analysis.

E.2 BRAC Objectives Development

Working within this framework of assumptions, TABS reviewed Army literature and conducted senior-leader interviews to determine installation capabilities needed to support the Current and Future force. The literature provided a plethora of commentary on important capabilities from different perspectives. Interviews of senior leaders and subject matter experts solidified the importance of specific characteristics and highlighted priorities.

After TABS developed potential capabilities and the subset of missions, the BRAC Objectives were formulated. An initial draft of the Objectives was presented to MACOM Commanders during a series of briefings conducted by the TABS Director. Each meeting with a Commander resulted in valuable insight on the objectives, which was later incorporated. The table below lists the 4 capabilities and 8 missions identified that the future installation portfolio must support.

¹ This framework of assumptions was approved in deliberative session by the BRAC Senior Review Group (BRAC SRG) on 29 January 2004.

Capabilities	
Deployment	Joint Logistics
Mobilization	Mission Expansion
Missions	
C4I/Headquarters	RDT&E
Homeland Defense	Well-Being
Institutional Training & Education	Cost
Unit Training	Environment

Table E-1. Army Capabilities and Missions

For each capability and mission the Army developed Objectives. Objectives provided TABS with more specific parameters to guide analysis.

At the end of the development effort, the draft final capabilities and the BRAC Objectives were presented to the Army BRAC Senior Review Group (BRAC SRG) on 29 January 2004. The BRAC SRG reviewed the capabilities and objectives as well as the process TABS employed to develop them. The BRAC SRG approved the capabilities and BRAC Objectives as presented. The final BRAC Objectives, grouped by their capabilities or missions and listed with examples of supporting literature and interview comments, are presented in the tables below.

Deployment
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Locate Army forces and materiel to enhance deployment and redeployment of the Joint Team. • Supporting material: <ul style="list-style-type: none"> ○ <u>Army Strategic Planning Guidance</u> <ul style="list-style-type: none"> ▪ “Provide Army brigade combat teams organized, resourced, and stationed to execute deployment from strategic distances into a contested area and employ required level of combat power in a forced entry operation.” (p. 35) ▪ “Provide Power Projection Platforms/Power Support Platforms capable of meeting throughput requirements to simultaneously support two major combat operations less than 30 days apart in accordance with the 10-30-30 construct and other Army commitments.” (p. 42) ○ <u>The Army Future Force: Decisive 21st Century Land Power</u> <ul style="list-style-type: none"> ▪ “Operational maneuver from strategic distances will strengthen deterrence and preclusion, improve Joint force strategic responsiveness, and provide higher levels of strategic and operational agility to Joint commanders throughout the campaign.” (p. 3)
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Relocate forces in accordance with the Integrated Global Presence and Basing Strategy (IGPBS). • Supporting material: <ul style="list-style-type: none"> ○ <u>Army Strategic Planning Guidance</u> <ul style="list-style-type: none"> ▪ “As the Army repositions and reconfigures its forces, we will expand the Joint Force Commander’s ability to rapidly deploy, employ and sustain forces throughout the global battle space in any environment and against any opponent.” (p.3) ○ <u>Strategic Readiness System Objective P7, “Provide Infrastructure”</u> <ul style="list-style-type: none"> ▪ “Sustain and improve predictable installation systems, power projection infrastructure, and environmental programs to improve the quality of installations and support quality training and operations.” ○ <u>Strategic Readiness System P7 Supporting Objective</u> <ul style="list-style-type: none"> ▪ “Provide installations with a minimum of C2 quality facilities to support the force by 2010 with all installations in compliance by 2023.”

Table E-2. Deployment Objectives

Mobilization
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Reshape installations to support home station mobilization and demobilization and successfully implement the Train/Alert/Deploy model. • Supporting material: <ul style="list-style-type: none"> ○ <u>Army Strategic Planning Guidance</u> <ul style="list-style-type: none"> ▪ “Establish mobilization training and force validation through the FORSCOM collective training structure and TRADOC individual training structures to ensure rapid, effective, and sustained mobilization.” (p. 35) ▪ “Improve efficiency of mobilization and demobilization processes and align mobilization categories (PRC [at Personnel Readiness Center], Partial, and Full) to Defense Planning Guidance Force Sizing Construct (1-4-2-1).” (p. 34) ○ <u>Strategic Readiness System Objective C3, “Mobilize the Army”</u> <ul style="list-style-type: none"> ▪ “USAR and ARNG units and soldiers arrive at mobilization or duty stations within 72 hours of notification ... the qualified leaders, and requiring minimal post-mobilization training. Transition to Train/Alert/Deploy model.” (p. 33)
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Reshape Reserve Component infrastructure in support of the Director, Army National Guard, the Chief, Army Reserve, and the State Adjutants General. • Supporting material: <ul style="list-style-type: none"> ○ <u>Army Strategic Planning Guidance</u> <ul style="list-style-type: none"> ▪ “Establish mobilization training and force validation through the FORSCOM collective training structure and TRADOC individual training structures to ensure rapid, effective, and sustained mobilization.” (p. 35) ▪ “Improve efficiency of mobilization and demobilization processes and align mobilization categories (PRC, Partial, and Full) to Defense Planning Guidance Force Sizing Construct (1-4-2-1).” (p. 34) ○ <u>Washington Post Editorial, “A Streamlined Army Reserve,” dated 22 Sep 03</u> <ul style="list-style-type: none"> ▪ Quote by LTG James R. Helmly, Chief, Army Reserve, “From top to bottom, we are overhauling the process by which we prepare and deploy our forces. We plan to organize, train, sustain, mobilize and deploy our units in a much different way.”

Table E-3. Mobilization Objectives

C4I/Headquarters
<ul style="list-style-type: none"> • <i>Objectives:</i> <ul style="list-style-type: none"> ○ Locate units and activities to enhance home-station operations and force protection. ○ Collocate functions and headquarters in “Joint campuses” to enhance interoperability and reduce cost. ○ Unite multi-location headquarters in single locations to enhance effectiveness and efficiency. ○ Retain installations with the greatest capability to support reach-back/forward operations. • Supporting material: <ul style="list-style-type: none"> ○ <u>SecDef Memo, “Land Acquisition and Leasing of Office Space in the United States,” dated 17 Nov 02</u> <ul style="list-style-type: none"> ▪ This memo expressed “concern with acquisition of real property (annual lease over \$1M) throughout the United States, and particularly with the concentration of Defense activities in the Washington, D.C. area.” ○ <u>Army Stationing Strategy</u> <ul style="list-style-type: none"> ▪ “Efficiencies may be gained by collocating multiple functions, activities or workload at a single installation (either Army-only or through pursuit of inter-Service moves) and decreasing installations and facilities.” ▪ “[L]eased facilities must be examined to determine if they provide an efficient and cost effective alternative that affords its occupants the force protection that is required in today’s environment.” ○ <u>Chief of Staff, Army’s 16 Focus Areas</u> <ul style="list-style-type: none"> ▪ “That framework stretches from the individual soldier on point, through the variety of operations centers in the theater of operations, and stretches back to the home station operations center regardless of where it is.” ○ <u>Senior-Leader Interviews</u> <ul style="list-style-type: none"> ▪ “Why have so much lease space? If you stacked up all the lease space and don’t consider costs and/or savings of moving them to installations, you’ve missed big things. The return on investment would be significant.”

Table E-4. C4I/Headquarters Objectives

Homeland Defense
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Locate Army forces to protect the United States population, territory, and critical infrastructure. • Supporting material: <ul style="list-style-type: none"> ○ <u>Quadrennial Defense Review, 30 Sep 01</u> <ul style="list-style-type: none"> ▪ “...DoD will continue to examine the roles and responsibilities of its Active and Reserve forces to ensure they are properly organized, trained, equipped, and postured to provide for the effective defense of the United States.” (p.19) ▪ “In particular, the United States must enhance its capabilities to protect its critical infrastructure ... that supports oil and gas transportation and storage, information and communications, banking and finance, electrical power, transportation, water supply, emergency, and government services.” (p. 20)
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Locate forces to enhance support of potential NORTHCOM operations. • Supporting material: <ul style="list-style-type: none"> ○ <u>The Army Strategic Planning Guidance(14 Nov 03), Objective C-6, “Support Civil Authorities”</u> <ul style="list-style-type: none"> ▪ “Provide the diversity of services and support that the Army can uniquely contribute to assist civil authorities in domestic contingencies, including disaster relief and crisis resolution, until the civil authority reestablishes control or civilian relief agencies can assume the mission.” (p. 35) ▪ “Support NORTHCOM and PACOM with planning/coordination capabilities, supporting headquarters, and forces to execute homeland defense and military support to civil authorities.” (p. 35)

Table E-5. Homeland Defense Objectives

Institutional Training & Education

- *Objective:*
 - Provide sufficient area and facilities (with varied terrain, climate, and airspace) to support institutional training, combat development, and doctrine development.
- Supporting material:
 - **Army Stationing Strategy**
 - “Provide sustainable facilities to support a trained and ready Army and ... other members of the Joint team.” (p.3)
 - “... [E]xamine...current installation locations and capabilities to ensure the requirements of our 21st Century forces can be met. Testing and training land and facilities must also be correctly located and sized to ensure the readiness of our support units as the Army transforms.” (p.11)
 - “...Institutional Training locations must have sufficient space and facilities (either Army owned or with sister services) to allow centers and schools to fully test and develop new doctrinal concepts, to include addressing full spectrum operation in a Joint, combined, and/or interagency environment. (p.22)
 - **DoD Selection Criterion #2**
 - Identifies the “availability and condition of land...throughout a diversity of climate and terrain” as a key military value criterion.
 - **Senior Leader Interviews**
 - “For future training, we must eliminate these distinctions and move toward multi-use, multi-Service Joint bases. Bases that can train, test, evaluate, and field all at the same time.” (p.2)

- *Objective:*
 - Consolidate, collocate, or disperse training to enhance coordination, doctrine development, training effectiveness, and improve operational and functional efficiencies.
- Supporting material:
 - **Army Stationing Strategy**
 - “Consolidation of branch schools promotes integration of leader development, functional training, doctrine development and writing, and combat development activities.” (p. 23)
 - “Locate branch schools to facilitate maneuver development, maneuver support development, and maneuver sustainment development and operational efficiency.” (p.22)
 - “...[C]onsolidation of branches makes maximum use of high capacity, modernized installations and may allow closure of some installations.” (p.23)
 - “...[O]pportunities to consolidate school training with sister services and with other DoD organizations to make maximum use of compatible facilities and to reduce installation management

Institutional Training & Education
<p style="text-align: center;">costs. (p.23)</p> <ul style="list-style-type: none"> ○ <u>Senior Leader Interviews</u> <ul style="list-style-type: none"> ▪ “For future training, we must eliminate these distinctions and move towards multi-use, multi-service Joint bases. Bases that can train, test, evaluate, and field all at the same time.” (p.2) ▪ “Co-locating will save money as well as enable us to protect all of our important assets as they are only in one place.” (p.2)
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Optimize the capacity to train the entire range of military and civilian skills. • Supporting material: <ul style="list-style-type: none"> ○ <u>Army Stationing Strategy</u> <ul style="list-style-type: none"> ▪ “Provide adequate airspace and facilities to support rotary wing pilot training.” (p.22) ▪ “Maintain the capability to provide live agent training.” (p.22) ▪ “...[M]aintain the capability to conduct ‘joint logistics over the shore’ (JLOTS) training at either Army owned facilities or through inter-service agreements with sister services/other DoD agencies and retain access to the seaports that provide the necessary capabilities.” (p. 24) ▪ “...[T]he Army must have the capability to provide facilities (either Army owned or those of other services) to support at least one ROTC Summer Training Camp.” (p. 23) ▪ “Ensure that the entire range of skills needed to support a transforming Army can be trained effectively and efficiently.” (p.22) ○ <u>Senior Leader Interviews</u> <ul style="list-style-type: none"> ▪ “Army Leadership believes the Army will need more, not less, training land.” (p.1)

Table E-6. Institutional Training & Education Objectives

Unit Training
<ul style="list-style-type: none">• <i>Objective:</i><ul style="list-style-type: none">○ Provide Army units and activities with sufficient, sustainable maneuver and training space in a wide variety of geographic, topographic, and climatic conditions in support of Joint training, testing and experimentation, and Homeland Defense.• Supporting material:<ul style="list-style-type: none">○ <u>Army Strategic Planning Guidance</u><ul style="list-style-type: none">▪ “Support NORTHCOM and PACOM with planning/coordination capabilities, supporting headquarters, and forces to execute homeland defense and military support to civil authorities.” (p.37)○ <u>Army Stationing Strategy</u><ul style="list-style-type: none">▪ “Army training lands and ranges must provide the capability to train forces and test equipment and emerging doctrine under varying climatic conditions.” (p.3)○ <u>DoD Selection Criterion #1</u><ul style="list-style-type: none">▪ includes in military value the “impacts on Joint war fighting, training, and readiness.”○ <u>DoD Selection Criterion #2</u><ul style="list-style-type: none">▪ cites “the availability and condition of land, facilities, and associated airspace ... for the use of the Armed Forces in homeland defense missions.”
<ul style="list-style-type: none">• <i>Objective:</i><ul style="list-style-type: none">○ Locate Army units and activities to enhance home-station training, force-stabilization policies, Joint interoperability, and readiness.• Supporting material:<ul style="list-style-type: none">○ <u>Army Strategic Planning Guidance</u><ul style="list-style-type: none">▪ “There can be only one standard of training for our Soldiers, regardless of component or specialty. Our equipment and systems must be cross-leveled as necessary to support the Soldier in the warfight.” (p.5)○ <u>Army Stationing Strategy</u><ul style="list-style-type: none">▪ “A suitable location and mix of testing and training land and facilities (e.g., deployment and testing facilities, maneuver space, and firing and test ranges) must be available to ensure that readiness is not degraded for any part of the force – from the Current Force to the Objective Force, for both the Active Army and the Reserve Component.” (p.11)
<ul style="list-style-type: none">• <i>Objective:</i><ul style="list-style-type: none">○ Locate Special Operations Forces (SOF) in locations that best support: SOF specialized training needs, training with other-Service SOF units, and the unit and materiel deployment requirements of wartime regional

Unit Training
<p>alignments.</p> <ul style="list-style-type: none">• Supporting material:<ul style="list-style-type: none">○ <u>Army Strategic Planning Guidance</u><ul style="list-style-type: none">▪ “Enhance capabilities of Army special operations/special purpose units organized and resourced to conduct strike operations in support of forced entry operations to include Ranger, Special Forces, Special Operations Aviation, Airborne, headquarters, and support units.” (p. 36)○ <u>The Army Future Force: Decisive 21st Century Landpower</u><ul style="list-style-type: none">▪ “Operational maneuver from strategic distances will strengthen deterrence and preclusion, improve Joint force strategic responsiveness, and provide higher levels of strategic and operational agility to Joint commanders throughout the campaign.” (p. 3)○ <u>Army Stationing Strategy</u><ul style="list-style-type: none">▪ “Army training lands and ranges must provide the capability to train forces and test equipment and emerging doctrine under varying climatic conditions.” (p. 3)▪ “Station Army forces and functions at installations capable of supporting the DPG [Defense Planning Guidance] and Army Transformation.” (p. 9)▪ “Retain or acquire sufficient training land and facilities to meet current and potential combined arms training requirements for both Active Army and Reserve Component forces (Contingency Force Package units, Special Operations Forces and National Guard Enhanced Brigades).” (p.20)

Table E-7. Unit Training Objectives

RDTE

- *Objectives:*
 - Retain critical Research, Development, Test, and Evaluation (RDTE) infrastructure to provide required technological capabilities and capacity in support of DoD transformation and Joint operations.
 - Integrate DoD testing and training ranges and assets to effectively support DoD transformation and Joint operations.
 - Consolidate DoD RDTE organizations, capitalizing on synergy across DoD, other Federal agencies, academia, and industry, to enhance support of DoD transformation and Joint operations.
 - Maintain unity of command for Army developmental testing (DT) and operational testing (OT), thus leveraging organizational efficiencies in support of DoD transformation and Joint operations.
 - Provide RDTE infrastructure that will attract world-class talent in emerging science and engineering fields, ensuring long-term technological innovation to support DoD transformation and Joint operations
- Supporting material:
 - **Army Strategic Planning Guidance (ASPG) and The Strategic Readiness System (SRS)**
 - “Leverage Technology into Key Processes and Equipping the Future Army”
 - **CSA Focus Area – “Current to Future Force”**
 - “Ensure linkage of all Army systems/requirements to Joint requirements”
 - **Army Stationing Strategy**
 - “Provide research, development, and evaluation for Army weapon systems by leveraging the private sector and retaining in-house technologies for which there is no commercial market...”
 - “The Army must preserve crucial laboratory and research, development and engineering, acquisition, and logistics management capabilities and capacity necessary to ensure current and future readiness, and transform the force.”
 - “Efficiency, achieved through collocation and integration of research, development and engineering, acquisition and logistics functions, as well as reduced overhead, should be the key factors in any determinations concerning the stationing of acquisition, technology, and logistics oriented organizations.”
 - **Transformation Planning Guidance (2003)**
 - “A Joint Test and Evaluation Capability (Joint-TEC) is needed to test the capabilities in a realistic Joint environment.”
 - **Army Test Resources Master Plan (ATRMP)**
 - “Shape the Army’s T&E infrastructure by investing in capabilities which support the Army of the future, producing accurate, reliable, and cost effective information for use by decision makers at all levels.”

RDT&E	
○	<u>ATEC Strategic Plan</u> <ul style="list-style-type: none">▪ “Identify and optimize processes and capabilities essential to providing quality and timely products and services.”▪ “Provide, develop, sustain and integrate technological capabilities and procedures.”

Table E-8. RDT&E Objectives

Joint Logistics
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Realign and consolidate the Army organic industrial base, in partnership with industry, to provide Joint, responsive, flexible, worldwide logistics support from the factory to the foxhole. • Supporting material: <ul style="list-style-type: none"> ○ <u>The Army Stationing Strategy</u> <ul style="list-style-type: none"> ▪ indicates that the Army must maintain core industrial capability that is properly sized and efficiently work loaded to support peacetime training and readiness as well as combat operational requirements. (p. 9 & p. 27) ○ <u>AMC Transformation Strategy briefing, dated 11 Jun 03</u> <ul style="list-style-type: none"> ▪ AMC intends to “...reshape and modernize its business practices to provide factory-to-foxhole support.” (Slide 22) ○ <u>The Army Strategic Planning Guidance</u> <ul style="list-style-type: none"> ▪ the Army will provide end-to-end support (factory to foxhole) through an integrated logistics enterprise. (p. 32) ○ <u>Senior Leader Interviews</u> <ul style="list-style-type: none"> ▪ “...establish integrated logistics support systems that provide end-to-end war fighter support.” ▪ “This round of BRAC is a tremendous opportunity for DoD to analyze the existing Industrial Base and do what we should have done 10 years ago. Transform the base into a <i>joint</i>, efficient, and effective multi-functional Industrial Base through realignment, relocation, and reductions that free up funding that we can refocus in the right direction: support the war-fighter...”
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Reshape and integrate Army critical munitions and armaments capability to sustain peacetime and wartime Joint operational requirements in the most effective and efficient manner. • Supporting material: <ul style="list-style-type: none"> ○ <u>The Army Stationing Strategy</u> <ul style="list-style-type: none"> ▪ States that the Army must maintain critical production capabilities that can not be commercially duplicated or expanded during mobilization. (p. 28 – 29) ▪ States that the Army will improve capacity utilization of its industrial base through consolidations and divestiture of unneeded facilities. (p. 28 – 29) ○ <u>SecArmy Directive dated 24 Mar 03</u> <ul style="list-style-type: none"> ▪ requires AMC to develop plans “...for the consolidation, leasing or divestiture of excess government owned ammunition facilities....work toward reducing manufacturing arsenal capability.” ○ <u>RAND Report “Options for Managing the Army’s Arsenals and</u>

Joint Logistics
<ul style="list-style-type: none">○ <u>Ammunition Plants</u><ul style="list-style-type: none">▪ states that the Army currently maintains industrial capability to support requirements that no longer exist. (p. vii)○ <u>GAO and RAND Reports</u><ul style="list-style-type: none">▪ industrial facilities are currently using only a small portion of their overall capability—some have no active production at all.○ <u>10 USC 2535 (Defense Industrial Reserve)</u><ul style="list-style-type: none">▪ requires DoD to maintain a government owned industrial base to provide essential reserve capability. However, 10 USC 2501 (National security objectives concerning national technology and industrial base) requires DoD to rely on the commercial sector to the maximum extent possible.
<ul style="list-style-type: none">● <i>Objective:</i><ul style="list-style-type: none">○ Reshape and integrate Army maintenance and materiel management capabilities to sustain peacetime and wartime Joint operational requirements in the most effective and efficient manner.● Supporting material:<ul style="list-style-type: none">○ <u>Defense Depot Maintenance Council Business Plan and GAO</u><ul style="list-style-type: none">▪ the amount of work and efficiency of operations within the Army’s depot system is subject to continuing debate.○ <u>The Army Stationing Strategy</u><ul style="list-style-type: none">▪ the Army will improve the capacity utilization of its industrial facilities through consolidations, realignments, and divestiture of unneeded facilities. (p. 28-29)○ <u>The Army Strategic Planning Guidance</u><ul style="list-style-type: none">▪ the Army will “...ensure core maintenance capabilities are available with the organic base.” (p. 36)

Joint Logistics
<ul style="list-style-type: none">• <i>Objective:</i><ul style="list-style-type: none">○ Structure a multi-Service distribution and deployment network to enhance the strategic responsiveness of the Joint Team.• Supporting material:<ul style="list-style-type: none">○ <u>Army Strategic Planning Guidance</u><ul style="list-style-type: none">▪ Indicates that the Army will reduce its logistics footprint to enhance the strategic responsiveness of the Joint Force, and to enable efficient and timely deployment of modular combat support and combat service support units. (p. 7)▪ Also states that the Army will “...[m]aintain sufficient availability of ammunition/munitions to support Current Force and Future Force weapons platforms.” (p. 36)○ <u>Senior Leader Interviews</u><ul style="list-style-type: none">▪ suggested that the Army “...provide modernized theater distribution, improved force reception capabilities, integrated supply chains, and sense and respond logistics capabilities.”

Table E-9. Joint Logistics Objectives

Mission Expansion
<ul style="list-style-type: none"> • <i>Objectives:</i> <ul style="list-style-type: none"> ○ Retain DoD installations with the most flexible capability to accept new missions. ○ Retain vital training and test lands as a hedge against likely new Joint Team missions; changes in technology, Tactics, Techniques, and Procedures (TTP); and other Operational Risk. • Supporting material: <ul style="list-style-type: none"> ○ <u>The Army Plan</u> <ul style="list-style-type: none"> ▪ “[T]he Army must ... shape infrastructure to accommodate changes in doctrine and force structure.” ○ <u>2005 DoD Selection Criterion #1</u> <ul style="list-style-type: none"> ▪ “The current and future mission requirements and the impact on operational readiness of the Department of Defense’s total force, including impacts on Joint war fighting, training, and readiness.” ○ <u>Army Stationing Strategy</u> <ul style="list-style-type: none"> ▪ “Other metrics to be considered in making stationing decisions include: current and future mission requirements, the impacts on operational readiness, the ability to accommodate contingency, mobilization and future force requirements at both existing and potential receiving installations....” ▪ “As future combat organizations are able to cover ever increasing areas of responsibility and weapon systems have the ability to fire over the horizon, the Army will need the maneuver space and testing and training ranges to exercise these systems and train our soldiers.” ○ <u>RAND Report “Taking Stock of the Army's Base Realignment and Closure Selection Process”</u> <ul style="list-style-type: none"> ▪ “Because the future is cloudy, an ideal BRAC process would produce closure and realignment options that hedge against likely changes in future demands and against less likely but potentially devastating changes.” (p. xvi) ○ <u>Senior Leader Interviews</u> <ul style="list-style-type: none"> ▪ “We should ask, if we move a division back from Europe, can its receiving base support it?” ▪ “We must have the space to exercise our new systems.” ▪ “Objective Force is able to operate over a larger area; there is a requirement for more maneuver area. Simulators will help, but there will still be the need for live training areas.”

Table E-10. Mission Expansion Objectives

Well-Being
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Locate Army organizations to provide safe, quality, and affordable communities on and off post. • Supporting material: <ul style="list-style-type: none"> ○ <u>Army Strategic Planning Guidance</u> <ul style="list-style-type: none"> ▪ “Provide a competitive standard of living for all Soldiers (Active, Guard, Reserve), retirees, civilians and their families.” (p. 40) ○ <u>Army Stationing Strategy</u> <ul style="list-style-type: none"> ▪ “The Army must ensure that its installations are ... safe, secure facilities that provide our soldiers, civilians, and their families with quality living, working, and recreational areas.” (p. 10) ▪ “This entails the facilities and functions that are available both on and off post and providing (1) safe, comfortable, quality, affordable family housing for Army soldiers to raise their families; (2) adequate, modern, single soldier barracks facilities....” (p. 16) ○ <u>Army Family Housing Master Plan (FY03-09)</u> <ul style="list-style-type: none"> ▪ “... meet the Defense Planning Guidance (DPG) goal to eliminate all inadequate family housing by 2007.” (p. ES-1) ○ <u>DoD Strategic Planning Guidance</u> <ul style="list-style-type: none"> ▪ “... [M]aintain or improve working and living conditions during these stressful periods (e.g., schools, childcare, fitness, and housing)...collaboration with the civilian community for housing and schools, and ensure adequate military welfare and recreation and family support funding is reprogrammed to the gaining installations.”
<ul style="list-style-type: none"> • <i>Objective:</i> <ul style="list-style-type: none"> ○ Provide responsive, quality, and cost-effective medical and dental care on and off post. • Supporting material: <ul style="list-style-type: none"> ○ <u>Army Stationing Strategy</u> <ul style="list-style-type: none"> ▪ “Military medicine and dental treatment facilities must optimize patient capacity ... and focus on providing prompt, competent, efficient and cost effective medical support to active duty populations and TRICARE beneficiaries.” (p. 3) ▪ “This entails the facilities and functions that are available both on and off post and providing...responsive, comprehensive professional medical/dental care;...” (p. 16) ○ <u>ARMY Magazine, “The Army Medical Department’s Transformation,” by LTG James B. Peake, May 2001</u> <ul style="list-style-type: none"> ▪ “We are working to improve appointment systems and increase the number of appointments available within military treatment facilities and increase acceptance of TRICARE by civilian

Well-Being
providers.”
<ul style="list-style-type: none">• <i>Objective:</i><ul style="list-style-type: none">○ Provide opportunities to enrich personal lives by achieving individual aspirations.• Supporting material:<ul style="list-style-type: none">○ <u>Army Strategic Planning Guidance</u><ul style="list-style-type: none">▪ “Provide an environment that allows Soldiers (Active Guard, Reserve), veterans, retirees, civilians, and their family members to enrich their personal lives by achieving their individual aspirations” (p. 41)○ <u>Army Stationing Strategy</u><ul style="list-style-type: none">▪ “This entails the facilities and functions that are available both on and off post and providing ... affordable quality childcare; employment opportunities for family members for financial security and/or personal/professional advancement commensurate with their skills and abilities and a consistent quality educational experience...” (p. 16)○ <u>DoD Strategic Planning Guidance</u><ul style="list-style-type: none">▪ “...[M]aintain or improve working and living conditions during these stressful periods (e.g., schools, childcare, fitness, and housing) ... collaboration with the civilian community for housing and schools, and ensure adequate military welfare and recreation and family support funding is reprogrammed to the gaining installations.”▪ “...[D]ue to the financial impact of the cost of child care on families, plan to reduce the unmet child care need over the FYDP [Future Year Defense Program] through a balance of construction and alternative delivery systems...”

Well-Being
<ul style="list-style-type: none">• <i>Objective:</i><ul style="list-style-type: none">○ Create a portfolio of installations that provide quality and varied recreational and cultural opportunities on and off post.• Supporting material:<ul style="list-style-type: none">○ <u>Army Strategic Planning Guidance</u><ul style="list-style-type: none">▪ “Manage and utilize resources in a cost effective and responsible manner to achieve Army requirements in areas outside of core competencies outsourcing options will be considered where quality can be maintained” (p. 40)○ <u>DOD Strategic Planning Guidance</u><ul style="list-style-type: none">▪ “[E]nsure adequate military welfare and recreation and family support funding is reprogrammed to the gaining installations.”▪ “[C]ontinue to implement Business Initiative Council (BIC) fitness center initiatives to eliminate substandard facilities...”▪ “[S]ustain critical morale and recreation programs...”

Table E-11. Well Being Objectives

Cost
<ul style="list-style-type: none"> • <i>Objectives:</i> <ul style="list-style-type: none"> ○ Create multifunctional, multi-component and multi-Service installations that provide the same or better level of service to the Joint Team at a reduced cost. ○ Consolidate or collocate common business functions with other agencies to provide the same or better level of Joint services at a reduced cost. • Supporting material: <ul style="list-style-type: none"> ○ <u>S. 1438-334, BRAC Law</u> <ul style="list-style-type: none"> ▪ “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.” ○ <u>Sec Def Kick-Off Memo (15 Nov 02)</u> <ul style="list-style-type: none"> ▪ “BRAC 2005 should be the means by which we reconfigure our current infrastructure into one in which operational capacity maximizes both warfighting capability and efficiency.” ○ <u>Army Program Guidance Memorandum FY05-09</u> <ul style="list-style-type: none"> ▪ Efficient installations will provide a standard and equitable delivery of services from installation to installation. ○ <u>Senior Leader Interviews</u> <ul style="list-style-type: none"> ▪ “We are too big. We have too many places, too much infrastructure. It shows in our ability to pay bills and keep our quality of life at sufficient levels.” ▪ “The reason it is so expensive to run an installation is because they have been so under-funded for 15-30 years. We put no money into them; the housing is poor, the water plants are poor, etc.” ▪ “Base operations and support accounts are not there, we can’t do it all with current budgets.”

Table E-12. Cost Objectives

Environment
<ul style="list-style-type: none">• <i>Objectives:</i><ul style="list-style-type: none">○ Locate Army units to reduce the impact of encroachment on Joint Team mission accomplishment.○ Locate Army units where available natural resources can sustain the force.○ Locate Army units to enable maximum training and test flexibility within environmental limits.• Supporting material:<ul style="list-style-type: none">○ <u>Army Stationing Strategy</u><ul style="list-style-type: none">▪ “Consider environmental impacts on stationing and training.”○ <u>Strategic Readiness System</u><ul style="list-style-type: none">▪ “Sustain and improve ... environmental programs to improve the quality of installations and support quality training and operations.”○ <u>The Army Plan</u><ul style="list-style-type: none">▪ “Provide integrated management and sustainment of installation natural resources to provide the optimum land platform for accomplishment of Army missions.”○ <u>Senior Leader Interviews</u><ul style="list-style-type: none">▪ “Environmental issues are a big concern.”▪ “It is important that we have measures that look at the availability and use of training lands and how their use is restricted by environmental and encroachment regulations.”

Table E-13. Environment Objectives

All Army recommendations will support one or more of these objectives.

F. BRAC CONSIDERATIONS

BRAC Considerations are those ideas that the Army factored into the BRAC deliberative process. This appendix describes the Army BRAC Considerations, the process used to develop them, and their role in the BRAC analytical process.

F.1 Background

Initially, TABS worked in conjunction with a G3-led effort to develop appropriate Army BRAC Imperatives to support the TABS-developed BRAC Principles. Imperatives were defined as highly important outcomes that the Army wanted preserved or accomplished through BRAC. The draft imperatives were briefed to and approved by the Army BRAC SRG on 4 May 2004. TABS worked with the other Military Departments and OSD over the next two months to finalize a set of overarching OSD imperatives for use by the Military Departments and the Joint Cross Service Groups.

At its 23 July 2004 meeting, the Infrastructure Steering Group (ISG) determined that the BRAC Principles enumerated the essential elements of military judgment sufficiently and that mandating the use of detailed imperatives drafted by the Military Departments to support the principles, as originally envisioned, was unnecessary. However, the ISG also recognized the value of retaining the ideas associated with the imperatives. Over time, OSD changed the name from imperatives to considerations. The guidance was that while the ideas were no longer binding, they were still worthy of consideration in the BRAC process. On 28 September 2004, the Chairman of the ISG issued the final approved list of BRAC Considerations. .

F.2 Purpose

Although the ISG determined that the draft imperatives were not mandatory constraints on the BRAC analytical process, the ideas expressed within these imperatives were judged to be beneficial to the BRAC process as appropriate “considerations” in the decision-making process. The ISG recommended that the Military Departments (MILDEPs), Joint Cross-Service Groups (JCSGs), and Defense Agencies use the considerations as additional factors to inform their deliberative processes.

F.3 Scope: OSD vs. Army Considerations

The considerations were issued by OSD, but were based on input from the Services. Some considerations apply to all DOD components, while others were detailed Service specific considerations.

During development of the considerations, the Army did not object to any consideration that was inapplicable to its infrastructure or missions. The Army used these considerations to assist where and when appropriate.

F.4 List of Considerations

The following pages list the OSD Considerations. These considerations were used by TABs in developing recommendations and each Army recommendation supports one or

more of the considerations listed. The considerations are grouped by the corresponding OSD BRAC Principles.

F.4.1. Recruit and Train: The Department must attract, develop, and retain active, reserve, civilian, and contractor personnel that are highly skilled and educated and that have access to effective, diverse, and sustainable training space in order to ensure current and future readiness, to support advances in technology, and to respond to anticipated developments in joint and service doctrine and tactics.

1. Consider the value of preserving the required training capabilities in the United States to support the following missions: airborne, air assault, urban operations; Joint Logistics Over-The-Shore (JLOTS); obscurant, chemical live agent, and electro-magnetic operations; and Marine Air-Ground Task Force live fire and combined arms training.
2. Consider the value of preserving access to air, land, and sea areas and facilities (to include war gaming/simulation/experimentation) in the following environments: cold weather, tropical weather, swamps, littoral, mountainous, and desert conditions with operationally efficient access and proximity to meet current and future Service and Joint training/test/operational requirements for both Active and Reserve Component forces and weapons systems.
3. Consider the value of locating operational squadrons (with the exception of Naval Reserve Squadrons) and Navy or Marine Corps Fleet Replacement Squadrons within operationally efficient proximity (i.e., for the Department of the Navy, farther than one un-refueled leg) of DoD-scheduled airspace, ranges, targets, low-level routes, outlying fields and over-water training airspace with access to aircraft carrier support.
4. Consider the value of locating Department of the Navy undergraduate flight training separate from operational squadrons.
5. Consider the value of preserving the organizational independence of Air Force flight training units from combat units.
6. Consider the value of locating Carrier Strike Groups/ Expeditionary Strike Groups/ Maritime Pre-positioning Groups or their individual elements within operationally efficient proximity of ranges and operational areas. Operationally efficient proximity is generally defined as within 3 underway days from air, sea and over the shore maneuver space for the Groups, or for individual operational ships and aircraft an approximate distance of 6 underway hours for ships, 12 underway hours for submarines, and 1 un-refueled sortie for aircraft.
7. Consider the value of preserving organic institution(s) for Service specific strategic thought, innovation, joint, and coalition security policy.

8. Consider the value of locating Department of Navy specific skills progression training and functional skills training relevant to home ported platforms in Fleet concentration areas.
9. Consider the value of locating Department of Navy specific initial skills training with accessions training to minimize student moves or with skills progression training to allow cross-utilization of instructors, facilities, and equipment, and support future training and efficiency improvements.
10. Consider the value of preserving parcels of land in the United States that: consist of 37,000 contiguous acres or larger; are currently suitable for mounted ground maneuver training; and unencumbered by major restrictions (i.e., environmental contamination or unexploded ordnance) as a capability to accommodate surge, contingency, and future force structure/weapons systems requirements.
11. Consider the value of geographically positioning infrastructure and all elements of the Marine Air-Ground Task Forces (MAGTFs) to enhance training, maintenance and deployment of Marine Forces as MAGTFs. This necessitates retaining/acquiring sufficient sea access, air space, air-to-ground training ranges and maneuver areas, for training and deployment purposes; preserving necessary rail access, explosives safety arcs, and staging areas.
12. Consider the value of preserving access to educational programs which include specific focus on those areas which are uniquely related to distinctive Service capabilities (i.e., maritime, land warfare).

F.4.2. Quality of Life: The Department must provide a quality of life, to include quality of work place that supports recruitment, learning, and training, and enhances retention.

1. Consider the value of supporting access to basic quality of life services (i.e., housing, MWR-like services, education, child development, medical, etc.)

F.4.3. Organize: The Department needs force structure sized, composed, and located to match the demands of the National Military Strategy, effectively and efficiently supported by properly aligned headquarters and other DOD organizations, and that take advantage of opportunities for joint basing.

1. Consider the value of keeping core elements of the Headquarters of the Department of Defense, the Department of the Army, the Department of the Navy (including the Commandant of the Marine Corps), and the Department of the Air Force within the National Capital Region.
2. Consider the value of preserving the last remaining Service specific Reserve Component presence in a state.

3. Consider the value of preserving the capability to support, surge, mobilization, continuity of operations, evacuations for natural disasters, or conduct core roles and missions (i.e., sea-based operations, combined arms, etc.).
4. Consider whether a closure or realignment involving joint basing of a function should increase the average quantifiable military value of that function or decrease the cost for the same average quantifiable military value, when compared to the status quo.
5. Consider the value of preserving the capability to fulfill the air sovereignty protection site and response criteria requirements stipulated by COMNORTHCOM and COMPACOM.
6. Consider the value of preserving START Treaty land-based strategic deterrent.

F.4.4. Equip: The Department needs research, development, acquisition, test, and evaluation capabilities that efficiently and effectively place superior technology in the hands of the war fighter to meet current and future threats and facilitate knowledge-enabled and net-centric warfare.

1. Consider the value of preserving the capability to support technologies and systems integral to the conduct of expeditionary, maritime, air, and land warfare.
2. Consider the value of preserving the minimum required non-renewable infrastructure (i.e., air, land, sea, and space ranges and frequency spectrum) to ensure successful RDTE&A and life-cycle support of emerging and existing technologies in support of expeditionary, maritime, air and land warfare operations.
3. Consider the value of preserving the Army's RDT&E capability necessary to support technologies and systems integral to the conduct of land warfare; the DON's RDT&E capability necessary to support technologies and systems integral to the conduct of Maritime and Amphibious warfare; and the Air Force's RDT&E capability necessary to support technologies and systems integral to the conduct of air warfare.
4. Consider the value of providing RDT&E infrastructure and laboratory capabilities to attract, train, and retain talent in emerging science and engineering fields.
5. Consider the value of the ability to use Federally Funded Research and Development Centers and contractor support.

F.4.5. Supply, Service, and Maintain: The Department needs access to logistical and industrial infrastructure capabilities optimally integrated into a skilled and cost efficient

national industrial base that provides agile and responsive global support to operational forces.

1. Consider the value of preserving access to ammunition storage facilities which will not complete planned chemical demilitarization before 2011.
2. Consider the value of preserving ship maintenance capabilities to:
 - Dry dock CVNs and submarines on both coasts and in the central Pacific.
 - Refuel/de-fuel/inactivate nuclear-powered ships.
 - Dispose of inactivated nuclear-powered ship reactor compartments.
3. Consider the value of preserving the following critical industrial capabilities: casting and forgings of ground components; white phosphorous-based munitions; chemical and biological defense equipment; the manufacture of gun tubes, mortars, and cannon tubes; and rubber track and road wheels that are required by law, not commercially available, ensure competition, meet small volume and discontinued repair parts requirements, and provide sustainment, surge, and reconstitution in support of Joint expeditionary warfare.
4. Consider the value of preserving the capability of a Service to define its requirements (all classes of supply), integrate its logistics support, and acquire appropriate support for its unique material.
5. Consider the value of preserving inherent Service capabilities where concepts of operations differ from other Services (i.e., MALS support to the FRSs, deployable intermediate maintenance support for MPS equipment, Navy IMAs, reach back support for sea-based logistics, etc.)
6. Consider the risks presented by creating a single point of failure in logistics operations.

F.4.6. Deploy and Employ (Operational): The Department needs secure installations that are optimally located for mission accomplishment (including homeland defense), that support power projection, rapid deployable capabilities, and expeditionary force needs for reach-back capability, that sustain the capability to mobilize and surge, and that ensure strategic redundancy.

1. Consider the value of preserving the capability to simultaneously deploy, support, and rotate forces from the Atlantic, Pacific, and Gulf coasts in support of operational plans (including pre-positioning logistics support capabilities) due to reduced quantities of, or reduced access to port facilities, local/national transportation assets (highways and railroad), and airfields or lack of information infrastructure reach back capabilities.

2. Consider the value of preserving the capability for Fleet basing that supports the Fleet Response Plan and Sea-basing concepts:
 - CVN (Nuclear Carrier) capability: 2 East Coast ports, 2 West Coast ports, and 2 forward-based in the Pacific.
 - SSBN (Nuclear Submarine Ballistic Missile) basing: 1 East Coast port, 1 West Coast port.
 - MPA (Maritime Patrol Aircraft) and rotary wings located within one un-refueled sortie from over water training areas.
 - OLF (Outlying Landing Field) capability to permit unrestricted fleet operations, including flight training, if home base does not allow.
 - CLF (Combat Logistics Force) capability: 1 East Coast and 1 West Coast base that minimize explosive safety risks and eliminate waiver requirements.
3. Consider the value of preserving unimpeded access to space (polar, equatorial, and inclined launch).
4. Consider the value of preserving and aligning sufficient medical capacity (manning, logistics, training and facilities) integral to the operational forces; as well as an efficient reach back system to ensure the continuum of care for those operating forces and their families.
5. Consider the value of preserving the capability to provide responsive airlift to the POTUS, special air missions, and visiting heads of state to and from the National Capital region.
6. Consider the value of preserving:
 - Two air mobility bases and one wide-body capable base on each coast to ensure mobility flow without adverse weather, capacity, or airfield incapacitation impacts; and
 - Sufficient mobility bases along the deployment routes to potential crisis areas to afford deployment of mobility aircraft.
7. Consider the value of preserving the capability to absorb overseas forces within the United States.

F.4.7. Intelligence: The Department needs intelligence capabilities to support the National Military Strategy by delivering predictive analysis, warning of impending crises, providing persistent surveillance of our most critical targets, and achieving horizontal integration of networks and databases.

1. Consider the value of preserving sufficient organic Intelligence, Surveillance and Reconnaissance/analytic infrastructure to meet war fighting and acquisition

requirements while effectively leveraging Joint and National intelligence capabilities.

G. TRANSFORMATIONAL OPTIONS

This appendix describes the OSD BRAC 2005 transformational options, their development, and role in the analytical process. Transformational Options (TOs) are initiatives recommended by BRAC leadership and judged to rationalize DOD's infrastructure in accordance with defense strategy, efficiency, and effectiveness. Joint Cross Service Groups (JCSGs) and Military Departments (MILDEPs) were required to consider all of the applicable transformational options during their analysis.

The TOs are linked to the OSD BRAC Principles, OSD BRAC Considerations (formerly Imperatives), and the Army BRAC Objectives.

G.1 Development

In the BRAC 2005 kickoff memo, the SECDEF called for a broad range of options for stationing and supporting forces and functions to increase efficiency and effectiveness. The memo tasked ISG members to develop possible options, and for the IEC to forward a list to the SECDEF for approval. The memo stated that the finalized list of TOs must be considered by the MILDEPs and JCSGs during the analytical phase.

Following OSD guidance, the MILDEPs and JCSGs each compiled suggestions to stimulate critical analysis in support of a comprehensive and transformational analysis. The MILDEPs coordinated with the JCSGs to strengthen potential options. The Army developed a list of possible transformational options, grouped by OSD BRAC Principle, and categorized as either "Army" or "Multi-Service." In developing TOs, the Army drew from transformational ideas from outside research, senior leader interviews, capacity analysis considerations, and initial scenario brainstorming.

The original Army BRAC transformational options were briefed to the Army BRAC SRG on 16 June 2004, approved, and submitted to OSD. Each of the other BRAC components also submitted recommended TOs to OSD, and the lists were consolidated.

OSD sent the complete list of transformational options to the MILDEPs and JCSGs for review, and the Army commented on the proposed set.

OSD coordinated the reviews of the MILDEPs and JCSGs and issued the OSD BRAC transformational options in draft on 8 September 2004, directing the MILDEPs and JCSGs to study them and develop proposals accordingly. OSD did not publish a final list of TOs and the JCSGs and MILDEPs used the draft document as their final guidance.

G.2 Analytical Process

Transformational options constitute the minimum analytical framework for the MILDEPs and JCSGs during BRAC 2005 analysis. Each option is overarching, notional, and does not identify specific installations. They were not required to be selected as a BRAC action, but they were reviewed and analyzed by the BRAC components.

The Army's Proposal Information Management System (PIMS) tracked transformational options and enabled analysts to notate the options associated with various proposals. Each recommendation submitted by the Army supported one or more TOs.

The draft list of OSD transformational options as of 8 September 2004 is listed below, complete with source and application:

1. Consolidate Management at Installations with Shared Boundaries. Create a single manager for installations that share boundaries. Source & Application: H&SA
2. Regionalize Installation Support. Regionalize management of the provision of installation support activities across Military Departments within areas of significant Department of Defense (DoD) concentration, identified as Geographic Clusters. Option will evaluate designating organizations to provide a range of services, regionally, as well as aligning regional efforts to specific functions. For example, a possible outcome might be designation of a single organization with the responsibility to provide installation management services to DoD installations within the statutory National Capital Region (NCR). Source and Application: H&SA
3. Consolidate or collocate Regional Civilian Personnel Offices to create joint civilian personnel centers. Source and Application: H&SA
4. Consolidate active and Reserve Military Personnel Centers of the same service. Source and Application: H&SA
5. Collocate active and/or Reserve Military Personnel Centers across Military Departments. Source and Application: H&SA
6. Consolidate same service active and Reserve local Military Personnel Offices within Geographic Clusters. Source and Application: H&SA
7. Collocate active and/or Reserve local Military Personnel Offices across Military Departments located within Geographic Clusters. Source and Application: H&SA
8. Consolidate Defense Finance and Accounting Service (DFAS) Central and Field Sites. Consolidate DFAS business line workload and administrative/staff functions and locations. Source and Application: H&SA
9. Consolidate Local DFAS Finance & Accounting (F&A). Merge/consolidate local DFAS F&A within Geographic Clusters. Source and Application: H&SA
10. Consolidate remaining mainframe processing and high capacity data storage operations to existing Defense Mega Centers (Defense Enterprise Computing Centers). Source and Application: H&SA
11. Establish and consolidate mobilization sites at installations able to adequately prepare, train and deploy service members. Source and Application: H&SA
12. Establish joint pre-deployment/re-deployment processing sites. Source and Application: H&SA
13. Rationalize Presence in the DC Area. Assess the need for headquarters, commands and activities to be located within 100 miles of the Pentagon. Evaluation will include analysis of realignment of those organizations found to

be eligible to move to DoD-owned space outside of a 100-miles radius. Source and Application: H&SA

14. Minimize leased space across the US and movement of organizations residing in leased space to DoD-owned space. Source and Application: H&SA
15. Consolidate HQs at Single Locations. Consolidate multi-location headquarters at single locations. Source and Application: H&SA
16. Eliminate locations of stand-alone headquarters. Source and Application: H&SA
17. Consolidate correctional facilities into fewer locations across Military Departments. Source and Application: H&SA
18. Collocate Reserve Component (RC) Headquarters. Determine alternative facility alignments to support RC headquarters' administrative missions. Alternatives could consider collocation and/or movement of RC headquarters to operational bases. Source: H&SA; Application: MILDEPS
19. Collocate Recruiting Headquarters. Analyze alternative Recruiting Headquarters alignments. Consider co-location of RC and Active Component (AC) Recruiting headquarters. Source and Application: H&SA
20. Establish a consolidated multi-service supply, storage and distribution system that enhances the strategic deployment and sustainment of expeditionary joint forces worldwide. Focus the analysis on creating joint activities in heavy (US) DoD concentration areas, i.e. locations where more than one Department is based and within close proximity to another. Source: Supply & Storage; Application: Supply and Storage and Industrial
21. Privatize the wholesale storage and distribution processes from DoD activities that perform these functions. Source and Application: Supply & Storage
22. Migrate oversight and management of all service depot level reparable to a single DoD agency/activity. Source and Application: Supply & Storage
23. Decentralize Depot level maintenance by reclassifying work from depot-level to I-level. Source and Application: Industrial
24. Centralize I-level maintenance and decentralize depot-level maintenance to the existing (or remaining) depots.
 - Eliminate over-redundancy in functions.
 - Consolidate Intermediate and Depot-level regional activitiesSource and Application: Industrial
25. Regionalize severable and similar work at the intermediate level. Source and Application: Industrial
26. Partnerships Expansions. Under a partnership, have government personnel work in contractor owned/leased facilities and realign or close facilities where personnel are currently working. Source and Application: Industrial

27. Collocate depots: Two Services use the same facility(s). Separate command structures but shared common operations. Source and Application: Industrial
28. Consolidate similar commodities under Centers of Technical Excellence. Source and Application: Industrial
29. Implement concept of Vertical Integration by putting entire life cycle at same site to increase synergies, e.g. production of raw materials to the manufacture of finished parts, co-locating storage, maintenance and demil. Source and Application: Industrial
30. Implement concept of Horizontal Integration by taking some of the most costly elements of the M&A processes and put them at the same site to increase efficiencies, e.g. put Load, Assemble and Pack (LAP) of all related munitions at same site. Source and Application: Industrial
31. Maintain a multi-service distribution and deployment network consolidating on regional joint service nodes. Source and Application: Industrial
32. Evaluate Joint Centers for classes and types of weapons systems and/or technologies used by more than one Military Department:
 - Within a Defense Technology Area Plan (DTAP) Capability Area
 - Across multiple functions (Research; Development & Acquisition; Test & Evaluation)
 - Across multiple DTAP capability areas. Source and Application: Technical
33. Evaluate Service-Centric concentration, i.e. consolidate within each Service:
 - Within a Defense Technology Area Plan (DTAP) capability area
 - Across multiple functions (Research; Development & Acquisition; Test & Evaluation)
 - Across multiple DTAP capability areas. Source and Application: Technical
34. Privatize graduate-level education. Source and Application: Education & Training
35. Integrate military and DoD civilian full-time professional development education programs. Source and Application: Education & Training
36. Establish Centers of Excellence for Joint or Inter-service education and training by combining or co-locating like schools (e.g., form a “DoD University” with satellite training sites provided by Service-lead or civilian institutions). Source and Application: Education & Training
37. Establish “joint” officer and enlisted specialized skill training (initial skill, skill progression & functional training). Source and Application: Education & Training

38. Establish a single "Center of Excellence" to provide Unmanned Aerial Vehicle initial (a.k.a. undergraduate) training. Source and Application: Education & Training
39. Establish regional Cross-Service and Cross-Functional ranges that will support Service collective, interoperability and joint training as well as test and evaluation of weapon systems. Source and Application: Education & Training
40. Integrate selected range capabilities across Services to enhance Service collective, interoperability and joint training, such as Urban Operations, Littoral, training in unique settings (arctic, mountain, desert, and tropical). Source and Application: Education & Training
41. Combine Services' T&E Open Air Range (OAR) management into one joint management office. Although organizational/managerial, this option could engender further transformation. Joint management of OAR resources could encourage a healthy competition among OARs to increase efficiency and maximum utility DoD-wide. Source and Application: Education & Training
42. Consolidate or collocate at a single installation all services' primary phase of pilot training that uses the same aircraft (T-6). Source and Application: Education & Training
43. Locate (division/corps) UEx and (corps/Army) UEy on Joint bases where practical to leverage capabilities of other services (e.g., strategic lift to enhance strategic responsiveness). Source and Application: Army
44. Locate (brigades) Units of Action at installations DoD-wide, capable of training modular formations, both mounted and dismounted, at home station with sufficient land and facilities to test, simulate, or fire all organic weapons. Source and Application: Army
45. Collocate Army War College and Command and General Staff College at a single location. Source: Army; Application: Education & Training
46. Locate Special Operations Forces (SOF) in locations that best support specialized training needs, training with conventional forces and other service SOF units and wartime alignment deployment requirements. Source and Application: Army
47. Collocate or consolidate multiple branch schools and centers on single locations (preferably with MTOE units and RDTE facilities) based on warfighting requirements, training strategy, and doctrine, to gain efficiencies from reducing overhead and sharing of program-of-instruction resources. Source and Application: Army
48. Reshape installations, RC facilities and RC major training centers to support home station mobilization and demobilization and implement the Train/Alert/Deploy model. Source and Application: Army
49. Increase the number of multi-functional training areas able to simultaneously serve multiple purposes and minimize the number of single focus training areas for the Reserve Components where possible. Source and Application: Army

50. Collocate institutional training, MTOE units, RDTE organizations and other TDA units in large numbers on single installations to support force stabilization and enhance training. Army
51. Locate units/activities to enhance home station operations and force protection. Source and Application: Army
52. Consolidate aviation training with sister services for like-type aircraft to gain efficiencies. Source: Army; Application: all services.
53. Collocate functions and headquarters in “Joint Campuses” to enhance interoperability and reduce costs. Source: Army; Application: H&SA
54. Consolidate Army RDT&E organizations to capitalize on technical synergy across DoD, academia and industry. Source: Army; Application: Technical
55. Reduce the number of USAR regional headquarters to reflect Federal Reserve Restructuring Initiative (FRRI). Source and Application: Army
56. Consolidate RDT&E functions on fewer installations through inter-service support agreements to enable multidisciplinary efforts to increase efficiencies and reduce redundancy within DoD. Source: Army; Application: Technical, MILDEPs.
57. Establish a single inventory control point (ICP) within each Service or consolidating into joint ICPs. Application: Supply and Storage
58. Expand Guard and Reserve force integration with the Active force. Examples:
 - (1) Blended organizations.
 - (2) Reserve Associate, Guard Associate, and Active Associate
 - (3) Sponsored Reserve.
 - (4) Blending of Guard units across state lines to unify mission areas, reduce infrastructure, and improve readiness.Application: MILDEPs
59. Consolidate National Capital Region (NCR) intelligence community activities now occupying small government facilities and privately owned leased space to fewer, secure DoD-owned locations in the region. Application: Intel
60. Collocate Guard and Reserve units at active bases or consolidate the Guard and Reserve units that are located in close proximity to one another at one location if practical, i.e., joint use facilities. Application: MILDEPs
61. Consolidate the Army’s five separate Active Component recruit training sites and the Marine Corps’ two Active Component recruit training sites into one recruit training installation each. Source: Education and Training; Application: Army & Marine Corps
62. Privatize Household Goods and Personal Property Shipping function. Source: BENS; Application: Supply and Storage, MILDEPs

63. Privatize long-haul communications in the Defense Information Systems Agency (DISA). Source: BENS; Application: H&SA
64. Collocate Joint Strike Fighter graduate flight training and maintenance training
65. Collocate Joint Strike Fighter graduate flight training.
66. Collocate Joint Strike Fighter maintenance training
67. Consolidate aviation assets of two or more Military Services on the same base. Application: MILDEPs
68. Collocate Service special operations units where they further reduce infrastructure requirements and enable improved training opportunities.
69. Collocate Service Professional Military Education (PME) schools at the intermediate and senior levels. Application: E&T
70. Consolidate/Collocate Service specific test pilot schools. Application: MILDEPs
71. Collocate ground and signals intelligence systems. Application: Intel & MILDEPs
72. Collocate ground and airborne intelligence systems. Application: Intel & MILDEPs
73. Consolidate pilot training and maintenance training for rotary wing and fixed wing aircraft using Executive Agency. Application: Education and Training.
74. Each Military Department and Joint Cross Service Group will look at the effects of either reducing their functions by 20%, 30%, and 40% from the current baseline, or reducing excess capacity by an additional 5% beyond the analyzed excess capacity, whichever is greater. The objective of this analysis is to uncover ways in which additional gains could be achieved, rather reasons why they could not. Source: DON; Application: MILDEPs and JCSGs
75. Establish a “space test range” for satellite ground testing, threat assessment, and tactics development. Elements of the “range” should be networked using a minimum number of ground facilities to virtually simulate on-orbit operations. Source and Application: Air Force
76. Establish an Army Joint Network Science Technology and Experimentation Center to fully realize the transformational capabilities of interdependent Joint Network Centric Warfare. Source: Army; Application: Technical
77. Air Force use optimum flying squadron sizing and organizational constructs to disproportionately increase combat capability and transform the capability of its AEFs. Source and Application: Air Force

H. CAPACITY ANALYSIS

H.1 INTRODUCTION

Capacity analysis focuses on the availability of Army infrastructure (supply) and Army unit requirements (demand). Results provide an inventory of assets as well as a review of shortages and excess based on *current* stationing and requirements. These shortages and excesses provide the analyst insights for potential Stationing Actions (SAs) by illustrating opportunities for improved efficiency. If results show excess, and the Army has a requirement that could use the excess, then this situation may merit a scenario analysis. The basic concept of Capacity analysis is to station units on installations to achieve efficiencies through improved utilization of excess capacity. The capacity results are one of several inputs that influence SAs.

As illustrated in the following figure, Capacity analysis, when combined with the Military Value Analysis (MVA), helps in installation prioritization. MVA evaluates installations and ranks them from best to worst from a MV perspective. All installations have value, but the installations with the lowest MV should be examined first for a potential BRAC action. Since Capacity analysis determines the nature of excess capacity, it can locate a higher-valued installation, or combination of higher-valued installations, with capacity available to accommodate units from a lower-valued installation, or installations.

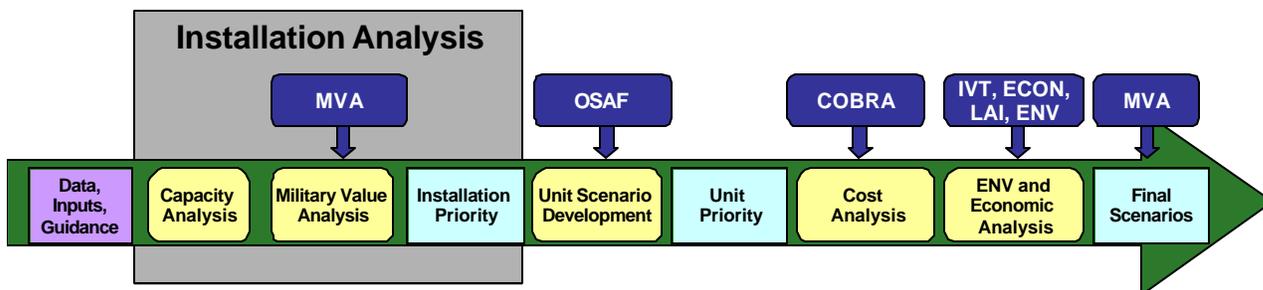


Figure H-1 Capacity Analysis

H.1.1 History

GAO’s review of DoD’s January 1998 Congressional BRAC report¹ provides a relative estimate of selected capacity, using 1989 force structure and projections for 2003. The report to the Congress concluded that DoD continued to support an estimated 23 percent excess capacity in 2003. DoD calculated this excess capacity by comparing capacity relative to an estimated force structure for 2003 with capacity relative to the force structure in 1989. Estimates were made for DoD as a whole, for each of the Military Departments, and for various categories of installations within each Service.

¹ Military Bases: Review of DOD’s 1998 Report on Base Realignment and Closure, (GAO/NSIAD-99-17, Nov. 13, 1998)

In March 2004, as required by law,² DoD revised the 2004 Capacity Report³ using the same metrics as the prior Report and the 2003 force structure to make projections for 2009. As in 1998, the 2004 Report did not use certified data. The Report estimated that DoD possessed an aggregate 24 percent excess installation capacity, which is 1 percent higher than the prior Report. When expressing excess in terms of individual Military Departments, DLA showed the greatest reduction in excess since 1998, followed by the Navy and the Air Force. The Army, however, was reported with the most excess capacity—29 percent.

Department	Estimated Percentage of Excess Capacity (above 1989 baseline)
Army	29%
Navy	21%
Air Force	24%
DLA	17%
Total	24%

Table H-1. Estimated Percentage of Excess Capacity

The estimated excess capacity illustrated in this table would be further refined after completing detailed capacity analysis with certified data.

Based upon the Department’s experience in executing the BRAC decisions of 1993 and 1995, DoD concludes that each Military Department will generate annual net savings no later than 2011.

H.1.2 DoD’s Approach

The DoD’s approach for calculating excess capacity was based on a simple ratio methodology to provide a macro view of capacity. DoD used this report to show the Congress a general trend from 1989 to 2009.

GAO’s review of DoD’s report states that by using 1989 as a baseline, DoD’s approach did not take into account excesses or shortages that may have occurred in 1989. Therefore, the actual amount may have been understated in some instances and overstated in other instances. As an example, GAO’s report⁴ points out that DoD’s estimates show that excess

² Section 2912 of the Defense Base Closure and Realignment Act of 1990, as amended through the National Defense Authorization Act for Fiscal Year 2003.

³ DoD’s 2004 Report on the Need for a Base Realignment and Closure Round, March 2004.

⁴ Military Base Closures: Assessment of DOD’s 2004 Report on the Need for a Base Realignment and Closure Round, (GAO-04-760, May 17, 2004).

capacity did not increase between 1989 and 2009 for Army depots; hence the depots show no excess capacity in 2009. However, previous GAO audits to which DoD concurred, shows that the Army depot system continued to support excess capacity after implementing the previous BRAC recommendations.

Additionally, this approach has some limitations and cannot provide the level of accuracy needed for BRAC 05. For example, capacity for some functions was measured differently by each Service. The Army and the Air Force measured capacity for RDT&E facilities in terms of physical total square feet of space, while the Navy measured its capacity for these facilities in terms of work years. In addition, the measurements could not consider the changes in the technologies in 2009 vs. 1989 and their implications on how much facility/land is required to conduct Army missions. The variety of metrics and differences across the military Departments makes it difficult to be precise when trying to project a total amount of excess capacity across DOD.

H.1.3 Joint Cross Service Groups Capacity Analysis Reports

The Joint Cross Service Groups⁵ are also required to submit capacity analysis reports to the Infrastructure Steering Group (ISG). The JCSG capacity reports describe the general process for developing capacity data call questions that will be answered by commanders of each DOD installation. In addition, the JCSG capacity reports focused on assessing current assets, current requirements, and surge requirements in their respective functional areas:

- Industrial: aviation depot maintenance, non-aviation maintenance and logistics, ammunition production and disposal, intermediate maintenance, shipyards overhaul and repair
- Supply and Storage: munitions storage, inventory supply and storage, DLA activities
- Technical: laboratories, test & evaluation, T&E ranges, research centers, warfare/engineering centers
- Education & Training: initial entry skill education, advanced skill training, professional education, graduate degree education, professional development, undergraduate flight training, joint program training
- Headquarters and Support Activities: location of HQs and C&C functions, location of operational support functions, armories, NCR
- Medical
- Intelligence

⁵ They are 7 Joint Cross Service Groups: Industrial, Supply and Storage, Technical, Education & Training, Headquarters and Support Activities, Medical, and Intelligence - Each reports to the DoD Infrastructure Steering Group (ISG) chaired by the Under Secretary of Defense for Acquisition, Logistics, and Technologies.

H.2 THE TABS CAPACITY ANALYSIS PROCESS

Capacity analysis is the first part of the larger TABS analytical process (illustrated in Figure H-1). Analysis begins with a data call. Once the data has been collected, analysts determine the inventory of current assets (supply), current and surge requirements (demand), and calculate excesses and shortages. TABS will determine potential installation capacity for chosen unit types based on unit footprints and use this information to calculate the additional units and/or missions an installation can potentially absorb.

H.2.1 Definition

TABS approaches capacity analyses in two ways:

- **Physical Capacity:** A measure of an installation's capacity in terms of essential facilities, also considered static in nature.
- **Operational Capacity:** A measure of the Army's capacity in terms of its ability to support unit requirements (e.g. ability to support a BDE's facilities, ranges, and land requirements), also considered dynamic in nature.

H.2.2 Responsibilities:

Capacity Analysis uses certified capacity data. TABS sent requests to 87 Army installations in January 2004 and completed collection of physical and operational capacity data in the Summer of 2004. Certified data is compared to requirements e.g. RPLANS, Army Training Circular (TC 25-1) and an inventory of current capacity (for data call elements), current and surge requirements, and excesses/shortages will be determined. Furthermore, TABS considers potential installation capacity for chosen unit types and the maximum capacity that the additional units and/or missions an installation can absorb. The final report:

- Provides TABS and the Army a summary of excesses and shortages; which establishes potential for improving capacity utilization.
- Identifies possible locations for consolidation/realignment based on excesses and shortages.
- Combines capacity data with MVA results to provide additional insights for consolidations and realignments on high value installations.
- Provides a starting point for installation level analysis.

H.2.3 Approach

TABS capacity analysis provides the Army with an estimate of capacity utilization at each Army installation and a summary of excesses and shortages Army-wide. When combined with MVA, TABS analysts will use the capacity analysis to determine an installation's ability to accommodate current units and then use this information to determine the additional units and/or mission functions that a higher valued Army installation can absorb. The TABS capacity analysis includes three interrelated phases or levels as shown below.

Type	Level	Description
Physical	Level I	Considers an inventory of Army-owned assets (buildings, leaseholds, and land) available for use by DoD units and activities.
Physical	Level II	Calculates excesses and shortages of assets by comparing peacetime operational and surge requirements to the inventory of assets based on current stationing assignments.
Operational	Level III	Documents the potential capacity of an installation to support additional units and activities.

Table H-2. Types and Levels of Capacity Analysis

The first and second levels of capacity analysis are focused on physical capacity of installations in terms of essential facilities (Level I) and the extent to which these facilities are currently being utilized (Level II). The third level of capacity considers an installation’s potential capacity to support additional specific unit requirements in support of military missions and readiness. The completed capacity analysis provides TABS with an initial means to start developing SAs for relocating units and activities from lower valued installations to better utilize existing excess or under-utilized infrastructure, to include available buildable acreage at higher MV installations. In some instances, the analysis may identify potential efficiencies that could be achieved through the rehabilitation of existing buildings, construction of new facilities, and acquisition of additional land.

H.2.3.1 Level I Analysis

The first level of capacity analysis provides the Army with an inventory listing of assets available on Army installations and within leased facilities to support Army units and activities. TABS analysts will select specific types of capacity information from certified data sources and record this information in spreadsheet format by selected units of measure. The completed Level I listings will document, in a spreadsheet format, the type of Army owned facilities and leaseholds currently available to support Army requirements. Inventories will be developed for each CONUS-based Army installation and summarized for the Army in total.

H.2.3.2 Level II Analysis

The second level of capacity analysis provides the Army with a record of specific excesses and shortages of key facilities and operational training areas based on current units and activities assigned to each CONUS-based installation. Level II capacity will compare available assets documented in the level I analysis to current operational and surge requirements. Excesses and shortages calculations compare current capacity to current requirements. Capacity measures in excess of current and surge requirements are considered

excess and potentially available for units transferring from lower valued installations. Conversely when capacity is less than current and surge requirements, the analyst may want to determine how the shortage affects the selected units' ability to satisfy mission readiness and possibly consider developing a scenario to relocate selected units to high valued installations with known excess capacity.

H.2.3.3 Level III Analysis

The third level of capacity analysis provides the Army with additional insight into an installation's capability to support current and future operational requirements. When combined with MV analysis, Level III analyses provide the analyst with a basis and starting point for recommending alternative stationing scenarios. The Level III analyses will identify the current capability of installations to support specific types and numbers of selected unit types and the expanded capability to support additional units, potentially with additional resources (e.g., with additional construction or acquisition of additional land).

A Level III capacity analysis begins with the development of footprints for selected types of military units and supporting activities. The footprints document the typical operational requirements in facilities and training lands for selected types of Army units such as Army brigades, units of action, small training schools, large training schools, and administrative headquarters facilities. By comparing the selected footprint to an installation's inventory of assets, the analyst can simulate the extent to which an installation could possibly accommodate additional units. The footprints identify the maximum support for selected unit types by using existing facilities on the installation to satisfy the selected requirement.

Further analysis will simulate the expanded capability that could be achieved to support additional units and functionality, but with additional resources (e.g., outlays for new construction and land acquisition). More importantly, the expanded analysis highlights the binding constraint(s) that preclude an installation from absorbing additional missions and units. For example, the analyst may find that an installation could support additional units but the current inventory of assets shows a shortage of authorized training lands and that some potentially available facilities either do not meet standard specifications or may not be located within a contiguous area. In such a situation, the analyst may want to consider a scenario to determine the feasibility of moving some units off post to create room for the relocated units and/or building new facilities to include the possibility of acquiring more land depending on the amount of urbanization surrounding the community.

H.2.3.4 Surge Analysis

Surge capacity provides the Army an ability to support mobilization and unknown future missions. TABS considers surge within MV Portfolio capacities by ensuring Portfolio constraints include a surge potential. TBS also reviews surge at facility level; reports in the capacity results report. Lastly, surge capacity has multiple sources including internal excess, contracting, leasing, and procurement. Within BRAC, TABS is primarily concerned with difficult to reconstitute assets and the need to maintain capacity of such assets due to surge requirements.

H.3 SUMMARY

TABS capacity analysis provides the Army with an estimate of capacity utilization at each Army installation and a summary of excesses and shortages Army-wide. To complete the capacity analysis, TABS uses three interrelated phases or levels to document estimated capacity. Its result will provide TABS with an initial means to start developing stationing actions for relocating units and activities to better utilize existing excess or under-utilized infrastructure.

TABS provides capacity analysis results in a separate Capacity Report; Appendix A of the Army's BRAC 2005 Report.

I. MILITARY VALUE ASSESSMENT

1.1 Introduction

During BRAC 2005 analysis, the Army employs military judgment built upon a quantitative analytical foundation to ensure that Military Value is the primary consideration in making closure and realignment recommendations. In exercising the military judgment component of Military Value, the BRAC deliberative process will develop and approve overarching principles from which specific imperatives flow. These principles and considerations are discussed in TAF appendices D and F. This appendix concerns the quantitative analytical foundation.

The BRAC law, Section 2913(b)(1-5), specifies that “the selection criteria prepared by the Secretary [of Defense] shall ensure that Military Value is the primary consideration in the making of recommendations for closure or realignment.” The Commission may change a recommendation only if it determines “that the Secretary [of Defense] deviated substantially from the force-structure plan and final criteria in making recommendations” (Section 2903(d)(2)(B)).

Military Value concepts lead from the DoD Selection Criteria to scenario development, by way of capabilities, objectives, and Military Value attributes. The criteria enable the Army to develop *capabilities*, which are the key capabilities that the future installation portfolio will provide the Current and Future Armies as part of the Joint Team. *Objectives* are developed by the Army and are used for transforming the current portfolio of Army installations into a portfolio that best supports the Joint Team. The Army then uses *Military Value attributes*, which are installation characteristics that permit us to score how well an installation can help achieve the BRAC Objectives. Using the objectives and attributes, the Army performs Military Value assessment.

1.2 Approach

Along with capacity analysis, Military Value assessment is part of Installation Level analysis—the starting point for scenario development. This level of analysis provides a prioritization of installations for unit/scenario analysis, based on capacity, Military Value, and team discussion. The key inputs to Military Value assessment are capacity analysis, function attributes, installation data, BRAC Objectives, and priority (weights).

TABS briefed all MV assessment results to the BRAC Senior Review Group (SRG). The BRAC SRG provided specific guidance on changes or enhancements to the results and approved TABS requests to continue with the analysis, given the MV baseline.

1.3 Military Value Assessment Details

At every stage in the TABS Analytical Framework (TAF), TABS is working at some level with Military Value (MV) analysis. MV analysis consists of the Military Value Analysis (MVA), two modules (IEM and ODEM), four models (MVI, MVP, OVM, and OPM), and four distinct products (Installation Evaluation, Portfolio Determination, Scenario Value, and Option Evaluation).

The Installation Evaluation Module (IEM) results in the MV of installations and a portfolio of BRAC installations that satisfies Army requirements. The Option Development and Evaluation Module (ODEM) uses the IEM and other model results (e.g., COBRA) to determine different combinations of Army scenarios to package into Options.

Military Value Analysis (MVA)

Module	IEM (Installation Evaluation Module)		Scenario Analysis	ODEM (Option Development and Evaluation Module)	
Models	MVI (MV- Installations)	MVP (MV-Portfolio)		OVM (Option Value Model)	OPM (Option Portfolio Model)
Products	Installation Evaluation	Portfolio Determination		Scenario Value	Option Evaluation

Figure 1. MVA Modules

1.3.1 IEM

The IEM, as shown in Figure 2, includes the Military Value of Installations (MVI) and Military Value Portfolio (MVP) models, which provide a starting point for installation-level analysis (e.g., the installations to focus stationing efforts) and unit-level analysis (e.g., improved locations for specific units).

1.3.1.1 MVI

The MVI model develops a 1-to-97 ranking of each installation’s overall MV (called the Installation Assessment in BRAC 95). As in BRAC 95, MVI for BRAC 2005 uses Multiple Objective Decision Analysis (MODA), the most appropriate technique for defining value and analyzing alternatives involving competing objectives. Unlike BRAC 95, however, the 2005 MV uses a capability approach instead of an installation-category approach. This allows the Army to evaluate all installations in a single group using one model. Numerous sources led to the development of capabilities and capacities, which in turn helped TABS develop Army BRAC Objectives, MVI attributes (installation characteristics), and MVI priorities (weighting).

Once developed, the MVI remains constant throughout BRAC.

1.3.1.2 MVP

The MVP is based on the MVI of Army installations. Given a future Army force structure and Army requirements (e.g., total maneuver space required), MVP uses an optimization model to determine the number of installations within the final Army Portfolio by maximizing installation Military Value subject to a set of capacity

constraints. The BRAC 95 team conducted similar analysis, but used more of a qualitative approach.

Sensitivity analysis determines the portfolio of installations that provides the greatest future stationing flexibility. Flexibility is defined as the Army’s ability to absorb additional units while still meeting the unit’s requirements and satisfying potential surge requirements.

MVI and MVP components are described in Table 1.

MVI	MILITARY VALUE OF INSTALLATIONS
Purpose	Determines the MV of an installation based on 40 attributes ¹ .
Products	- Installation MV ranking - A ranking of installations from 1 to 97
Use	- Provides input for MV-Portfolio (MVP) analysis - Assists with scenario analysis
Method	Multiple Objective Decision Analysis (MODA)
Description	The MVI is the first step in determining the MV of BRAC-related actions or products. The MVI provides the installation MV and is derived from 40 attributes. MVI does not consider unit stationing nor does it consider costs of implementation actions or requirements.
MVP	MILITARY VALUE PORTFOLIO
Purpose	Determines the portfolio of installations that maximizes the MV of a portfolio or set of Army installations, subject to meeting a set of requirements.
Product	A portfolio, or set of installations (subset of the 97 installations)
Use	Provides TABS a starting point for installation and unit-level analysis. Installations not in the portfolio are the first installations under review for possible stationing actions.
Method	Optimization: MVP uses outputs from MVI and maximizes the MV of the portfolio of installations that the model recommends, subject to the needs of the Army.
Description	MVP provides a means to include requirements within MV analysis. The MVP uses MVI as an input to an optimization model as well as requirements, which are the basis for model constraints. The MVP is the MV of a set of installations, but still does not consider unit stationing and costs of implementation.

Table 1. IEM Component Descriptions

¹ The primary building block for MVI is the attribute. An attribute is an installation characteristic that helps the model distinguish installations from each other.

1.3.2 ODEM

The ODEM Module, described in Table 2, includes the OVM and OPM models, which provide products that illustrate the comparative Military Value of scenarios and maximize the MV of options subject to budget constraints.

1.3.2.1 OVM

The Military Value of Scenarios (OVM) is the first model of the ODEM module. OVM uses MODA to determine the overall Military Value of each scenario. The model uses MVI, unit stationing, and implementation costs as inputs. Similar to MVI, it produces a ranking, of scenarios from 1-to-n.

1.3.2.2 OPM

The Military Value of Options (OPM) model is the second model of ODEM, and the final stage in the MVA process. The model determines the set of scenarios that maximizes the MV of an option subject to a budget constraint. Using OPM, the Army can develop a set of options to use as a basis for candidate recommendations.

OVM	OPTION VALUE MODEL
Purpose	Determines the value of different scenarios. The scenarios are evaluated for their value relative to each other based on the installations involved within the scenario.
Product	A ranking of scenarios from 1 to n.
Use	- Provides input for OPM analysis - Assists with scenario prioritization
Method	MODA
Description	The TABS Group develops multiple scenarios based on MVI, MVP, capacity analysis, and other analyses. Once the scenario is built, overall value with OVM is determined. OVM includes the MVI inputs (MVI never changes within analyses), but we introduce unit stationing and implementation costs.
OPM	OPTION PORTFOLIO MODEL
Purpose	Determines the set of scenarios that maximizes the value of an option subject to meeting a budget constraint.
Product	An option that consists of multiple scenarios.
Use	Provides a set of options that TABS can use as a basis for recommendations.
Method	Optimization: OPM uses outputs from OVM and maximizes the value of a set of scenarios subject to implementation cost. The options differ depending on the additional constraints applied to the model (e.g., constraints can force particular scenarios into the final option).
Description	TABS will combine scenarios into options and needs a way to determine the value of each option. OPM uses the inputs from OVM and determines the value of a set of scenarios subject to a budget constraint. OPM allows TABS to maximize value while ensuring the option’s scenarios can be funded. Funding constraints are notional, but provide a means to distinguish between possible options.

Table 2. ODEM Component Descriptions

1.4 Military Value and the Analyst

The analyst works with Military Value during every stage of the analysis. MVI and MVP occur during installation-level analysis and provide starting points for scenario development. OVM is determined during scenario analysis, and OPM occurs when scenarios are combined into options, which become the bases for Army BRAC recommendations.

Prior to scenario development and analysis, the analyst uses the IEM, along with other analyses, to produce starting points. This stage of BRAC analysis and MV’s role is illustrated in Figure 2 below.

Module	IEM (Installation Evaluation Module)		S C E N A R I O
Models	MVI (MV-Installations)	MVP (MV-Portfolio)	
Products	Installation Evaluation	Portfolio Determination	
Other Analyses			A N A L Y S I S*
Team Discussions	Capacity Analysis	JCSG	
	OSAF	JAST	

Figure 2. MVA Prior to Scenario Development

Along with Military Value, the analyst takes advantage of team discussions, capacity analysis, JCSG work, OSAF results, and JAST coordination. All of these analyses feed scenario development as shown in Figure 2.

1.5 Summary

BRAC law designates Military Value as the primary consideration for making BRAC closure and realignment recommendations. The Army incorporated this statute, and Military Value is included, in each step of the Army’s analytical framework. The Military Value Analysis (MVA) comprises the Army’s MV analysis. It includes two modules—IEM and ODEM, and four models—MVI, MVP, OVM, OPM. MVI ranks installations based on Military Value from 1-to-97. MVP provides the Army’s portfolio, using that list of installations based on MVI scores. OVM determines the MV of scenarios, and OPM maximizes MV of an option subject to meeting a budget constraint. As the primary consideration based on legislation, MV is the starting point for scenario development; analysts use the MVP product to initiate the development and study of potential stationing actions and scenarios. And, since MVP incorporates MVI results, which are based on MV attributes, objectives, and capabilities, which in turn are based on

the DoD selection criteria, the MV process links the analytical foundation to scenario development.

J. OPTIMAL STATIONING OF ARMY FORCES (OSAF)

J.1 THE BRAC PROCESS AND OSAF

TABS uses the Optimal Stationing of Army Forces (OSAF) model as a means to examine a complex stationing problem in a dynamic fashion, providing a powerful source of insights to TABS analysts. OSAF has its primary role during the scenario-development step of the overall Army BRAC process (depicted in Figure 1). OSAF provides insights to stationing problems by examining all possible solutions (that are feasible within model constraints) and provides the optimal or “best” solution at a given level of funding. OSAF augments the scenario process by providing the analyst a starting point for further analysis; the model supports all other analytical efforts and *does not replace* the need for other analyses.

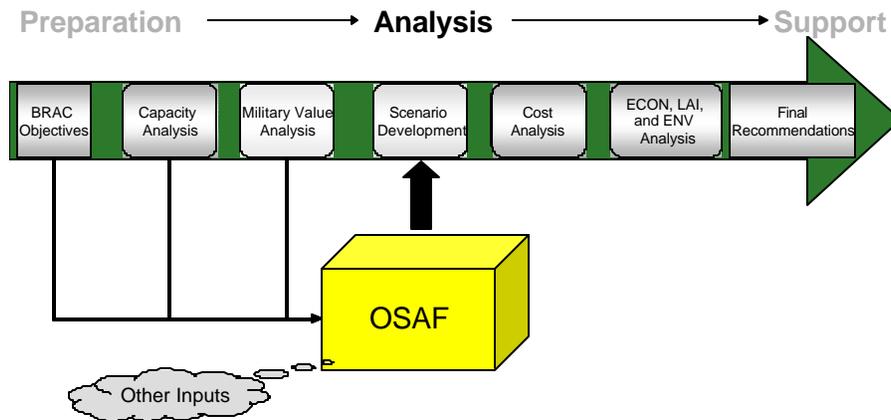


Figure 1. OSAF in BRAC Analysis

As illustrated above, BRAC Objectives, Capacity Analysis, and Military Value Analysis all influence OSAF through data inputs and provide possible constraints on the stationing solution. Each of the three analyses were complete prior to OSAF analysis. OSAF considers as many of the military value and capacity metrics as possible within its basic structure. Possible constraints are specifically defined within Army considerations, Design Constraints, and Transformational Options, all of which provide some form of stationing restriction on the OSAF solution, thus the term “constraints” (Figure 2).

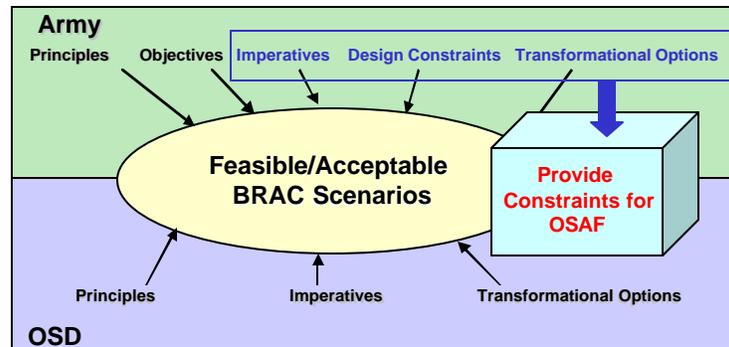


Figure 2. OSAF Inputs

J.1.1 Design Constraints

A Design Constraint is a required outcome that TABS must satisfy within a BRAC action unless it is infeasible to do so. For example, if an Army Brigade requires a set number of maneuver acres (design constraint), then the modelers can depict this requirement as a stationing capability that the unit’s stationing assignment must satisfy. Such requirements are placed into the model as constraints on the solution, where each solution identifies the total maneuver requirement that the stationing cannot satisfy, and TABS can adjust the total allowed shortfall to ensure the model finds a solution. Some constraints can not be broken, for example limiting locations for units where TABS or a MACOM has identified geographic requirements that must be satisfied (e.g., port requirements).

J.1.2 Considerations

Considerations inform the BRAC process and provide a basis for stationing restrictions and requirements that the final BRAC Scenarios must consider; therefore, the Army uses considerations within OSAF to provide constraints, but in some solutions these constraints may not be met.

J.1.3 Transformational Options

Transformational Options can also impose constraints within OSAF, but such constraints are proposal specific and may move in and out of the model as needed to test a particular Option. For example, if a Transformational Option requires a specific stationing action (SA), the modelers would force the model to assign a unit to a particular installation to see the impact of the SA.

J.2 ANALYSIS

The following figure describes how TABS uses OSAF to help generate scenarios for consideration in the BRAC process. The Center for Army Analysis (CAA) conducts OSAF analysis, TABS provides all inputs and reviews outputs for further analysis. In this document, the OSAF “Team” refers to CAA and TABS analysts as they work together to complete analysis.

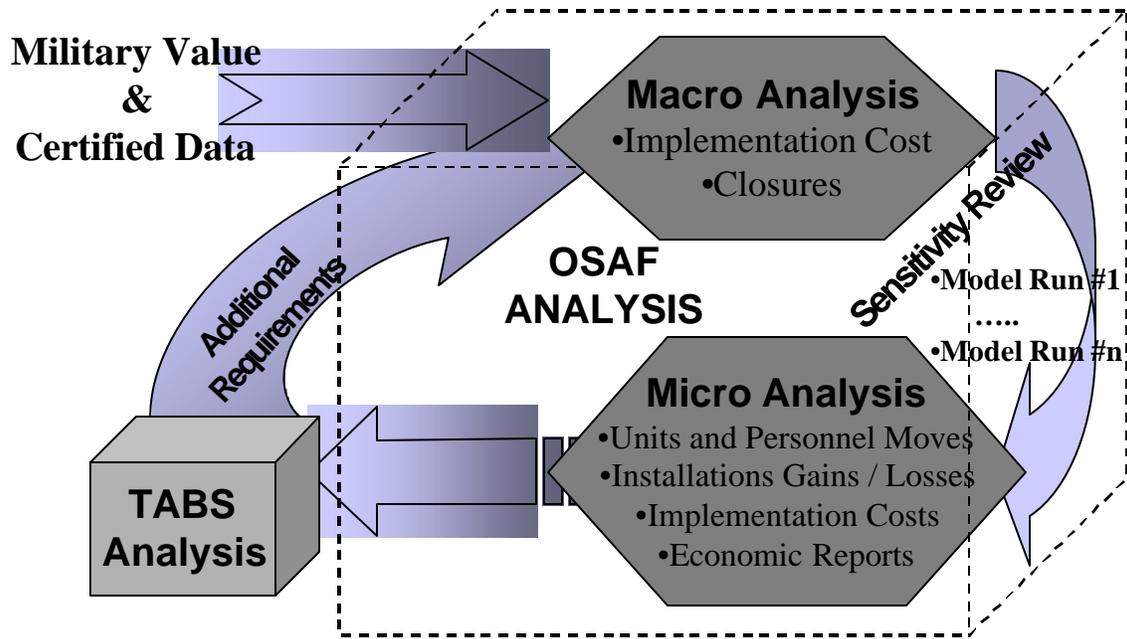


Figure 3. The Role of OSFA

OSAF analysis includes five major steps. First, during the Model setup, TABS certifies all data used in OSFA and CAA incorporates the data and any known stationing restrictions into the model. TABS provides final constraints, but MACOMS and other sources (explained above) provide TABS the means to develop quality constraints. For example, if TABS knows of a “unique” function that the Army has a requirement for, then a constraint can be used to force an installation to remain open or move a specific unit; CAA models all such constraints.

CAA conducts the next three major steps:

1. A macro analysis tests for the sensitivity of closures of installations to a change in implementation costs. The macro analysis offers a way to generate multiple scenarios and screen scenarios that do not meet minimum requirements, e.g., scenarios that do not pass Military Value (MV) or Net Present Value (NPV) thresholds.
 - Within the macro analysis, CAA conducts what TABS refers to as their “Baseline analysis”. The Baseline stations the September 2003 ASIP force structure to determine current excess and shortages. From this Baseline, TABS can then determine the aggregate impact of BRAC actions.
 - Also during this phase of the analysis, CAA examines stationing solutions at different levels of implementation costs. This in effect constrains what stationing actions can take place by limiting the implementation dollars available to pay for the actions. If the solution moves one unit (one SA),

then we would call this type of analysis “static” in the sense that all other units are constrained to remain in place. A “dynamic” analysis occurs when all units are allowed to move from their current locations (within the limitations imposed by the model constraints).

2. After the macro analysis, CAA completes a sensitivity analysis. The multiple solutions from the macro analysis are analyzed to determine the solution that offers the greatest NPV savings, provide the smallest shortfall in maneuver lands, or meets other possible goals (e.g., square footage shut down). CAA reports these results and TABS determines which solutions need to be examined in more detail. CAA generates sensitivity review reports to assist TABS in examining the model results.
3. The third step of the OSAF analysis that CAA conducts, is a *microanalysis* that results in detailed reports on the movement of units, costs, and impacts on installations within the vicinity of the solution for the scenario chosen after the sensitivity analysis.

A key aspect of the analysis is the analyst’s review of the solution. In the final step of the process, each TABS analyst reviews selected OSAF results for additional constraints that were not modeled and more importantly, applies military judgment as to the feasibility of the OSAF solution. The analyst reviews each stationing action for required actions and provides feedback to the OSAF Team for further action. If the model changes, the process starts over with the macro analysis, but once the model is stable, TABS will determine a set of final scenarios and place them in the Scenario Pool for future evaluation.

J.3 THE MODEL – INTRODUCTION¹

OSAF is an optimization-based decision-support model that TABS will use to inform decision-makers during the 2005 BRAC process.

As weapon systems, missions, and operations change over time, the Army frequently plans adjustments to the stationing of its force structure much as a large corporation plans changes to its plant infrastructure as product demand and technology change over time. Optimization models have long played a key role in developing these corporate plans. (For example, see Brown et al [2001] and their references.)

The Army has long used integer linear programming to help make stationing decisions, with the Naval Postgraduate School (NPS) and the Center for Army Analysis (CAA) playing a significant role in its use. Dell et al [1994] and Loerch et al [1996] describe some early work. The NPS theses by Gezer [2001] and Bayram [2002] describe integer linear programs to help the Army with stationing and infrastructure consolidation. Tarantino [2002] reports on a recent OSAF application. Dell [1998] and recent NPS theses by Oremis [2000] and Ardic [2001] describe integer linear programs to help the Army implement BRAC decisions.

¹ Part of this section of the appendix was taken from Dell and Tarantino, 2003.

For BRAC, we are stationing a force structure consisting of more than 600 major units at 88 installations and training areas, as well as 11 major leased facilities (along with a number of other Service installations). We also analyze the National Guard and Reserve Component requirements using OSAF in conjunction with the Incorporating Training of Reserves for OSAF (TARC) model.

OSAF prescribes an optimal Army stationing plan for a given force structure, set of installations, available implementation dollars, and stationing restrictions such as: “the National Training Center is fixed at Fort Irwin” and “the Old Guard is fixed at Fort Myer.” Each stationing plan must satisfy many unit requirements (for example, availability of buildings and ranges necessary to train a unit) and is evaluated with a set of quantitative and qualitative metrics. Interviews with Army leadership, BRAC Objectives, Imperatives, Design Constraints, and MACOM inputs help to determine which stationing restrictions, unit requirements, and quantitative metrics to include, and which comparisons are better left for expert judgment; in making these decisions, we frequently balanced tradeoffs between detail and tractability.

J.4 OSAF INPUTS

OSAF accounts for the building types and ranges that are required by units stationed at an installation. The Army divides its building types and ranges into several hundred facility-category groups (FCGs), which are inventoried in the Army Real Property Planning and Analysis System. OSAF includes those building types that the Army also includes within COBRA.

A primary OSAF input is the major unit. To ensure that multiple solutions are computationally tractable, approximately 6,000 units found on CONUS BRAC installations are aggregated into approximately 600 major units. A major unit consists of an aggregation of units that must be stationed at the same location. TABS, CAA, and the MACOMS developed the major unit listing to ensure BRAC stationing results considered unit relationships, especially dependencies.

The Installation Status Report provides a quality rating (green for good, yellow for fair, and red for poor) for each square foot of each FCG at each installation. OSAF combines these groups into “green” and “other” and ensures that any unit moved to a new installation is given green-rated facilities or new construction. If only other-rated facilities are available for a moved unit, a cost to upgrade existing facilities to green-rated is applied in the model. OSAF does not upgrade facilities for units whose stationing does not change (units that do not move) and assumes that no green-rated facilities are evacuated by units leaving an installation unless all other-rated facilities are evacuated.

OSAF uses maneuver and range-day requirements from the Installation Training Capacity/Army Range Requirements Model (ITC/ARRM) or from the Real Property Planning and Analysis System (RPLANS). Most OSAF model instances encompass the eighteen range types with the most importance in the ITC. Range requirements are expressed in range-days and maneuver land requirements are expressed in kilometer-days. OSAF usually restricts the deviation between the required and available training assets, and in so doing it ensures that moving units do not increase training asset

shortfalls. A subset of units can train at installations to which they are not assigned, proximity allowing.

OSAF typically minimizes the 20-year NPV of stationing a given force structure. Consistent with prior BRAC stationing analyses, OSAF considers both recurring and one-time costs. Recurring costs are further divided into fixed and variable costs.

Fixed costs occur regardless of the number of soldiers on an installation and include certain operating costs for garrison activities (e.g., fire protection, grounds maintenance) and minimum community facilities (e.g., fitness centers and medical facilities). Cost factors and relationships are obtained from standard Army sources such as the Cost of Base Realignment Actions (COBRA) model and the Installation Status Report (ISR).

Every unit stationed on an installation generates a variable cost for installation operations. OSAF implements variable costs as a cost per soldier or civilian assigned to the installation. OSAF uses variable costs based on five cost categories (Base Operating Support; Sustainment Repair and Modernization; Medical; Locality Pay; and Housing Operations and Allowances)

Stationing actions that include the movement of a unit or closure of an installation incur one-time costs in military construction (MILCON), transportation, and program management. If an installation that receives a new unit does not have the required green-rated facilities or ranges available, then a one-time MILCON cost is assessed for new construction or an upgrade from other-rated facilities, if such facilities are available.

All unit movements also incur a one-time transportation cost that includes the movement of civilians, equipment, military families, and the military unit.

For BRAC analysis, CAA modified OSAF to include military value (MV). The set of stationing actions considered possible within an OSAF scenario is constrained by the allowed NPV (or by constraining MV) for the given scenario and all other stationing constraints.

J.5 OSAF OUTPUTS

OSAF creates an optimal stationing plan that reflects unit requirements, stationing restrictions, MV, and costs. But stationing a force structure is a complex problem that should be evaluated using many criteria, not all of which can be incorporated in the model. Every optimized plan automatically satisfies the myriad details expressed in the underlying constraints, and every proposed solution is the best that can be achieved under the circumstances. Nonetheless, the best solution may miss key real world considerations; therefore, TABS uses OSAF scenarios as a starting point for further analysis.

J.6 OSAF LIMITATIONS

Much research and manpower have been devoted to developing OSAF. Despite the substantial effort, the model is not perfect, and TABS is mindful of limitations imposed by certain intangibles:

- Economic assistance. OSAF does not consider the cost of assisting local communities with overcoming realignment impacts.

- Environmental costs. OSAF does not account for environmental remediation costs.
- Environmental issues other than cost. OSAF does not consider any environmental factors that can impact a stationing decision, e.g., urban encroachment that can complicate new construction.
- Industrial base – OSAF does not model the industrial base to the same level of fidelity as it does other parts of the Army. TABS relies on Military Value and Capacity Analysis to generate industrial base proposals.
- Joint Installations – OSAF has the ability to model Joint Installations if the data for those installations is available.

Such issues are carefully investigated by TABS analysts in other parts of the TABS analytical process.

K. COST OF BASE REALIGNMENT ACTION (COBRA)

K.1 COST ANALYSIS

The requirement for the development of a cost analysis model stems from both BRAC law and the DoD Selection Criteria. BRAC law requires a cost analysis for each recommended scenario, including the Net Present Value (NPV) and Payback Year (PB). Criterion #5 of the selection criteria states that DoD, in selecting military installations for closure or realignment, must consider the extent and timing of potential costs and savings, including the number of years until the savings exceed the costs. COBRA is the DoD-approved tool that analysts from every Service must use to address the considerations in Criterion #5. The following figure illustrates where COBRA fits into the TABS analytical process.

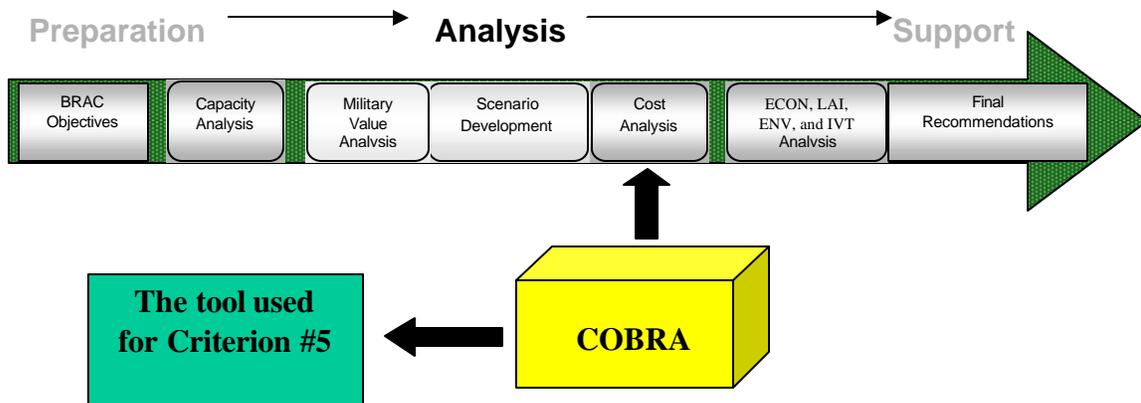


Figure 1. TABS Process

Analysts must perform capacity analysis, military value analysis, and scenario development before using COBRA. This analysis provides the necessary inputs to run the COBRA model. For instance, analysts use the Real Property Planning and Analysis System (RPLANS) to assist with determining the military construction (MILCON) requirements for a stationing action based on the capacity of the gaining installation. To determine personnel requirements for SAs, analysts use the Army Stationing and Installation Plan (ASIP) model along with major-unit lists (lists developed by TABS with the cooperation of the MACOMs that illustrate the brigade-sized units that would move as a group within a SA).

TABS developed tools to determine the need for community, utility, and IT facility requirements.

- Community Facilities

TABS can determine if an increase in community facilities is required based on an increase in installation population. This increase is not determined by RPLANS but is instead based on a regression that estimates facility quantity on an

installation with a similar population. Using this mathematical tool, the amount of facilities required is determined by the size of the installation.

- Utility Requirements

FAC codes 8111 through 8452 are utility codes. In RPLANS these facilities are assets equals allowances, which means whatever quantity and type of FAC on hand is what the installation requires, therefore RPLANS assumes there is never any excess or shortage available, so facility requirements are based solely on the stationed unit's utility requirement. To counter this issue, TABS has developed a tool to determine the additional one-time cost associated with the added utility infrastructure required to support new MILCON. This tool's assumptions were certified by ACSIM.

- Information Technology (IT) Tool

When an installation has a significant increase in population, then upgrades to the IT infrastructure may be required to support new personnel. The G6 developed a tool that estimated the IT infrastructure update costs for a specific installation when presented with a population change.

To ensure proper information input, COBRA comes with a User's Manual, Algorithm Manual, Analyst Template, and User Checklist. These documents, included in every Proposal Book, will assist the COBRA user to properly input required COBRA information.

K.2 HISTORY

COBRA began in 1988 as a LOTUS spreadsheet program developed by the Air Force to cost its BRAC actions. The figure below illustrates the evolution of COBRA, first to a DOS program and then to a more user-friendly Windows-compatible program with input screens. The underlying mathematics behind the original and current versions of COBRA is spreadsheet-based algorithms.

COBRA Evolution

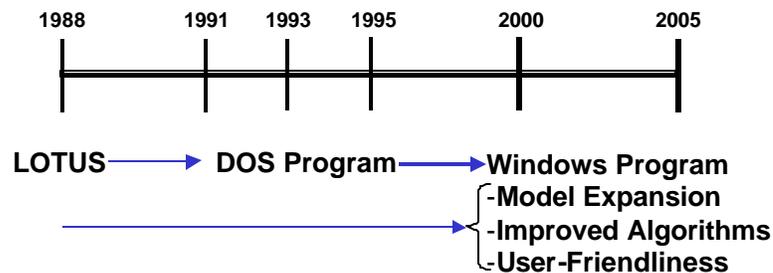


Figure 2. COBRA Evolution

For BRAC 2005, DoD sought to improve COBRA. The COBRA program needed updates because of changes in business practices (it was last used in BRAC 95) and changes in data elements. For instance, privatization was rare in 1995; now, contractors are providing services such as installation operations, utilities, and housing management.

OSD Policy Memo #1, which was issued on 16 April 2003, tasked the Army to be the lead Service to update and revise the COBRA model. The Joint Process Action Team (JPAT) was tasked to review, refine, and verify COBRA algorithms, operations, and functionality.

The JPAT consisted of representatives from each of the Services, the Joint Cross Service Groups (JCSGs), and OSD. The Army Audit Agency (AAA), OSD Inspector General, and the General Accounting Office (GAO) acted as JPAT observers.

K.3 THE MODEL

COBRA provides TABS analysts with a cost analysis, including NPV and PB, for each recommended scenario. The model can evaluate a scenario involving as many as 20 different installations. COBRA assumes BRAC actions occur during a six-year period, which is the legally required timeframe. It also assumes a follow-on steady-state cash flow through 20 years, including implementation years.

COBRA does not *formulate* a scenario. As Figure 3 outlines, COBRA is specifically designed to *compare* potential scenarios on a macro level (“macro level” signifies that the model does not go into budget-level cost elements but provides a satisfactory means of comparison). It evaluates courses of action for the realignment or closure of a set of installations (a “potential scenario”) from a cost perspective, based on inputs by TABS analysts. The ADDER feature enables the model to simultaneously run two or more scenarios for comparison. This feature is especially helpful with analysis of larger scenarios, when the analyst may exchange units to compare impacts of the unit-mix on resulting costs.

In a scenario, the analyst should identify the smallest subset of stationing actions (SAs) that are dependent, i.e., must be combined. This subset could be pulled from the overall scenario if needed.

- **Requirements**
 - Calculates scenario Return on Investment, Net Present Value (NPV), Payback Year (PB)
 - Uses data “readily” available to the Service
 - Complies with past BRAC law
- **Capabilities**
 - Calculates scenario costs and savings over 20 years
 - Comparative, macro-level tool; not an optimizing tool
 - Models all actions through 6 years and assumes steady-state cash flow through 20 years
 - Estimates costs and savings of stationing actions (that compose a scenario)
 - A tool for all DoD BRAC Components
 - Combine multiple scenarios into one major scenario

Figure 3. Current COBRA Model

COBRA is a window-based program where the analyst enters dynamic data into a series of data entry screens. Dynamic data is scenario-specific data, such as personnel, that is not automated by the model and must be entered by the analyst. The data entry screens are described below:

1. **GENERAL SCENARIO** – Defines the installations (as many as 20) being analyzed in the scenario. All installations included in the scenario must be identified on this screen and may be input in any order.
2. **DISTANCE TABLE** – Displays the distance between two installations. COBRA will do this automatically, but if an installation is not in the COBRA database, then the distances must be manually populated. This information is available on the database containing installation-specific data, which has the latitude and longitude of all installations for which data has been collected.
3. **MOVEMENT TABLE** - For each planned movement (realignment) between two installations, the analyst enters the total number of personnel, equipment, and vehicles moving in each of the (up to six) scenario years. A separate page will be presented for each pair of installations. **NOTE:** The analyst only enters the movement for the year(s) during which it occurs.
4. **INSTALLATION INFORMATION (STATIC)** - Each installation involved in the scenario will have an installation information screen, which displays the starting point (status quo) data from which potential BRAC changes are measured.

5. **INSTALLATION INFORMATION (DYNAMIC)** - This screen displays costs/savings outside of the model's functionality that are determined by the analyst and added into the COBRA NPV calculations. No COBRA algorithms are used on these values. Some of these costs/savings could be entered in several of the data cells on this screen. In such cases the analyst should consider whether the costs/savings are mission- or support-related. The primary goal of COBRA is to capture all known costs/savings incurred with a BRAC action.

6. **INSTALLATION INFORMATION (PERSONNEL)** - For each installation involved in the scenario, the analyst enters the number of personnel to be added and/or eliminated in a specific year. Personnel are grouped into Officers, Enlisted, and Government Civilians. In addition, the analyst enters, if relevant, the percentage of family housing to be privatized each year. This screen also shows Programmed Installation Population Changes – installation population changes, by year, scheduled to take place independent of the BRAC action and should be populated from a database file.

7. **INSTALLATION INFORMATION (MILCON)** – Provides a separate MILCON screen for each installation involved in the scenario. The user must input the Facility Analysis Category (FAC) code for each project as well as the size of the facility to be constructed or rehabilitated. Once the FAC code is entered, the Description and UM (unit of measure) fields automatically populate. If construction is not needed at the installation, the screen remains blank.

8. **ENCLAVES** - Enclaves are sections of deactivated military installations that remain operational and continue with their current roles and functions subject to specific modifications. The number of remaining authorized personnel (Screen Six) establishes enclave manning, but this screen enables the analyst to also “build-up” the necessary facilities of an enclave. Once the facilities are entered, COBRA can then determine the annual facilities sustainment budget for the enclave. Any new facilities required for an enclave that are entered as MILCON on Screen Seven must be included on this screen. While this section emphasizes Reserve Component, it applies to any enclave that may result from a BRAC action.

After all of the screens have been populated, the analyst runs the model, which produces a series of reports. These reports document the scenario analyses. Most important among the reports is the realignment summary, which shows the NPV and PB results.

K.4 PRODUCTS

The COBRA model can produce various analytical reports for a scenario, using information on each of the installations involved. Output includes reports on personnel changes, one-time costs, change in costs, PB, and NPV.

COBRA can model combinations of single installation-to-installation or multiple installation-to-installation moves in a scenario. Figure 4 provides an example of the multi-unit, multi-location capability within COBRA:

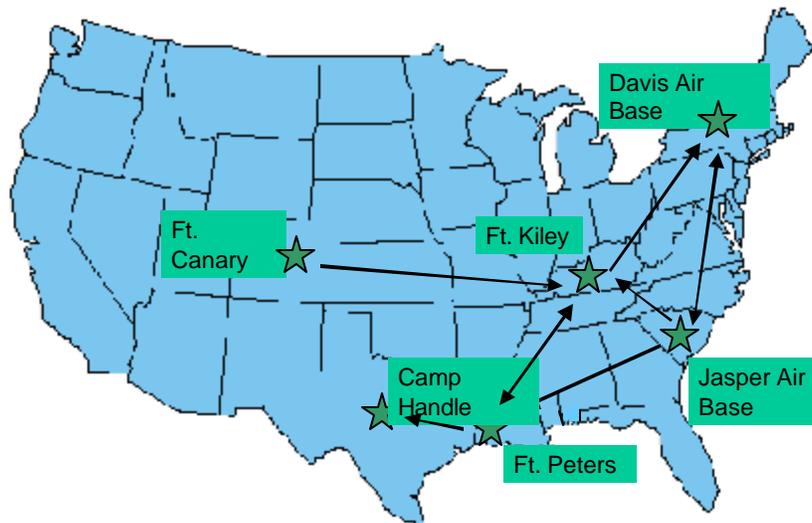


Figure 4. A COBRA Scenario

The figure also illustrates the Joint nature of COBRA. Analysts can examine a mix of installations across Services within the same scenario.

K.5 DATA

COBRA has three types of data—static installation, dynamic scenario, and standard factors. Static installation data describes the conditions at the installation at the beginning of a scenario. Examples of static installation data include the Area Cost Factor (ACF), officer population, and locality pay rate. The dynamic scenario data is required for the BRAC action; examples include how many officers are moved from Installation A to Installation B, military construction, or other one-time costs.

Standard factors are constant values that are used for every installation considered in BRAC 2005, e.g., civilian retirement factors, average household goods weight, and construction cost factors. Examples of these three data types are listed in the following figure.

- **Static Installation Data** (Starting position; “baseline”)
 - Population
 - Operating Costs
 - Demographics
 - Installation specific cost factors
- **Dynamic Scenario Data**
 - Personnel moved/eliminated/added
 - Equipment moved
 - Scheduling of moves/eliminations
 - Identified unique costs and savings
 - Construction/rehabilitation requirements
- **Standard Factors**
 - Demographics
 - Financial cost data
 - Pay and allowances
 - Civilian, transportation, and construction costing factors
 - Relocation program factors

Figure 5. COBRA Data

K.6 CALCULATION CAPABILITIES

COBRA calculates three primary costs: status quo costs, implementation costs, and steady state costs. The status quo costs are those required to operate the installation before any BRAC action. Implementation costs are created by the BRAC action including the cost of moving military units, cost of civilian separation benefits, and new military construction costs. Steady state costs occur for 20 years, during and after the implementation period.

- **Status quo costs**
 - Personnel costs (e.g., salaries, housing allowances)
 - Overhead (e.g., base operations support (BOS), admin support)
- **Implementation costs**
 - Construction (e.g., new facilities, renovation)
 - PCS costs (e.g., travel, homeowners assistance program)
 - Transportation (e.g., freight, vehicles, equipment)
 - Personnel (e.g., severance, unemployment, hiring)
- **Steady state costs**
 - Personnel costs (e.g., salaries, housing allowances)
 - Overhead (e.g., BOS, admin support)

Figure 6. Calculation Capabilities

K.7 GRAPHICS

COBRA output includes graphs like the one below. Graphs are available to illustrate key analyses. According to this example, a net present value chart, the scenario has a pay back year between 1997 and 1998 -- where the NPV graph crosses the zero-axis. Additional graphics are available.

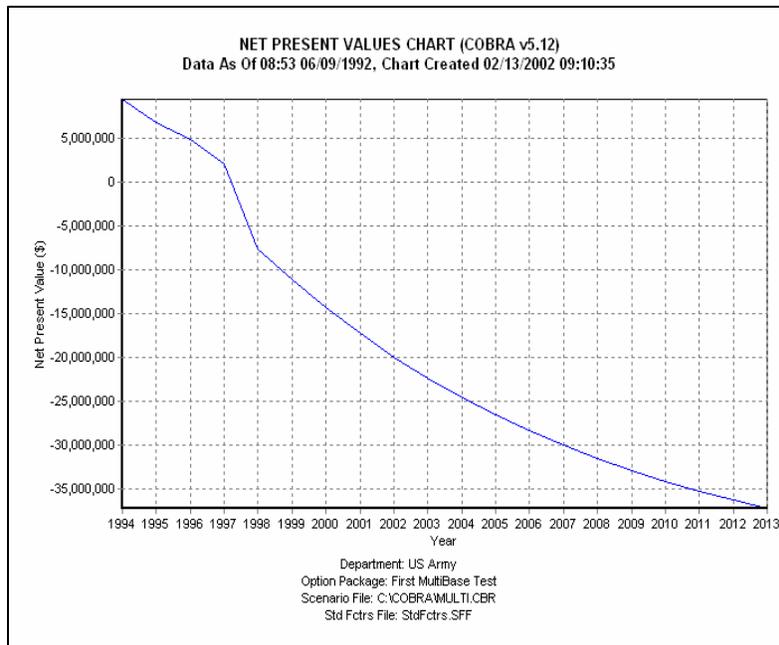


Figure 7. Output Graphics

K.8 SUMMARY

The COBRA model enables the MILDEPs and JCSGs to analyze costs associated with BRAC actions, and, thus, adhere to BRAC law and satisfy Criterion #5 of the DoD Selection Criteria.

Created as a spreadsheet program in 1988 by the Air Force, COBRA has advanced to a windows-based program, with numerous data entry screens. The model uses the inputs from these screens to determine outputs such as NPV and PB of scenarios.

Though the Army had the lead in adapting the model for BRAC 2005, all BRAC components must use COBRA to identify the costs of their potential realignments and closures.

L. ECONOMIC IMPACT, CRITERION #6

L.1 INTRODUCTION

Section 2913 of the Base Closure and Realignment Act of 1990 (Public Law 101-510, as amended through the National Defense Authorization Act of Fiscal Year 2004) requires that the selection criteria prepared by the Secretary of Defense ensure that military value is the primary consideration in making BRAC recommendations. This section also requires that the selection criteria, among other considerations, address the "economic impact on existing communities in the vicinity of military installations." Criterion six of the Department's final selection criteria, published in the Federal Register on 12 Feb 2004, contains this language.

The economic impact criterion for BRAC 2005 is similar to that used for BRAC 1995, which was "The economic impact on communities." The criterion in the law for BRAC 2005 is more specific, highlighting "existing communities" and clearly identifying communities in the vicinity of military installations as the unit of economic analysis.

The Defense Department decided to develop and implement a methodology for assessing economic impact consistent with the selection criteria. To meet the rigorous demands of the BRAC process, the methodology had to: treat all installations equally; be based on certified data; be carried out in accordance with internal control plans; be relatively inexpensive and easy to operate; be flexible enough to analyze numerous scenarios; and be credible, defensible, and professionally sound in the eyes of the Defense Base Closure and Realignment Commission, the White House, the Congress, the Government Accountability Office, the Department of Defense Inspector General, the audit agencies of the Military Services, economists and entities employed by communities, communities themselves, and the general public.

L.2 THE MODEL

The DoD Joint Process Action Team on Economic Impact (JPAT 6) developed an economic impact methodology in which DoD Components (Military Services, Defense Agencies and Joint Cross Service Groups) shall measure the economic impact on communities of BRAC 2005 alternatives and recommendations using (1) the total potential job change in the economic area, and (2) the total potential job change as a percentage of total employment in the local economic area. These measures highlight the potential economic impact on economic areas, and also take into account the size of each economic area. This information tool will be used by all DoD BRAC 2005 organizations to assess the economic impact on existing communities in the vicinity of military installations. TABS analysts enter direct job changes for military personnel, civilian employees, trainees, and contractors, and the EIT model produces a report that indicates the local economic impact and displays historical economic information for the affected local areas, into PIMS and required Quad Charts. The approach focuses on net job changes from a BRAC action, which includes Direct, Indirect (e.g., base support), and

Induced (e.g., households) data. The methodology also uses historical trends for context to include Employment, Unemployment rate, and Per-capita income.

L.2.1 ECONOMIC IMPACT DEFINITIONS

Definitions for terms found in the model:

- **Total potential job change:** direct, indirect, and induced job changes attributable to a potential BRAC action
- **Direct jobs:** jobs for military personnel, government civilian employees, contractors performing base mission(s), and military students
- **Indirect jobs:** non-government jobs that supply goods and services to support base performance of mission(s)
- **Induced jobs:** jobs supported by households in the surrounding economic area
- **Total employment:** all military and civilian jobs
- **Region of Influence (ROI):** The existing communities in the vicinity of a military installation in which significant economic impact might occur due to potential BRAC actions. The EIT uses the Metropolitan District (MD), Metropolitan Statistical Area (MSA), or Micropolitan Statistical Area in which the installation is located as the ROI. For bases that are not located in one of these OMB-defined areas, the EIT uses the installation's county as the ROI.

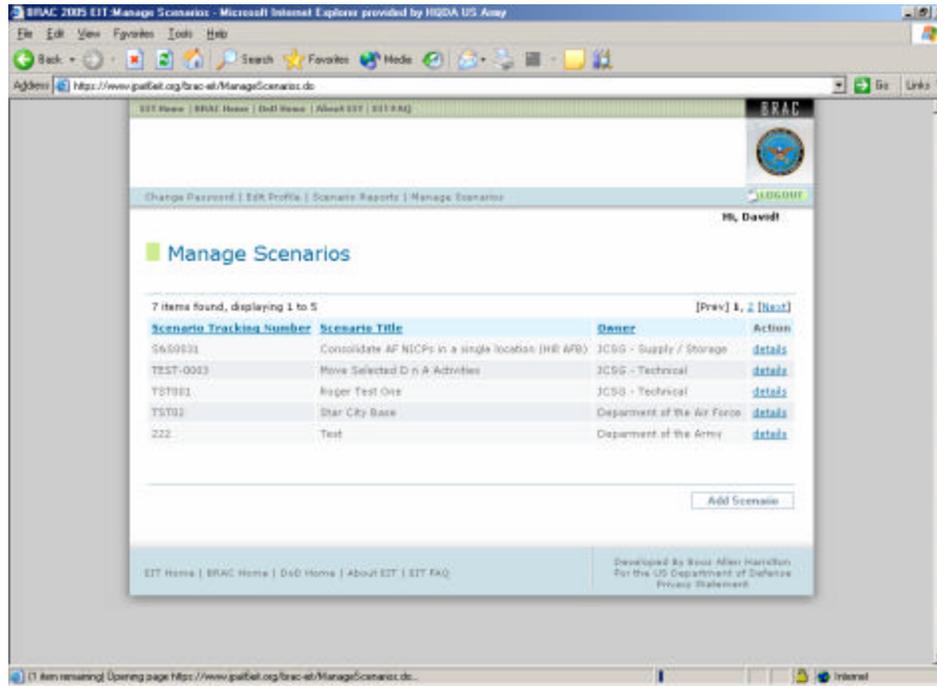
L.3 ANALYSIS

The BRAC 2005 EIT is a web-based application that allows TABS analysts to enter economic data and produce reports depicting the actions created for each scenario. To access the EIT, analysts must enter the following URL in Internet Explorer: <https://www.jpat6eit.org>. Only Internet Explorer version 5.x or greater may be used to access the web site. All analysts will be provided with a User Name and Password, which must be entered in the Login screen to use the EIT. A User Name and Password can be obtained through MAJ David Smith.

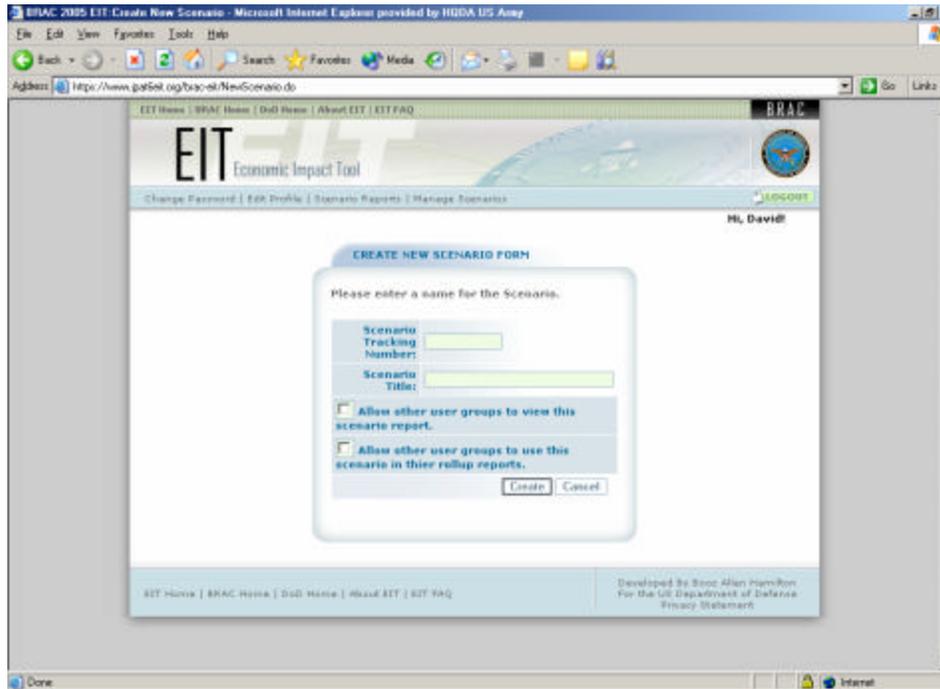
After completing a COBRA run for the scenario and printing out the EIR report, the analyst logs into the EIT site. Six modules will be displayed at the top of the screen

- **Change Password**
- **Edit Profile**
- **Scenario Reports**
- **Manage Scenarios**
- **Manage Users**
- **Manage Bases**

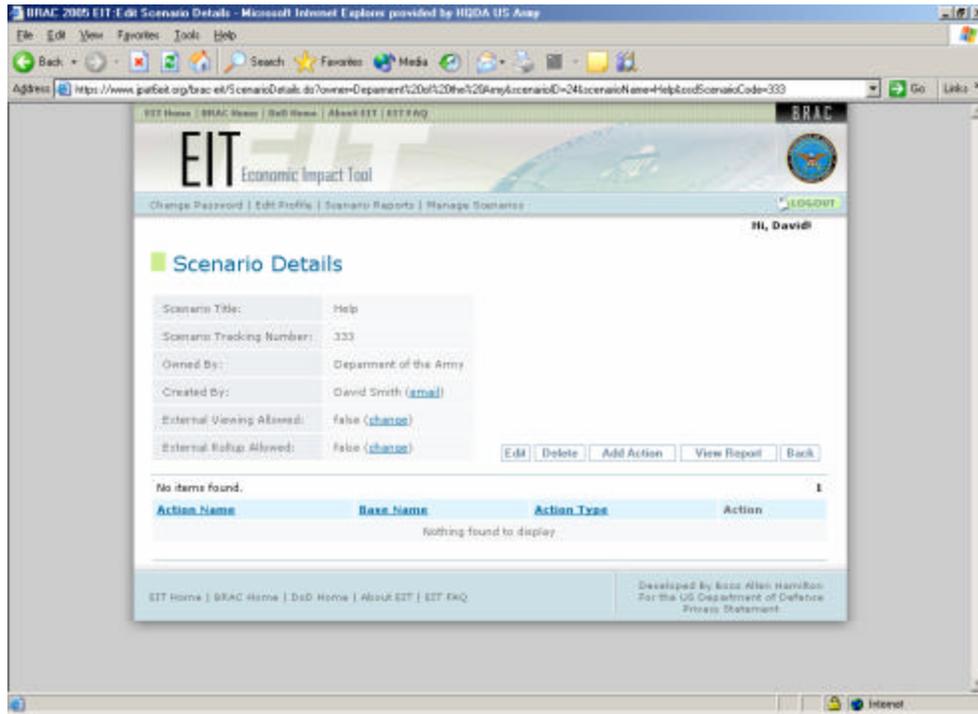
To enter a new scenario the analyst selects the Manage Scenarios module.



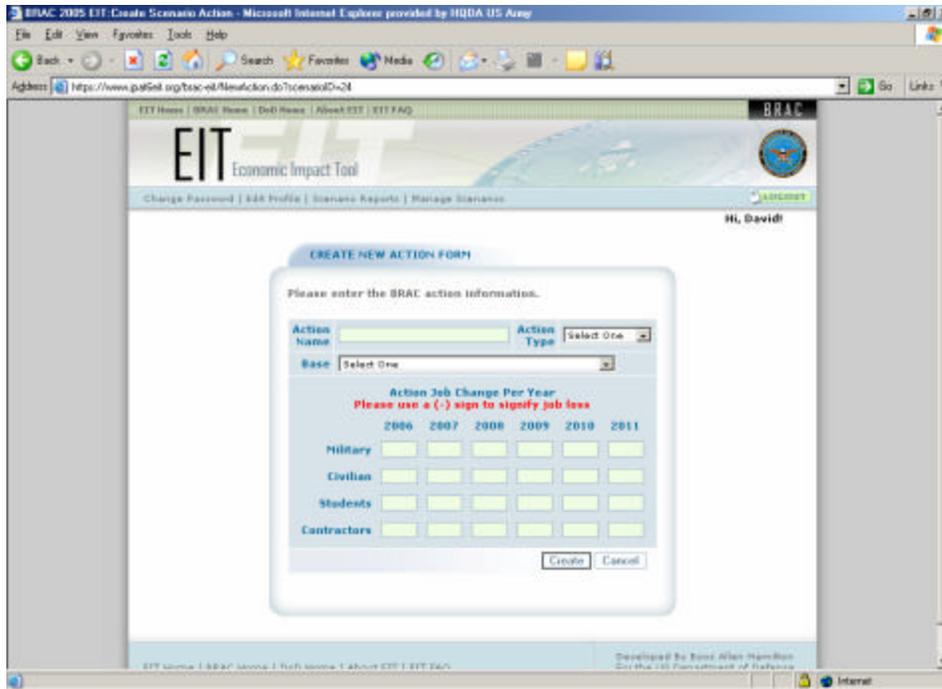
The Manage Scenarios module displays all of the scenarios entered by the Army. To add another scenario, the analyst selects the Add Scenario button in the lower right hand corner of the screen which takes the analyst to the Create New Scenario Form.



At the Create New Scenario Form, the analyst enters the scenario tracking number and the scenario title. The two checkboxes allow analysts from other Services to view the scenarios which can be used to coordinate scenarios between JCSGs and MILDEPs. After selecting the Create button, the model returns back to the Manage Scenarios module, then to add or modify actions in the scenario select “details” next to the desired scenario. This takes the analyst to the Scenario Details Module.



The analyst then uses the Add Action button to input the individual realignments in the Create New Action Form.



Analysts create a name for the action, select the Action Type, and choose the installation from the Base cell in the Add Action input screen, then they enter the following information:

- Job Changes (Out): The number of authorized positions for DoD military personnel, military trainees, civilian government employees, and mission support contractors to be eliminated or relocated to a different base under each alternative, by installation, by fiscal year from 2006 through 2011.
- Job Changes (In): The number of authorized positions for DoD military personnel, military trainees, civilian government employees, and mission support contractors to be added or gained from a different base under each alternative, by installation, by fiscal year from 2006 through 2011.

It is important that users input into the EIT **all** BRAC job changes, including job gains at receiving installations. The COBRA EIR Report contains job changes for military personnel, civilian government employees, and military trainees (students). COBRA does not contain contractor information, so the analyst must refer to the ASIP for contractor job information. Also contractor job losses should only include contractors who perform one or more of the military missions on the installation and whose work tasks are virtually identical to government civil servants or military personnel. Contractors involved in Base Operating Support (BOS) or sustainment operations should not be included. Jobs eliminated or transferred out of the base must be entered into the EIT with a negative sign (-) preceding the number, e.g., -200. Jobs added to or transferred into a base can be entered simply as a number without a sign, e.g., 200. The EIT lists the economic area for every DoD installation and activity. The user may also view a report created for each installation and BRAC action.

L.4 OUTPUTS

The EIT allows the analyst to select a scenario that has already been created and stored in the EIT database, and roll up that data by a particular report type:

- Individual actions (stand-alone reports for one specific action for the base)
- Base (net result of multiple actions for the base)
- ROI (net result of all actions for the economic region of influence).

A report based on the criteria selected will be opened in a PDF document using Adobe Acrobat. In order to generate and view the report, users must have Adobe Acrobat version 5.0 or greater installed on their hard drive. Analysts are able to save reports to the hard drive and may also print the reports.

The report will display economic impact data for each scenario for the proposed BRAC 05 Action. The report includes the following for each ROI:

- Economic ROI to which each installation that has been assigned
- ROI population (2002)
- ROI employment (2002)
- Base authorized manpower (2005)
- Estimated job changes summed over the period 2006-2011.

The report also shows a graph that depicts the cumulative job change (direct and indirect/induced) over time.

The report depicts historic economic data, which includes:

- Total employment (1988-2002)
- Annual unemployment rates (1990-2003)
- Per capita income (1988-2002), in real 2003 dollars.

L. 5 REVIEW

Using the report created by the EIT, the analyst goes into PIMS and enters the total scenario Direct and Indirect job changes into the Community Impact cells where the analyst can also comment on the results. The analyst should print the EIT report and add it to the scenario proposal book. A large reduction in indirect or direct jobs does not necessarily prevent the scenario from going forward, but the analyst must ensure that the EIT results are properly recorded so they are fully considered within the scenario assessment process.

The analyst shall use the following language to document the Criterion 6 consideration for each candidate recommendation.

“Economic Impact on Communities: Assuming no economic recovery, this recommendation could result in a maximum potential reduction of XXX jobs (YYY direct jobs and ZZZ indirect jobs) over the 2006-2011 period in the [fill in name of the metropolitan statistical area, metropolitan division, micropolitan statistical area or county] economic area, which is x.x percent of economic area employment.”

If the percentage of economic area employment affected is less than 0.1 percent in either case, then scenario proponents shall use the phrase "less than 0.1 percent" in the last phrase of these statements. (That is, the language should not report percentages in the hundredths of a percent, e.g., "0.07 percent." Simply state "less than 0.1 percent.")

There will be instances where multiple candidate recommendations will impact the same ROI. The OSD BRAC Office will work with the relevant JCSGs and Military Departments to analyze the economic impact of multiple candidate recommendations in a single ROI, and provide that analysis to the ISG and IEC for use during their review.

L. 6 SUMMARY

Criterion 6 ensures that MILDEPs and JCSGs analyze the economic impact on communities affected by a closure or realignment. The Economic Impact Tool provides a consistent method for determining such impacts and provides a readable report to highlight the import comparison metrics. These metrics have no threshold values, but scenario proponents will use these metrics for relative comparisons of the impacts of potential BRAC recommendations. TABS will develop candidate recommendations through a comprehensive analysis on the basis of the force structure plan, all of the final selection criteria, and all other relevant legal and policy requirements.

M. LOCAL AREA INFRASTRUCTURE MODEL, CRITERION #7 (LAI)

M.1 INTRODUCTION

The Local Area Infrastructure (LAI) model fulfills Criterion 7 requirements, specifically it examines “the ability of existing and potential receiving communities’ infrastructure to support forces, missions, and personnel.” LAI analysis supports the scenario development process by helping to define possible risks the Army would take if it assigned a unit to an installation with a given level of infrastructure ability.

LAI analysis is part of the TABS analytical framework, as depicted in Figure M-1.

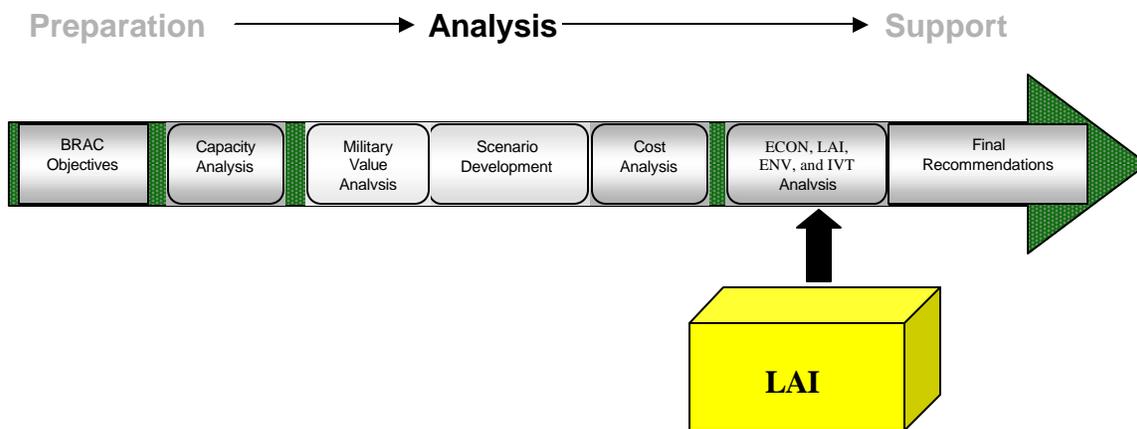


Figure 1. TABS Process

M.2 HISTORY

The BRAC statute requires that the foundation for BRAC recommendations be “the force structure plan and infrastructure inventory prepared by the Secretary under section 2912 and the final selection criteria prepared by the Secretary under section 2913.” As such, the JCSGs and MILDEPs need to ensure that all eight selection criteria are considered in developing recommendations that will be forwarded to the Secretary of Defense.

Exercising authority provided by the BRAC 2005 Infrastructure Steering Group (ISG), the OSD BRAC Director and the MILDEP Deputy Assistant Secretaries responsible for the BRAC process (known as the “BRAC DASs”) established a Joint Process Action Team (JPAT) for Criterion 7. The Air Force was designated as the lead MILDEP for the effort.

The JPAT was tasked to develop and execute an approach to define Criterion 7 and identify attributes, metrics, and questions that would appropriately assess a community’s ability to support missions, forces, and personnel. The JPAT was also tasked to produce a report on the data gathered in support of the analysis, for use by the Military

Departments (MILDEPs) and Joint Cross Service Groups (JCSGs). The JPAT did not, however, establish a method to analyze or combine the LAI data. The Army Basing Study (TABS) Group developed a LAI model to assist in analyzing LAI data.

M.3 THE MODEL

The TABS LAI model allows the analyst to compare the value of selected attributes at the gaining and losing installations, determine whether the move improves or worsens the attribute level, and make an overall risk assessment of the gaining community's ability relative to the losing community's ability to absorb additional units. The model groups the JPAT data into ten different attributes and then compares the gaining and losing installations using these attributes in order to determine a comparative local area infrastructure, which TABS then uses in a comparative assessment.

TABS consolidated Criterion 7 metrics into the following 10 soldier-issues-based attributes:

- **Child Care:** The total number of accredited facilities within the designated counties around the installation.
- **Cost of Living:** The basic allowance for housing (BAH). The JPAT collected data for median household income, median value of owner-occupied housing, BAH, and GS locality pay rate. Since there was a strong correlation between BAH and median household income, TABS used the BAH in the final assessment.
- **Education:** Determined by examining the state policy on in-state tuition for military dependents, the average SAT score for the school districts in the surrounding counties, the student-teacher ratio, and the number of post-secondary-education institutions within the area. Some school districts reported ACT scores instead of SAT scores. When this happened, the scores were converted to SAT scores using a formula developed by the California Department of Education.
- **Employment:** The region's unemployment rate.
- **Housing:** Determined based on the vacancies available and the median home price.
- **Medical Health:** The number of hospital beds available. The JPAT also collected data on the number of doctors available but since there was a strong and consistent correlation between the number of hospital beds and the number of doctors, only the hospital bed factor needed to be considered within the final assessment.
- **Population Center:** Determined by finding the distance to the nearest city with a population that exceeds 100,000 persons.

- **Safety:** The community Uniform Crime Reports (UCR) Index per 100,000 persons. If community cannot be determined, then the state average is considered.
- **Transportation:** The distance to the closest airport that provides regularly scheduled commercial airline service and checking to see whether the public transportation system provides transportation to or near the installation.
- **Utilities:** The local community's ability to provide water and sewage disposal for 1,000 additional people.

The assessment determines if the local area infrastructure at a unit's proposed location has the same, better, or worse ability to support Army units when compared to another location. The assessment is based on a scale that allows TABS to compare installations; TABS assumes that more of a metric is better and all metrics are valued equally. Thus, if the new installation has higher (better) values in all metrics, then the Army has little risk in relocating the unit as far as the local area's ability to support it.

RC scenarios were not subject to the LAI model. These scenarios consisted of relocating units, but usually within commuting distance. Since few relocated their residences, there will not be a change in the status of their local area infrastructure, rendering Criterion 7 insignificant. The RC approach to Criterion 7 is described in Appendix R.

M.3.1 Data Analysis

For each metric, TABS conducted data analysis to determine the variability and grouping of the installation data. TABS used scatter plots to look for natural breaks in the data and, when these breaks were discovered, grouped data according to these breaks (see figure below). If there were no obvious natural breaks but significant variation in the data existed, then the data was broken into thirds. The top group (all points above the green line), or most desirable, was given a value of 1, while the bottom group (all points below the red line), the least desirable, was given a value of 3. The value of 2 was given to the values in the middle group (points between the green and red line).

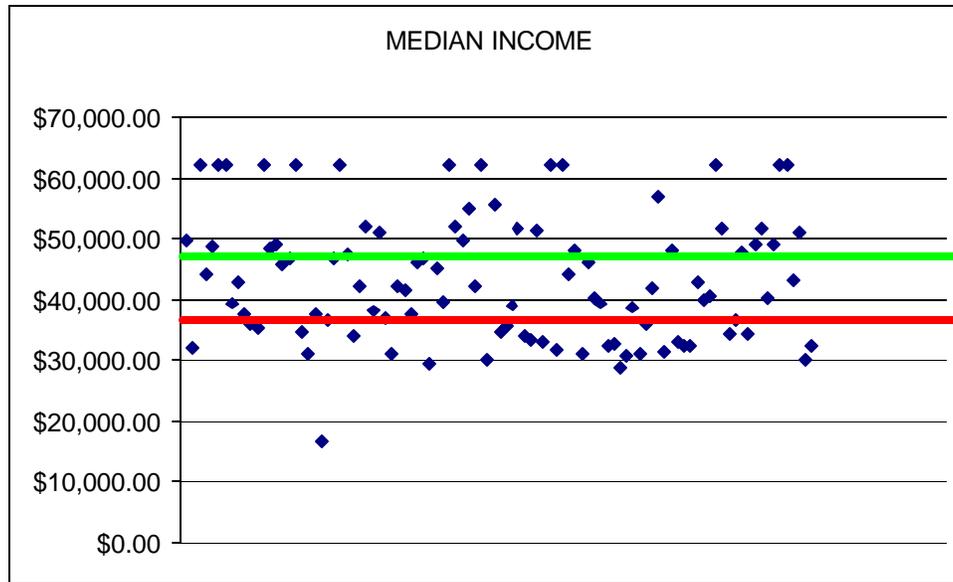


Figure 2. Variability and Grouping

If the metric was based on a binary answer (yes or no), then a “yes” was assigned 1 while “no” was assigned 3. If there was more than one metric assigned to an attribute, then the attribute value was determined by averaging the metric values and rounding the result off to the nearest integer. The Criterion 7 Evaluation Model then used these factors to compare the gaining installation’s capability with the losing installation.

M.4 ANALYSIS

To use the Criterion 7 Evaluation Model, the analyst chooses for analysis the potential losing installation and the potential gaining installation from a drop-down menu. After the installations are chosen, the model displays either a red (lower group), amber (middle group), or a green (upper group) rectangle under the installation column for each attribute. For instance, the below graphic shows that Fort B is amber, or is in the middle group of all installations, for the Child Care attribute. It also shows that Fort A is red, i.e., in the lower group of all installations, for the same attribute. Further to the right under Attribute Change, the tool indicates that there is a “Decline” in child care capability if an activity is moved from Fort B to Fort A. Attribute Change also indicates an “Improve” in Cost of Living and a “Sustain” in Education. There is also an overall “Risk Evaluation” box that determines the overall community impact for the relocation to Fort A. In this case there is a “High” because there are six “Declines” in the “Attribute Change” column.

CRITERIA 7 EVALUATION TOOL

Attribute	Losing Installation	Gaining Installation	Risk Evaluation
	FORT B	FORT A	HIGH
Child Care	2	3	DECLINE
Housing	2	2	SUSTAIN
Cost of Living	3	2	IMPROVE
Education	2	2	SUSTAIN
Employment	2	3	DECLINE
Medical Health	1	3	DECLINE
Safety	2	3	DECLINE
Population Center	1	3	DECLINE
Transportation	2	3	DECLINE
Utilities	2	3	DECLINE

Figure 3. Attribute Table

If an analyst is considering such a move, then, in the Criterion 7 portion of the Proposal Information Management System (PIMS), he or she would check the box of each criterion that indicates a “Decline.” In this case the analyst would check the Child Care, Employment, Medical Health, Safety, Population Center, and Transportation boxes. Also, on the PIMS “Risk to Move” drop-down menu, the analyst would choose “High” based on the risk evaluation. If there are multiple stationing actions in the scenario, then the analyst must compose each origin and destination pair. If there is a decline in any of the installation pairs, then that box should be checked in PIMS. Also, the risk evaluation should indicate the highest level of all of the pairs. For instance, if one installation pair has a “High” and all of the others have a “Low,” the analyst should still choose an overall “High” risk evaluation.

M.5 REVIEW

A quality control (QC) review will be performed on each scenario. An assigned analyst will verify Criterion 7 model results for each scenario to ensure accurate results. Analysts can comment on the outcome of the analysis. None of the Criterion 7 attributes are “show-stoppers” in the sense that a scenario should not go forward, but QC must ensure that metrics with comparatively lower rankings are properly recorded, so that they are fully considered within the scenario assessment process.

The analysis is comparative in nature, and a “High” risk does not automatically nullify a proposal. It portrays that the gaining installation is not as robust as the losing installation in several of the chosen metrics. It outlines factors that may need to be improved or constructed before the gaining installation’s population can increase.

M.6 SUMMARY

Criterion 7 ensures that MILDEPs and JCSGs analyze the ability of a gaining installation’s community and its infrastructure to support forces, missions, and personnel in comparison to other installations. The JPAT will issue a report to the MILDEPs and

JCSGs outlining the installation answers to the Criterion 7 questions¹. The report will contain an entry for each installation and each installation will have a data summary table. The data supporting production of these reports will be maintained in a single database that allows the MILDEPs and JCSGs to analyze the data further during scenario development. The MILDEPs, Joint Cross Service Groups, and Defense Agencies are responsible for final review and editing of the output reports for their scenarios.

TABS uses the Criterion 7 report to conduct comparative assessments. TABS built a spreadsheet model to help analysts compare data between installations and rate the movement of a unit from one installation to another as high, medium, or low risk. The intent is to relocate units to installations that have the capacity to absorb additional unit missions and assess whether Army installations require additional support to attain a certain level of local-area infrastructure support.

¹ J:\Criterion 7\Criterion 7 Reports for Analysts\PDF JPAT-7

N. TABS ENVIRONMENTAL PROCESS (CRITERION 8)

N.1 INTRODUCTION

The environmental analysis process was developed by a Joint Process Action Team (JPAT) and was designed to satisfy, for each proposal, the analytical requirements for DoD Selection Criterion 8:

“The environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance activities.”

The Army BRAC 2005 Objectives provided goals and the basis for analysis. The environmental model used in the analysis assists in supporting these objectives, specifically those related to environment:

- Locate Army units to reduce the impact of encroachment on Joint Team mission accomplishment.
- Locate Army units where available natural resources can sustain the force.
- Locate Army units to enable maximum training and test flexibility within environmental limits.

The environmental JPAT generated 101 questions for Data Call #1. These questions sought certified environmental data in 10 *resource areas*:

- Air Quality
- Cultural/Archeological/Tribal Resources
- Dredging
- Land Use Constraints/Sensitive Resource Areas
- Marine Mammals/Marine Resources/Marine Sanctuaries
- Noise
- Threatened and Endangered Species/Critical Habitat
- Waste Disposal
- Water Resources
- Wetlands

The JPAT also developed three products to assist environmental analysis: the Installation Profile, the Summary of Scenario Environmental Impacts (SSEI), and the Summary of Cumulative Environmental Impacts (SCEI). The TABS Environmental Analyst uses certified data submitted by installations in response to data calls to create a standardized format summary, or *Installation Profile*, that characterizes the current environmental picture of each Army installation. These profiles – intended for DoD use – inform the development of BRAC scenarios. When analysts from TABS or a JCSG produce a viable proposal, the TABS Environmental Analyst uses the profile information and other certified data to generate a *Summary of Scenario Environmental Impacts*. This summary addresses all 10 resource areas for both losing (contributing) and receiving installations. If appropriate, a *Summary of Cumulative Environmental Impacts* is later generated for each installation that is affected by more than one scenario.

The formats for these three JPAT products are included and referenced in the Under Secretary of Defense Policy Memorandum Four.¹

N.2 BACKGROUND

Environmental factors constitute a significant aspect of BRAC analysis. Because of this, TABS uses environmental information throughout the analytical process.

N.2.1 Capacity Analysis

Certified data also provided environmental information related to installation capacity, and the following factors will be considered in TABS' capacity analysis:

- Air Quality
- Noise Zones Extending Off-Installation
- Buildable Acres. This measure captures environmental restrictions in that it excludes counting land constrained by historical use restrictions, contamination, wetlands, incompatible encroachment, and similar restrictions.

N.2.2 Military Value Assessment

For BRAC 2005, seven environmental attributes are used as part of the assessment of the military value of a given installation:

- Environmental elasticity (capacity to absorb more personnel)
- Air Quality
- Water Quantity
- Noise restrictions
- Soil Resiliency
- Buildable Acres
- Urban Sprawl

These environmental attributes are incorporated in TABS military value analysis.

N.2.3 Cost of Base Realignment Actions (COBRA) Model

COBRA, the DoD joint model for developing and evaluating the economic potential of BRAC scenarios, will accommodate both static installation environmental data taken from the data-call responses and dynamic environmental data produced by scenario development.

Environmental inputs for static data include those captured under Base Operating Support (BOS):

- Recurring Costs of Compliance

¹ Under Secretary of Defense Memorandum, SUBJECT: Transformation Through Base Realignment and Closure (BRAC 2005) Policy Memorandum Four - Selection Criteria 7 and 8, 7 Dec 2005.

- Recurring Costs of Pollution Prevention
- Recurring Costs of Conservation

Environmental inputs for dynamic data include one-time costs related to BRAC scenarios, such as (but not limited to):

- Environmental Baseline Surveys
- Permit Acquisitions
- NEPA Documentation

One-time restoration costs are *not* considered in COBRA scenario analysis.

N.3 ANALYST PROCEDURES FOR SCENARIO DEVELOPMENT

The following graphic offers an overview of where environmental issues are considered and analyzed in the scenario development process, and also in the overall TABS analytical process.

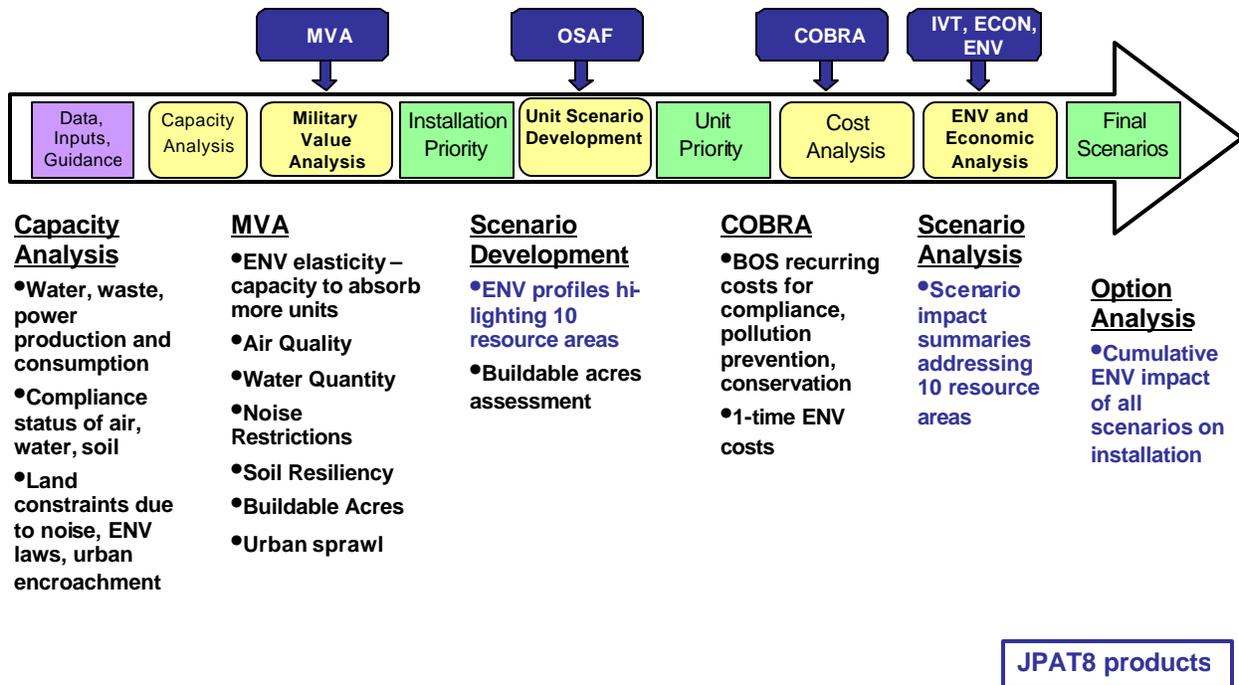


Figure 1. Environmental Analysis within the Analytical Process

N.3.1 Installation Environmental Profiles

TABS analysts will consider the reported environmental situation of each affected installation when developing a proposal. The installation environmental profile, previously prepared by TABS

environmental analyst, describes the installation’s environmental health in terms of the 10 resource areas mentioned in the Introduction. The analyst will review the profile to understand reported environmental restrictions and capacities, identified in the BRAC data call. A sample Installation Environmental Profiles is provided in Section N.6.

N.3.2 Proposal Buildable Acres Assessment

Next, the TABS analyst must perform a buildable acres assessment to determine if adequate acreage exists to support required facility construction at receiving installations. Using unit requirements taken from the scenario, and facility requirements taken from the Real Property Planning and Analysis System (RPLANS), the analyst will follow these steps to assess buildable acres:

<p><i><u>Step 1</u></i> – <i>What do you need to station?</i></p> <p><i><u>Step 2</u></i> – <i>How many acres are needed?</i></p> <ul style="list-style-type: none">– <i>Pick a standard unit</i>– <i>Estimate variance of your requirements from standard unit (1/4, 1/2, 3/4)</i>– <i>Multiply % variance times standard unit footprint</i> <p><i><u>Step 3</u></i> – <i>Does gaining installation have enough buildable acres?</i></p> <ul style="list-style-type: none">– <i>By Total Acreage</i>– <i>Verify acreage by parcels and land use</i> <p><i><u>Step 4</u></i> – <i>Check “Go/No Go” & Note any concerns</i></p>

Figure 2. Buildable Acres Assessment

Should analysts have any questions during the process of completing checklists for the buildable-acres assessment, they should consult a TABS environmental analyst. The analyst should describe any considerations or concerns and highlight areas requiring follow-up in the Notes block. This check serves to save the analyst work by avoiding detailed development of a scenario at a gaining installation without inadequate space to support the units moving. The TABS Buildable Acres Assessment checklist is provided in Section N.7.

A TABS environmental analyst will perform QC of these calculations, and re-assess buildable acreage when performing the comprehensive scenario assessment described in Section N.4.

N.4 TABS ENVIRONMENTAL ANALYST PROCEDURES

N.4.1 Summary of Scenario Environmental Impacts

For each viable TABS or JCSG-generated proposal, there is a requirement to complete a Summary of Scenario Environmental Impacts (SSEI) in accordance with the Under Secretary of Defense Policy Memorandum Four.

The flowchart below presents the TABS process for this assessment.

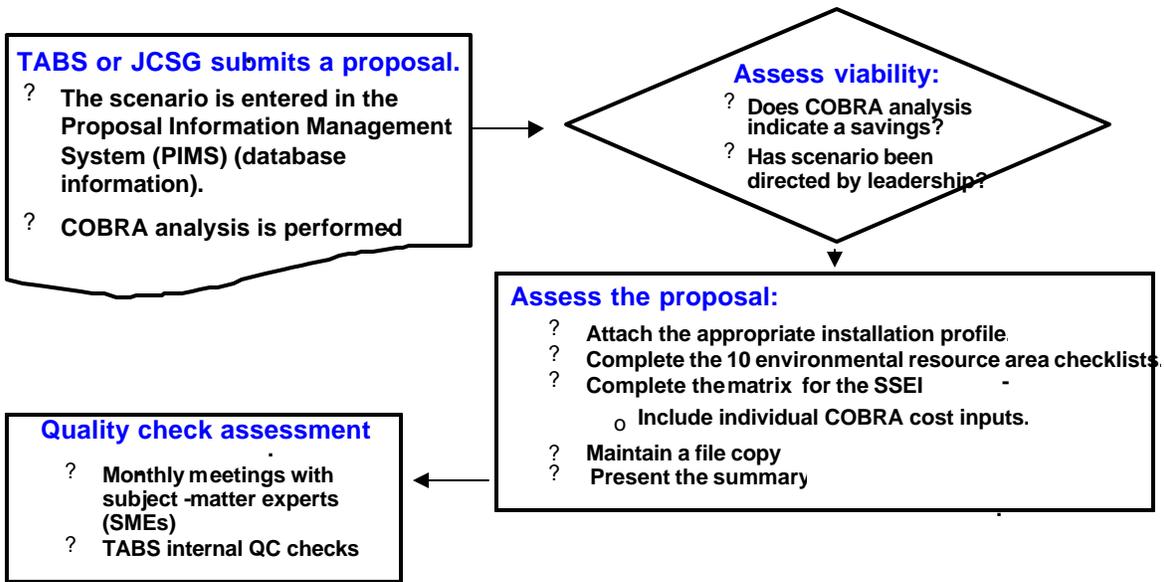


Figure 3. Proposal Environmental Assessment Process

As analysts from TABS and the JCSGs develop viable scenarios, TABS environmental analysts generate SSEIs for the Army installations involved. The analysts use the installation environmental profiles, additional data from the BRAC data calls, and input from Army environmental subject-matter experts (SMEs), and produce the SSEI by a rules-based approach using eleven checklists as appropriate (ten for the ten resource areas, and one for closures). All assessments are based on certified data. The summaries are presented in a JPAT-designed template that organizes and arranges environmental impacts for each of the 10 resource areas encompassed in a particular profile. The summaries also report qualitative impacts of costs of potential environmental restoration, waste management and environmental compliance efforts, and identify which one-time environmental costs will be entered in COBRA.

The eleven SSEI checklists are included in Section N.8. These checklists were developed in conjunction with Army environmental SMEs for each area. Each checklist specifies the data source(s) to be consulted, and questions that the analyst will answer from the data, and then guides that analyst to the resulting assessment wording, to include costs when appropriate. A separate SSEI matrix must be completed for each unique gaining and losing installation in each scenario, however, in most cases, no environmental impacts will result from realignments that do not close an installation.

N.4.2 Summary of Cumulative Environmental Impacts

When TABS and the JCSGs have developed a collection of viable BRAC candidate recommendations, the cumulative impact to Army receiving installations will be assessed using the JPAT Summary of Cumulative Scenarios' Environmental Impacts template. The TABS environmental analysts will use a

similar a rules-based approach to that described in Section N.4.1 to assess cumulative impacts on each receiving installation.

N.4.3 Reserve Component (RC) Assessments.

RC proposals are assessed using a modified environmental process, as the active installations underwent a comprehensive data collection, while Reserve Component sites are generally small and have limited environmental data and no environmental staffing maintained at the installation level. RC BRAC proposals were initiated at the state level, taking into account the existing installation's environmental situation in determining the optimal location for consolidating missions and functions.

N.4.3.1. Characteristics of RC Proposals.

- Less environmental data is available on RC sites compared to active installations
- Involve population and/or equipment moves to and from: 1) active Army installations; 2) active installations owned-operated by other Services; 3) RC sites owned and operated by the Army and other Services, and 4) RC sites operated by the Army but owned by private entities (lesasers), or owned by the state government.
- Involve units from all Services (Note: For assessments of other MILDEP or Defense Agency sites, the Criteria 8 assessment is performed by the owning MILDEP/Agency, according to USD Policy Memorandum Four.)
- Involve significantly smaller population and/or equipment moves when compared to active army installation proposals. (This generally results in significantly less environmental impacts.)

N.4.3.2 Assumptions

- The RC Principal and/or State Adjutant General who developed a particular proposal, have a thorough understanding of the environmental constraints and impacts associated with:
 - A. The proposed gaining installation(s), Reserve Center(s), or new location(s);
 - B. The proposed losing Reserve Center(s) or other installation(s) housing RC units; and,
 - C. The closing Reserve Centers(s) or other installation(s) housing RC units.
- The proposal developer (state Adjutant General or representative) would not propose a BRAC action, if environmental constraints were likely to inhibit execution of that proposal.
- Environmental Baseline Survey (EBS) / Initial Site Investigation (ISI) will follow virtually all closures at RC sites, and it is likely that additional restoration issues will be discovered.

N.4.3.3 Assessment Approach

Step 1. Identify Gaining Installation Type

Determine whether the proposal involves movement of units to an active, Army-owned installation or to

another RC site (Service that owns/operates RC site is unimportant) or to both and follow the procedures listed below for the appropriate move.

Step 2. Note Any Unique Environmental Issues Identified by Proposal Authors

TABS analysts will focus on known site conditions as described in the RC proposals or confirmed through other certified data source, to avoid speculative assessments. EBSs performed on closing sites may identify additional restoration issues.

Step 3. Perform the Assessment

If Gaining Site Is A Reserve Component Site

- A. Identify key specific environmental impacts associated with those losing and/or closing RC sites as described in the RC proposal (if any). Note those impacts under "Environmental Resource Areas" block, as shown in Section N.9.1.
- B. If the proposal describes a specific environmental impact or impacts associated with either a losing or gaining site, describe the impact with sufficient detail in the appropriate section (Compliance, Restoration, or Waste Management) or state "No Impact:"
- C. If proposal complexity or environmental data available indicates further investigation is warranted, coordinate with RC environmental Subject Matter Experts (SMEs) for the refinement of the above assessment. This effort may include examining RC certified data sources or scenario-specific data collection, if required.
- D. If a state-owned RC site is closing, (applies to NGB sites) then do not include NEPA and EBS costs in the assessment for that site, as these costs will be paid by the state.

If Gaining Site Is An Active, Army-Owned Installation

RC proposals that move units to active Army installations will be assessed according to the process in Section N.4.1.

N.5 SUMMARY

The environmental analytical process ensures that each proposal satisfies the requirements of DoD Selection Criterion 8. The analysis is based on the Army BRAC objectives related to environment, and is assisted by tools developed by the environmental JPAT, and Army environmental SMEs. TABS' systematized, rules-based approach for assessing impacts will assist both JCSGs and the Army in the evaluation of environmental impacts of proposed BRAC actions on Army installations.

N.6 INSTALLATION ENVIRONMENTAL PROFILE SAMPLE

N.6.1 Notional Example: Installation Environmental Profile

Installation Environmental Profile

CAMP SWAMPY

1. Air Quality (DoD Question #210-225):

- a. The Clean Air Act (CAA) establishes health-based standards for air quality, and all areas of the country are monitored to determine if they meet the standards. A major limiting factor is whether the installation is in an area designated nonattainment or maintenance (air quality is not meeting the standard) and is therefore subject to more stringent requirements, including the CAA General Conformity Rule. Conformity requires that any new emissions from military sources brought into the area must be offset by credits or accounted for in the State Implementation Plan (SIP) emissions budget. The "criteria pollutants" of concern include: carbon monoxide (CO), ozone (O₃) (1 hour & 8 Hour), and particulate matter (PM), PM₁₀ (microns in diameter), and PM_{2.5}. Installations in attainment areas are not restricted in their current activities, while activities for installations in non-attainment areas may be restricted. Non-attainment areas are classified as to the degree of non-attainment: Marginal, Moderate, Serious, and in the case of O₃, Severe and Extreme. SIP Growth Allowances and Emission Reduction Credits are tools that can be used to accommodate increased emissions in a manner that conforms to a state's SIP. All areas of the country require operating permits if emissions from stationary sources exceed certain threshold amounts. "Major sources" already exceed the amount and are subject to permit requirements. "Synthetic minor" means the base has accepted legal limits to its emissions to stay under the major source threshold. "Natural" or "true" minor means the actual and potential emissions are below the threshold.
- b. Camp Swampy is in Attainment for all Criteria Pollutants. It holds a CAA Major Operating Permit.

2. Cultural/Archeological/Tribal Resources (DoD Question #229-237):

- a. Many installations have historical, archeological, cultural, and Tribal sites of interest. These sites and access to them often must be maintained, or consultation is typically required before changes can be made. The sites and any buffers surrounding them may reduce the quantity or quality of land or airspace available for training and maneuvers or even construction of new facilities. The presence of such sites needs to be recognized, but the fact that restrictions actually occur is the overriding factor the data call is trying to identify. A programmatic agreement with the State Historic Preservation Office (SHPO) facilitates management of these sites.
- b. Historic property has been identified on Camp Swampy. There is a programmatic agreement for historic property in place with the SHPO. It has sites with high archeological potential identified, which restrict construction and operations.

3. Dredging (DoD Question # 226-228):

- a. Dredging allows for free navigation of vessels through ports, channels, and rivers. Identification of sites with remaining capacity for the proper disposal of dredge spoil is the primary focus of this section of the profile. However, the presence of unexploded ordnance or any other impediment that restricts the ability to dredge is also a consideration.
- b. Camp Swampy has no impediments to dredging.

4. Land Use Constraints/Sensitive Resource Areas (DoD Question #198-201, 238, 240-247, 254-256, 273):

- a. Land use can be encroached from both internal and external pressures. This resource area combines several different types of possible constraints. It captures the variety of constraints not otherwise covered

by other areas that could restrict operations or development. The areas include electromagnetic radiation or emissions, environmental restoration sites (on and off installation), military munitions response areas, explosive safety quantity distance arcs, treaties, underground storage tanks, sensitive resource areas, as well as policies, rules, regulations, and activities of other federal, state, tribal and local agencies. This area also captures other constraining factors from animals and wildlife that are not endangered but cause operational restrictions. This resource area specifically includes information on known environmental restoration costs through FY03 and the projected cost-to-complete the restoration.

- b. Camp Swampy reports that 3939 unconstrained acres are available for development out of 14493 total acres. Camp Swampy has spent \$124.4M thru FY03 for environmental restoration, and has estimated the remaining the Cost to Complete at \$52.2M. It has Military Munitions Response Areas. It has restrictions due to adjacent or nearby Sensitive Resource Areas. Camp Swampy has Explosive Safety Quantity Distance Arcs, some of which require safety waivers, and some with the potential for expansion. Camp Swampy reports being constrained by the laws, regulations, policies, or activities of non-DoD federal, tribal, state, or local agencies. Camp Swampy reports that its missions have been limited by existing or proposed activities of other military departments or other federal, tribal, state, or local agencies being located on the main installation, auxiliary airfield, or RDT&E range.

5. Marine Mammal/Marine Resources/Marine Sanctuaries (DoD Question #248-250, 252-253):

- a. This area captures the extent of any restrictions on near shore or open water testing, training or operations as a result of laws protecting Marine Mammals, Essential Fish Habitat, and other related marine resources.
- b. Camp Swampy is impacted by laws and regulations pertaining to Marine Mammal Protection Act, Essential Fish Habitats & Fisheries and Marine Sanctuaries, which may adversely restrict navigation and operations.

6. Noise (DoD Question # 202-209, 239):

- a. Military operations, particularly aircraft operations and weapons firing, may generate noise that can impact property outside of the installation. Installations with significant noise will typically generate maps that predict noise levels. These maps are then used to identify whether the noise levels are compatible with land uses in these noise-impacted areas. Installations will often publish noise abatement procedures to mitigate these noise impacts.
- b. Camp Swampy has noise contours that extend off the installation's property. Of the 296.723 acres that extend to off-base property, 0 acres have incompatible land uses. It does not have published noise abatement procedures for the main installation. It does not have published noise abatement procedures for the training and/or RDT&E range. It does not have published noise abatement procedures for the auxiliary airfield.

7. Threatened and Endangered Species/Critical Habitat (DoD Question #259-264):

- a. The presence of threatened and endangered species (TES) can result in restrictions on training, testing and operations. They serve to reduce buildable acres and maneuver space. The data in this section reflects listed TES as well as candidate species, designated critical habitat as well as proposed habitat, and restrictions from Biological Opinions. The legally binding conditions in Biological Opinions are designed to protect TES, and critical habitat. The data call seeks to identify the presence of the resource, TES, candidate or critical habitat, even if they don't result in restrictions, as well places where restrictions do exist.
- b. Camp Swampy reported that federally listed TES are present and have delayed or diverted operations/training/testing; candidate species are present; critical habitat is not present; and Camp Swampy does not have a Biological Opinion.

8. Waste Management (DoD Question # 265-272):

- a. This resource area identifies whether the installation has existing waste treatment and/or disposal capabilities, whether there is additional capacity, and in some cases whether the waste facility can accept off-site waste. This area includes Resource Conservation and Recovery Act (RCRA) Treatment, Storage and Disposal facilities, solid-waste disposal facilities, RCRA Subpart X (open/burning/open detonation), and operations.
- b. Camp Swampy does not have a permitted RCRA Treatment Storage and Disposal Facility (TSDF). Camp Swampy has an interim or final RCRA Part X facility that accepts off-site waste. Camp Swampy has 2 on-base solid waste disposal facilities that are 38.5% filled.

9. Water Resources (DoD Question # 258, 274-299):

- a. This resource area asks about the condition of ground and surface water, and about the legal status of water rights. Water is essential for installation operations and plays a vital role in the proper functioning of the surrounding ecosystems. Contamination of ground or surface waters can result in restrictions on training and operations and require funding to study and remediate. Federal clean-water laws require states to identify impaired waters and to restrict the discharge of certain pollutants into those waters. Federal safe-drinking-water laws can require alternative sources of water and restrict activities above groundwater supplies, particularly sole-source aquifers. Water resources are also affected by the McCarran Amendment (1952), where Congress returned substantial power to the states with respect to the management of water. The amendment requires that the Federal government waive its sovereign immunity in cases involving the general adjudication of water rights. On the other hand, existence of Federal Reserve Water Rights can provide more ability to the government to use water on Federal lands.
- b. Camp Swampy does not discharge to an impaired waterway. Groundwater contamination is reported. Surface water contamination is not reported. Exceedances of drinking-water standards are reported during at least one of the last three reporting periods.

10. Wetlands (DoD Question # 251, 257):

- a. The existence of jurisdictional wetlands poses restraints on the use of land for training, testing, or operations. In the data call, the installations were asked to report the presence of jurisdictional wetlands and to compare the percent of restricted acres to the total acres. The presence of jurisdictional wetlands, by limiting the availability of land, may reduce the ability of an installation to assume new or different missions, even if those wetlands do not presently pose restrictions.
- b. Camp Swampy has no wetland-restricted acres on the military installation.

N.7 BUILDABLE ACRES CHECKLIST

N.7.1 Buildable Acres Assessment - Checklist and Supporting Data

1. Assessment Steps

Notes:

Step 1 – What do you need to station?	
Step 2 – How many acres are needed? - Pick a standard unit - Estimate variance of your requirements from standard unit (1/4, 1/2, 3/4, or 2x, etc.) - Multiply % variance times std unit footprint	
Step 3 – Does gaining installation have enough BA? - By Total Acreage - Verify acreage by parcels and land use	
Step 4 – Check “Go/No Go” & note any concerns in <i>comment</i> block	

2. Unit Configurations – Select from the following standard unit configurations:

Table 2.1

Brigade (UA) – Light			Facility	FAC #	Area	UM
SRC	ALO	UA Population 3,311				
06365F000	1	155MM SP Bn Force XXI	HQ & Admin	6101-6102	346,000	SF
07245F100	1	Inf Bn Mech (FXXI)	Org Classroom	1711-1717	23,000	SF
11103F300	1	Initial Bde Sig Co	Avn Maint	2111	26,000	SF
17285F000	2	Div Cav Sqdn (XXI)	Veh Maint	2141	203,000	SF
17375F100	1	Armor Bn (FXXI)	Hardstand	8521-8522	185,000	SY
34393A100	1	MI Co, Sep Bde	Dining Facilities	7220	30,257	SF
63115F600	3	FSB (1x2) FXXI (Pure)	Barracks	7210	502,980	SF
87042F100	1	HHC Armor Bde (XXI)	Fitness Facilities	7421	65,000	SF
			Child Dev Ctrs	7371	30,000	SF
			Chapels	7361	28,000	SF

Table 2.2

Brigade (UA) -- Heavy						
SRC	ALO	UA Population 3,971	Facility	FAC #	Area	UM
06365F000	1	155MM SP Bn Force XXI	HQ & Admin	6101-6102	404,000	SF
06367F000	1	155SP Btry, 1x6 Force XXI	Org Classroom	1711-1717	28,000	SF
07245F100	1	Inf Bn Mech (FXXI)	Avn Maint	2111	26,000	SF
07245F100	1	Inf Bn Mech (FXXI)	Veh Maint	2141	211,000	SF
11103F300	1	Initial Bde Sig Co	Hardstand	8521-8522	205,000	SY
17285F000	2	Div Cav Sqdn (XXI)	Dining Facilities	7220	55,100	SF
17375F100	1	Armor Bn (FXXI)	Barracks	7210	609,931	SF
34393A100	1	MI Co, Sep Bde	Fitness Facilities	7421	65,000	SF
63115F600	3	FSB (1x2) FXXI (Pure)	Child Dev Ctrs	7371	32,000	SF
87042F100	1	HHC Armor Bde (XXI)	Chapels	7361	29,000	SF

Table 2.3

Schools -- Small						
SRC		Facility	FAC #	Area	UM	
I685/Y	Students-NCO Academy Ft Campbell	Gen Instr Bldg	1711	17,000	SF	
W3Y8AA	NCO Acad Ft Campbell	HQ & Admin	6100	9,000	SF	
		Barracks- perm	7210	3,100	SF	
		Barracks-student	7218	62,001	SF	
		Dining Facilities	7220	13,245	SF	
		Fitness Facilities	7421	28,000	SF	

Table 2.4

Schools -- Large						
SRC		Facility	FAC #	Area	UM	
I071/P	Inf School PCS students	Gen Instr Bldg	1711	420,000	SF	
I071/Y	Inf School TDY students	Applied Instr Bldgs	1711	188,000	SF	
I809/B	Basic Trainee students	HQ & Admin	6100	796,000	SF	
I809/R	Reception station students	Veh Maint	2141	18,000	SF	
I809/S	OSUT students	Hardstand	8521-8522	35,000	SY	
W0U2NA	USA Inf Center & Ft Benning	Barracks- perm	7210	235,990	SF	
W0U2AA	USA Inf Center & Ft Benning	Dining Facilities	7220	27,550	SF	
W2L5AA	USA Inf School (2,357 SP)					
W2L5NA	USA Inf School (11,221 SP)	AIT/BCT Complex: BN Headquarters w/2 Classrooms Co Ops / Barracks Dining	7218	348,485	SF	
		Fitness Facilities	7421	151,000	SF	
		Child Dev Ctrs	7371	30,000	SF	
		Chapels	7361	89,000	SF	

Table 2.5

Admin Organization - Small						
SRC		Facility	FAC #	Area	UM	
	CAA at Ft Belvoir - 142 PN					
W3WCAA	CAA	Admin	6100	23,000	SF	
W3WCNA	CAA					

Table 2.6

Admin Organization – Large					
SRC		Facility	FAC #	Area	UM
	HQ FORSCOM - Ft McPherson - 970 PN				
W3YBAA	HQ USA FORSCOM	Admin	6100	152,000	SF
W3YBNA	HQ USA FORSCOM	Barracks	7210	3,875	SF
		Fitness Facilities	7421	28,000	SF
		Child Dev Ctrs	7371	8,000	SF
		Chapels	7361	5,000	SF

Table 2.7

Depot Maintenance						
		Installation	UM	FAC #	Area	UM
Small	<200,000 SF Total Depot Facilities (Ex. Corpus Christi Army Depot)	200,000	SF	2111-2191, 4411-4424,		
	Small Depot Maintenance Facility			8521-8522	8,000	SF
Large	>8,850,000 SF Total Depot Facilities (Ex. Hawthorne Army Depot)	8,850,000	SF	2111-2191, 4411-4424,		
	Large Depot Maintenance Facility			8521-8522	75,000	SF

Table 2.8

Industrial						
		Installation	UM	FAC #	Area	UM
Small	~1,500,000 SF Total Industrial Facilities (Ex. Lake City AAP)	1,500,000	SF	2211-2281	NA	NA
Medium	~3,000,000 SF Total Industrial Facilities (Rock Island Arsenal)	3,000,000	SF	2211-2281	NA	NA
Large	>6,000,000 SF Total Industrial Facilities Ex. (Red River Depot)	6,000,000	SF	2211-2281	NA	NA

Table 2.9

Supply & Storage						
		Installation	UM	FAC #	Area	UM
Small	Small Storage GP Inst Facility	NA	NA	1443, 2182, 4411-4424	40,000	SF
Medium	Medium Storage GP Inst Facility	NA	NA	1443, 2182, 4411-4424	160,000	SF
Large	Large Storage GP Inst Facility	NA	NA	1443, 2182, 4411-4424	280,000	SF

3. Standard Unit Acreage Footprints – Standard footprints in acres are estimated for the facility types required for each configuration. Facility footprints include all ‘primary’ space requirements (facility footprint, parking, access roads/drives, and Anti Terrorism/Force Protection (AT/FP) setbacks).

Table 2.10

Brigade, Light	Footprint Acres	Brigade, Heavy	Footprint Acres
Total	187	Total	214
Administration LUC	72	Administration LUC	85
Industrial / Airfield Operations LUC	54	Barracks LUC	59
Barracks LUC	50	Industrial / Airfield Operations LUC	54
Community LUC	11	Community LUC	16

Table 2.11

School, Small	Footprint Acres	School, Large	Footprint Acres
Total	18	Total	791
Barracks LUC	15	Barracks LUC	645
Administration LUC	3	Administration LUC	128
		Community LUC	11
		Industrial LUC	7

Table 2.12

Administrative Small	Organization, Footprint Acres	Administrative Organization, Large	Footprint Acres
Total	7	Total	43
Administration LUC	7	Administration LUC	33
		Barracks LUC	6
		Community LUC	4

Table 2.13

Depot	Footprint Acres
Small	Industrial LUC 84
Large	Industrial LUC 1,361

Table 2.14

Industrial	Footprint Acres
Small	Industrial LUC 344
Medium	Industrial LUC 689
Large	Industrial LUC 1,377

Table 2.15

Supply & Storage	Footprint Acres
Small	Storage GP Inst Facility -- Industrial LUC 3
Medium	Storage GP Inst Facility -- Industrial LUC 9
Large	Storage GP Inst Facility -- Industrial LUC 15

N.8 SSEI CHECKLISTS

N.8.1 SSEI Checklist for Air Quality

Questions	Information Source	Analysis
<p>1. Is the receiving installation in <u>non-attainment</u> for air quality standards for any of the following criteria pollutants?</p> <p>Ground-Level Ozone (O₃), along with its precursors, Nitrogen Oxides (NO_x) and Volatile Organic Compounds (VOCs);</p> <p>Carbon Monoxide;</p> <p>Particulate Matter (PM-10 and PM-2.5)</p> <p>Sulfur Oxides (SO_x)</p>	<p>DOD #213: In the following Table, fill in the following information which describes the attainment designation classifications of the installation's National Ambient Air Quality Standard (NAAQS) for each applicable criteria pollutant.</p> <p>.</p>	<p>If NO, insert: "The receiving installation is in attainment for all NAAQS.</p> <p>If YES, insert: "The receiving installation is currently in Non-Attainment for _____. (list all applicable pollutants)."</p> <p>Proceed to question 2.</p>
<p>2. How close is the receiving installation to becoming a major source of Hazardous Air Pollutants (HAPs) or criteria air pollutants (as listed above)?</p>	<p>Use "Air Analysis Lookup.xls" spreadsheet to estimate if close to exceeding permit thresholds.</p> <p>DOD #211: Identify the actual air emissions, permit limits and threshold limits for each criteria pollutant</p> <p>DOD #212: Stationary Source Emissions Inventory/Permit Limits. Identify the actual emissions and the permit limits for the top five hazardous air pollutants in the following table.</p> <p>DOD #220: List any Clean Air Act (CAA) operating permits held by the installation. If multiple CAA operating permits are held for the installation, please indicate the applicable SIC code(s) for each permit.</p> <p>(For existence of Title V permit, see "Answer Source" for 211, 212, 220. Also, assume they have a Title V if they are a Major Source, or if they are operating under a synthetic minor (FESOP)).</p>	<p>A. If receiving installation is in Non-Attainment area, and currently a Major Source emitter, (or if new activity will make them a Major Source), then any impact due to mission increase is significant.</p> <p>B. Similarly, even if they are not a Major Source, but the new activity will exceed their permit limits for pollutants that contribute to the Non-Attainment, this addition will have significant impact.</p> <p>If A or B apply, insert: "Addition of operations at the receiving installation will require New Source Review permitting and Air Conformity Analysis for pollutants X,Y, etc. A more detailed emission analysis will be required to determine regulatory impact of new activities."</p> <p>C. If receiving installation is an Attainment area, but the new activity will bust either a Major Source threshold or a Permit threshold, then this is also significant impact. Insert: "Addition of operations at the receiving installation will require New Source Review permitting. A more detailed emission analysis</p>

Questions	Information Source	Analysis
		<p>will be required to determine regulatory impact of new activities."</p> <p>D. Regardless of whether receiving installation is in a Non-Attainment area, if the added activity doesn't appear to bust any Major Source or permit thresholds, then limited impact is expected. Insert:</p> <p>"Additional operations appear to be within operating permit buffers - limited impact expected."</p> <p>Proceed to question 3.</p>
<p>3. Are operations restricted due to air quality requirements?</p>	<p>ISR II: AQM issues adversely impacting mission.</p> <p>DOD #218: If your military installation, range or auxiliary airfield operations (i.e., training, R&D, ship movement, aircraft movement, military operations, support functions, vehicle trips per day, etc.) have been restricted or delayed as a result of air quality requirements, complete the following table.</p>	<p>If YES, insert:</p> <p>"Air quality issues currently restrict operations, and additional operations with air emissions may also be restricted."</p>
<p>If potential significant impacts exist from activities above, what are the range of costs for major studies, approvals, and construction or other purchases?</p>	<p>Summary of Potential Significant Cost Activities</p>	
	<p>Activity</p>	<p>Range of Costs</p>
	<p>Conformity Analysis</p>	<p>\$25K-75K (includes no mitigation costs)</p>
	<p>NSR (New Source Review) Analysis and Permitting</p>	<p>\$100K-500K (depends on complexity of the analysis and issues)</p>
		<p>COBRA</p>
		<p>\$50K</p>
		<p>\$100K</p>

N.8.2 SSEI Checklist for Cultural/Archeological/Tribal Resources

Questions	Information Source	Analysis
<p>1. Have surveys been completed at the receiving installation to identify cultural / archeological / tribal resources?</p>	<p>DOD #233: If the military installation, range, or auxiliary airfield has been surveyed for archeological resources, what percentage of the military installation, range or auxiliary airfield has been completed as of 30 Sep 03?</p>	<p>Fort Meade and Kansas AAP are the only installations that have not been surveyed. For Fort Meade and Kansas, insert: "Surveys need to be completed to determine impact." Then proceed to question 5.</p> <p>Less than 5% of Aberdeen Proving Grounds, Bluegrass, Fort Wainwright, Schofield</p>

Questions	Information Source	Analysis
	<p>DOD #235: If the military installation, range, or auxiliary airfield has been surveyed for non-archeological historic resources (i.e. properties on or eligible for the National Register of Historic Places) and historic resources were identified, complete the following table.</p>	<p>Barracks, Crane, Lake City, Picatinny, West Point, and Walter Reed have been surveyed for cultural resources. For these installations, insert: “A very limited portion of the installation has been surveyed for cultural resources (<5%); therefore, the extent of cultural resources on the installation and impacts to these resources is uncertain.” Then proceed to question 2.</p> <p>If all other installations, proceed to question 2.</p>
<p>2. What cultural / archeological / tribal resources were identified?</p>	<p>DOD #229: Do any on-military installation cemeteries impose limitations on fee-simple ownership, e.g. access easements, outside plot ownership?</p> <p>DOD #230: List any archeological resources and/or sacred burial sites in the table.</p> <p>DOD #231: Are there any areas on or contiguous to the military installation, range or auxiliary airfield used or identified as sacred sites, Traditional Cultural Properties, or burial sites by Native People or others?</p> <p>DOD #235: If the military installation, range, or auxiliary airfield has been surveyed for non-archeological historic resources (i.e. properties on or eligible for the National Register of Historic Places) and historic resources were identified, complete the following table.</p>	<p>Note resources identified (type and number), then proceed to question 3.</p>
<p>3. Does the receiving installation have a National Historic Preservation Act (NHPA) Programmatic Agreement (PA) in place?</p>	<p>DOD # 236: Does the military installation have a programmatic agreement or other program alternative to case-by-case National Historic Preservation Act consultation in effect with the State Historic Preservation Officer?</p>	<p>If NO, then insert: “Potential impacts may occur, since resources must be evaluated on a case-by-case basis, thereby causing increased delays and costs.” Proceed to question 4.</p> <p>If YES, proceed to question 4.</p>
<p>4. Are there restrictions on operations or other significant constraints due to cultural / archaeological / tribal resources?</p>	<p>ISR II: Archeological site restrictions or access to cultural resources affecting mission?</p> <p>DOD #201: If there have been constraints which impacted any type of mission operations, identify the type of constraint (1-6 below), type of</p>	<p>If NO, but these resources do exist (see question 2), insert: “Operations are not restricted due to cultural / archaeological / tribal resources. However, these resources were identified. There may be restrictions on operations or other land use constraints due to these resources.”</p>

Questions	Information Source	Analysis	
	limitation (i-ii below), and the operational restriction as defined in (a-e below) against the possible drivers of the constraint in the following table. Only consider constraints occurring within FY03. DOD #230: List any archeological resources and/or sacred burial sites in the table.	Then proceed to question 5. If YES, insert: “Cultural / archaeological / tribal resources currently restrict operations. Additional operations may impact these resources, which may lead to restrictions on these operations as well.” Proceed to question 5.	
5. Is the receiving installation required to consult with Federally-recognized tribes for NHPA or other relevant regulation or statute?	DOD #234: If any federally recognized Native American Tribes have asserted an interest in the military installation for the purposes of National Historic Preservation Act or other required consultation activities, complete the following table.	If NO, then insert: “There is no additional impact on operations anticipated from NHPA or other related regulations.” If YES, then insert: “A potential impact may occur as a result of increased time delays and negotiated restrictions.”	
If potential significant impacts exist from above, what are the range of costs for major studies, and compliance actions?	Summary of Potential Significant Cost Activities		
	Activity	Range of Costs	
	Archeological/tribal resources inventory	\$25 to \$100 per acre depending on location and ground cover	
	Historic building/structure inventory	\$500-\$1,500 per building/structure depending on size, quantity, location	
	Evaluation to determine if archeological/tribal site(s) is significant	\$15,000K to \$40,000K per site depending on size, complexity, and location	
	Evaluation to determine if historic buildings/structures are significant	\$1,000 to \$2,000 per building depending on size, complexity, and location	
	Develop Programmatic Agreement (PA)	\$10,000 if not prepared in-house	
	Mitigation of archeological site by data recovery IAW PA	\$25,000 to \$500,000 per site depending on size, complexity, and location	
Mitigation of historic building/structure by HABS/HAER recordation IAW PA	\$5,000 to \$25,000 per building depending on size, complexity, and location		
Conduct Tribal government to government consultation	\$500 to \$2,000 per meeting for each tribal representative TDY costs		

N.8.3 SSEI Checklist for Dredging

Questions	Information Source	Analysis
1. Are there any known impediments to deepening existing channels?	DOD #227: Are there known impediments to deepening existing channels (possible structural concerns, etc.)?	If the unit/activity does not require dredging and/or the answer is “No” to question 1, then write the following statement (applies for all installations except Aberdeen Proving Grounds and Fort Belvoir) - "There are no dredging impacts for this scenario." Otherwise, for Aberdeen Proving Grounds and Fort Belvoir write – “If the new unit/activity requires dredging, then dredging may not be able to occur in the short term due to known dredging impediments.” Proceed to question 2.
2. Is the installation’s ability to dredge hampered by the presence of ordnance in the water?	DOD #226: Is dredging activity restricted because of the presence of ordnance in the water?	For all installations other than Aberdeen Proving Grounds, the answer is No. Proceed to question 3. For Aberdeen Proving Grounds write the following statement – “If the new unit/activity requires dredging, then UXO and endangered species surveys may be required.”
3. What is the remaining life expectancy of the approved spoil receiving site under current projections and how may this be impacted by the depth and maneuvering requirements of any new vessels being added to the local fleet as a result of transferred function(s)?	DOD #228: If the military installation has a dredging maintenance requirement and there is an approved spoil dumping site, complete the following table.	This question applies to Military Ocean Terminal Sunny Point and Fort Eustis , only. If applicable: write the following statement – “The spoil site has X years remaining and the new activity (will) will not (significantly) reduce the life expectancy of the spoil area.” (Sunny Pt has 2099-2005=94 years; Ft Eustis has 2030-2005=25 years remaining.)

N.8.4 SSEI Checklist for Land Use Constraints/Sensitive Resource Areas

Questions	Information Source	Analysis
1. How many unconstrained acres are available for development or use ?	DOD #30: Buildable Acres DOD #198: Complete the table for all land owned/controlled by the installation. “Controlled” includes land/property used by the service under lease, license, permit, etc. DO NOT include easements as either owned or controlled. Include the main installation, ranges, auxiliary airfields, withdrawn land and all outlying sites. Designate ranges, auxiliary airfields, and outlying sites separately by name and real property nomenclature.	Insert: “There are x acres of unconstrained land available for development or use.” Proceed to question 2.

Questions	Information Source	Analysis	
<p>2. What unique land use constraints (i.e., other than those captured by other Criterion 8 factors such as noise, T&E, etc.) exist that impact operations?</p>	<p>DOD #201: If there have been constraints which impacted any type of mission operations, identify the type of constraint (1-6 below), type of limitation (i-ii below), and the operational restriction as defined in (a-e below) against the possible drivers of the constraint in the following table.</p> <p>DOD #254: If training/testing/operational areas (e.g. MTRs, EW emitter sites, antenna sites) that are not part of the local operations are restricted by Sensitive Resource Areas that your military installation manages and/or controls, provide the following information and list restricted area in square (SQ) statute miles (MI) or describe in parameters (e.g. MTR from San Nicholas Island to China Lake from 0 to 18,000 MSL).</p> <p>DOD #256: If there are any Sensitive Resource Areas managed by a state or Federal agency, on, adjacent to, or within 10 miles of the military installation, range or auxiliary field, complete the following table.</p>	<p>List and describe unique land use constraints not captured under other Criterion 8 factors.</p> <p>For Fort Belvoir, Fort Polk, Fort Sill, WSMR, Fort Huachuca, Fort McCoy, Fort Myer, and Walter Reed AMC (relative to question 256) insert:</p> <p>“Unique land use constraints on, adjacent to, and/or within 10 miles of (insert name of location) currently constrain mission on the installation.”</p> <p>For Fort Sill (relative to question #254) insert:</p> <p>“Aircraft training around Fort Sill is restricted by nearby sensitive habitat. Aircraft altitude should remain above 2000’ over the Wichita Mountain Wildlife Refuge.”</p> <p>Proceed to question 3.</p>	
<p>3. Is future encroachment projected to further constrain mission?</p>	<p>CERL Encroachment Study ("Encroachment Projection.xls"). The following are projected to be in the top 20% of most encroached by 2020: Carlisle, Charles Kelly, Corpus Christi, Detroit Ars, Belvoir, Buchanan, Gillem, Hamilton, Holston, ,Lewis, Lima, McPherson, Monmouth, Presidio of Monterey, Sam Houston, Scranton, Selfridge, Shafter, Soldier Support Ctr, Rock Island, & Watervliet.</p>	<p>If not on this list, then complete.</p> <p>If YES, then insert:</p> <p>“Future encroachment around the installation is expected to further adversely impact mission on the installation.”</p>	
<p>If potential significant impacts exist from activities above, what are the range of costs for major studies, approvals, and construction or other purchases?</p>	<p>Summary of Potential Significant Cost Activities</p>		
	<p>Activity</p>	<p>Range of Costs</p>	<p>COBRA</p>
	<p>NEPA: < 1K pers, Admin Realignment (EA)</p>	<p>N/A</p>	<p>\$100K</p>
	<p>NEPA: ≥ 1K pers, up to Bde sized (EA)</p>	<p>N/A</p>	<p>\$400K</p>
	<p>NEPA: Multiple Bdes, or industrial, or high Env risk (EIS)</p>	<p>N/A</p>	<p>\$1M</p>

N.8.5 SSEI Checklist for Marine Resources

Questions	Information Source	Analysis
<p>1. Are marine resources, including species protected under MMPA/ESA, EFH, corals, Marine Protection Areas, and/or other habitat affected by training in the area?</p>	<p>a. Data Call Question(s): DoD #248, 249, 250, 252 and 253.</p>	<p>Analysis applies only to new missions at Fort Eustis, Fort Lewis, Fort Meade, and West Point.</p> <p>If the new unit/activity has the potential to impact marine resources (directly/indirectly) or the answer to question 1 is No (which includes all installations with the exception of Fort Eustis, Fort Lewis, Fort Meade, and West Point), then insert: “There are no impacts to marine resources for this scenario.”</p> <p>If the new unit/activity impacts similar resources as those units currently on the installation, and the answer to question 2 is Yes (i.e., Fort Eustis, Fort Lewis, Fort Meade, and West Point), then insert: “Marine resources are currently impacted by training. Additional operations may further impact marine resources, which may lead to operational restrictions. Further study is needed to determine significance of impact.”</p>
<p>If potential significant impacts exist from above, what are the range of costs for major studies, and compliance actions?</p>	<p>Summary of Potential Significant Cost Activities</p>	
	<p>Activity</p>	<p>Range of Costs</p>
	Noise contour development	\$10,000-50,000 per installation
	Marine mammals survey	\$50,000-100,000 per installation
	Marine endangered species survey	\$50,000-100,000 per installation
	Coral reef survey	\$20,000-50,000 per installation
	Important fisheries survey	\$20,000-50,000 per installation
Consultation	\$100,000-150,000 per installation	

N.8.6 SSEI Checklist for Noise

Questions	Information Source	Analysis
<p>1. Do noise contours currently go beyond the receiving installation boundary, while at the same time significant encroachment has occurred in the area?</p>	<p>a. Installation Profile</p> <p>b. SIRRA Noise Sensitivity Question</p> <p>c. Data Call Question:</p> <p>DOD #239: Fill in the table for the property outside of your main installation, auxiliary airfield, training</p>	<p>If NO, insert: “Noise impacts may not occur. However, an increase greater than 50% in operations may result in significant impacts from noise. Further evaluation is required.”*</p> <p>If YES, insert: “Significant impacts associated with noise levels off-post are likely to occur. Noise-generating operations may be restricted. Also,</p>

Questions	Information Source	Analysis	
	range and/or RDT&E range that are within noise zones (report EITHER Noise Zones (Army) or AICUZ 5 dB contours (AF, Navy)).	additional noise analysis and mitigation may be required.” Proceed to question 2	
2. Are there restrictions on operations at the receiving installation due to noise considerations, such as incompatible land use on- or off-post?	DOD #201: If there have been constraints which impacted any type of mission operations, identify the type of constraint (1-6 below), type of limitation (i-ii below), and the operational restriction as defined in (a-e below) against the possible drivers of the constraint in the following table.	If NO, insert: “Operations are not currently restricted due to noise considerations. However, an increase greater than 50% in operations with noise aspects may result in significant impacts and further restrictions. Further evaluation is required.”* If YES, insert: “Operations are currently restricted due to noise considerations. Additional noise-generating operations may be restricted as well.”	
3. If potential significant impacts exist from activities above, what are the range of costs for major studies, approvals, and construction or other purchases?	Summary of Potential Significant Cost Activities		
	Activity	Range of Costs	COBRA
	Noise Analysis and Monitoring	\$5,000-75,000	\$20K

N.8.7 SSEI Checklist for Endangered Species Management

Questions	Information Source	Analysis
1. Has the installation identified threatened / endangered / candidate species or critical habitat on the installation?	DOD #249: If current Endangered Species Act/Marine Mammal Protection Act restrictions affect shore or in-water operations or testing/training activities conducted at the military installation or range, complete the following table. DOD #259: If Federally listed threatened or endangered species are found on your military installation, range or auxiliary field locations, identify each and indicate whether operations, testing or training are restricted by the presence of the threatened or endangered species in the table. DOD #260: If any critical habitats (as defined	If NO, insert: “No threatened, endangered or candidate species exist on the installation. No critical habitat is found on the installation. No impact is expected.” (End assessment) If YES, proceed to question 2.

Questions	Information Source	Analysis
	by the U.S. Fish and Wildlife Service) have been designated on the military installation, range or auxiliary field, complete the following table.	
<p>2. Are there endangered species management concerns at the installation that warrant restrictions on operations/testing/training on the military installation, range, ² or auxiliary airfield?³</p>	<p>DOD # 249, #259, and #260</p> <p>DOD #201: If there have been constraints which impacted any type of mission operations, identify the type of constraint (1-6 below), type of limitation (i-ii below), and the operational restriction as defined in (a-e below) against the possible drivers of the constraint in the following table.</p> <p>DOD # 261: If existing Biological Opinion restricts operations/testing/training on the military installation, range or auxiliary airfield, complete the following table.</p> <p>DOD #262: Do current species/habitat restrictions outlined in biological opinions impede military installation development/expansion activities?</p> <p>DOD #263: If species that are identified by U.S. Fish and Wildlife Service as candidate species for listing as threatened or endangered are found on the military installation, range or auxiliary airfield, complete the following table.</p> <p>DOD #264: If a candidate species that has been identified by U.S. Fish and Wildlife Service has a proposed critical habitat complete the following table.</p>	<p>If NO, insert: “Threatened/endangered/candidate species or critical habitats exist but do not impact operations. Additional operations may impact TES, candidate species, and/or critical habitats, possibly leading to restrictions on operations.”</p> <p>If Yes, insert: “Threatened / endangered / candidate species or critical habitats already restrict operations. Additional operations may further impact threatened / endangered / candidate species or critical habitat leading to additional restrictions on operations.”</p>

² Preparation of a BA to assess affects and consultation usually requires 2-12 months. In most cases the action cannot occur until consultation is completed with either a BO or a concurrence from the FWS.

³ Note IAW with the ESA, if the action is considered to be a “major activity”, a BA is required to assess affects to listed species—i.e. actions that require an environmental assessment (EA) or environmental impact statement (EIS).

Questions	Information Source	Analysis
3. If potential significant impacts exist from activities above, what is the range of costs for major studies, approvals, and construction or other purchases?	Summary of Potential Significant Cost Activities	
	Activity	Range of Costs/Time Frame
	Endangered Species Planning Level Survey	\$20K to \$100K / 2-6 Month (could season specific)
	ESA Consultation (Biological Assessment prep)	\$10K to 100K / 2 –12 months
	Endangered Species Management (includes monitoring)	\$20K to \$2M/

N.8.8 SSEI Checklist for Waste Management

Questions	Information Source	Analysis
1. If the mission of the relocating unit/activity requires RCRA management of waste military munitions (WMM) via the use of an OB/OD facility, does the receiving installation currently have a RCRA Subpart X OB/OD permit	a. Installation Profile	<p>If both losing and gaining installations have OB/OD permits, or if both do not have permits, indicate -- No Impact.</p> <p>If the moving unit/activity requires management of WMM through an on-site OB/OD facility, BUT the gaining installation does not have a RCRA Subpart X permit, indicate -- Significant Impact.</p> <p>In determining whether unit/activity requires management of WMM through an OB/OD facility, assume: :</p> <ol style="list-style-type: none"> 1) Primary mission-related activities at all Ammunition Depots, Ammunition Plants, and Chemical Depots require access to an OB/OD facility 2) Military Munition RDT&E activities require access to an OB/OD (may need to research specific mission of the moving activity) <p><u>Notes:</u></p> <ol style="list-style-type: none"> 1) Management of WMM during the course of regular training on active/inactive ranges, is exempt from RCRA and therefore, no OB/OD permits are required. 2) Regulators have been extremely reluctant to grant new OB/OD permits where none exist.
	<p>b. Unit/activity information gleaned from proposal or through discussions with proposal author</p> <p>b. Data Call Question:</p> <p>DOD #269: RCRA Subpart X Permit. “Does the military installation have an interim or final RCRA Subpart X permit for operation of an open burning/open detonation facility?”</p>	
2. If potential significant impacts exist from activities above, what is the range of costs for major studies, approvals, and construction or other purchases?	Summary of Potential Significant Cost Activities	
	Activity	Range of Costs
	Permit for RCRA Sub X OB/OD at an installation that does not have one.	\$1 million

N.8.9 SSEI Checklist for Water Resources

Questions	Information Source	Analysis
<p>1. Is the installation or range located over or in the recharge zone of a sole source aquifer?</p>	<p>DOD #276: Recharge Zone – “Is the military installation or range located over or in the recharge zone of a sole source aquifer?”</p>	<p>If No, then go to question 2.</p> <p>If YES note: “The installation or range is located over or in the recharge zone of a sole source aquifer, which may result in future regulatory limitations on training activities.”</p> <p>Proceed to question 2.</p>
<p>2. Do special restrictions or regulations significantly restrict the quantity of water that may be used by the installation (e.g., McCarren Amendment, state/local controls)?</p>	<p>DOD #278: Is any source from which the military installation withdraws water currently the subject of adjudication under the McCarren Amendment?</p> <p>DOD #293: Potable Water Controls/Restrictions - If water controls/restrictions were implemented that limited the production or distribution of potable water on the installation, fill in the following table:</p>	<p>If No, then go to question 3.</p> <p>Note: Only Ft Carson & Ft Huachuca answered "yes" to #278.</p> <p>If YES note: “Special restrictions or procedures are in place to significantly limit the production or distribution of potable water at the installation. Increased missions at the installation may result in additional restrictions or mitigation requirements (e.g., purchase/development of additional regional water resources).”</p> <p>Proceed to question 3.</p>
<p>3. Is water available to support increased demands due to population and mission increases?</p>	<p>Water resource SMEs compiled a list of installations with reported water constraints: [Carlisle, Bragg, Detrick, Eustis, Huachuca, Monroe, Sam Houston, Kansas AAP.] See "CHPPM-Water Resources v2.xls"</p>	<p>If installation is on the list then insert:</p> <p>“Installation is currently experiencing water constraints which will be exacerbated by increased demands due to population and mission increases.”</p> <p>Proceed to question 4.</p>
<p>4. Is water delivery infrastructure at or near physical capacity?</p>	<p>DOD #291: Potable Water Production - Complete the table for FY 2003 for each potable water system / treatment facility.</p> <p>DOD #292: Potable Water Consumption Peak Month - For the period FY 1999-2003, provide the month, year and volume of largest peak monthly consumption of Potable Water.</p> <p>DOD #293.</p>	<p>Compare the number of personnel from the scenario with remaining allowable capacity at the installation from file "IREM Water Constraints.xls".</p> <p>If remaining capacity of the installation potable water system exceeds the number of personnel associated with the scenario, then go to question 5.</p> <p>If remaining capacity of the installation potable water system is below the number of personnel associated with the scenario, then insert:</p> <p>“Potable water resources on the installation may be limited. Scenario exceeds the</p>

Questions	Information Source	Analysis
		<p>remaining potable water capacity for the installation. Scenario is potentially infeasible without significant water conservation measures or unless additional regional water resources are available for purchase.”</p> <p>Proceed to question 5.</p>
<p>5. Does the military installation discharge pollutants to an impaired waterway that will be regulated under the TMDL program?</p>	<p>DOD #279: If the military installation discharges (point or nonpoint source) to an impaired waterway, as defined in the Clean Water Act, for which the state will have to develop a total maximum daily load for one or more pollutants in the installation’s discharge, complete the following table.</p>	<p>If No, then go to question 7.</p> <p>If Yes, then insert: “Water quality impaired by pollutant loadings. Current operations may contribute to impaired water quality. Significant mitigation measures to limit releases may be required to reduce impacts to water quality and achieve USEPA Water Quality Standards.”</p> <p>Proceed to question 6.</p>
<p>6. Does impaired waterway adversely impact operations?</p>	<p>ISR II: WQM issues adversely impacting mission. WSWM issues adversely impacting mission.</p>	<p>If No, then insert: “Water quality issues currently do not restrict operations. However, increases in operational forces may increase discharge levels which may impact operations in the future and/or require further mitigation.”</p> <p>If Yes, then insert: “Water quality issues currently restrict operations. Increases in personnel may further restrict operations and/or require implementation of enhanced mitigation measures.”</p>
<p>7. Does the installation operate its own government run sanitary sewage treatment plant?</p>	<p>DOD #297: Sanitary Sewage Treatment System/Plant - Complete the following table for FY 2003 for each sanitary sewer system / treatment plant for the military installation (government operated only).</p>	<p>If No, then go to question 8.</p> <p>If Yes and the installation has the potential to exceed operating/permitting capacity from receiving new mission (evaluate responses to DOD #297 and personnel increases), then insert: “Scenario may require upgrades to the sanitary sewage treatment plant system. Further study is needed to determine the extent of upgrades.”</p>
<p>8. Does the installation operate an industrial wastewater treatment facility?</p>	<p>DOD #282: Industrial Wastewater Treatment System - If the installation has an industrial wastewater treatment system.</p>	<p>If No, then complete.</p> <p>If Yes and the scenario requires treatment of industrial waste effluent, then insert: “Scenario may require upgrades/pretreatment of wastewater effluent. Further study is needed to determine the extent of upgrades.”</p>

Questions	Information Source	Analysis
If potentially significant impacts exist from activities above, what are the range of costs for major studies, approvals, and construction or other purchases?	Summary of Potential Significant Cost Activities	
	Activity	Range of Costs
	Infrastructure or Source Upgrade	\$0.5K per person added above capacity
	Collection System Upgrade	\$100K-1M
	Install Best Management Practices (BMPs) to protect impaired waterways and reduce non-point source runoff from training areas and ranges	\$100K – 3M
	Wastewater Treatment Plant Upgrade	\$250K-2M
	Industrial Wastewater Treatment Plant Upgrade	\$75K-1M
	Pretreatment Program Improvements	\$50-300K

N.8.10 SSEI Checklist for Wetlands

Questions	Information Source	Analysis
1. Has the receiving installation been surveyed for wetlands?	DOD #251: If the military installation has been surveyed for jurisdictional wetlands in accordance with established Federally approved guidelines, when was the survey completed?	If NO, insert: "Wetlands survey may need to be conducted to determine impact, as appropriate." If YES, proceed to question 2.
2. Were wetlands, jurisdictional or otherwise, identified in the wetlands survey?	DOD #257: If there are any jurisdictional wetlands (as defined by the U.S. Army Corps of Engineers), estuaries, or other special aquatic features such as American Heritage Rivers present on the military installation, complete the following table.	If NO, end assessment and insert: "There is no anticipated impact to wetlands." If YES, proceed to question 3.

Questions	Information Source	Analysis
3. Did the installation identify that operations are restricted due to wetlands?	<p>DOD #201: If there have been constraints which impacted any type of mission operations, identify the type of constraint (1-6 below), type of limitation (i-ii below), and the operational restriction as defined in (a-e below) against the possible drivers of the constraint in the following table.</p> <p>DOD #257: If there are any jurisdictional wetlands (as defined by the U.S. Army Corps of Engineers), estuaries, or other special aquatic features such as American Heritage Rivers present on the military installation, complete the following table.</p>	<p>If installation is Fort Lee or Fort Buchanan, or the answer is YES, then insert: “Wetlands already restrict operations. Additional operations may impact wetlands, which may lead to operations that are restricted.”</p> <p>If NO, insert: “Wetlands do not currently restrict operations. However, additional operations may impact wetlands, which may lead to operations that are restricted.”</p>
4. If potential significant impacts exist from activities above, what are the range of costs for major studies, approvals, and construction or other purchases?	Summary of Potential Significant Cost Activities	
	Activity	Range of Costs
	Survey for jurisdictional wetlands	\$300K to \$5M
	Evaluation of jurisdictional wetland surveys	\$75K to \$850K
	Evaluation of operational restrictions for jurisdictional wetlands	\$10K to \$200K
	Mitigation costs (if required)	\$50K to \$4M

N.8.11 SSEI Checklist for Installation Closure

Questions	Information Source	Analysis
1. Are environmental media contaminated by hazardous chemicals, which will likely require further remediation and monitoring after closure?	<p>DOD #275: Groundwater Contamination – If contamination has been found in ground water resources within the boundaries of the military installation or range, complete the following table.</p> <p>DOD #281: Surface Water Contamination - If contamination has been identified in the surface water resources within the boundaries of the installation or range, complete the following table.</p> <p>DOD #240: Defense Environmental Restoration Accounts: If there are identified installation restoration (DERA - Defense Environmental Restoration Accounts) sites located on the military installation, range or auxiliary airfield, complete the following table.</p> <p>FY03 Installation Action Plan (IAP) Database / FY2003 DERP Annual Report to Congress</p>	<p>If No, then proceed to question 2.</p> <p>If YES, insert: “Environmental media contamination issues at the installation include: _____ (list). Restoration and/or monitoring of contaminated media will likely be required after closure in order to prevent significant long-term impacts to the environment.”</p> <p>Proceed to question 2.</p>

Questions	Information Source	Analysis
<p>2. Does the installation contain areas that cannot be disturbed due to past waste management activities (e.g., RCRA landfills, sanitary landfills, old waste disposal areas) and/or munitions firing (e.g., ranges and impact zones with UXO)?</p>	<p>DOD #265: Permitted Hazardous Waste TSD Facility: Does the military installation have a permitted hazardous waste RCRA Treatment Storage and Disposal (TSD) facility?</p> <p>DOD #272: Permitted Solid Waste Disposal Facility: If the military installation has a permitted solid waste disposal facility, what is the permitted capacity and percent filled for each facility?</p> <p>DOD #269: RCRA Subpart X Permit: Does the military installation have an interim or final RCRA Subpart X permit for operation of an open burning/open detonation facility?</p> <p>DOD #273: Military Munitions Response Areas: Are there military munitions response areas located on the military installation or auxiliary airfield?</p> <p>Active Army Range Database (AEC)</p>	<p>If No, then proceed to question 3.</p> <p>If YES, insert:</p> <p>“Special waste management areas at the installation include _____(list). Restoration, monitoring/sweeps, access controls, and/or deed restrictions may be required for these areas to prevent disturbance, health and safety risks, and/or long-term release of toxins to environmental media.”</p> <p>Proceed to question 3.</p>
<p>3. Are significant cultural resources located on the installation that must be protected after closure?</p>	<p>DOD #230: List any archeological resources and/or sacred burial sites in the table.</p> <p>DOD #231: Are there any areas on or contiguous to the military installation, range or auxiliary airfield used or identified as sacred sites, Traditional Cultural Properties, or burial sites by Native People or others? Include all on-military installation cemeteries.</p> <p>DOD #232: Were any sites or areas with high potential for archeological sites identified?</p> <p>DOD #235: If the military installation, range or auxiliary airfield has been surveyed for non-archaeological historic resources (i.e. properties on or eligible for the National Register of Historic Places) and historic resources were identified, complete the following table.</p>	<p>If No, then go to question 4.</p> <p>If YES, insert:</p> <p>“Surveys and consultation with the SHPO will be required to ensure protection of cultural resources at the installation.”</p> <p>Proceed to question 4.</p>
<p>4. Are listed species or sensitive areas located on the installation that must be protected and managed after closure?</p>	<p>DOD #259: If Federally listed threatened or endangered species are found on your military installation, range or auxiliary field locations, identify each and indicate whether operations, testing or training are restricted by the presence of the threatened or endangered species in the table.</p> <p>DOD #260: If any critical habitats (as defined by the U.S. Fish and Wildlife Service) have been designated on the military installation, range or auxiliary field, complete the following table.</p> <p>DOD #263: If species that are identified by U.S. Fish and Wildlife Service as candidate species for listing as threatened or endangered are found on the military installation, range or auxiliary airfield, complete the following table.</p>	<p>If No, then complete.</p> <p>If YES, insert:</p> <p>“Federally listed species at the installation include: _____(list). Continued management and/or deed restrictions will be necessary to insure future protection of Federally listed species.”</p>

Questions	Information Source	Analysis	
	DOD #264: If a candidate species that has been identified by U.S. Fish and Wildlife Service has a proposed critical habitat complete the following table.		
If potentially significant impacts exist from activities above, what are the range of costs for major studies, approvals, and construction or other purchases?	Summary of Potential Significant Cost Activities		
	Activity	Range of Costs	COBRA
	Environmental Baseline Survey (including MEC survey, asbestos survey, radiological contamination, records survey, etc.)	\$300K – 500K	
	Restoration/monitoring of Hazardous Waste Sites – <i>only apply if installation has a TSDF, permitted disposal facility, OB/OD permit</i>	\$500K – 10M+	
	UXO sweep and restoration	\$500K – 20M+	
	Controlled burning/decontamination/demolition of industrial buildings/structures heavily contaminated with explosives/metals – <i>only apply costs if installation is a Chemical Depot, Chemical Plant, Ammunition Plant</i>	\$1M – 10M+	
	Land Use Controls (LUC) management/enforcement in perpetuity (occurs after land transfer)	\$50K – \$100K (annual)	
	Asbestos/Lead-based Paint Removal – <i>include in all assessments since varying degrees of removal efforts are very likely</i>	\$200K – 1M	
	Access controls/caretaker management - <i>include in all assessments since these activities are likely to occur in virtually all closed installations</i>	\$500K – 1M (annual)	
	EBS + Disposal EIS (for Depots, Arsenals, AAPs), or if TES and/or Arch Resources involved		\$1.3M
	EBS + Disposal EA , if Candidate Species involved		\$800K
	EBS + Disposal EA if NO TES and NO Arch Resources involved		\$550K

N.9 RESERVE COMPONENT SSEI FORMAT

N.9.1 Matrix Format

Reserve Component SSEIs will use the below matrix format for all RC installation assessments. When an RC scenario involves a gaining installation that is on the Active Component study list, the JPAT-designed format and process discussed in SECTION N.4.1 will be used.

Proposal # _____

Title: _____

Analyst _____

Last Update: _____

	<i>Gaining Installation Assessment</i>	<i>Losing Installation Assessment</i>
<u>Environmental Resource Areas</u> Air Quality; Cultural/Archeological/Tribal Resources; Dredging; Land Use Constraints/Sensitive Resource Areas; Marine Mammals/Marine Resources/Marine Sanctuaries; Noise; Threatened & Endangered Species/Critical Habitat; Waste Management; Water Resources; Wetlands		
<u>Compliance</u> (e.g., pollution prevention, air permits, etc.)		
<u>Restoration</u> (AEDBR data, CERCLA work)		
<u>Waste Management</u> (RCRA – Haz. Waste, OB/OD areas, radiological, etc.)		
COBRA Costs:		

O. INSTALLATION VISUALIZATION TOOL (IVT)

O.1 BACKGROUND

Department of Defense (DoD) IVT capabilities were established to further the objectives set forth by the Secretary of Defense in the kickoff memo for BRAC 2005.¹ In particular, the Secretary stated:

A primary objective of BRAC 2005, in addition to realigning our base structure to meet our post-Cold War force structure, is to examine and implement opportunities for greater joint activity. Prior BRAC analyses considered all functions on a service-by-service basis and, therefore, did not result in the joint examination of functions that cross Services. While some unique functions may exist, those functions that are common across the Services must be analyzed on a joint basis.

IVT enables the analyst to view imagery and geospatial data in a consistent fashion. It provides the ability to visualize: installation and associated range complexes using overhead (satellite) imagery of each installation or activity; installation/range boundaries, and significant “exclusion zone” criteria, depicting areas of the installation or range not available to accept realigned missions from closed installations. Each criterion is depicted on a map overlay. The IVT layers are overlaid on digital satellite imagery to provide a comprehensive picture of the situation at each site.

O.2 IVT AND THE BRAC PROCESS

The IVT provides The Army Basing Study (TABS) Group with a process and means for collecting, standardizing, documenting, delivering, and visualizing imagery and geospatial data in a consistent fashion for DoD installations. IVT provides a complementary geospatial supplement to deliberative data.

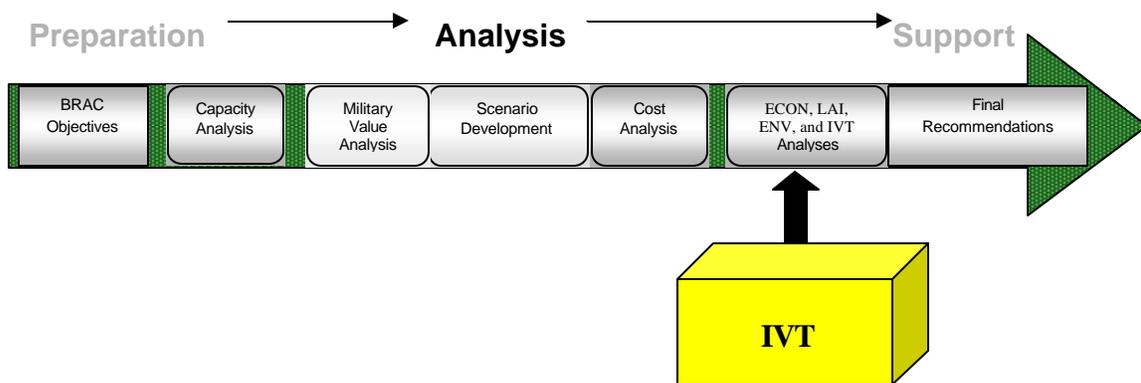


Figure 1. TABS Process

¹ Department of Defense, Office of the Secretary of Defense, *Transformation Through Base Realignment and Closure*, memorandum, by Donald Rumsfeld, (Washington, D.C., 15 November 2002).

Each TABS analyst has the ArcReader software installed on his PC. Utilizing this software, TABS analysts have the ability to supplement their analysis using the Army, Army Reserve, and Army National Guard geospatial data provided in support of IVT. If a conflict arises between the IVT data and the BRAC data call, the data call prevails in all cases.

TABS analysts also have the OSD IVT application available for their use, by request from the IVT support analyst. This application is provided to offer the TABS analyst an additional means of cross-service visualization by including the geospatial data for all DoD installations included in IVT, several national datasets (major roads, urban areas, federal lands, and hydrography), military training routes, and special-use airspace.

TABS analysts may submit their IVT analytical requirements to the on-site IVT support analyst as needed via an Electronic Request Form. The Modeling Team Environmental Analyst intercedes as needed to prioritize workload if necessary. Upon request, special thematic map products can be produced incorporating tabular data from the BRAC data call questionnaire with the IVT data. The IVT support analyst also provides map products showing Service installations and environmental awareness through the use of national and regional data sets.

O.3 QUALITY ASSURANCE PLAN

The DoD IVT Quality Assurance Plan (QAP), dated 31 October 2003, defined geospatial data and metadata content specifications, data handling and certification procedures, and validation methodologies for the IVT to supplement the BRAC 2005 analysis. It also defined the Base-Level Command Authority approval process, including preparation of an IVT portfolio, data submission procedures, and a signature process.

An IVT Technical Working Group (TWG) developed the QAP with support from mission knowledge experts within the Services and with oversight from the BRAC Joint Audit Planning Group and the IVT Integrated Process Team (IPT).

While the Services used geographic information systems (GIS) to prepare and deliver the IVT data, OSD designed the actual tool interface and architecture. The collected, documented, and standardized data was leveraged by the Services to supplement their Service-specific GIS programs. This helped establish an initial information base that can be used and expanded by the Services to support any future DoD, or Service Headquarters-level IVT requirements.

O.4 IMAGERY

Per the QAP, each Service collected and delivered to OSD the seven data layers, when applicable to the installations, supplemented with satellite imagery. The OSD IVT office acquired all imagery centrally through the National Geospatial-Intelligence Agency (NGA) for use within the IVT. The DoD/Title 50 License Agreement was paid by NGA, thereby enabling distribution and use of the imagery amongst DoD organizations. Imagery files were distributed to the Services for their use beyond BRAC 2005, and the Services redistributed the imagery to their respective installations. Under the DoD/Title 50 license restrictions, non-DoD organizations and private citizens are not entitled to use

DoD-purchased imagery. Those organizations may purchase the identical imagery directly from the imagery vendor(s).

All IVT imagery had to have 20% or less cloud cover, be snow free and same season per installation, and be acquired no earlier than 1 January 2000. Image types include:

- 1-meter resolution imagery for installations or installation cantonment areas;
- Visual spectrum panchromatic and color (“pan sharpened”);
- Ortho-rectified 4-meter CE-90 horizontal accuracy;
- Ortho-rectified 25-meter CE-90 horizontal accuracy;
- 5-meter resolution imagery for range complexes; and
- Visible spectrum color.

The imagery extends one mile beyond the furthest extent of the installation or range complex boundary, noise contours, accident potential zones, or explosive safety quantity distance arcs.

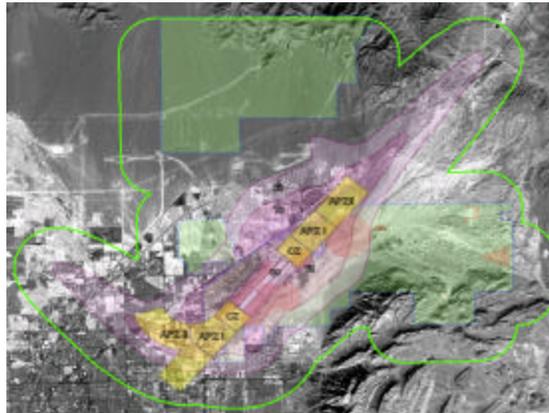


Figure 2. Sample Imagery with Layers

O.5 LAYERS

Layer data extends beyond the installation or range complex boundary to enable understanding of the impact of military operations on the surrounding communities, and to visualize community encroachment on military installations. Noise contours, accident potential zones, and explosive safety quantity distance arcs are mapped to their fullest extent beyond the installation boundary. 100-year floodplains and wetlands are mapped at a minimum within the installation boundary. Layers include:

- Installation boundaries
- Range complex boundaries
- The following “exclusion zone” layers will be provided for each installation and associated range complex shown in IVT, where applicable:
 - Noise contours >65 decibels (>60 decibels in California);

- Clear Zones and Accident Potential Zones;
- Explosive Safety Quantity Distance (ESQD) arcs;
- 100-year floodplains; and
- Wetlands.

IVT imagery and layers will be documented using metadata, organized by the Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata (CSDGM), as per Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure (NSDI)," 11 Apr 94, and Office of Management and Budget (OMB) Circular A-16, "Coordination of Geographic Information and related Spatial Data Activities," 3 Jul 01.

The CSDGM provides a common set of terminology and definitions for the documentation of digital geospatial data. Metadata are a critical element of the IVT; metadata accompany each IVT data layer and describe the data source, lineage, accuracy, contents, data quality, organization, spatial reference, and distribution constraints. The QAP defines the metadata requirements for all IVT layers.

O.6 IVT AND ARMY GIS

The Office of the Assistant Chief of Staff for Installation Management (OACSIM) was directed to develop the Army's Enterprise GIS policy. The Installation Management Agency (IMA) directs the implementation of established policy at the installations. The OACSIM is directing the Army's IVT efforts and managing the allocated OSD funding. This funding established GIS representation in the IMA Regional Offices that guided and assisted the installations with their IVT GIS efforts. This regional GIS presence integrated the existing installation and Headquarters GIS programs.

Geospatial information, including installation facility maps and standardized installation features and environmental conditions data, must be readily available to installation, regional, and HQDA offices. In order to facilitate this, HQDA is developing a GIS program that includes an Army GIS Repository (GISR) to accept spatial data from installations worldwide. OACSIM will utilize GISR to manage Army facilities, enhance decision makers' ability to visualize DoD installations, respond to OSD and Army tasks, and ensure DoD spatial data-standards compliance. The IVT data is being integrated into the GISR to further the Army's internal program.

O.7 SUMMARY

The DoD IVT enables decision-makers to increase their installation situational awareness. The OSD IVT office has purchased imagery, and DoD funds have been allocated to the Services for the required people and equipment to support the overlay data collection process. Imagery and base-level command-authority approved layers will be used by OSD to supplement the BRAC 2005 process. The Services use these initial IVT requirements to further their internal programs and increase their capability to meet future DoD and Headquarter level requirements.

P. JOINT ACTION SCENARIO TEAM (JAST) COORDINATION

P.1 INTRODUCTION

P.1.1 Background and Scope

The Department of Defense (DoD) has conducted four rounds of Base Realignment and Closure (BRAC) initiatives between 1988 and 1995 that closed 97 major installations within the United States. Despite these achievements in infrastructure downsizing, the Department of Defense and numerous independent groups continued to identify the need for further reductions in the Department's installation structure. These messages were heard and the Congress, in late 2001, authorized an additional BRAC round in 2005.¹

On 15 November 2002, the Secretary of Defense signed a memorandum, now referred to as the "BRAC kickoff memo," announcing BRAC 2005. BRAC 2005 is similar to previous BRAC initiatives in that it is intended to eliminate excess physical capacity which diverts scarce resources from defense capability. A significant difference in BRAC 2005 from previous rounds of BRAC, however, is that the Department of Defense has made joint basing of forces and support functions a priority consideration for BRAC 2005. The Secretary of Defense has stated the following objective:

"A primary objective of BRAC 2005, in addition to realigning our base structure to meet our post-Cold War force structure, is to examine and implement opportunities for greater joint activity."²

Prior BRAC analyses focused on Service-by-Service functions and did not result in the joint examination of functions common to the Services. Therefore, the BRAC 2005 analysis was divided into Service unique functions, which are analyzed by the Military Departments (MILDEPs), and common business-oriented functions, which are analyzed by the Joint Cross-Service Groups (JCSGs). Subsequently the BRAC senior leadership realized that a methodology for considering and analyzing possible joint basing scenarios of operational forces also needed to be established. Consequently, in February 2004, the Deputy Assistant Secretary of the Army for Infrastructure Analysis, the Deputy Assistant Secretary of the Air Force for Basing and Infrastructure Analysis, and the Deputy Assistant Secretary of the Navy for Infrastructure Strategy and Analysis – referred to as the "BRAC Directors" – established the Joint Action Scenario Team (JAST) to coordinate and manage the process for joint basing scenarios for the MILDEPs.

The scope of the JAST processes described in this document is aimed at managing the joint operational basing scenario process. The terms *joint* and *joint base* used in this document are derived from the definitions described in Joint Publication 1-02.³ However, for the purpose of considering joint operational basing options, we define *joint* as "activities, operations, organizations, etc., in which elements of two or more Services

¹ Department of Defense, *Report Required by Section 2912 of the Defense Base Closure and Realignment Act of 1990, as amended through the National Defense Authorization Act for Fiscal Year 2003* (Washington, D.C., 23 March 2004).

² Department of Defense, Office of the Secretary of Defense, *Transformation Through Base Realignment and Closure*, memorandum, by Donald Rumsfeld (Washington, D.C., 15 November 2002).

³ Department of Defense, *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02 (Washington, D.C., 12 April 2001, as amended through 17 December 2003).

participate.” We define *joint base* as “a locality from which two or more Services operate.” The JAST process will primarily focus on scenarios involving operational forces. *Operational forces* are “those combat forces and their integral combat support and combat service support elements whose primary missions are to participate in combat.” The JAST process may consider other joint options, including those on a smaller scale that do not involve a significant element of force structure, but will primarily concentrate on operational forces. *Joint basing* is synonymous with the terms *joint activity* and *joint use* and is used throughout this document. The JAST process will not attempt to create mechanisms to determine joint funding or joint leadership and assumes a Service activity moving to another Service’s base will fall under existing host/tenant relationships for that Service.

P.1.2 Purpose

The purpose of this document is to provide an understanding of the joint action scenario development process to be used in considering joint basing options – those scenarios involving locating operational forces of one Service on another Service’s installation – and to assist the JAST in coordinating and managing the joint operational basing scenario process for the MILDEPs.

P.1.3 Authority

The BRAC Directors established the JAST effective 12 February 2004 and subsequently approved and signed the JAST Charter dated 20 February 2004.

P.2 JAST MISSION AND OBJECTIVES

The mission of the JAST is to assist the MILDEPs in assessing joint operational basing scenarios in accordance with BRAC law.⁴ The primary objective is to help the MILDEPs efficiently examine and implement viable opportunities for greater joint activity of operational forces.

P.3 PRINCIPLES

The JAST will develop and manage the process for conducting joint analysis for all Service-to-Service joint operational basing opportunities and scenarios that are outside the purview of the JCSGs. The following principles will be employed to manage the joint operational basing scenario process:

- Comply with the provisions of the Defense Base Closure and Realignment Act, as amended, and other relevant legislation that may be enacted after the approval of the charter.
- Comply with the BRAC 2005 guidance promulgated by the Office of the Secretary of Defense (OSD), MILDEPs and the BRAC Directors.
- Work within existing MILDEP BRAC structures.
- Ensure each MILDEP uses the DoD selection criteria as the basis for BRAC joint operational basing scenarios.

⁴ *Defense Base Closure and Realignment Act of 1990, Public Law 101-510*, as amended.

- Provide ready access to MILDEP information and open sharing of information for developing joint operational basing scenarios.
- Review and provide to the BRAC Directors viable joint operational basing scenarios.

P.4 MILDEP PROCESSES

A key aspect of the joint action scenario development process is the importance of working within the existing MILDEP BRAC structures. The MILDEPs' own Military Value Analyses (MVA) will be used to defend decisions to the BRAC Commission or other interested parties. JAST assumes the MILDEPs' processes are equitable, consistent, and defensible. Therefore, the JAST will continually coordinate and work within the existing MILDEPs' BRAC analytical frameworks.

P.5 JAST GOVERNANCE

The JAST consists of senior individuals who represent the MILDEPs' BRAC Directors and is staffed by personnel assigned by their respective organizations. The Army is the JAST lead. The JAST works within the established BRAC 2005 management structure and supports the MILDEPs in the joint basing scenario process. The JAST periodically reports to the BRAC Directors collectively and JAST members routinely report to their BRAC Directors individually.

P.5.1 Organization and Management

The JAST consists of senior individuals as follows:

- **Department of Army:** Army military lead, plus two members
- **Department of Navy:** Two Navy military members; one Marine Corps military member
- **Department of Air Force:** Three military members
- **OSD:** Two attendees

The organization structure of the JAST is depicted in the following figure.

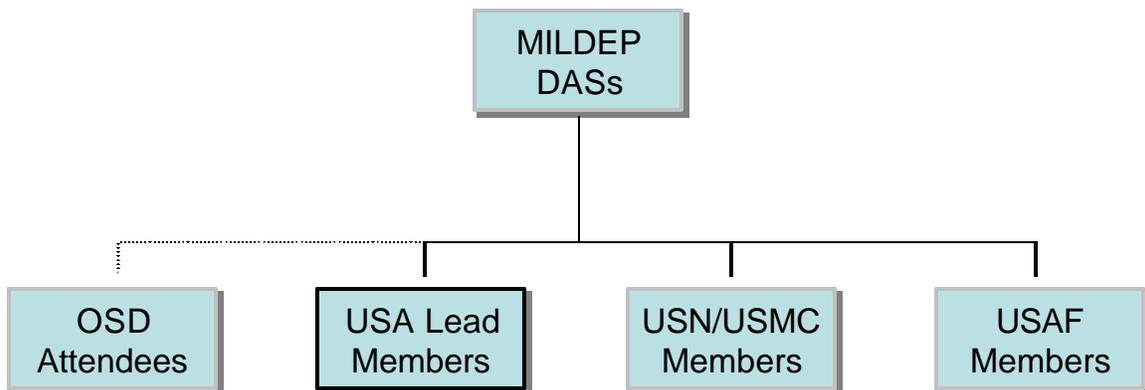


Figure 1 - Organization Structure

P.5.2 Roles and Responsibilities

As shown in the figure above, the JAST consists of members from each of the Services. The JAST members are an extension of the MILDEP BRAC Directors and represent,

work for, and report to their respective MILDEP BRAC Directors. The Army is the lead for the JAST and each of the other Services are JAST members. OSD representatives attend the JAST meetings and provide prior BRAC experience, advice, and expertise.

The JAST is responsible for the following:

P.5.2.1 Establish process for MILDEP joint operational basing analysis

This document describes the joint operational basing scenario process that the MILDEPs will use in developing possible scenarios involving joint basing of operational units. This document is the guide, or standard operating procedure, for the JAST to use. The JAST will not create different or unique analysis processes but facilitate the MILDEP approved military value analysis.

P.5.2.2 Serve as DoD Single Point of Contact and clearinghouse for examining joint operational basing opportunities

The MILDEPs will refer to the JAST all scenarios that involve basing Service operational forces onto another Service's installation. The JAST is DoD's single point of contact, and acts as DoD's clearinghouse for coordinating all joint operational basing scenarios.

P.5.2.3 Manage the joint operational basing scenario process

The JAST manages the joint operational basing scenario process by receiving recommended scenarios, coordinating MILDEP to MILDEP analysis, translating service-unique terminology for improved understanding of requirements, monitoring progress, reporting and referring recommendations, facilitating resolution of issues, and recording results.

P.5.2.4 Provide feasible joint operational basing scenarios to the BRAC Directors

The JAST will closely coordinate, manage, and monitor the process of data collection and reconciliation of results. The JAST will provide the results of joint operational basing scenarios data collection to the BRAC Directors for their consideration.

P.6 JOINT OPERATIONAL BASING SCENARIO DEVELOPMENT PROCESS

The joint operational basing scenario process is simple and straightforward. Although JAST is the vehicle used to facilitate joint operational basing scenarios, the process focuses on the MILDEPs maximizing the use of information from data calls, then using the MILDEPs' own BRAC 2005 analytical framework to evaluate the possible scenarios. MILDEPs must have a clear understanding of issues and requirements and then work together to determine the best solutions. They must maintain open lines of communication within the JAST and with their sister MILDEPs, build and maintain trust and confidence, freely share essential information, and work jointly to develop scenario options. Requests for additional information are inevitable in order to work specific scenarios.

P.6.1 Scenario Preparation

The MILDEPs will use information derived from the data calls in preparation for developing joint operational basing scenarios. Capacity information from the data calls serves as the basis for conducting the initial screen to cull the possible locations for operational units. Information derived from other data calls allows the MILDEPs to

compare MVA of its own installations against other Services’ installations. This information serves as a starting point for scenario development and a basis for supporting actual scenario recommendations.

The figure below displays the scenario preparation and development flow.

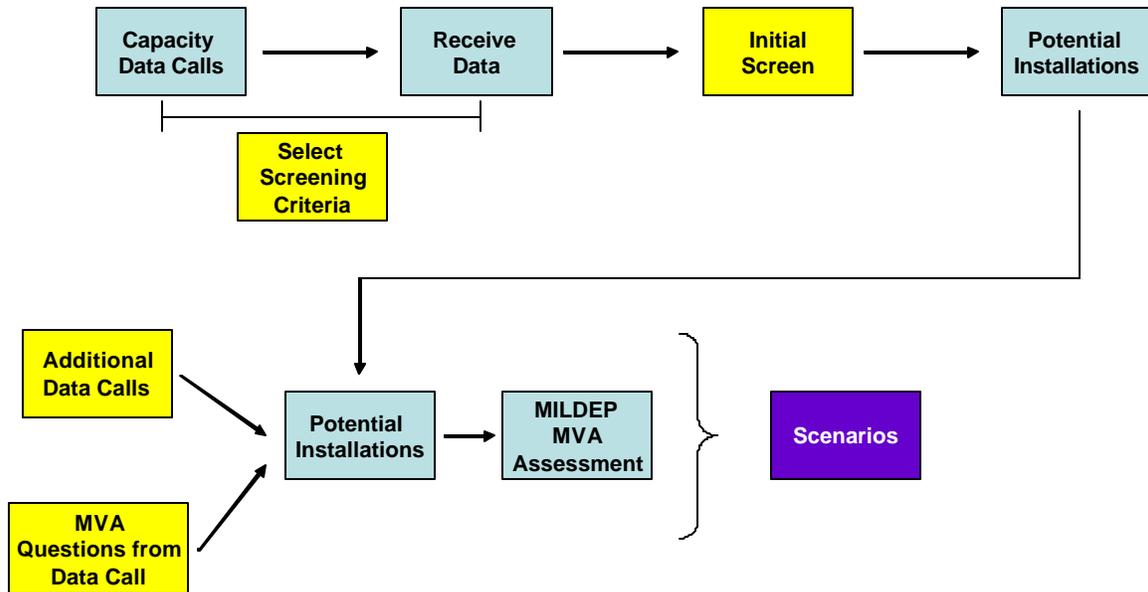


Figure 2 - Preparation and development flow

P.6.2 Initial Clarification and Screening.

The MILDEPs must first determine why they are considering a joint operational basing scenario – what synergies will be gained or how the capabilities of their operational forces will be improved. After capacity data analysis, the MILDEPs will determine the appropriate type of operational unit to be considered for joint operational basing scenarios. The MILDEPs will identify and select the key capacity questions that most closely identify the basic capacity required for the operational unit or function they are interested in moving. The requesting MILDEP will then give those questions to the other MILDEP BRAC Directors via the JAST. The MILDEPs take the selected questions from the requesting MILDEP and use those questions to screen potential installations that meet the requirements of the requesting MILDEP. Once the MILDEPs identify the potential installations, they provide the list of installations to the requesting MILDEPs via the JAST. This list establishes a baseline of installations from all Services.

P.6.3 MILDEP MVA Process.

A key aspect of the joint operational basing action scenario development process is to work within the existing MILDEP BRAC Structures. MILDEPs use their own Military Value Analysis process. For “jointness” to succeed, MILDEPs must closely coordinate information sharing with their sister MILDEPs.

Once the MILDEPs have completed the initial screening, they will request military value data on all potential receiver installations. It is critical to adequately clarify each question in the language of the answering MILDEP. Otherwise answers will not yield the intended results and data will prove to be less than useful.

P.6.3.1 Army Process

The following notional example describes the process for the TABS analysts to use when considering a joint operational basing scenario. For example, prior to gathering military value data the TABS analyst will have already considered that the Army should move a brigade, or *unit of action*, to another Service’s installation. The analyst will identify and select the key capacity questions that most closely identify the capacity required for the brigade under consideration. The analyst gives those questions to the Navy and Air Force via the Army JAST member. The Navy and Air Force take the selected questions from the Army and use those questions to screen potential installations that meet the Army’s requirements. Once the Navy and Air Force have identified potential installations, they will provide their lists to the Army, via the JAST. The following figure portrays the process that would establish the base line of potential installations from all Services.

Army passes Operational requirements through the JAST to Navy and Air Force to establish potential receiving installations.

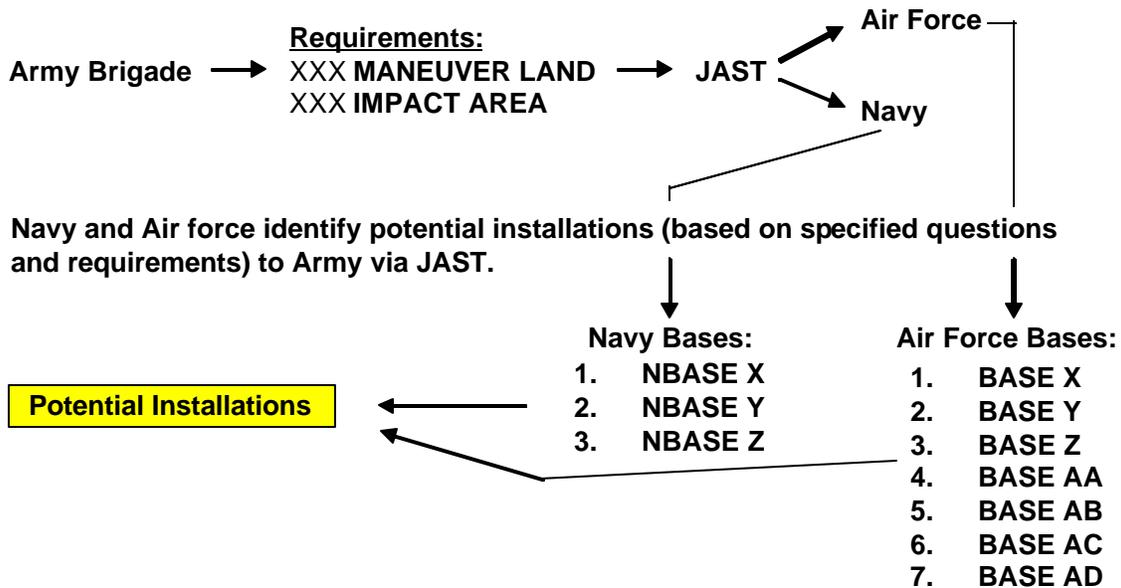


Figure 3 – Installation screening

Once the TABS analyst has received the list of potential installations from the Navy and Air Force, the Data Support Team will provide all MVA questions to all potential receiver installations, including those of the sister Services. The analysts must ensure that their questions are clarified in such a manner that the Navy and Air Force can provide accurate, useful information. It may also be necessary to ask the Navy and Air Force

some number of Army-specific capacity questions to ensure all questions are properly addressed. See figure below.

Potential installations are asked full set of MVA questions plus any needed MILDEP specific questions.

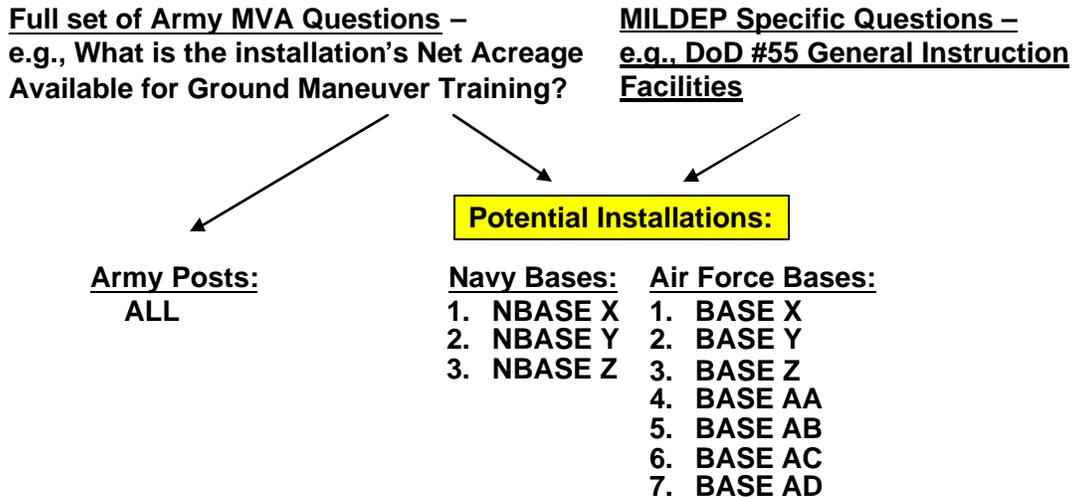


Figure 4 – Installation data call

Upon completion of military value data gathering, potential installations from the Navy and Air Force will then be assessed against the Army’s own installations for comparison purposes and to begin scenario development. All potential installations, including those from Navy and Air force, will be considered in the MVA process, and arrayed with the Army’s list of installations, as shown on the figure below.

At completion of military value data gathering, the Army conducts its MVA and arrays Army’s installations with Navy and Air Force potential installations (1-N)

Full MVA Assessment:

1. POST X
 2. POST Y
 3. POST Z
 4. POST AA
 5. **BASE X**
 6. POST AB
 7. POST AC
 8. **BASE Y**
 9. POST AD
 10. **NBASE X**
 11. **BASE Z**
 12. **NBASE Y**
- |
- N. POST X X

Figure 5 – MVA assessment

P.6.4 Scenario Development

The three primary sources for scenario ideas are OSD, JAST, and MILDEP BRAC offices. In addition to providing expertise and advice to the JAST, the OSD attendees may provide joint operational basing scenarios in the form of “Transformational Options.” JAST members themselves may also generate joint operational basing scenarios – both in the performance of their role as the JAST and as representatives of their respective BRAC Director. While there are numerous sources of good ideas, the MILDEPs will likely generate the majority of joint operational basing ideas. The figure below displays the overall process flow of receiving, reviewing, and managing the joint operational basing scenarios.

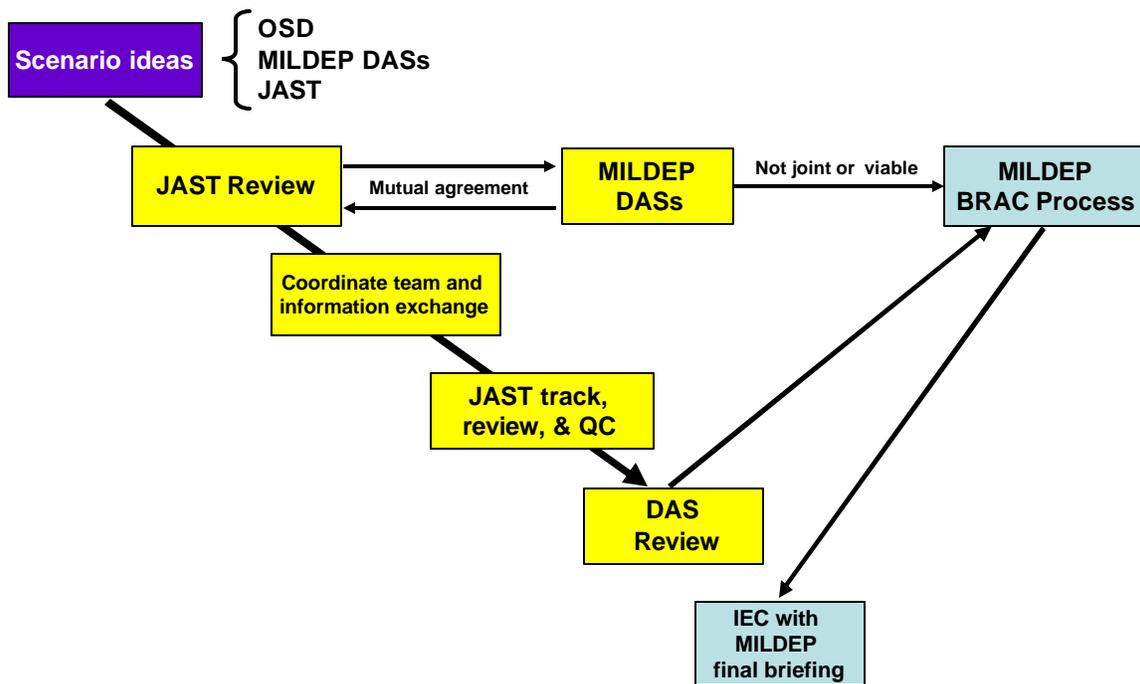


Figure 6 – Overall process flow

P.6.5 Scenario Coordination

The JAST is DoD’s single point of contact, and acts as DoD’s clearinghouse, for managing the joint operational basing scenario process. Once a MILDEP has generated a joint operational basing scenario, it will present the scenario to the JAST. The JAST will receive, review, and bin the idea as “recommend for further study and analysis” or “recommend against further study” for BRAC Directors’ action. If the BRAC Directors direct further study of an idea, the JAST will coordinate with the applicable MILDEPs to develop the scenario. If the BRAC Directors determine an idea does not warrant further study or direct dropping a scenario for any reason, the JAST will terminate the effort, refer the scenario back to the MILDEP and document the BRAC Directors’ decision.

P.6.6 Scenario Analysis

Once the BRAC Directors approve a potential scenario for further study, the MILDEP that will potentially lose or move the operational unit will have the lead in conducting the joint operational basing scenario analysis. If a scenario arises that involves multiple losing services, the JAST will determine the lead MILDEP. The lead MILDEP analysts will work closely with the supporting MILDEP's analysts in developing the scenario and conducting the analyses, including the COBRA cost analysis. The JAST will actively monitor the progress, coordinate between the MILDEPs, facilitate information flow, and assist in identifying and resolving issues.

P.6.7 Scenario Review and Selection

After the lead MILDEP finalizes the scenario, it will present the scenario to the JAST for review. The JAST will review the scenario and coordinate between the MILDEPs to resolve outstanding issues. The JAST will then present the scenario to the BRAC Directors who will evaluate the scenario and approve or reject it.

P.7 SCENARIO FINALIZATION AND SUPPORT

Approved joint operational basing scenarios will then follow the established MILDEP's BRAC process through final recommendation to the Infrastructure Executive Council (IEC). The JAST will establish and maintain a record of each potential scenario and manage the joint operational basing scenario process through its completion.

P.8 SUMMARY

The Department of Defense is committed to eliminating excess physical capacity and rationalizing DoD infrastructure with defense strategy. BRAC 2005 is the means by which DoD will reconfigure to maximize warfighting capability and efficiency. The JAST dovetails with the overarching BRAC objectives by efficiently using the MILDEPs' existing BRAC processes to enhance and complement operational capability through joint operational basing opportunities.

Q. JOINT CROSS-SERVICE GROUP (JCSG) COORDINATION

Q.1 INTRODUCTION

Each BRAC component seeks to examine available capacity to improve its capabilities. Some components examine the same excess capacity. For example, the Military Departments (MILDEPs) may look to a contiguous area of buildable acres to satisfy an operational stationing action, while a Joint Cross Service Group (JCSG) may study the same parcel of land as a possibility for a joint business-oriented stationing action. Because of this possibility for overlapping analysis, The Army Basing Study (TABS) group coordinated with the JCSGs to ensure awareness and synchronization. This coordination occurred both internally within the Army, and externally throughout the other DoD BRAC components. The primary purpose of coordination is to identify any overlapping proposals and work toward a desired decision.

Proposals can be independent, enabling, or conflicting:

- **Independent** –Does not affect another proposal
- **Enabling** – Helps another proposal occur
- **Conflicting** – Uses the same resources as another proposal or conflicts in some other way

Determining whether proposals are independent, enabling, or conflicting must be accomplished early and throughout the proposal and scenario development process. Coordination between TABS and the JCSGs is vital. Resolving potential issues and looking for mutually beneficial proposals early on in the BRAC process will enhance the products that each analytical group develops.

Q.2 INTERNAL COORDINATION

Internal coordination takes place among the JCSG liaison officers assigned to TABS, primarily before and during the TABS panel process. The objective of such initial coordination is to identify the need for external coordination with specific JCSGs, and to inform the analyst of any ongoing efforts within the JCSGs that might impact on the proposal under consideration. Internal coordination will continue throughout the analytical process as proposals become scenarios and scenarios become candidate recommendations. During internal coordination, the TABS Director or Deputy Director will prioritize well-developed proposals during a TABS Board. At each step, TABS JCSG liaison officers will inform other action officers when their respective JCSGs develop proposals, scenarios, and candidate recommendations so that the multiple efforts remain synchronized.

Q.3 EXTERNAL COORDINATION

External coordination between TABS and JCSGs takes place initially through liaison officers and Deputy-level panels. Later, coordination takes place among the senior Army representatives of the JCSGs, either on an individual basis or as part of a board. These boards are called Quarterback meetings. The “quarterbacks” are the senior Army

representatives of the JCSGs, and the meetings enable coordination and synchronization among the JCSGs and TABS.

The first formal step in external coordination is a Deputy-level coordination panel. The panel focuses on coordination and integration with JCSG representatives and TABS JCSG liaison officers (LNOs) discussing stationing actions and proposals. The goal of the panel is to integrate proposals that involve Army installations. Additionally, integration and coordination at the panel level highlights whether scenarios are enabling, independent, or conflicting. As indicated above, enabling stationing actions (SAs) between TABS and JCSGs are those that complement one another, making a stronger combined stationing action; independent SAs stand alone and do not impact other units or resources; conflicting SAs either use the same resources, use the same unit, or create a different end-state for an installation. Examples of conflicting SAs are ones that use the same excess space (buildings, land, or training capacity), try to move the same unit to different locations, or attempt to close an installation that another action uses as a gaining installation.

The external coordination board then coordinates, integrates, and prioritizes well-developed proposals from the panel process. The board will consist of the DASA (IA) and the Senior Army representatives to the JCSGs. The objective of the coordination is to synchronize multiple efforts (potentially combining independent and complementary actions to make stronger recommendations), identify and resolve conflicts (adjudicate those conflicting actions between two groups), and, if unable to resolve conflicts, elevate issues to the senior representatives of each group for their resolution.

Q.4 SUMMARY

The benefits of continuous coordination are numerous. Primarily, coordination allows integrated scenarios to be considered by the Infrastructure Steering Group (ISG) and Infrastructure Executive Council (IEC). Coordination also ensures that transformational options and objectives are being supported and that OSD and Service considerations are not violated. As LNOs work together, they focus on installations and resources and deconflict proposals that over-utilize an installation.

R. RC PAT COORDINATION

R.1 INTRODUCTION

The Army Basing Study (TABS) Group established the Reserve Component Process Action Team (RC PAT) to assess and articulate Base Realignment and Closure (BRAC) 2005 impacts on Reserve Component (RC) facilities and functions. The RC PAT evaluates all potential recommendations to TABS involving realignments and closures of installations with civilian authorizations below the BRAC thresholds established by Section 2687, Title 10 U.S. Code as amended, and assists TABS Group in assessing other potential BRAC actions.

R.1.1 Background and Scope

Between 1988 and 1995, the Department of Defense (DoD) conducted four rounds of BRAC initiatives. BRAC actions resulting from these rounds closed or realigned more than 150 major installations within the United States. Despite the results achieved after implementing these actions, however, DoD and independent groups continued to identify further reduction possibilities in DoD's infrastructure. It was clear that DoD still had more bases than were needed to support our nation's military forces. Therefore, the Secretary of Defense requested and Congress authorized an additional round of BRAC to occur in 2005.¹

Prior BRAC analyses focused primarily on Active Component facilities and functions, and the recommendations did not result in the substantial closure or realignment of RC facilities or functions. The RC was, however, substantially affected by BRAC closure actions. In 1995, particularly, with the closure of several Active Army installations, the Army needed to create enclaves to protect RC access to ranges, maneuver areas, and training lands – an essential to maintaining the readiness of Army National Guard and Army Reserve units. According to the General Accounting Office (GAO) report on RC enclaves, the creation of these entities offset a substantial portion of the anticipated savings from the closure of the installation.²

To increase efficiency and effectiveness, the RC PAT takes a more active role for BRAC 2005. The RC PAT works with the Army Reserve (AR) and Army National Guard (ARNG) to develop and analyze potential BRAC actions involving RC facilities. Throughout the process, the RC PAT also works to satisfy DoD's request for jointness by seeking to develop joint proposals with the other Services to develop more powerful, more effective, and more efficient stationing solutions.

R.1.2 Purpose

This document provides an understanding of the RC PAT proposal development process used to consider RC stationing options and to coordinate and manage the RC-basing proposal process for the MILDEPs.

¹ Department of Defense BRAC Report to Congress, dated March 2004.

² United States General Accounting Office, *Military Base Closures: Better Planning Needed for Future Reserve Enclaves* (Washington, D.C.: GPO, 2003), 42.

The RC PAT assesses all RC sub-threshold facilities to identify opportunities for realignment and closure that result in enhanced readiness and a more powerful military, with emphasis on joint stationing opportunities. To accomplish this, the Army enacts the following initiatives:

- Organizes the RC PAT analytical effort to focus on identifying excess capacity by working with the States/Territories/Regions to evaluate their full inventory of facilities.
- Invites the other Services to assign RC Liaison Officers to work directly with the RC PAT, whenever feasible and appropriate, to develop joint stationing proposals early in the analytical process.
- Leverages the Joint Action Scenario Team (JAST) to formally coordinate the joint proposals developed within the RC PAT framework with the MILDEPS.

R.1.3 Authority

The Deputy Assistant Secretary of the Army for Infrastructure Analysis (DASA (IA)), the Chief, Army Reserve, and the Director, Army National Guard established the RC PAT and signed the RC PAT Charter on 28 July 2003.³ This document prescribes RC processes to be employed within the Army BRAC process. Subsequent to establishing the Army's RC PAT process it became clear that great benefit could be gained in coordinating with the Navy and Air Force through the JAST process.

R.2 RC PAT MISSION AND OBJECTIVES

RC PAT analysts examine the issues surrounding the realignment and closure of installations within the 50 States, the District of Columbia and U.S. commonwealths, territories and possessions, and coordinate the development of proposals to the RC PAT Executive Committee for submission to the RC PAT General Officer Steering Committee (GOSC) concerning potential realignments and closures with a focus on sub-threshold RC installations. The RC PAT conducts an assessment of Army RC facilities and functions; evaluates base realignment and closure alternatives; and coordinates with the other Services to the maximum extent possible to develop, document, and provide input into BRAC recommendations consistent with Department of Defense (DoD) guidance and Army force structure plans, the Army Stationing Strategy, and the requirements of Public Law 101-510, as amended. The RC PAT pursues joint stationing opportunities with the other Services to promote more powerful, more effective, and more efficient stationing solutions wherever possible. The RC PAT assesses enclave requirements in order to address GAO concerns from previous rounds. The RC PAT enclave analysis will focus on two decision areas: first, an assessment of the 97 installations with regard to future RC support requirements should an installation be selected for closure, and second, an assessment of all existing RC presence on active duty installations, to determine 'closure, keep, or expand' in the event an installation is considered for closure.

³ Charter for the Reserve Component Process Action Team (RC PAT), dated 28 July 2003.

R.3 PRINCIPLES

The RC PAT develops and manages the process for conducting analysis for all RC basing and joint use opportunities, developing proposals, and coordinating them with the appropriate JCSGs, the JAST and TABS. To manage the RC-basing proposal process, the Army employs the following principles:

- Comply with the provisions of the Defense Base Closure and Realignment Act, as amended, and other relevant legislation that may be enacted after the approval of the RC PAT Charter.
- Comply with the BRAC 2005 guidance from the Office of the Secretary of Defense (OSD) and the Director, TABS.
- Work within an RC-unique analytical structure. The structure facilitates development of both Army-specific proposals and joint proposals by incorporating functional experts from the Army Reserve, Army National Guard, and the other Service RCs to the maximum extent possible.
- Ensure each State, Territory or Region uses the DoD selection criteria as the basis for RC proposals.
- Provide ready access to all RC facilities information and open sharing of information for developing and conducting joint RC basing proposals within a non-disclosure analytical framework.
- Review and provide to the TABS Group and other Service BRAC Directors viable RC basing proposals.
- Articulate potential RC enclave requirements to the Director, TABS.

R.4 MILDEP PROCESSES

The RC PAT proposal development process integrates with the existing MILDEP BRAC structure. Because of the number, small size, and unique requirements for RC facilities in this study, RC PAT analytical processes differ from MILDEP processes.

R.5 RC PAT GOVERNANCE

The Army chairs the RC PAT, but the team may include representatives for each of the MILDEPs' BRAC directors. The RC PAT works within the established BRAC 2005 management structure and supports the MILDEPs in the joint basing proposal process. The RC PAT periodically reports to the MILDEP BRAC Directors to provide updates on progress and procedures.

The RC PAT consists of senior individuals as follows:

- **RC PAT GOSC:** Director, TABS; Chief, Army Reserve; Director, Army National Guard (Other Service RC Chiefs may attend or send a representative, but are not GOSC members).

- **RC PAT Executive Committee:** Deputy Director, TABS; Deputy Chief, Army Reserve; Deputy Director, Army National Guard (Other Service RC Deputies may attend or send a representative, but are not Committee members).
- **RC PAT Core Group:** Army Reserve Senior Analyst, TABS; Army National Guard Senior Analyst, TABS; RC PAT Senior Analyst, OCAR; RC PAT Senior Analyst, NGB (Other Service RC Analysts may participate in Core Group meetings, but are not Core Group members).
- **RC PAT Subject Matter Experts (SMEs):** Additionally SMEs from the ARNG, Office of the Chief Army Reserve (OCAR) and United States Army Reserve Command (USARC) will support the RC PAT as needed. (Other Service RC SMEs may participate with the RC PAT as needed).
- **Navy and Air Force Integration:** The other Services are invited to participate in all levels of the RC PAT analytical process, to include each of the forums mentioned above. Additionally, the RC PAT will provide information updates to the Navy and Air Force BRAC Directors, the other Service RC Chiefs, and OSD, as requested, to promote joint stationing opportunities wherever possible.

R.5.1 Roles and Responsibilities

The RC PAT consists of members from the Army Reserve and Army National Guard. The RC PAT members are an extension of the Chief, Army Reserve and Director, Army National Guard: they represent, work for, and report to their respective RCs. The Army is the lead for the RC PAT and each of the other Services may provide liaisons to the RC PAT. The Office of the Assistant Secretary of Defense for Reserve Affairs – the ASD (RA) - representatives may attend the RC PAT meetings to provide experience, guidance, and expertise.

The RC PAT will serve as the single point of contact for Army RC issues during coordination of BRAC 2005 efforts.

R.6 RC PAT PROPOSAL DEVELOPMENT PROCESS

The RC PAT develops proposals using the following three-phase process:

Phase I – Preparation and Planning

The Chief, Army Reserve, the Director, Army National Guard, and the Director, TABS establish the RC PAT by charter and identify the goals and objectives for RC participation in BRAC 2005. The Director TABS executes a strategic communications campaign with senior Army Reserve and Army National Guard leadership to gain their support for RC participation in BRAC 2005 at the State and Regional Readiness Command (RRC) levels. The Senior Army Reserve and Senior Army National Guard Analysts for TABS identify resource requirements to execute the RC PAT mission, develop a methodology, and organize the RC PAT to execute its mission.

Phase II – Meetings with Field

Meeting #1 (February 2004 – Nashville & San Francisco): RC PAT conducts a meeting with all state and RRC installation management representatives to explain the RC PAT mission and charter and to solicit proposal ideas from the State ARNG and

RRCs. The following information is delivered via CD-ROM to the NGB, OCAR, USARC, and each TAG/RRC representative at the meetings:

- Tab A: Agenda, OSD BRAC 101 presentation, RC PAT 101 presentation, CD-ROM Contents and Process presentation, and Meeting #2 instructions
- Tab B: Microsoft Map Point pictures of all state and regional sites based on Guard Reserve Unit Facilities System (GRUFS) data (GRUFS data certified as accurate as of September 2002)
- Tab C: AC/RC Facilities list (inventory) and Request For Information (RFI) (excel spreadsheet which lists 18000+ AC/RC facilities) and the RC PAT request for information (13 questions (“mini-data call”) – see below)
- Tab D: Customer Meeting #2 Response Template (proposed draft proposal template)
- Tab E: USAR and NGB Total Army Schools System (TASS)/Distance Learning site inventory
- Tab F: Reference Material (USC 10 2687/BRAC law, BRAC Non-Disclosure document, Federal Register – Final Notice of Selection Criteria, GAO Report 03-723, DOD PAO Guidance, RC PAT Mission Statement, RC PAT Charter, RC PAT Contact Sheet)

Though no restrictions are placed on developing proposals for meeting #2, the RC PAT asked participants to focus on proposals that first (quantifiably) improve member/unit readiness and joint operations/training, and, second, reduce facility and land footprint/operating costs in accordance with the approved DoD selection criteria.

RC PAT Request for Information (13 – Supplement to GRUFS data)

Each State/Territory/Region provides the following data points for each facility:

- Close (C), Realign (R), or Do nothing (N)
- ISR Code
- Environmental Issues (Y/N)
- Historically 'Protected' (Y/N)
- On an Enclave Now (Y/N)
- Co-located w/ Federal Active installation (Y/N)
- On joint installation now (Y/N)
- Part of Real Property Exchange (RPX) Agreement (Y/N)
- If yes (Real Prop X), provide comment.
- Long Range Construction Program (LRCP) dollars
- Force Protection Upgrade Requirement Costs in dollars
- Current AFRC (Y/N)?
- Current Auth TOE/TDA troop strength All Tenant Units

Meeting #2 (March - May 2004 – 2-hour sessions with each state/RRC): Each participant provides a briefing to the RC PAT on their final inventory and their draft proposals. RC PAT provides a brief on the cost assessment modeling tool, Cost of Base Realignment Actions (COBRA), along with associated COBRA data requirements for meeting #3. In preparation for meeting #3, participants refine proposals and gather additional (COBRA related) data, conduct further coordination with the other Services, and schedule their final proposal review session (meeting #3) with RC PAT.

Meeting #3 (June-August 2004). Participants deliver final draft proposals and additional (COBRA) data points. Analysts review proposals and COBRA data for accuracy and sufficiency. Customers requiring additional time to accommodate changes or to submit additional new proposals are granted exceptions on a case-by-case basis. A final meeting will be conducted in Baltimore 9-13 August 2004 to provide a last-opportunity for the States and Regional Readiness Commands to turn-in proposal data and to review all RC PAT proposals with the USAF and USN/USMC BRAC POCs. This meeting with other Service representatives facilitates the coordination of joint proposals and explores the development of new joint stationing and training opportunities.”

Phase III - RC PAT Review and Final Packaging.

The RC PAT will review proposals and present them through the RC PAT Executive Committee to the RC PAT GOSC for approval to submit them to The Army Basing Study Group for further consideration. The RC PAT will then enter proposals to the TABS review process.

Meeting # 4 (March-April 2005). Two meetings (East and West) will be conducted to allow the State and Regional Readiness Commands the opportunity to review and re-certify the finalized proposals after the TABS Group and OSD quality assurance review and editing processes. The intent is two-fold: first, to ensure that the submitting command concurs with the final candidate recommendation product, and second, to discuss preliminary BRAC implementation issues and initiate the Reserve Component execution planning process.

The RC PAT will attempt to resolve any issues locally, e.g., by correcting the stationing action. If a State or Regional Readiness Command representative non-concurrence rises to the level of command non-participation, the RC PAT will refer the issue to its Executive Council for resolution, with the ultimate decision handled by the BRAC SRG.

R.6.1 Proposal Preparation

The Army RRCs and ARNG Construction and Facility Management Offices (CFMO) for each state as well as other-Service RC representatives prepare draft proposals. The draft proposal will address each of the eight DoD Criteria in paragraph format to ensure the State/Territory/RRC representatives consider the criteria during proposal development.

R.6.2 Proposal Development

The States/Territories/RRCs first determine the reason for considering an RC proposal. They must identify the RC PAT Goals and/or Principles that are accomplished or

enhanced through the proposal. Most RC proposals refer to the DoD Selection Criteria, but this is not a necessity. In one of the departures from the MILDEP process, RC proposals that do not clearly support the eight DoD Selection Criteria for BRAC 2005 will be accepted. However they may be reduced in priority during the analytical process. Ultimately, all proposals must be subjected to Selection Criteria analysis. The same is true for “stove-pipe” proposals that do not involve multiple components of the Army or other Services. The RC PAT also submits these “stove-pipe” proposals to the GOSC, and potentially to the TABS Group, to determine whether they may be included with other proposals being considered by TABS that would transform them into joint or multi-component proposals.

R.6.3 Proposal Coordination

The Assistant Secretary of the Army (Installations and Environment) is responsible for policy and oversight of all Army BRAC initiatives. The DASA (IA) is responsible for coordinating and synchronizing all Army BRAC 2005 actions. The RC PAT synchronizes and coordinates actions in accordance with guidance from the DARNG, CAR, and DASA (IA) regarding BRAC 2005 actions. Formal Department of the Army submissions, correspondence and documents developed by the RC PAT will be signed by the DASA (IA), the DARNG, or the CAR as appropriate, or their designee.

The RC PAT conducts cross-service coordination of the process and proposals with representatives from the other Service RCs. RC analysts explore and develop opportunities for feasible joint proposals to address DoD joint criteria.

Final RC proposals that meet all phase I, II, and III process requirements, including signed coordination documents from all Army RC stakeholders, are forwarded to the Director, TABS for consideration. Coordination documents may not be available from the Department of the Navy (USNR/USMCR) and Department of the Air Force (AFR/ANG) until after coordination through the JAST has taken place at the MILDEP level. Therefore, these documents are not required at the RC PAT level.

R.6.4 Proposal Analysis

Unlike the TABS analytical process, the RC PAT process does not rank order the thousands of RC facilities based upon military value. Instead, the RC PAT requires the States/Territories/RRCs to consider military value by addressing DoD Criteria 1-4 – the MV Criteria – when developing each proposal. The States/Territories/RRCs must also address DoD Criteria 5-8 as well. After proposal development the RC analysts perform rank-ordering based upon a Core Team assessment of each proposal’s relative value in meeting each DoD criteria. The Core Team also considers any proposal rank-ordering performed by the States/Territories/RRCs or the other Service Components. The RC PAT Core Group reviews all proposals to ensure each of the eight DoD Selection Criteria have been addressed sufficiently to justify forwarding the proposals for further consideration. When a determination is made that a resubmission of data is required, the RC PAT will carefully control data revisions, ensure that changes are properly analyzed and posted to the appropriate models and documents and inform the Army Audit Agency in order to prevent the accidental introduction of uncertified data into the BRAC deliberative process. All resubmitted data must be accompanied by its certification.

R.6.5 Proposal Review and Selection

The RC PAT Core Group presents its list of reviewed and prioritized proposals to the RC PAT Executive Committee prior to presenting them to the RC PAT GOSC for further consideration. The Executive Committee reviews the Core Group's recommendations, provides any additional guidance, and directs the Core Group to present its recommendations to the GOSC. The GOSC reviews and selects potential RC proposals for submission to the TABS Group. Proposals that require joint coordination may be submitted to the JAST prior to the GOSC, to avoid delaying the analytical process. Once approved by the GOSC, the TABS Group may share the RC proposals with appropriate DoD JCSGs for further study. Coincident with the formal review process, the Army Reserve and Army National Guard Senior Analysts assigned to TABS will work with the TABS Group, and the OCAR and NGB RC PAT analysts in further developing the proposals or linking them with active component/joint proposals that provide a superior overall DoD solution set. Any modification or linkage that substantially changes a proposal may restart the formal review process to ensure that the RC PAT Executive Committee and GOSC approve of the modification/linkage. The RC PAT will actively support this process by coordinating within the respective Reserve Components, and amongst the other RC PAT members, to facilitate information flow and assist in identifying issues and resolving problems. Implicit in this process is the understanding that no proposal will be "developed" to the point where it fundamentally differs from the State/Territory/RRC input.

R.6.6 Enclaves Plan

There are two components to this sub-project (1) assess the 97 installations and determine support requirements should the facility be selected for closure and (2) assess all existing RC presence on active duty installations, to determine 'closure, keep, or expand' in the event an installation is considered for closure.

This is a multiple step process:

Step 1 – RC leadership evaluates the 97 installations to determine RC support requirements should any of the facilities be selected for closure and also assesses all existing RC presence on active duty installations to determine 'closure, keep, or expand' in the event an installation is considered for closure. A TABS member notifies RC leadership of any installations that contain current enclaves at risk or offer potential enclave sites.

Step 2 – TABS performs refined analysis for installations identified for enclaves and develops draft recommendations.

Step 3 - RC PAT monitors the JAST and performs a similar process to identify RC enclaves on potentially closing Air Force and Navy bases that should be retained to preserve RC training opportunities.

R.7 PROPOSAL FINALIZATION AND SUPPORT

RC proposals are presented to the TABS Proposal Review Panel, which is chaired by the head of the TABS Mission Team. The panel either accepts or returns proposals for

clarification and/or modification. Once proposals are accepted, they cross the TABS “firewall” and become subject to TABS analytical processes outlined elsewhere in the TABS Analytical Framework (TAF). The Director, TABS, may consider RC PAT proposal recommendations from the other Service BRAC Directors, and appropriate DoD JCSGs. The status of proposals is subsequently limited to the Army Reserve and Army National Guard Senior Analysts within the TABS Group. Requests for additional information may be passed back to the RC PAT, but the status of proposals is not discussed or provided.

R.8 SUMMARY

The RC PAT provides an extraordinary opportunity to rationalize Reserve Component infrastructure within the BRAC framework by reducing footprint, eliminating excess capacity, and improving the operational efficiencies of the RCs to the maximum extent possible with tremendous emphasis on joint stationing to promote a more powerful, more effective, and more efficient military. In light of the transformational initiatives that will restructure DoD and the Army from the current force to the future force, the Reserve Component has the potential to pay large dividends. The process is based on the DoD Selection Criteria for BRAC 2005, leverages certified data, treats all installations equally, and focuses on goals and principles that enhance readiness, improve quality of life, and reshape RC facilities to enhance the mobilization process with emphasis on joint opportunities.

S. RISK MANAGEMENT

S.1 PURPOSE

The 2005 Base Realignment and Closure (BRAC) process seeks to use installation resources efficiently and effectively. Army considerations should be met, while objectives must be investigated. To support the BRAC process, The Army Basing Study (TABS) group uses models to forecast capacity utilization and future costs and savings. These models are analytically sound and appropriate for BRAC analysis. However, uncertainty exists.

All analyses have sources of uncertainty, which is inherent within models, data and processes, and due to future unknowns. Essential to the success of an analysis such as BRAC is realizing that uncertainty is real and developing a plan to both explore and mitigate identified risks.

This appendix highlights selected sources of potential risks associated with uncertainties in the Army BRAC process. We highlight the risks, sources of uncertainty, and analytical approaches available to inform decision-makers concerning the potential impact of the risks as well as suggestions for mitigation.

S.2 INTRODUCTION

“At a minimum, BRAC 2005 must eliminate excess physical capacity; the operation, sustainment, and recapitalization of which diverts scarce resources from defense capability. However, BRAC 2005 can make an even more profound contribution to transforming the Defense Department by rationalizing our infrastructure with defense strategy.”¹

The above statement highlights required analytical balance for BRAC: close enough facilities to increase efficiency and take advantage of derived resources, but keep enough facilities to ensure that the capabilities of the future force are fully realized. Risk management helps TABS stay within this analytical balance. It enables analysts to understand the nature of unwanted consequences by illustrating what could go wrong as well as the likelihood of such an undesirable event. Risk is a product of uncertainty, which is the possible variation in the parameters that affect decisions within the analysis.

Risk in BRAC 2005 is characterized by a possible failure to balance savings versus maintaining military capabilities. To hedge against potential risk, TABS must identify, understand, address, and mitigate the associated uncertainties.

There are four possible outcomes to BRAC:

- 1) BRAC successfully eliminates excess and supports the Army’s transformation into the future force.
- 2) BRAC closes too many installations, which could adversely impact military readiness and well-being.

¹ Department of Defense, Office of the Secretary of Defense, Transformation through Base Realignment and Closure, memorandum, by Donald Rumsfeld, (Washington, D.C., 15 November 2002).

- 3) BRAC fails to close enough installations, so the military continues to waste resources on excess facilities.
- 4) BRAC closes the wrong portfolio of installations, thus failing to generate savings or support future force capabilities.

The last three possible outcomes are the undesirable events that TABS cautiously defends against through risk management. The following sections examine the three undesirable outcomes by describing the risk, the uncertainty that drives the risk, assessing the impact of the risk, and developing hedge strategies that address potential outcomes for the decision-maker.

S.3 CLOSING TOO MANY FACILITIES

"Particularly now, when we are at war in Iraq and fighting the war on terrorism on many different fronts, this is not the time to close any of our nation's military bases, therefore, I will continue to oppose any movements in Congress that could threaten these and other bases throughout the nation."²

Opponents of BRAC often echo the Senator's quotation. With Service members fighting in the field, the possibility of BRAC actions hindering wartime training is a frightening risk associated with shuttering too many installations. To avoid this consequence, TABS first identifies the uncertainty associated with this potential outcome.

Army Transformation will provide relevant and ready forces that are organized, trained, and equipped for full-spectrum Joint, interagency and multi-national operations. In order to support transformation, the Army will reorganize units into a larger number of brigade-sized units that are more modular and capability-based. This reorganization will occur during the BRAC process, creating uncertainty about the size, composition, and number of units that will be arrayed across the Army's new installation inventory. Although some preliminary work has been done, the size and composition of the new unit of action (UA) continues to change based on experience from the wars in Iraq and Afghanistan. The number of UAs is also uncertain. At present there are 43 UAs in the Program Objective Memorandum (POM) with a decision point pending in FY06 to decide whether the Army will go to 48. The future of the Army's overseas-based brigades is also uncertain. Under the present Army brigade structure, there are four maneuver brigades stationed in Germany, one in Italy, and two in Korea. If the Army chooses to return some of these units to CONUS, the number of returnees and the size and composition of their new UAs is uncertain. In the analysis, stationing these additional brigade-sized units can be described in terms of supply and demand. The supply is the available capacity of the installation inventory, which includes different assets, for instance, administrative facilities, operations facilities, buildable acres, ranges, and training maneuver land. The uncertainty in the force structure lies in the size, population, composition, and requirements of the future UA's, in other words, the demand.

There are two hedge strategies that help guard against closing too many installations. The first is preventive, while the other is responsive. The first strategy reduces the probability of arriving at an undesirable outcome by addressing the "worst-case

² Kenny, Elizabeth, "Maine, New Hampshire Senator back BRAC Delay," Portsmouth Herald, April 2004.

scenario.” In such a scenario, the analyst either decreases the supply (the available installation capacity) or increases the demand (the future force structure requirement). Since the capacity of the installations (supply) is easier to concretely identify than unit requirements (demand), the strategy is applied to the latter, which is the more uncertain parameter. To account for the uncertainty associated with requirements, the analyst then either stations units with augmented requirements, or uses a greater number of brigades than necessary. Both methods maintain a surplus of capacity, which ensures military readiness and, naturally, addresses future requirements.

The downside of worst-case scenario analysis is the possible failure to purge enough excess, while eliminating risky yet potentially efficient scenarios in the process. We can conduct sensitivity analysis to mitigate these potential effects.

For example, some Army requirements are based on step functions; therefore, a small increase in the force structure can lead to a larger capacity requirement if a “step” is reached. Sensitivity analysis helps us review how these types of variation in the output of a model can be apportioned to different sources of variation and how the model depends upon the information provided. For example, we can determine if there is a range of input factors over which the model’s variation is large. The maximum range of input factors is the total capacity requirements for the chosen force structure size and we would search for a large increase in the cost over that range. Figure 1 illustrates the impact of worst-case scenario analysis on the potential cost of a scenario and how sensitivity analysis can identify the impacts.

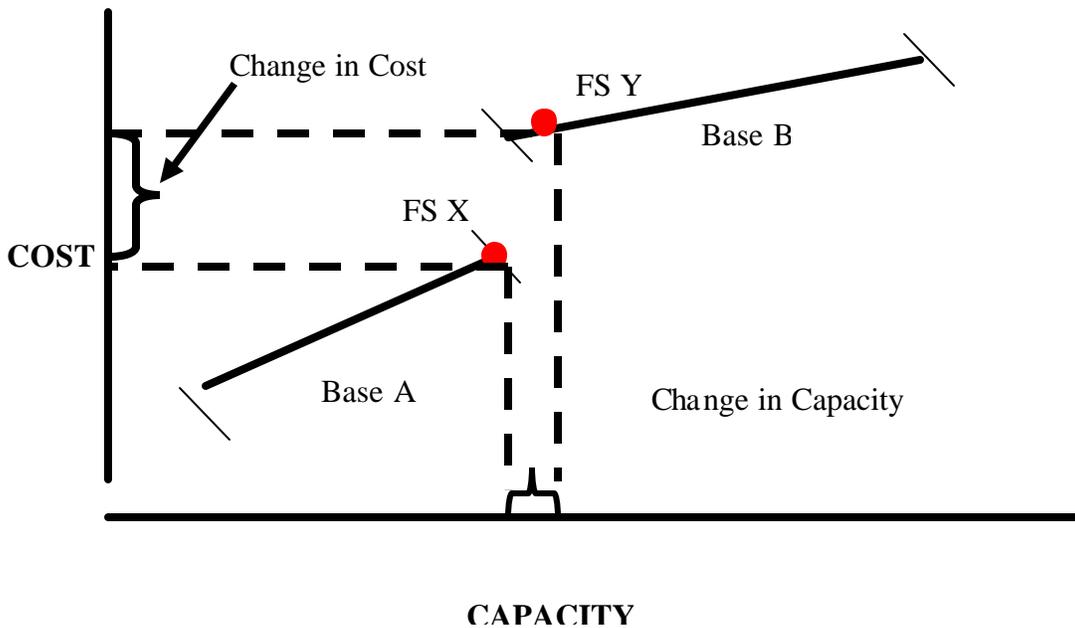


Figure 1.

In Figure 1, the x-axis denotes the capacity requirement of the chosen force structure used in the analysis, while the y-axis is the cost of the corresponding capacity. The function is a step function that depicts the cost of operating Base A and Base B. If the force structure requirements exceed the capacity of Base A, then Base B will be required.

There is a step increase in costs between Base A and Base B because there is a fixed cost requirement to open Base B. Suppose the analyst decides to use FS Y as the force structure size in our worst-case scenario analysis. Figure 1 shows that FS Y's capacity requirements force the model to open Base B, which would lead to additional excess. If we conduct sensitivity analysis by reducing the capacity requirement to FS X, we will discover a large decrease in the cost over a small range in capacity. This highlights that a relatively small increase in capacity forced the model to include an additional installation in the solution portfolio.

If the downside impact of the force structure or requirements used in the worst-case scenario analysis is too great, then there are other potential strategies to help mitigate the risks inherent with an unknown future force structure. For example:

- The Reserve Component has land and facilities that are not used as often as active facilities that would be used for active force training.
- Using simulation, one unit can train in the maneuver box with live equipment, while another unit trains virtually on the unit's flank in a simulator.
- Add a second National Training Center to the Army inventory, which will reduce local installation requirements.
- Leverage joint use training facilities.

Such options do not require an increase in infrastructure, but do require funds to buy simulation equipment or rent training land. The above options allow the analyst to be less conservative in terms of training land and explore more stationing options.

S.4 MAINTAINING INEFFICIENT FACILITIES

Inefficient installations drain resources away from other military priorities, such as force protection improvements for soldiers in the field. In the beginning of this paper, we quoted the Secretary of Defense as stating that BRAC 2005 must, at a minimum, get rid of excess physical capacity. Therefore, the Army would fail to accomplish its most basic BRAC task if it maintains too much excess capacity.

As discussed in the last section, any inflation in the size of the future force structure could lead to an overestimation of facility requirements, and, thus, keep unneeded facilities. There are other issues, though, that can lead BRAC to maintain inefficient or excess facilities.

The Army's shift from the old brigade structure to the new UA structure has changed unit facility requirements. This shift could cause an analyst to overlook efficiency possibilities. For instance, if a division transforms from three brigades to five UAs, then there would follow an increase in the number of required headquarters facilities. This headquarters shortage could lead the analyst to conclude that there is not enough room to station additional UA-sized units. However, there are plenty of other facilities to support the additional unit. The hedge against this is to ensure the analyst searches for alternatives through the conversion of existing facilities.

Another instance where particularly conservative analysis could keep excess installations open occurs when accounting for "surge" requirements during mobilization or the return

of overseas units to CONUS. The hedge against this uncertainty is construction, temporary facilities, and buildable acres. Facility conversions and military construction are examples of “reconstitutable” facilities, i.e., available through construction or purchase in the private sector. We must focus on eliminating reconstitutable facilities, while retaining assets such as maneuver land and training airspace that are difficult to reconstitute. Focusing on reconstitutable assets allows us to use MILCON as a hedge if we close too many facilities, which frees us to use less conservative estimates when determining force structure requirements.

S.5 CHOOSING SCENARIOS THAT FAIL TO GENERATE SAVINGS

Although BRAC law specifies military value as the primary consideration for making recommendations, the extent and timing of potential costs and savings must also be considered. Savings from closures and realignments allow DoD to reallocate resources to other priorities. Thus, there is military value associated with reducing installation operating costs. An efficient stationing scenario should show savings, and TABS must be wary of scenarios that show increased costs, which could hurt military readiness by diverting resources away from other programs.

The model used to calculate costs and savings of potential scenarios has its own inherent uncertainties. TABS uses the Cost of Base Realignment Actions (COBRA) model to estimate the extent and timing of potential costs and savings. The model is analytically sound, but there can be some uncertainty in the model’s data inputs. COBRA has been used successfully in BRAC since 1988, and the Army Audit Agency (AAA) states that the model reliably calculates costs, savings, and net present value (NPV). The AAA report also states, however, that the bases for COBRA calculations are standard factors and installation-specific data, on which the model’s accuracy and consistency are dependent.

The Services and Joint Cross Service Groups (JCSG) use COBRA to compare the costs of competing scenarios. COBRA outputs include NPV and Payback Period. For ease of calculation, reproduction, and understanding, COBRA parameters are single-point estimates based on averages and values from accredited references. In most cases, parameters are not derived from point values, but rather, a range of values, and that range is where the uncertainty in the parameters lies. One parameter that has a significant affect on the final COBRA output is the discount rate. BRAC law states that the selection for military installations shall address 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. The extent and timing of the costs and savings are illustrated in COBRA through the NPV, which is determined using a single discount rate. A higher discount rate leads to a lower NPV and vice versa, so the chosen rate has a significant impact on a scenario’s final NPV and its economic feasibility.

In Circular A-94, “Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs”, the Office of Management and Budget (OMB) states that the standard for deciding whether a government program can be justified on economic principles is NPV, the discounted monetized value of expected benefits. COBRA computes NPV based on OMB guidance using the following formula (*i* is the year):

$$\sum_{i=1}^{20} Cost_i \left(\frac{1}{1 + discount\ rate} \right)^{i-1/2}$$

COBRA uses the mid-year formula instead of the end-of-year formula since costs occur in a steady stream.³ Further OMB guidance states that a real discount rate that has been adjusted to eliminate the effect of expected inflation should be used to discount constant-dollar costs. Since BRAC requires the 20-year NPV, we use the 20-year real discount rate. Discount rates are published in Appendix C of Circular A-94 and for 2004 the 10-year rate is 2.8% and the 30-year rate is 3.5%. The circular does not provide the 20-year rate, but guidance further states that terms different from those presented may use a linear interpolation; therefore, we use the average between the 10-year and 30-year rate, which is 3.15%. OMB determines the discount rates for 2004 based on the forecasted 10-year Treasury note rate and the 91-day Treasury bill rate, so it is a short-term prediction used to predict long-term results. The 2004 rate, 3.15%, is the second lowest rate in the last 26 years during which time there was a maximum value of 7.25% and a minimum value of 2.85%. If the discount rate increases, then the NPV decreases, which would decrease the value of potential savings. Based on recent history, an increase in the discount rate in the future is a reasonable assumption. To estimate or calculate the impact of differing historical rates, we use simulation to determine how the 3.15% discount rate assumption influences NPV calculations.

A simulation experiment provides a means to measure the performance, behavior, and influence of inputs in the COBRA model. In this case, we used the Monte Carlo simulation, which uses random numbers to measure the effects of uncertain parameters like the effects of the changing discount rate. First, using the historical discount rate found in Circular A-94, we fit a distribution to the 1-year through 20-year discount rates to generate a random discount rate based on historical data. Then we developed a stationing scenario for COBRA, which involved moving a combat maneuver brigade from Fort A to Fort B. Table 1 contains the stationing cost summary.

Year	2006	2007	2008	2009	2010	2011
MilCon	76,937	60,742	58,458	0	0	0
Personel	0	-8,082	-16,211	-16,515	-19,156	-19,156
Overhead	4,536	5,025	5,434	3,873	2,865	2,865
Moving	0	5,371	5,838	4,121	0	0
Mission	0	100	200	100	0	0
Other	0	34	68	102	102	102
TOTAL	81,473	63,190	53,787	-8,319	-16,190	-16,190
Dollars (000's)						

Table 1

³ The end-of-year formula is calculated on the implicit assumption that the costs and benefits occur in lump sums at year-end. When costs and benefits occur in a steady stream, applying mid-year discount factors is more appropriate. The first cost year is estimated to occur after six months, rather than at the end of one year to approximate better a steady stream of costs and benefits occurring in the first year.

Each row represents a part of the total cost:

- MILCON is the cost of the required military construction projects at the gaining installation
- Personnel is the cost of adding or eliminating a civilian position
- Overhead contains the base operating and support (BOS) costs and the sustainment costs
- Moving is the cost of moving civilians and military personnel from on installation to another
- Mission is any unit mission costs associated with the move
- Other is any other cost not contained in the other five categories.

In COBRA, positive cash flow values are costs while negative values are savings. From Table 1, we see our example stationing action involved over 196 million dollars of military construction costs and there are over 16 million dollars in savings from 2011, which will be a recurring savings out to 2025. In this example, each annual cash flow value is discounted based on the COBRA NPV equation using a different discount rate. For example, the 5th year of the scenario used the discount rate randomly generated from the 5-year real discount rate distribution. The simulation iterated the procedure 10,000 times and produced the bar chart in Figure 2, which represents the NPV for the 10,000 runs.

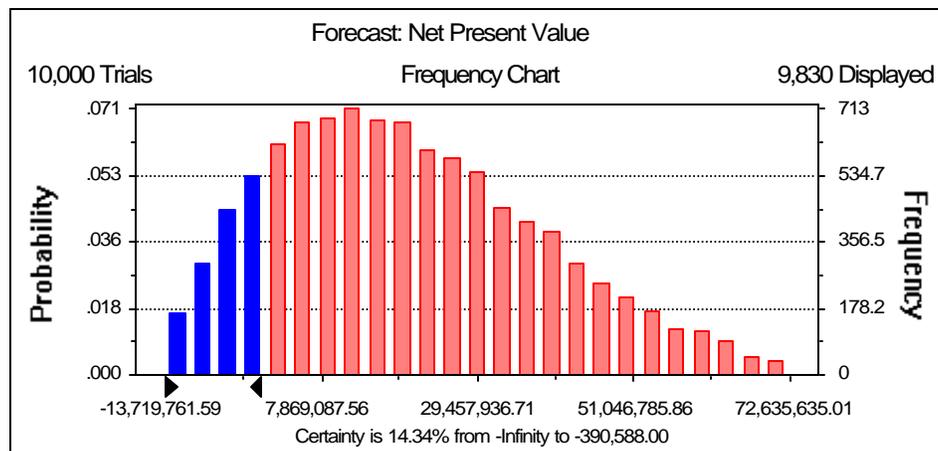


Figure 2

When using a single discount rate of 3.15%, COBRA calculates a 20-year NPV amounting to \$-390,000, which indicates the scenario will generate about \$390,000 in savings. For COBRA stationing scenarios, \$390,000 in savings is a marginally efficient scenario.

In Figure 2, the darker shaded portion of the frequency chart represents the number of simulation iterations that returned a value that met or exceeded the expected savings.

This portion represents only 14.34% of the iterations; so over 85% of the simulated outcomes did not meet the expected savings. Since this was a marginally efficient scenario, it is important to know how many simulated outcomes produce any savings at all. To do this we moved the lighter region to the right where the NPV value is zero, leaving 15% of the iterations in the lighter region. Using the 3.15% point estimate for the discount rate poses a risk since the chance of an undesirable event, in this case claiming a stationing scenario will generate savings when it does not, is almost 85%.

For scenario comparison, COBRA is an effective tool as long as both scenarios use the same discount rate. The uncertainty lies when COBRA estimates savings. COBRA does not produce budget quality cost projections, but it should forecast whether or not a scenario would realize any savings. Certainty is defined as the probability that the actual NPV will meet or exceed the COBRA NPV savings estimate. Figure 3 shows how an increase in the discount rate improves the certainty in the example scenario described in Table 1.

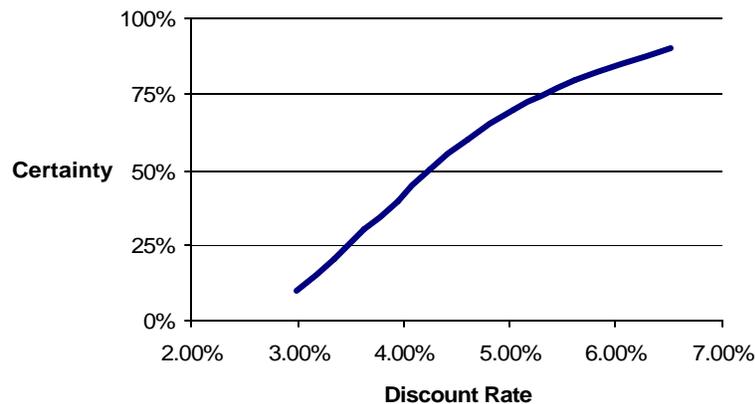


Figure 3

Marginally efficient scenarios in COBRA can be examined using this technique to determine their sensitivity to the discount rate. This information can then help limit risky scenarios in terms of savings or help prioritize among competing scenarios.

S.6 CONCLUSIONS

The models used in BRAC analysis contain sound algorithms, which will be audited for content and methodology by government audit agencies, such as the General Accounting Office (GAO). However, uncertainty lies in the inputs to the models – inputs based on averages and assumptions that although valid, use a single value to represent a range of possible values. Within these ranges of possible values lies the uncertainty that produces the risks in BRAC – risks that could produce the following outcomes:

- closing too many facilities,
- maintaining inefficient facilities,

or

- choosing scenarios that fail to generate savings.

To avoid closing too many facilities and weakening military readiness, TABS considers surge requirements, which considers the size, composition, and number of brigade-sized units in the Army force structure and the Army's ability to meet unforeseen requirements. Surge analysis ensures little impact on military readiness, but it could eliminate attractive stationing options. It could also force the Army to keep installations specifically for future needs.

To prevent the Army from maintaining inefficient facilities, TABS examines alternatives for Army scenarios.

Lastly, to determine final cost estimates and understand scenarios which may not produce savings, TABS conducts uncertainty analysis within COBRA by increasing the discount rate. This increases the probability that the COBRA-predicted value is realized.

T. ANALYST PROCEDURES

T.1 INTRODUCTION

This appendix provides the procedures that analysts with The Army Basing Study (TABS) Group follow to generate and document stationing proposals that can lead to a BRAC scenario. The first five sections explain the process of developing stationing proposals, while section T.6 outlines the procedure used to document the proposals; sections T.7 and T.8 outline procedures for proposal preparation and quality control reporting protocols as part of the proposal assessment process.

An analyst conducts initial installation/unit analysis to initiate a proposal. If the initial proposal is approved, the analyst completes detailed installation (provides installation possibilities), detailed unit (provides unit stationing possibilities), and proposal (criteria requirements) analyses. At each level of analysis, analysts follow the worksheets (incorporating additional insights as they see fit) and document their findings.

The following figure illustrates the proposal development flow:

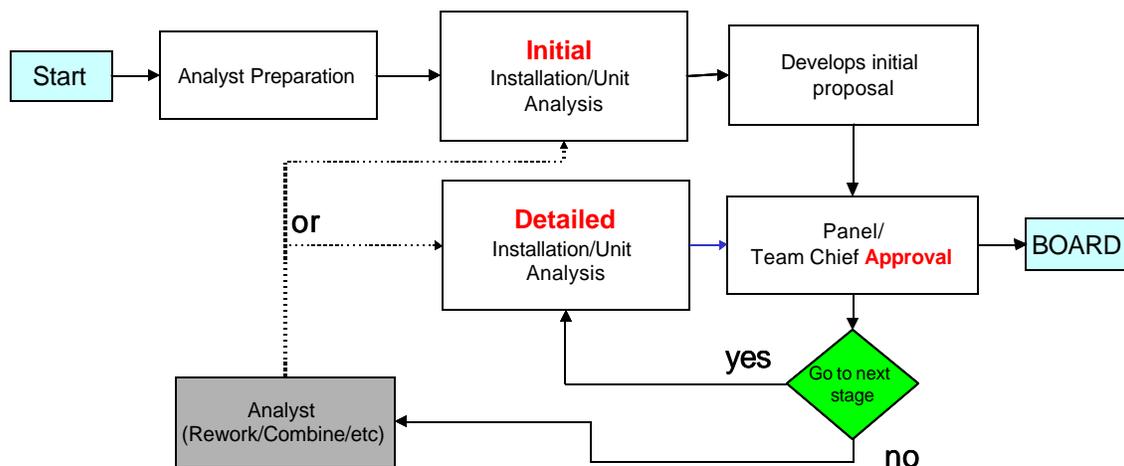


Figure 1. Proposal Development Flow

Throughout this appendix, there are checklists for analysts to follow while conducting their analyses. The checklists represent the minimum amount of analysis required to complete a proposal and are a compilation of TAF concepts. If there is a “P” in the far left column of a checklist, then the analyst needs to make an annotation in the Proposal Information Management System (PIMS) if they choose, but all responses will be placed into PIMS. The analyst will attach responses, for selected checklists, in the Analyst Proposal Book.

T.1.1 Analyst Preparation

The first phase of the process is Preparation, which prepares analysts for the tasks they need to conduct during the proposal development phases. The Preparation phase is separate from all analysis and is completed by each analyst prior to working on proposals. The following are the Inputs and Objectives for the preparation phase:

INPUT	OBJECTIVES
Guidance	Be familiar with the BRAC Law, TABS Charter, Army Stationing Strategy and other guidance.
Senior-leader interview results	Be familiar with trends from senior-leader interviews and how they relate to BRAC Objectives.
Transformational Options, Army Principles, BRAC Objectives, BRAC Considerations, BRAC Design Constraints	Understand Army and DoD Transformational concepts and their relation to BRAC analyses.
Installation Knowledge Books	<ul style="list-style-type: none"> • Take ownership of the books for assigned installations; remember that only certified data can be used to support BRAC decisions. • Review installation characteristics for installations in the analyst’s subject area. • Review unit relationships on installations of interest, associated relationships on other installations, higher headquarters and their locations, and other similar organizations and their installations. • Review all installation tenants, units they support, and their requirements.
Initial Reserve Component (RC), Joint Cross Service Group (JCSG), and Joint analyses	<p>Understand the potential impact of RC, JCSG, and Joint stationing options. Determine whether the Joint, JCSG, or RC analyses are completed for areas being examined, and be prepared to revisit coordination throughout the BRAC process.</p> <ul style="list-style-type: none"> • JAST – Understand other Service stationing opportunities. • RC – Discuss related areas of interest with the TABS RC analysts. • JCSGs – Discuss their areas of interest with the TABS JCSG LNO for concepts and scenario information.

Figure 2. Analyst Preparation

During preparation, sharing ideas among analysts is essential. TABS analysts coordinate with each other as well as with liaison officers.

The following checklist ensures that TABS analysts have developed the requisite foundation for developing BRAC actions.

T.1.2 Preparation Checklist

P	Preparation Checklist
	1. Have you reviewed, and do you understand, Army and DoD Transformational concepts, and their relation to potential BRAC analyses?
	2. Have you reviewed senior-leader interviews and how they relate to BRAC Objectives?
	3. Do you know your installation characteristics, including unique facilities or other characteristics that cannot be replicated elsewhere?
	4. Have you reviewed installation knowledge books for an understanding of installations, units, and existing tenants?
	5. Do you have a copy of the MACOM major unit list?
	6. Have you reviewed all installation tenants, units they support, and their requirements?
	7. Have you reviewed potential impacts on RC, supporting units that reside or train on the installation that may influence active force stationing, enclave potential, JCSG, and Joint implications on the installations?

T.2 PROPOSALS

A proposal is the result of initial installation and unit analyses, can be revisited throughout the Panel process, can be combined with other proposals, and will be given a priority of analysis depending on its perceived benefits to the Army; proposals become scenarios. A scenario is a description of a potential closure or realignment action that has been declared for formal analysis by a deliberative body.

To initiate a proposal, the analyst starts initial installation/unit analysis and completes enough work to feel confident that there is a viable proposal to take to the Panel. The analyst then completes a Proposal Worksheet (J: / PROPOSAL DEVELOPMENT) and presents the proposal to the internal review Panel or the analyst's Team Chief. An initial proposal includes the Transformational Option and/or BRAC Objective(s) that it is supporting; the gaining and losing installations; the units being moved; and short paragraphs displaying initial thoughts about the operational impact, Military Value Analysis (MVA) impact, and capacity impact of the proposal.

The proposal checklist below illustrates the required actions an analyst must complete to initiate a proposal.

T.2.1 Proposal Initiation Checklist

P	Proposal Initiation Checklist
P	1. What BRAC Objectives and/or Transformational Options will your analysis support?
P	2. What initial installations (Army and Joint) do you propose as gainers that support this objective and/or Transformational Option?
P	3. What initial installations (Army and Joint) do you propose as losers that support this objective and/or Transformational Option?
P	4. What units are you proposing to move?
	5. Have other TABS proposals already addressed this objective and/or Transformational Option? <ul style="list-style-type: none"> • Have you reviewed their efforts?
	6. Is your proposal already being worked by a TABS or JCSG analyst?
P	7. What are the initial MVA implications for your proposal? (Provide short narrative.)
P	8. What are the initial Capacity implications for your proposal? (Provide short narrative.)
	9. What are the initial operational and business process engineering implications for your proposal?
	10. Do you need additional certified data to conduct your analysis and support your proposal?

The Panel or Team Chief approves the proposal by “initiating” it for further study and initials the Proposal Worksheet. The Panel or Team Chief will only approve proposals that are either:

- supportive of BRAC Objectives or Transformational Options,
- transformational,
- supported by MVA.

Once initiated, the analyst turns in the Proposal Worksheet for tracking to the Proposal Manager (the worksheet becomes the first piece of the Proposal Book, which is discussed in T.6). The analyst then works the new proposal in accordance with where it falls in the priority of work placement (priority assigned by Panel). Installation Analysis

After initiating a proposal, the analyst starts the detailed installation analysis phase. The analyst completes detailed installation analysis as the proposal matures within the Panel review process.

This section describes the questions an analyst considers to complete detailed installation analysis and generate proposals that will enhance execution of one or more of the BRAC Objectives or Transformational Options. The analysis is focused on developing proposals for realigning units,

functions, and activities from installations with low MV to installations with high MV. Additionally, analysts review installations to determine if there are unique characteristics that need to be maintained to meet Army BRAC Objectives or Imperatives.

The following are the Inputs and Objectives for installation analysis:

INPUT	OBJECTIVE
<ol style="list-style-type: none"> 1. Preparation inputs 2. Capacity Analysis results 3. Military Value results 4. Team inputs 	<ol style="list-style-type: none"> 1. Develop an installation-level understanding of the following aspects that impact stationing: <ul style="list-style-type: none"> • An installation’s unique facilities or other characteristics that cannot be replicated elsewhere, • An installation’s external relationship with the private sector, universities, and transshipment points, • JAST/JCSG/Tenant activities/functions and their supporting units that are tied to an installation that may influence what the Army assigns to the installation, • An installation’s parcels, the relationship with the primary installation, and their assets, • RC units, and their supporting units that reside or train on the installation that may influence active force stationing and enclave potential. 2. Develop a prioritization of installations for unit review, which is based on MV, capacity, and the installation’s potential as described above. The prioritization provides a starting point for unit analysis.

Figure 3. Installation Analysis Inputs and Objectives

T.2.2 Installation Checklist

P	Installation Checklist
	1. Do you have a copy of the MVI and MVP results and understand the military value relationships for your installation list?
	2. Do you have a copy of the capacity analysis results and understand the capacity relationships for your installation list?
	3. Have you reviewed major units (ASIP and MACOM major unit lists), their relationships with respect to installations of interest, associated relationships on other installations, higher headquarters and their locations, and other similar organizations and their current installations?
	4. Have you reviewed an installation’s parcels, the relationship with the primary installation, and their assets?
	5. Have you reviewed the installation’s external relationship with the private sector, universities, and transshipment points?
	6. Have you reviewed the business process re-engineering opportunities on these installations of interest?
	7. List the installations (Army and Joint) that currently support this objective or could support the BRAC objective and/or the Transformational Option that you are trying to support.

INSTALLATION BEING REVIEWED:	
	<ul style="list-style-type: none"> Does the installation have a unique function, characteristic, or facility asset that cannot be replicated with MILCON or elsewhere on an Army or other Service installation?
	<ul style="list-style-type: none"> What are the current Joint activities on the installation that impact your action and what units are involved in the support of those activities?
P	<ul style="list-style-type: none"> Does the installation have an RC activity? If so, does the RC PAT have a recommendation that might influence the installation and your proposal?
P	<ul style="list-style-type: none"> Is the installation a candidate for enclave from the RC perspective?
	Are there opportunities to share facilities with non-Army mission partners?
	<ul style="list-style-type: none"> Do all installation activities need to remain on post? Is there a

P	Installation Checklist
	Joint activity that will force this installation to remain open (an activity that cannot move or be replicated elsewhere)?
P	Are there JCSG activities on the installation that are currently involved with a JCSG scenario that would influence what the Army does with this installation? (Place JCSG units on Base X if you are completing proposals that may impact JCSG functions. Update the locations as the JCSG analysis matures.)

INSTALLATION BEING REVIEWED:	
	Does the installation have excess capacity that the Army can use for other units?
	<ul style="list-style-type: none"> • Are there joint activities that could be performed at these installations?
	<ul style="list-style-type: none"> • Could the installation support an operational requirement for a unit currently on an installation with low MV?

The following is the analyst’s installation checklist to follow during this phase of the analysis. Installation information and relationships from the checklist will be placed into the analyst’s Proposal Worksheet, which will be made available as a reference for all analysts.

T.3 UNIT¹ STATIONING ANALYSIS

This part of the process describes the general steps that analysts will follow as they complete unit-stationing analysis (generate unit-installation alternatives) in preparation for their proposals. The analysis is focused on finding new assignments for units on installations that are “possible” closure or realignment candidates. The inputs and objectives for this part of the analysis are:

INPUT	OBJECTIVES
<ol style="list-style-type: none"> 1. Inputs and outputs from Preparation and Installation analyses that relate to the BRAC Objectives and Transformational Options being considered. 2. Initial OSAF outputs. 3. Further coordination with the JCSGs, RC, and other Services. 4. Installation Smart Books 5. ASIP / RPLANS 6. Team and Panel discussions 	<ol style="list-style-type: none"> 1. Develop an understanding of the units on lower-MV installations and their supporting relationships (requires a “group” of units) as well as their tenant, JAST, JCSG, and RC relationships. 2. This list of supporting relationships will assist in the prioritization of feasible SAs. The supporting list is essential for quality proposals; if a major unit is moved, then supporting units should be considered for inclusion to ensure units continue to be operationally effective. 3. Develop a listing of the units that can be moved and where they can be moved, as well as a prioritization for those moves based on the overall potential impact on the Army (move to higher MV installation, provision of efficiencies, improved objective, mission needs, support to an Army initiative, and/or joint basing opportunities).

Figure 4. Unit Stationing Analysis Inputs and Objectives

Analysts start with the priority list of installations (Army and Joint) from installation analysis and identify the units on an installation that are being considered for an SA.

Explore the installations on your current list, giving priority for an SA that transports units from installations with low MV to installations with high MV. For the units on a *low-MV installation*, examine the stationing aspects in the following checklist.

¹ At all times in the process, any reference to a “unit” implies a potential “group” of units, which includes a major unit and its supporting units.

T.3.1 Unit Checklist 1

P	Unit Checklist 1
	1. Does the unit have supporting relationships with other units that would force it to stay on the installation or force a “package” of units to move if the unit is part of an SA? (This “supporting relationship” includes any Joint, RC, or JCSG relationship that would influence the realignment of this unit.)
P	2. Does the unit (or supporting unit) have a unique function or facility requirement that cannot be replicated with MILCON or elsewhere on an Army or other-Service installation?
	3. Does the unit have a stationing restriction, MACOM initiative, or other requirement that would limit stationing opportunities?
	4. Does the RC-PAT have an action related to this unit?
	5. Does a JCSG have a planned action that may influence the resources that you are using for the realignment?
	6. Can you place this unit on another Service’s installation (or other government property) that would assist in improving the operational effectiveness of the unit or improve the opportunities for closure of the installation?
	7. Can the unit remain in place with non-Army mission partners or as a stand-alone function?
	8. Does the unit have any partnering requirements?
P	9. What is the unit’s authorized personnel (officer, enlisted, civilian, contractor) numbers?
	10. Does the unit have any special requirements that you need to consider in this proposal?
	11. What is the unit’s Organizational structure? (Number of units, chain of command, and subordinate units.)
	12. Are there any business process re-engineering opportunities with these units?

P	Unit Checklist 1
	13. Use RPLANS to determine the unit’s facility requirements at possible locations. What are the unit’s requirements for the core facilities? (Note major facility requirements when looking for excess capacity.)
	14. Use RPLANS to determine the unit’s facility requirements at possible locations. What are the unit’s requirements for community facilities?
	15. Use RPLANS to determine the unit’s facility requirements at possible locations. What are the unit’s requirements for utility facilities?
	16. Does the unit have any special command and control requirements?
	17. What is the unit’s Command and Control structure?

Consider the installations on the list with **higher MV** and **excess capacity**. Consider a possible move to installations with **higher MV** for this unit.

P	Unit Checklist 2
P	1. Do any of the installations provide possible efficiencies, improve objectives, support mission needs, support an Army initiative, and/or provide joint basing opportunities for the unit that you are investigating?
P	2. Does the receiving installation have an environmental issue that could impact the stationing action? (This ENV screening does not stop an action from moving forward and does not take away the responsibility of the analyst for an environmental analysis; instead, this screening may help prioritize actions for further analysis.)
P	3. Does the receiving installation have an economic issue that could impact the stationing action? (This ECON screening does not stop an action from moving forward and does not take away the responsibility of the analyst for an economic analysis; instead, this screening may help prioritize actions for further analysis.)

T.4 PROPOSAL ANALYSIS

T.4.1 Introduction

Analysts combine their analyses from the previous sections at this stage in the process and develop stationing actions (SAs) for their proposal. An SA is a move of one unit between two installations

and should be based on prior analysis, Panel, and team discussions. The inputs and objectives for proposal analysis are:

INPUTS	OBJECTIVES
<ol style="list-style-type: none"> 1. Information from prior analysis that is related to the objective that the analyst is considering. 2. The baseline information of any installation the analyst considers (for closure or realignment or as a receiving installation) including Base Operating Support (BOS) cost, tenants, programmed personnel losses/gains, funded construction by type facility, any privatization/A76 initiative, partnership agreement, contracted work force, mobilization mission, source of funding (direct, reimbursable, working capital fund, etc). 	<p>At the completion of this stage of the analytical process, the analyst will have a proposal that supports a given BRAC objective or transformational option.</p>

Figure 5. Overall Proposal Analysis Inputs and Objectives

T.4.2 Process

The proposal analysis includes seven checklists for different parts of the analysis. First, identify the unit-installation sets that you will analyze further (based on prior analysis).

P	Proposal Analysis Checklist
	<ol style="list-style-type: none"> 1. Based on prior analysis, what are the subsets of unit-installation SAs that will support your proposal?
	<ol style="list-style-type: none"> 2. Provide any additional unit and installation information found during your analysis for the units and installations that are in your proposal.

T.4.3 Business Practices

Analyze the **unit** and potential gaining installations for Business Process Reengineering (BPR) opportunities (may need MACOM TA assistance).

P	Business Process Reengineering Checklist
	<ol style="list-style-type: none"> 1. Are there Business Process Reengineering actions that will impact your proposal?
	<ul style="list-style-type: none"> • Is construction required to complete BPR at the receiving installation?

P	Business Process Reengineering Checklist
	<ul style="list-style-type: none"> • Is there a feasible schedule to implement BPR at the receiving installation?
	<ul style="list-style-type: none"> • What is the required equipment that must be moved to implement BPR for the unit?
	<ul style="list-style-type: none"> • Are there positions (by grade and source – Officer, Enlisted, and Civilian) that will be eliminated due to BPR?
P	2. Have you coordinated with the MACOM on BPR?
	3. Have you considered the organizational structure and the senior/subordinate relationships of the units that you are examining?

T.4.4 Cost of Base Realignment Action (COBRA)

Enter data into COBRA for each proposal that you are tasked to analyze. Populate each screen in COBRA with relevant information, and document any assumptions that you make for each screen. (Follow COBRA Analyst Guide that comes with the COBRA manual.)

P	COBRA Impact Assessment (#5)
	1. Follow the COBRA checklist and complete all required worksheets.
P	2. Annotate PIMS with the appropriate COBRA resulting values.
	3. Print the COBRA Reports and place in your Proposal Book.

T.4.5 Environmental Assessment

Conduct an environmental assessment.

P	Environment Impact Assessment (#8)
	1. Follow the Environmental Impact Assessment checklist and complete all required worksheets.
	2. Review your assessment with an ENV Analyst if you have an issue/concern. List issues.
P	3. Annotate PIMS with the appropriate environmental risks.
	4. Print the assessment and place in your Proposal Book.

T.4.6 Reserve Component Assessment

Conduct a review with an RC analyst to ensure you have addressed RC issues within the SA.

P	RC Checklist
P	1. Does your proposal need to be coordinated with the RC?
	2. Does your proposal impact the use of training lands that the RC depends on?
	3. If your proposal closes an installation, have you considered an enclave for the RC and worked with the RC team to establish that enclave?
	4. Have you considered using RC training lands to meet requirements for the units that you are moving?
	5. Have you completed your RC coordination?

T.4.7 Economic Assessment (Criterion #6)

Conduct an economic assessment of the area surrounding an installation involved in a proposal.

P	Economic Impact Assessment (#6)
	1. Complete the Economic Impact Assessment checklist for criterion #6.
P	2. Is there an economic impact to the local area that would possibly interfere with this action?
P	3. Annotate PIMS with the appropriate economic risks.
	4. Print the assessment and place in your Proposal Book.

T.4.8 Local Area Infrastructure Assessment (Criterion #7)

Conduct an assessment of the local area infrastructure around an installation involved in a proposal.

P	Local Area Infrastructure Assessment (#7)
	1. Complete the Local Area Infrastructure checklist for criterion #7.
P	2. Is there a local area infrastructure shortcoming that could jeopardize the success of an action?

P	Local Area Infrastructure Assessment (#7)
P	3. Annotate PIMS with the appropriate economic risks.
	4. Print the assessment and place in your Proposal Book.

T.5 PROPOSAL DOCUMENTATION

Throughout the analysis, analysts follow their Proposal Worksheets and additional required documentation, which is listed below. (See Appendix E) At a minimum the analyst includes the following in their Proposal Workbook (summary of above checklists):

P	Proposal Documentation Checklist
P	1. Impacts on MV – how did this scenario support the BRAC Objectives and improve operational effectiveness? (Criterion #1-4, MVA results.)
P	2. What are the costs and savings related to the scenario? (Criterion #5, COBRA results, fills in values per Proposal Worksheet.)
P	3. What is the local area impact of the move for both losing and gaining communities? (criterion #6 and #7 results, fill in values per Proposal Worksheet)
P	4. What are the environmental concerns? (Criterion #8 environmental results - fill in values per Proposal Worksheet.)
P	5. What are the Joint implications for this proposal?
P	6. What is the unit’s command structure?
P	7. What are the structural changes (BPR) for the units in this proposal?
P	8. What is the operational justification for this proposal?
P	9. What are the JCSG implications? Ensure locations for Base-X units are clarified as analysis matures. In some cases, Base-X will remain the solution until implementation; state when this is the case.
P	10. What is the operational impact on the RC?
P	<ul style="list-style-type: none"> • USAR sites closed? • ARNG sites closed? • USAR/ARNG units moved? • USAR/ARNG soldiers moved? • USAR/ARNG cost avoidance?
P	11. What is the better business practice impact?

P	Proposal Documentation Checklist
P	12. What is the impact on Army logistics?
P	13. What is the impact on Army power projection capability?
P	14. What is the impact on the Army training capability?
P	15. What is the impact on the Army’s ability to react to future requirements?
P	16. What is the impact on Soldier well-being?
P	17. Does this proposal enable a closure?
P	18. How many square feet of space are vacated within this proposal?
P	19. How many square feet of new MILCON are constructed to support this proposal?

T.6 PROPOSAL DEVELOPMENT AND DOCUMENTATION

T.6.1 Introduction

Analysts follow TAF procedures to generate stationing proposals and document their work in accordance with TAF procedures and checklists (J:\PROPOSAL DEVELOPMENT\TOOLS\PROPOSAL WORKSHEET).

This section describes the documentation for developing Army BRAC proposal books (hard copy) and uploading data into the Proposal Information Management System (PIMS). The analyst is responsible for initiating an approved proposal, updating it, maintaining a hard copy of the proposal. The figure below portrays the documentation flow.

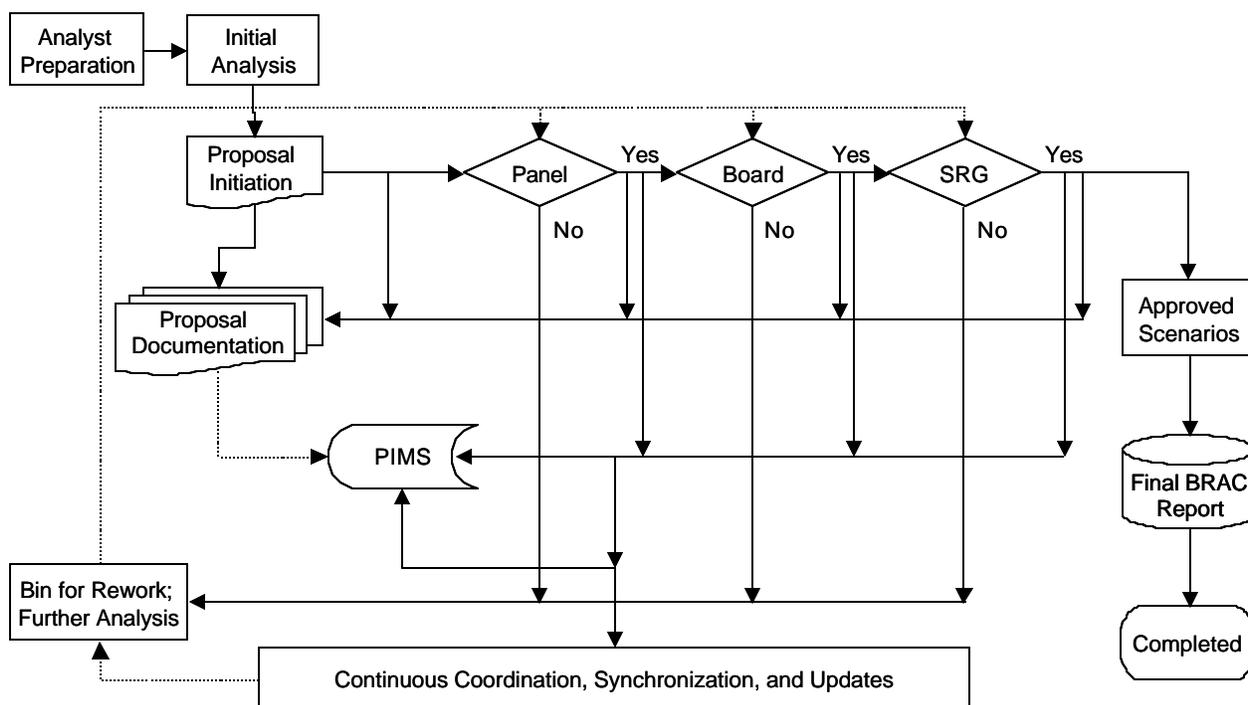


Figure 6. Proposal Documentation Flow

Following the procedures described in this section will ensure BRAC proposals are well documented, coordinated, and updated throughout their life cycle – from proposal initiation through scenario recommendation.

T.6.2 Analyst Actions

Prior to initiating a proposal, the TABS analyst coordinates and shares ideas with other analysts and liaison officers within and outside of the TABS group. Using the aforementioned proposal checklists and documenting the work in accordance with TAF procedures will assist the analyst in determining if the idea is proposal worthy.

T.6.2.1 Proposal Approval

After initiating the Proposal Worksheet as described above, the analyst prints the worksheet and presents the proposal to the **Team Chief** or **Internal Review Panel** for approval. The **Team Chief** or **Internal Review Panel** reviews the proposal, ensuring that the minimum required information is included, and approves or disapproves the proposal for further development. If the **Team Chief** or **Internal Review Panel** determines there is insufficient information, the worksheet is returned to the analyst for further analysis or rework. If approved, the **Team Chief** or **Internal Review Panel** initials the proposal worksheet signifying acceptance of the idea as a proposal.

T.6.2.2 Create PIMS Proposal

Upon approval, the analyst will upload proposal information into PIMS and establish a proposal number. The analyst uploads the essential information from the approved Proposal Worksheet into PIMS to generate a PIMS proposal number and creates a Proposal Book (hard copy) with the appropriate proposal name and number, approved summary worksheet, table of contents and proposal development checklists. Once the proposal number is established in PIMS, the analyst is able to log into PIMS and develop, update, and maintain the proposal. The analyst is responsible for maintaining the proposal – both within PIMS and in the hard copy Proposal Book.

T.6.3 Coordination and Updates

The analyst continues to conduct the analyses and ensures the Proposal Book and PIMS data remain current and accurate. As the analyst conducts analyses and develops the proposal, coordination and reviews with RC-PAT, JAST, JCSG, other MILDEPs, DoD agencies, SRG and EOH, ISG through IEC occur. During these external reviews, all scenarios are examined for understanding, coordination, and integration.

T.6.3.1 Document and Finalize

As the owner of the proposal– from initiation through scenario recommendation, -the analyst ensures that proposal development, data updates, and coordination is timely and accurate. The BRAC proposal of record resides in the PIMS database and the analyst’s hard copy Proposal Book.

T.6.4 Proposal Quality Reviews

T.6.4.1 Initial Quality Reviews (QC)

As part of the proposal development process, analysts complete an initial Quality Control (QC) process. This process culminates in the analysts disseminating either a Proposal Book (Active Army) or a proposal folder (Reserve Component). The QC process provides TABS leadership with an initial review of a proposal’s value as a potential scenario recommendation in accordance with BRAC objectives.

T.6.4.2 Initial QC Review Dissemination

The analyst is responsible for assembling and distributing QC materials. This material is reviewed by TABS members to ensure that all relevant data is current, accurate, and presented clearly. Each reviewer will denote their comments on a *TABS Proposal Quality Control Routing Slip* that is located on J drive (J:\PROPOSAL DEVELOPMENT\TOOLS\PROPOSAL WORKSHEET). Each reviewer is responsible for a specific portion of the eight-part evaluation criteria used for assessing installations in compliance with BRAC.

After review, the QC materials are submitted to the Integration Team for processing. From this point, the Integration Team performs two tasks. First, the Team documents and files a copy of the *Quality Control Routing Slip* containing the ideas, comments, and concerns of each reviewer about the respective proposal. Second, the Team produces a QC checklist summarizing any actionable items indicated on the QC routing slips. The purpose of this QC checklist is to capture any actionable items denoted on the routing slips to ensure that analysts incorporate the appropriate changes in PIMS, Proposal Workbooks, and other areas requiring current proposal data. After this processing, the Team will return the QC’d proposals with the QC checklist to the analysts so that the analyst can update PIMS with any missing data or actionable commentary emerging after this initial review process. Table I outlines the content and distribution schedule of QC materials.

Weekly QC Review Materials		
Category	Contents	Reviewers
<u>Reserve</u>	<p>Contents of <u>Proposal Folder</u>:</p> <ul style="list-style-type: none"> · TABS Quality Control Routing Slip · PIMS Report: Proposal Summary by Number · Initial Environmental Assessment · COBRA Reports <ul style="list-style-type: none"> a. Summary Report b. Data Input Report 	<ul style="list-style-type: none"> · Integrator-LTC Stanley · COBRA-MAJ Smith · Manpower-Mike Maguire · Criterion 6-MAJ Smith · Criterion 7-SGM Crossett · Criterion 8-LTC Crabtree · Military Value-COL Tarantino · Mr. McCullough
<u>Army</u>	<p>Title page with Proposal #, Proposal name, Priority #, Analyst name, Team Chief name, Date Approved.</p> <p>Contents of <u>Proposal Book</u>:</p> <ul style="list-style-type: none"> • Proposal Status Summary • Checklists • Justifications <ul style="list-style-type: none"> ○ BRAC Objectives/Transformation Objectives ○ Operational Implications ○ Capacity Implications • MVA Implications (Criteria 1-4) • COBRA Cost Reports (Criterion 5) <ul style="list-style-type: none"> ○ COBRA Reports ○ RPLANS Run ○ Stationing action/ASIP Run ○ IT (impact as required) • Economic Analysis (Criterion 6) • Local Area Impact (Criterion 7) • Environment (Criterion 8) • Unit Command Structure • RC Impact (if applicable) • Comments • Miscellaneous 	<ul style="list-style-type: none"> · Integrator-LTC Stanley · COBRA-MAJ Smith · Manpower-Mike Maguire · Criterion 6-MAJ Smith · Criterion 7-SGM Crossett · Criterion 8-LTC Crabtree · Military Value-COL Tarantino · Data- Mr. Wright · Mr. McCullough

T.6.4.3 Final QC Reviews

After the initial QC review process, the proposal is subject to a final QC review. While the content, delivery, and scrutiny parameters for this final round QC review process is identical to the initial QC review process, it is expected that each proposal that is being administered in this final review process is complete with updated data, analysis, and supporting documentation; that is, ready for publication.

T.6.5 Weekly Proposal Status Reports

In addition to processing the results of the QC review process, The TABS Integration Team also generates weekly Proposal Status report. This weekly binder of proposal information contains various PIMS reports and is distributed to the TABS leadership; specifically, the Director, Deputy Director and the Mission Team Chief. This report provides TABS leadership with a weekly status on the TABS group’s progress with respect to proposal assessments and proposal status.

The Integration Team is responsible for the assembly and distribution of the weekly Proposal Status report. The reports are generated through the PIMS database and distributed in paper copy in three-ring binders to the aforementioned recipients. Table II outlines the contents and distribution schedule of the PIMS report.

Weekly Proposal Status Reports		
Frequency	Contents	Reviewers
Weekly	<p>Customized to recipient. Typically will include one or more of the following PIMS reports:</p> <ul style="list-style-type: none"> • Proposal by PB, NPV & MILCON • Proposal by SA, PB, NPV with moves • Proposal by Transformational Objective • Proposal by ARMY BRAC Principals • Proposal by ARMY BRAC Objectives • Quality Review Status • Weekly Status (<i>*Excel version</i>) • Missing Data and Results Status • Criteria 5 • Criteria 6 • Criteria 7 • Criteria 8 • UICs with multiple Proposals • Analyst’s Proposal & Status • Proposals by Area of Analysis 	<ul style="list-style-type: none"> • Director • Deputy Director • Mission Team Chief

U. DOCUMENTATION

The Army Basing Study (TABS) Group developed and follows documentation procedures in accordance with their Internal Control Plan to ensure consistency and accuracy, and an auditable and defensible use of data and models.

U.1 Internal Documentation

Thorough documentation supports the TABS analytical process. TABS documentation efforts consist of three categories: background and familiarization information, certified information, and deliberative-process information.

U.1.1 Background and Familiarization Information

TABS obtained the majority of background and familiarization information through a series of installation briefings provided by Senior Mission Commanders, Garrison Commanders, and their representatives. Electronic and hard copies of these briefings, along with additional clarifying information, were retained and are available to the Commission and Congress. Since these briefings generally consisted of uncertified information, they were not included in presentations during deliberative meetings.

U.1.2 Certified Data

Certified data was collected through a variety of means. Data came from Army and non-Army databases (certified by appropriate officials); the Army staff and Major Commands (certified by senior officials within the staffs); and from the installations through a series of data calls (certified by appropriate officials).

TABS participated in all phases of the data calls, including efforts to refine the data-gathering questions and to review the data after it was input into data-management systems. Analysts used this data to support the proposals that they developed for review. The TABS Group developed the Proposal Information Management System (PIMS) to manage and document the process used for developing and reviewing the proposals. More information on PIMS is included in Appendix T.

U.1.3 Deliberative-Process Information

The minutes of the SRG deliberative meetings and the briefings presented during those meetings constitute the primary documentation supporting the Army BRAC process and recommendation. In addition, PIMS provides deliberative documentation for the scenario development process.

U.2 Model Documentation

The following provides a comprehensive overview of the models TABS uses within its analysis. The link to the DoD Selection Criteria is explained, as is the coordinating relationship among the models. The models are then listed – illustrating their connection with the criterion or criteria they support, their purpose, and the location of their documentation.

U.2.1 Mapping to DoD Selection Criteria

Models satisfy BRAC analytical requirements, address the DoD Selection Criteria, and assist analysts with the BRAC process. All models must associate with at least one criterion. Figure 1 displays the DoD Selection Criteria and the TABS-developed models that incorporate the criteria concepts to support the analyst.

	DoD Selection Criteria	Models	
1	The current and future mission capabilities and the impact on operational readiness of the Department of Defense's total force, including the impact on joint warfighting, training, and readiness.	MVA, Capacity, OSAF	<p>MVA Military Value Analyzer</p>
2	The availability and condition of land, facilities and associated airspace (including training areas suitable for maneuver by ground, naval, or air forces throughout a diversity of climate and terrain areas and staging areas for the use of the Armed Forces in homeland defense missions) at both existing and potential receiving locations.	MVA, Capacity, OSAF	
3	The ability to accommodate contingency, mobilization, and future total force requirements at both existing and potential receiving locations to support operations and training.	MVA, Capacity, OSAF	
4	The cost of operations and the manpower implications.	MVA, OSAF	
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.	COBRA	
6	The economic impact on existing communities in the vicinity of military installations.	Economic, IVT	
7	The ability of both the existing and potential receiving communities' infrastructure to support forces, missions, and personnel.	Infrastructure, IVT	
8	The environmental impact, including the impact of costs related to potential environmental restoration, waste management, and environmental compliance activities.	Environment, IVT	

Figure 1. DoD Selection Criteria and Models

The first four DoD selection criteria constitute the mandated basis for “military value,” while the remaining criteria are related to economics and environment. The TABS Modeling Team runs the models related to Criteria 1-4 and provides model outputs to aid the analysts. For example, Criterion 1, which addresses operational readiness and joint operations, is supported with the Military Value Analysis (MVA), the capacity analysis, and the Optimal Stationing of Army Forces (OSAF) model. Each of these models is briefly described in their respective appendices¹.

U.2.2 Coordination of Models

We have mentioned that the TAF includes several analyses as well as numerous coordinating requirements. It is essential that the TAF supporting models be linked to ensure consistency among models and analytical results. To accomplish this, each TAF model is linked through data sharing, DoD BRAC Considerations, Army BRAC Objectives, Army BRAC design constraints, mathematical constraints, and military judgment of the TABS analysts. Figure 2 illustrates the relationship among the primary TAF models.

¹ TAF Appendix I, MVA; TAF Appendix H, Capacity Analysis; TAF Appendix J, OSAF.

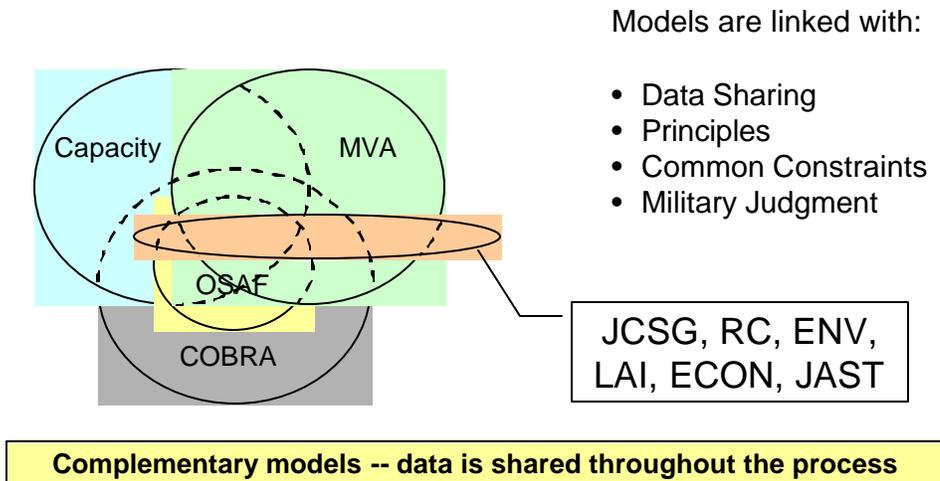


Figure 2. Relationship of Analytical Models

As the figure shows, all TABS primary models overlap to ensure efficient coordination.

The COBRA model is the cornerstone costing model, because it includes all standard cost factors and data as well as proposal-specific data. OSAF data stems from COBRA sources. Every element of OSAF resides in COBRA.

Capacity and MVA analyses provide an overlap of data within the different models. For example, a capacity metric may be used within MVA as well. However, all MVA metrics are not based on capacity. Instead, an MVA metric could be based on cost, location, or another installation characteristic.

A link that cuts across all models is the Joint Action Scenario Team (JAST), RC, and Joint Cross Service Group (JCSG) coordination that takes place. Capacity and MVA analyses from these groups are coordinated (by TABS liaison officers) and integrated (by TABS Modeling and Mission Teams) to ensure consistent analysis among the different groups from a data, modeling, and analysis perspective. Consistency does not imply that all groups have identical approaches, models, *or* results. In fact, because of uncertainties, the inherent need for judgment, and varying focuses, TABS and the JCSGs produce an array of proposals for consideration. Such a result strengthens the overall process because it provides multiple proposals from several perspectives to help generate options and recommendations.

If data or equations (manipulations of data) are used within several models, then the data or equations must be consistent in terms of source and their constraints. This requirement ensures a replicable process that is based on a similar baseline of information.

U.2.3 List of Models

U.2.3.1 Criteria 1-4: Military Value

All Military Value (MV) models are documented within the TAF and will be in the Final Report. The MVA Model is supported with other analytical models.

Supported Area	Model	Purpose	Documentation
Criteria 1-4	Military Value of Installations (MVI)	Determines the military value of the TABS 97 installations	For all MV references: <ul style="list-style-type: none"> • Appendix I • Appendix Y
	Connectivity	Supports MVI attribute - "Connectivity"	
	Force and Materiel Deployment	Supports MVI attributes - "Force Deployment" and "Materiel Deployment"	
	Accessibility	Supports MVI attribute - "Accessibility"	
	Critical Infrastructure	Supports MVI attribute - "Critical Infrastructure Proximity"	
	Soil Resiliency	Supports MVI attribute - "Soil Resiliency"	
	Encroachment	Supports MVI attribute - "Urban Sprawl"	
	Environmental Elasticity	Supports MVI attribute - "Environmental Elasticity"	
	Buildable Acres & Conversion Facilities	Supports MVI attributes - "Buildable Acres" and "Applied Instructional Facilities"	
	Noise	Supports MVI attribute - "Noise Contours"	
	Military Value Portfolio (MVP)	Determines the TABS installation portfolio	
	Option Determination and Evaluation Model (ODEM)	Provides alternative Options at different budget constraints	

U.2.3.2 Criterion 5: COBRA

Cost of Base Realignment Action (COBRA) documentation is based on Joint Process Action Team (JPAT) products and supporting models that the TABS Modeling Team developed to assist TABS analysts with completing COBRA runs in a consistent manner.

Supported Area	Model	Purpose	Documentation
Criterion 5	COBRA	Primary costing model for all TABS proposals	COBRA Users Guide, TAF, Appendix K
	IT Costing Model	Supplements COBRA by estimating campus area network IT costs	USAISEC Information Technology (IT) Impact Tool User Manual, dated 2 July 2004
	Community FAC Tool	Provides a consistent means for TABS analysts to determine construction requirements for community facilities	Analyst Reference Guide - MEMO - Utility Facility Analysis Categories (FAC)
	Support Utility Tool	Provides a consistent means for TABS analysts to determine construction requirements for hookup of support utilities (e.g., water, electric, waste water, power, etc.)	Analyst Reference Guide - MEMO - Community Facility Analysis Categories (FAC)
	Installation Code Tool	Provides a lookup feature for analysts	Analyst Reference Guide - MEMO - COBRA Installation Codes
	Standard Requirements Code (SRC) Weight Tool	Provides a consistent means for TABS analysts to determine weight requirements for unit moves	Analyst Reference Guide - MEMO - SRC Support and Mission Weights

U.2.3.3 Criteria 6, 7, and 8: ECON, LAI, and ENV

TABS also employs models to address Criteria 6, 7, and 8. Documentation for these models is based on Joint Process Action Team (JPAT) products and additional models that the TABS Modeling Team developed to assist TABS analysts with consistently completing scenario proposals.

Supported Area	Model	Purpose	Documentation
Criterion 6	Local Area Economic Impact (ECON)	Determines the local area impact for direct and indirect job impacts due to a BRAC action	TAF Appendix L
Criterion 7	Local Area Infrastructure (LAI)	Compares the ability of two different installations to support the local area's infrastructure capability to support a unit's requirements	TAF Appendix M
Criterion 8	Environmental Process (ENV)	Qualitative model developed using subject-matter experts (SMEs) to review all subject areas included within Criteria 8 analysis	TAF Appendix N

U.2.3.4 Additional Scenario-Development Models

In addition to aiding in the use of the DoD Selection Criteria, models assist TABS during scenario development. Each model has separate documentation as outlined below.

Supported Area	Model	Purpose	Documentation
Scenario Development	OSAF	Mixed-integer programming model that stations Army units while meeting their requirements and minimizing cost.	TAF Appendix J; Numerous Center for Army Analysis (CAA) documented studies
	Analyst Procedures	Provides consistent model for analysts to complete a scenario	TAF Appendix T
	Capacity Analysis	Capacity model that reviews assets (Level 1), shortages and excesses (Level 2), and footprint analysis (Level 3)	TAF Appendix H
	Maneuver Lands	Describe the impact of IGPBS and Modularity on the Army's maneuver lands and describe risks the Army is taking within BRAC reference maneuver land assets.	Army BRAC Report Volume II: Capacity Analysis Report

Supported Area	Model	Purpose	Documentation
	Proposal Information Management System (PIMS)	Access database model used to maintain proposal characteristics.	TAF Appendix T

U.3 Summary

This appendix illustrated the documentation efforts performed by TABS during the analytical process. It explained the internal documentation procedure and provided a listing of TABS primary models and their supporting models as well as their purpose and documentation location.

V. FORCE STRUCTURE

V.1 INTRODUCTION

BRAC law requires the Services to use the approved BRAC force structure in their analysis. This appendix describes the Army's approach for incorporating this force structure into the various required analyses.

Force Structure analysis focuses on the identification and integration of organizational capabilities across the Army. It is not limited to the operational force, nor is it simply an identification of missions. Force structure analysis includes modularity initiatives, incorporates military-to-civilian personnel conversions, and considers implementation of best-business practices to identify efficiencies due to BRAC actions. The TABS Group segregated the analysis of Force Structure into three distinct arenas: determination of stationable packages (section V.2), analysis of base operations (BASOPS) manpower implications under realignment or closure actions (section V.3), and analysis of possible manpower savings resulting from organizational consolidations (section V.4).

Force structure is documented on Modified Tables of Organization and Equipment (MTOE) for the operating force and Tables of Distribution and Allowances (TDA) for the generating force. The TABS group used the FY03 data from the 12 June 2003 Army Stationing and Installation Plan (ASIP) as a baseline for unit strengths and locations. Assumptions about future structure were based upon the 20 year Force Structure Plan submitted to Congress with the FY05 Budget (this plan is due to be updated in January 2005). The documentation for the units contained in that baseline are FY03 TDA and MTOE documents. These documents were used for TABS' organizational analyses.

V.2 DEVELOPMENT OF STATIONABLE PACKAGES

Army installations are not ordinarily single-purpose bases supporting only one unit. Some may be small and have very few units, but the majority of Army bases are multi-function installations that contain many units with differing missions. The TABS FY03 stationing baseline contains approximately 6,000 separate units, each of which could be stationed independent of the stationing of any other. However, 6,000 "individual" units are not representative of the total units on Army installations since relationships exist among many of those "individual" units. TABS and the Major Commands (MACOMs) grouped units into sets to reflect these relationships.

Unit groupings, or *stationable packages*, are collections of units that have been identified by the MACOMs to move together under closure or realignment actions. Each of the units are named by their Unit Identification Code (UIC) and each stationable package is anchored by a major UIC. For example, the stationable package that is anchored by the Headquarters, Training and Doctrine Command (HQ TRADOC) also contains UICs for the Security Assistance Training Field Activity and Combat Development Activities, all located together on Ft. Monroe. Since there are organizational synergies between these organizations, TABS considers them a single unit when assessing realignment or closure actions that may be related to Ft. Monroe. To develop these packages TABS sent a

questionnaire to each MACOM, the responses were coordinated, and TABS integrated the responses across the MACOMs.

The TABS group developed two sets of stationable packages for analysis of stationing actions. The first is a 2003 baseline position that was used for the inputs to all TABS stationing and costing models and formed the basis for all scenario analyses.¹ The second set incorporated all planned modularity transformation actions and Integrated Global Presence and Basing Strategy (IGPBS) moves. This set of packages is called the 2025 baseline and was input into the various stationing and costing models to provide analysts with a view of the requirements for stationing the future Army. This view was then incorporated into TABS scenarios to position the Army to meet future force structure changes and requirements.

V.2.1 2003 Stationable Packages

The TABS Group used the Army Stationing and Installation Plan (ASIP) to establish a baseline for Army units, their manpower levels, and their locations. The ASIP database contains listings of all Army UICs and derivative UICs, the installation the UIC resides on, and the Total Army Analysis (TAA) planned authorized strength for the UIC until 2009. The authorization data in ASIP reflects the 12 June 2003 Standard Army Manpower Allocation System (SAMAS) Data. This baseline list of UICs was distributed among the MACOMs in the form of an Excel spreadsheet that contained seven questions for the Command to answer about each of its own units. This questionnaire's objective was to determine which UICs were independent, which were closely associated with other UICs, and which UICs had special stationing requirements. The seven questions were:

1. If the installation closes, does the unit or organizational element relocate?
2. If the unit or organizational element relocates, can it be moved independently?
3. If no on question 2; list the UIC of the unit or organizational element it must relocate with.
4. If no on question 2; must the unit or organizational element relocate locally, regionally or nationally?
5. If the MACOM could realign the unit to another location, what are the top three preferences?
6. Does the unit or organizational element support other installations?
7. If the installation increases or decreases in size, does the unit or organizational element increase or decrease in size?

The MACOM answers enabled the TABS group to build the 2003 set of stationable packages. A full list of the 2003 packages is located in Annex 1.

¹ The stationable packages were used by TABS scenario analysts as a starting point for analysis. In some cases it was necessary to deviate from the packages, such as when scenarios moved functions and not units.

The 2003 set of packages contained several unit types that occurred at multiple Army installations. These packages were coded BASOP, BASEX, USAR##, ARNG##, TSB##, DOD##, and OTHCIV.

- BASOP - contains the units that provide the base operations support to the installation. It includes the garrison organization, medical and dental facilities and commissaries. Many of these units would be considered savings if the installation were to close, but not all (see V.3 Analysis of BASOPS Manpower implications).
- BASEX - a set of Army units that have special stationing considerations. These include: Criminal Investigative units that are stationed according to military population density and hence must be distributed after the rest of the Army is stationed, veterinary units that may have local missions not related to the military, and Corps of Engineer offices and detachments. In the event of an installation closure scenario, all of the units in the BASEX package are moved to a fictitious installation called Base X. Base X has an infinite capacity and is equidistant from all other Army installations.
- USAR## - contains the US Army Reserve units on an installation. These units have a local mission to support the Army Reserves that are located in the vicinity of the installation and in the event of a closure these units are enclaved or moved to some local facility.
- ARNG## - contains the US Army National Guard units on an installation. These units have a local mission to support the National Guard units that are located in the vicinity of the installation and in the event of a closure these units are enclaved or moved to some local facility.
- TSB## - active Training Support Brigade units that are multi-compo and exist on an installation to support training of National Guard and Reserve units that train regionally. These units can re-station within a set geographic region in the event of a closure action.
- DOD## - contains miscellaneous Department of Defense, or military, but non-Army, units. These units are often small and not associated with any larger organization on an installation.
- OTHCIV - is the package that contains all non-DoD organizations on the installation. This package also contains contractors, and non-appropriated funded (NAF) positions. This package does not include the Army & Air Force Exchange System (AAFES) organizations, even though AAFES is a NAF organization. These units are listed under the stationable package AAFES.

In addition to grouping each UIC into stationable packages, the TABS group researched the amount of equipment that each unit possessed. This information was necessary for the COBRA model to compute the costs associated with moving a unit. The COBRA model required the number of heavy vehicles (at most one can fit on a rail car), the number of light vehicles (more than one will fit on a rail car) and the tons of other equipment that a unit owns. To get this information for each UIC, the TABS group used the UIC from the 2003 ASIP and pulled all of the line item numbers (LINs) of equipment

that the UIC was authorized from The Army Automated Documentation System (TAADS) database. Then each LIN was looked up in the Army Master Data File (AMDF), which contained a description of the item, its volume in cubic feet and its weight. Some military judgment was required to identify if a vehicle was light or heavy. This data was then summed for each UIC and for each stationable package. It should be noted that many units have no equipment. This is because administrative equipment (computers, desks, etc.) is not recorded as an authorized LIN. COBRA contains a factor to compute administrative equipment based upon the personnel strength of each unit. Also, aircraft were segregated from other equipment because aircraft are not transported in a unit move.

V.2.2 Stationable Package Example

Figure 1 shows all of the UICs at Carlisle Barracks, the five stationable packages into which they are grouped, and their personnel strengths and equipment totals.

UIC	UIC Description	Stationable Package Code	Package Description	OFF	WOF	ENL	TOT MIL	US CIV	OTH CIV	TOT CIV	TOT POP	ACFT	HVY	LIGHT	SPT TONS
FG86	AIR FORCE	TC058	USA WAR COLLEGE	7	0	1	8	0	0	0	8	0	0	0	0
10UU04	MARINE CORPS	TC058	USA WAR COLLEGE	1	0	0	1	0	0	0	1	0	0	0	0
10UU03	NAVY	TC058	USA WAR COLLEGE	1	0	0	1	0	0	0	1	0	0	0	0
I217P	USA WAR COLLEGE	TC058	USA WAR COLLEGE	427	0	0	427	33	0	33	460	0	0	0	0
I217Y	USA WAR COLLEGE	TC058	USA WAR COLLEGE	48	0	0	48	0	0	0	48	0	0	0	0
W2H6NA	SCH USA WAR COLLEGE	TC058	USA WAR COLLEGE	30	0	1	31	0	0	0	31	0	0	0	0
W2H6AA	SCH USA WAR COLLEGE	TC058	USA WAR COLLEGE	114	1	47	162	261	0	261	423	0	0	0	0
W6BA08	OFC CONTRACT REG.N	BASEX	TO BASE X	0	0	0	0	1	0	1	1	0	0	0	0
W3LD47	RGN 3RD USACIDC	BASEX	TO BASE X	0	2	2	4	1	0	1	5	0	0	0	3
W3U4BU	SVC VETERINARY CMD	BASEX	TO BASE X	5	1	7	13	2	0	2	15	0	0	0	0
W06B02	CTR USA SVS FOR ARM	BASEX	TO BASE X	0	0	0	0	1	0	1	1	0	0	0	0
W31306	HQ SERVICES - WASH	BASEX	TO BASE X	1	0	1	2	0	0	0	2	0	0	0	0
DCNE39	DOD AGY	BASOP	BASOPS/GARRISONFUNCTIONS	0	0	0	0	48	0	48	48	0	0	0	0
W3ZS14	CMD N ATL RGN DENTAL	BASOP	BASOPS/GARRISONFUNCTIONS	4	0	7	11	6	0	6	17	0	0	0	0
W6F245	CTR WRAMC	BASOP	BASOPS/GARRISONFUNCTIONS	10	0	23	33	67	0	67	100	0	0	0	0
W6F250	CTR WRAMC	BASOP	BASOPS/GARRISONFUNCTIONS	0	0	3	3	2	0	2	5	0	0	0	0
W0UUA	GAR USAG CARLISLE BR	BASOP	BASOPS/GARRISONFUNCTIONS	2	0	2	4	11	0	11	15	0	0	0	0
I490ZG	DOD AGY	DOD12	DOD UNITS - CARLISLE	0	0	0	0	2	0	2	2	0	0	0	0
47566	AAFES	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	110	110	110	110	0	0	0	0
@6CM01	CONTRACTORS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	61	61	61	0	0	0	0
@6CM02	CONTRACTORS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	85	85	85	0	0	0	0
@6CM03	CONTRACTORS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	17	17	17	0	0	0	0
@6CM04	CONTRACTORS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	42	42	42	0	0	0	0
@6CM05	CONTRACTORS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	2	2	2	0	0	0	0
S0UU01	US POSTAL SERVICE	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	8	8	8	0	0	0	0
TD1001	NON-APPROPRIATED FUN	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	135	135	135	0	0	0	0
TD4001	NON-APPROPRIATED FUN	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	6	6	6	0	0	0	0
TDG001	NON-APPROPRIATED FUN	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	2	2	2	0	0	0	0
TDH001	NON-APPROPRIATED FUN	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	1	1	1	0	0	0	0
10UU01	US POSTAL SERVICE	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	1	1	1	0	0	0	0
10UU05	OTHER ACTIVS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	4	4	4	0	0	0	0
10UU06	OTHER ACTIVS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	6	6	6	0	0	0	0
10UU07	OTHER ACTIVS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	6	6	6	0	0	0	0
10UU08	OTHER ACTIVS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	4	4	4	0	0	0	0
S0UU02	OTHER ACTIVS	OTH CIV	OTHER CIVILIAN PERSONNEL	0	0	0	0	0	6	6	6	0	0	0	0

Figure 1. UICs at Carlisle Barracks

V.2.3 2025 Stationable Packages

The baseline FY03 list of UICs proved inadequate for representing the many Army transformation programs that are planned to take place from September 2003 until 2025. To address this issue, the MACOM responses to the UIC packaging questionnaires included new units, deleted old units and transformed some existing units. These were used to adjust the 2003 set of stationable packages into a set of packages that were representative of the Army that would exist in the future. This packaging of the Army, while still notional in many respects was invaluable to the BRAC process. It enabled the

TABS group to run stationing models that output optimal stationing of the future modular Army. The models accounted for training requirements, new construction, and stationing of forces returning from overseas. This 2025 stationing enabled TABS analysts to develop scenarios that would preposition the Army between 2005 and 2011 to support transformation objectives through 2025.

The two Army programs that created the greatest impact were the Integrated Global Presence Basing Strategy (IGPBS) and the Army transformation to modular brigade combat teams (BCTs). The IGPBS and the transformation of BCTs made the development of stationable packages for Forces Command (FORSCOM) difficult, requiring several assumptions during the process. Where possible, these assumptions were based upon existing decisions, but most were based upon the planned force structure (pre-decisional) that FORSCOM was aware of during July and September 2004.

The modularity initiative takes the operational force and transforms it from the current division/corps/theatre structure, into as many as 48 BCTs and 42 Support Brigades. Since the 2003 baseline reflected the current divisional structure, it had to be made to reflect the planned modular structure. The 2003 baseline was scrubbed to add new UICs and delete superfluous ones. Then FORSCOM, the Army G-3, and TABS mapped each of the UICs in the updated list to a modular brigade. Then each of the modular brigades became a stationable package. Following are some of the key assumptions² made during this action:

- There will be 10 UE_x and each will correspond roughly to the 10 existing divisions.
- UICs were mapped to the BCTs with an attempt to preserve existing command and control relationships.
- The 48 BCTs include: 20 Heavy combat brigades, eight Light combat brigades, five Stryker brigades and 10 Airborne/Air Assault brigades. Five other BCTs are yet to be funded.
- 46 of the 48 BCTs will be stationed in CONUS; two will be stationed OCONUS.
- The 42 Support Brigades include: six Maneuver Enhancement brigades, 10 Net Fires brigades, 11 Aviation, 12 Sustainment and three RSTA (Reconnaissance, Surveillance & Target Acquisition) brigades.
- Reserve Component modularity includes 8 UE_x, 34 BCTs (10 Heavy, 23 Light and one Stryker), 14 Sustainment Brigades, 14 Aviation, eight Fires and 11 Maneuver Enhancement brigades.
- The actual mapping of existing (2005) units to the planned modular brigades was supplied by the Army G-3 (September 2004).
- The Standard Requirements Codes (SRCs) used in TABS modeling are currently existing SRCs. Since support requirements have not been determined for the new

² Assumptions as of August 2004. The planned modular force mix was still being developed by the Army G3 during late 2004 and early 2005.

BCTs and their new SRCs, TABS used the existing SRC that was closest to what was planned under modularity.

- The units that will be returning to CONUS under IGPBS were not positioned at the planned CONUS installations. In order to allow the TABS models the freedom to place these units in optimal locales, units returning from Europe were considered to be at Base Germany, and were moved from there to a permanent station in TABS scenarios. Likewise, units returning from Korea were placed at a Base Korea.³

V.2.4 General Assumptions

The ASIP baseline of units includes more than just Army units. It includes everything that resides on an Army installation. When developing the stationable package sets, the following assumptions were made for all units:

- For new UICs that were added to the 2003 list, authorized strengths were straight-lined out to the future.
- Garrison organizations are considered BASOPS. If an installation closes, these positions are considered savings.
- Dental and medical clinics are considered BASOPS. If an installation closes, these positions are considered savings.
- The Army is the DoD executive agent for Veterinary Services. If an installation closes, these positions return to US Army Medical Command (MEDCOM) to be redistributed based upon population and regional requirements. There are no associated savings.
- Criminal Investigative Division (CID) Field Offices are distributed based upon military population densities. If an installation closes, these positions return to CID to be redistributed based upon population. There are no associated savings.
- Local, State, and Federal (non-DoD) government offices will close upon the closure of an installation.
- Concessions, Red Cross, Banks, Credit Unions and Army/Air Force Exchange Service (AAFES) facilities will close upon the closure of an installation.
- Classified units were not included in the analysis. They were considered on a case-by-case basis by the Intelligence Joint Cross-Service Group.

³ Base Germany is a fictitious installation on the East Coast (Norfolk, VA was used for costing) for holding units that will return from Europe under IGPBS. Likewise, a fictitious Base Korea was placed on the West Coast (Oakland, CA was used for costing) to hold units re-stationing from Korea.

V.3 ANALYSIS OF BASOPS MANPOWER IMPLICATIONS

Any realignment or closure of an installation will require units and organizational entities to move between installations. Therefore, the BASOPS required at the losing installation decreases, while the requirement increases at the gaining installation. Thus, BASOPS will need to move from the losing installation to the gaining installation, and the move may produce savings or costs in those positions.

The Army approach attempted to focus scenario development on installations with low military value. The Army developed a portfolio of desired installations based upon 40 military value criteria. Installations outside the portfolio were the starting point for BRAC action. These installations tended to be smaller installations with a single major function. BRAC actions at these installations tended to move organizations off of them and onto larger, multi-purpose bases. These scenarios should include manpower savings (or costs) for BASOPS-related functions since movement to larger installations should realize an “economy of scale” in the BASOPS functions. For example, an increase of 1,000 personnel at an installation that already has 50,000 people on it is not nearly as significant as an increase of 1,000 people at an installation with only 500 people. So TABS developed a model to estimate these changes.

The TABS group also coordinated with the Joint Cross Service Groups and the other Services to estimate BASOPS requirements for Joint installations. This is addressed in section V.3.7.

V.3.1 COBRA Impacts

Total base operations expenses are computed in the COBRA model in three ways, two of those ways do not include payroll: BOS includes physical expenses such as utilities, municipal Services, base communications, environmental costs and family programs; and Sustainment includes the maintenance and repair of facilities over a 50-year lifespan. The third category of cost is the personnel expenses for employees that operate the installation. These include the garrison staffs, directorates and divisions, as well as medical facilities and commissaries. The BOS expenses in COBRA were developed using information obtained from each installation through a data call. Sustainment costs are computed using an OSD facilities sustainment model. The personnel expenses are computed by eliminating and establishing positions in COBRA. The numbers of these positions are determined using the model described below.

V.3.2 Analyzed Data

The independent variables considered for the BASOPS model were the various types of populations and the numbers of units existing on an installation. Many factors influence the amount of BASOPS at any installation, such as developed acreage, number and types of buildings and even the level of availability of Services from the local community. Not all of these factors are quantifiable, nor was all of this information available for each of the 87 installations considered by the TABS group. TABS settled on various populations and unit counts as good independent variables since this data was easily obtainable and most other factors can be inferred from this information. Of the 87 total installations on

the Army list, only 64 were included in the analysis. This is because some installations have no BASOPS. They are government-owned and contractor-operated installations or have no BASOPS identified authorizations.

The populations supported for each of the 64 installations was drawn from the Army Stationing and Installation Plan (ASIP). The ASIP categorizes the populations of each unit resident on an installation, not only by officer, warrant, enlisted, US civilian (DoD-employed, direct-hire, civilians), and other civilians, but also by Service, Active Duty, Reserve, National Guard, student, AAFES, contractor, etc. This enabled TABS to have 51 different categories of population for each installation. Many of these categories were of little use since they contained only one or two positions across the entire Army. The 51 individual categories were combined into 17 main classes, defined below:

- Total Population: A sum of all 51 categories, the total population supported at the installation regardless of Service, component, military, or civilian. This number also includes contractors since they generate base operations workload.
- Total Military Population: The sum of all military positions on an installation regardless of Service or component.
- Total Officer Population: The sum of all military officer positions on an installation regardless of Service or component.
- Total Warrant Officer Population: The sum of all military warrant officer positions on an installation regardless of Service or component.
- Total Enlisted Population: The sum of all military enlisted positions on an installation regardless of Service or component.
- Total US Civilian Population: All direct-hire civilians employed by the Department of Defense regardless of agency or Service.
- Total Other Civilian Population: The sum of all other types of civilians on an installation. This includes contractors, NAF, Local Nationals, AAFES, Bank employees, etc.
- Total Civilian Population: The total of all types of civilian populations on the installation.
- Total Army Population: The sum of all types of personnel that are employed by an Army unit.
- Army Military Population: The sum of all Active Army, Reserve, National Guard and Army students at an installation.
- Army Officer Population: The total of all Army Officers on an installation.
- Army Warrant Officer Population: The total of all Army Warrant Officers on an installation.
- Army Enlisted Population: The total of all Army Enlisted personnel on an installation.

- Total Army Civilian Population: The sum of all types of civilian positions working in Army units.
- Army US Civilian Population: The sum of all direct-hire civilian positions assigned to Army organizations at an installation.
- Army Other Civilian Population: The sum of all other types of civilians on an installation. This includes contractors, NAF, Local Nationals, AAFES, Bank employees, etc. as long as they are assigned to an Army unit.
- Other Population: The sum of all non-Army (military & civilian) personnel and all Other Civilian positions at an installation.

Also considered as a factor in estimating the BASOPS manpower was the number of units at an installation. The number of units was determined by counting the number of UICs (derivatives and parents) in ASIP. Six classes of unit totals were considered:

- Stationable Packages: The total count of stationable packages on an installation.
- Total Units: The total number of units on an installation.
- Army Units: The number of Army units at an installation.
- Other Service Units: The sum of the numbers of Air Force, Navy and Marine Corps units on an installation.
- Defense & Joint Units: The sum of the numbers of DoD or Joint Service units at an installation.
- Other Units: The count of all non-military organizations at an installation.

Populations and Unit Totals for each installation are shown in Annex 2.

During analysis it was noticed that the amount of garrison functions that are contracted varies widely from installation to installation. TABS asked each garrison to provide a percentage of the IMA Standard garrison organization functions that were contracted at their installation. This data was used, as needed, to adjust BASOPS levels because the majority of contractors on an installation were recorded in ASIP separate from the units that employed them. Hence, it was not possible to determine how many contractors on an installation were performing BASOPS functions.

V.3.3 Analysis

The initial model segregated BASOPS by function and installations by type, and it attempted to develop models for each function and installation type. The attempt identified each position on every garrison TDA by function performed and whether that position was an overhead position or a mission position. This approach ultimately proved to be unsound, since statistically valid models were not possible for each area. This method also treated installations differently from each other, which would have made it unwieldy to apply.

The second attempt used much of the data developed during the first analysis. The overhead functions and positions were held as fixed under any realignment or closure

actions, and the model sought to assess changes in the mission-oriented functions and positions. This approach, like the first, used the FY05 TDA documents for every garrison in the US Army.⁴ This method could be enhanced; it ignored base operations functions that were not inherent in the garrison, such as medical and dental facilities; it proved to be less statistically valid than the model chosen and, in some cases, the FY05 TDAs differed significantly from the baseline ASIP data.

The first two attempts at developing a model identified several principles that governed the search for a responsive BASOPS estimating tool. These included:

- The model must be statistically valid.
- The model must treat all installations equally.
- Analysts should understand why each of the independent and dependent variables was chosen.
- The model should not be able to remove all BASOPS without closing the installation.
- The model, if multivariate, should be easily applicable by BRAC analysts. To facilitate this it was decided to limit the number of possible independent variables to no more than three.
- If multivariate, the model should not have negative coefficients associated with a particular population type. If this were to occur, movement of only one type of population would result in an increase in BASOPS to the losing installation.
- The model must include all BASOPS functions, not just the garrison organization.

The first two attempts also showed that the garrison TDAs were not the correct dependent variable for addressing the BASOPS functions. So TABS began using the size of the BASOP stationable package for each installation. This package included all base operations functions, including commissaries and medical facilities. However, scatterplots of the BASOP package against the total installation population showed several installations with a package size well above the other installations. These outliers (Ft. Bragg, Ft. Bliss, Ft. Gordon, Ft. Lewis and Ft. Sam Houston) are major installations with no one obvious characteristic in common. Some research determined that these five installations house Army Medical Centers. These centers are very large, tertiary care hospitals. They are the referral centers for normal installation hospitals and health centers and they conduct graduate medical training. These Medical Centers average approximately 1,900 authorizations and greatly inflate the size of the BASOP package at these installations, so they were removed from the BASOP package for the purpose of model development. Two other Army Medical Centers, Tripler AMC and Walter Reed AMC were already treated as independent installations and the BASOP stationable packages for each did not include the Medical Center piece.

⁴ The FY05 TDA documents for garrisons more accurately reflected the split of functions between the IMA and the mission organizations that operated installations prior to the establishment of the IMA. A strong case can be made for using the FY05 TDA authorizations for garrison strengths, since these documents were actually developed during FY03 and have effective dates in FY05. However, they were discarded in favor of the BASOP stationable package for reasons detailed above.

This gave three possible dependent variables; the BASOP stationable package, the package adjusted using the percentage of contracted functions and the package adjusted for the Army Medical Centers. TABS tested all three approaches. To start, stepwise linear regression ran 23 possible independent variables against each of the three dependent variables to obtain a best linear model. Then non-linear regression analysis was performed using total installation population, number of stationable packages and total number of units as possible independent variables. Other variables such as total military and Army population were examined but ultimately rejected because they only considered certain populations. Only one independent variable was tested at a time when performing non-linear regressions, which were also done with each of the three different dependent variables.

The best model, statistically and realistically, was based upon a logarithmic equation with a dependent variable of BASOP less the Medical Centers and total installation population as the independent variable. Other models that were examined and discarded can be found in Annex 3. The regression results are in Figure 2 below:

<i>SUMMARY OUTPUT</i>					
<i>Regression Statistics</i>					
Multiple R	0.853	Dependent Variable: BASOP Stationable Package size less the 5 Army Medical Centers.			
R Square	0.728				
Adjusted R Square	0.724				
Standard Error	477.028				
Observations	64.000				
<i>Coefficients</i>					
Intercept	-4335.800				
Total Population	601.801				
<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1.000	37790511.200	37790511.200	166.072	0.000
Residual	62.000	14108430.300	227555.300		
Total	63.000	51898941.500			

Figure 2. Regression Results

The following chart (Figure 3) shows a scatterplot of the BASOP stationable packages (less the Medical Centers) vs. the total installation population, as well as the equation predicted BASOPS.

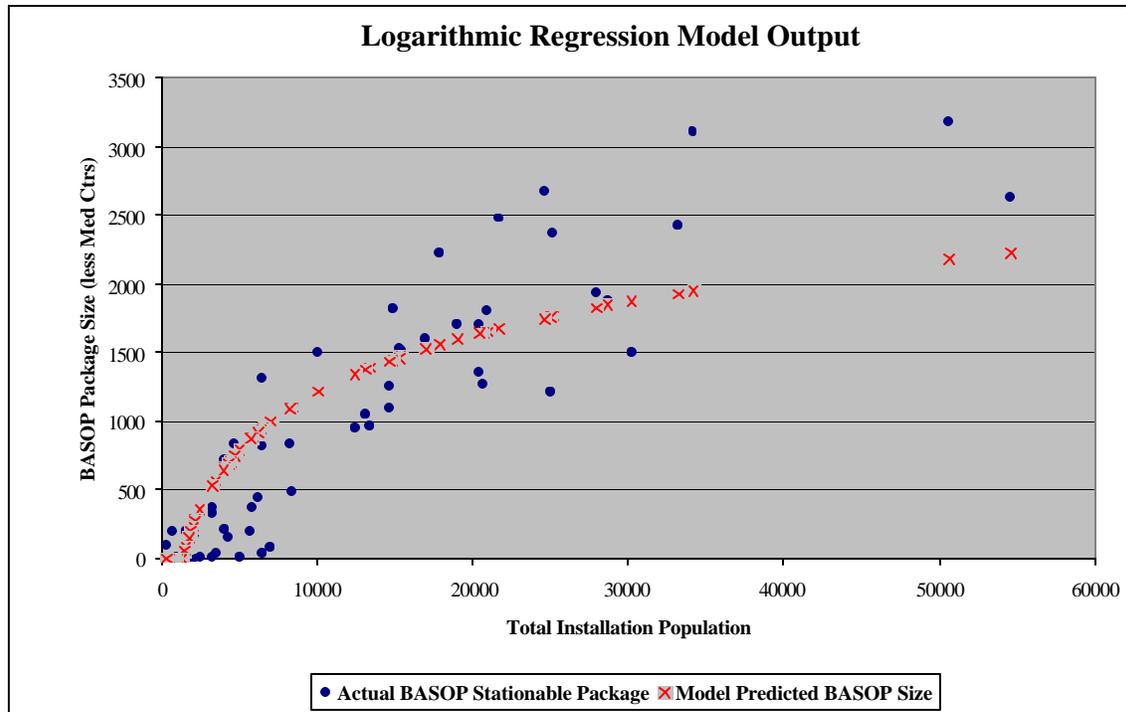


Figure 3. BASOP Stationable Packages vs. Total Installation Population

The model equation is as follows:

$$\text{BASOP Strength} = -4335.8 + 601.801[\ln(x)]$$

Where x is the total population supported by the installation. These numbers can be found in the ASIP. At a population of less than 1,346, the equation predicted BASOPS strength becomes negative, therefore, populations less than 1,346 are given two BASOPS positions.

V.3.4 Contractors

The contractor units were not able to be identified as supporting a particular unit or function but they do require BASOPS support. Since they cannot be definitively placed in a dependent variable, independent variable, or stationable package, they were included in the total population for each installation when it was used as the independent variable. This has the effect, when running the regression model, of “spreading” the contractor BASOPS requirements across all installations based upon the size of the installation. So, while the model does not take them into account as a moveable population, the regression equation does account for their support requirements.

V.3.5 Model Application

TABS uses the equation to determine an estimate for BASOPS before and after a stationing action. The resulting percentage difference in the equation results is then applied to the actual BASOPS strength to determine impacts.

Application of the model during a scenario may result in savings in BASOPS authorizations or it may result in a cost in positions. If the model yields a savings, the percentage savings is applied across the military and civilian positions that make up the BASOP package at the installation where the savings is identified. If there is a cost in positions, this cost should be considered to be all civilians. This is because the Army is currently trying to remove military positions from the generating force.

The model is automated as an Excel spreadsheet (see Example 2 in section V.3.6). The TABS analyst chooses an installation and inputs the population change the scenario causes at that installation. The model then shows the savings or costs in BASOPS manpower for that installation. These costs or savings are incorporated into the elimination and addition of positions on screen six in the COBRA model.

V.3.6 BASOPS calculation examples for Realignment Action

Example 1:

This example moves a Headquarters from Ft. A to Ft. B. The following table shows the strengths of the HQs stationable package and the total populations of Ft. A and Ft. B. Note that the HQs personnel strengths are part of the Ft. A population totals, to begin.

Unit	OFF	WO	ENL	US CIV	OTH CIV	TOTAL
HQs	507	8	201	745	17	1,478
Ft. A	664	11	465	1,409	668*	3,217
Ft. B	883	326	8,543	2,606	2,295*	14,653

* These two numbers include contractors.

Figure 4. Ft. A and Ft. B including HQs

Applying the model equation to the existing total populations at each post gives a predicted BASOPS requirement of 524 at Ft. A and 1,437 at Ft. B. Actual BASOP package size at Ft. A is 338 and 1,248 at Ft. B.

Removing the HQs from Ft. A and adding it to Ft. B gives new populations for the two installations of:

Unit	OFF	WO	ENL	US CIV	OTH CIV	TOTAL
Ft. A	157	3	264	664	651	1,739
Ft. B	1,390	334	8,744	3,351	2,312	16,131

Figure 5. Ft. A and Ft B Less HQs

Applying the equation to these new populations gives a predicted BASOPS requirement of 154 at Ft. A and 1,495 at Ft. B. The percentage change in equation predicted BASOPS at Ft. A is -70.6% (524 to 154), at Ft. B it is +4.0% (1,437 to 1,495). These two percentages display the economies of scale that are expected when moving units from a smaller installation to a larger.

For changes in the BASOPS authorizations at each installation, the percentage is applied to the actual BASOP stationable package size. This gives a change of -239 spaces at Ft. A (70.6% of 338) and +49 spaces at Ft. B (4.0% of 1,248) and results in an overall savings of 190 spaces.

Example 2:

In this example we move a School with 1,672 total authorizations from Ft. B to Ft. A (same A & B as in Example 1). Using the Excel spreadsheet tool to move the school off of Ft. B, we enter the total population change to Ft. B to get the resulting change in BASOPS positions. The screen after entering the school populations in the white cells looks like this:

Installation	Ft. B	OFF	WO	ENL	USCIV	OTH CIV	TOTAL
Population Change		-281	-61	-1124	-206	0	-1672
BASOPS Change		-5	-1	-16	-42	0	-64

Figure 6. Screen with School Populations

So, moving the School off of Ft. B saves 64 positions in BASOPS at Ft. B. Now we need to compute the BASOPS change at the gaining installation, Ft. A. Using the Excel we add the School authorization totals to Ft. A. The screen then looks like this:

Installation	Ft. A	OFF	WO	ENL	USCIV	OTH CIV	TOTAL
Population Change		281	61	1124	206	0	1672
BASOPS Change		0	0	0	163	0	163

Figure 7. Screen with School Authorization Added

Therefore, moving the School to Ft. A requires 163 positions to be established. This example again shows the expected economies of scale. Removing a population from larger installation has less of an impact than adding it to a smaller.

V.3.7 BASOPS requirements on Joint installations

Per direction from the Secretary of Defense and the Secretary of the Army⁵ the current round of BRAC is stressing joint organizations where possible. The Headquarters & Support Activities Joint-Cross Service Group (HSA-JCSG) proposed several scenarios creating joint installations. While this may physically involve nothing more than the removal of a fence line, the organizational impacts can be complex. The HSA-JCSG developed a model to estimate the BASOPS manpower requirements. The model is a ratio based model that estimates savings (personnel and cost) based upon the support-to-supported ratios for installations of similar size. These estimates were used to determine a set of joint-base scenarios that deserved further study. There were too many complexities of implementation to make meaningful cost estimates, although all three Services agreed that efficiencies were achievable.

V.4 ORGANIZATIONAL CONSOLIDATIONS

TABS proposals often collocate related organizations that currently are separated geographically. When this occurs the TABS analyst coordinates the consolidation of the two organizations with the pertinent MACOM. If consolidation is feasible, then the integration of the two organizations will produce a savings in manpower that can be realized as part of the scenario. Some of these consolidations have been assessed in the past by the organizations themselves; if this is the case, the study can indicate expected savings. If the MACOM does not have existing studies or reports on the desired combination of organizations, it becomes necessary for the TABS analyst to estimate the savings without such information. Determination of actual staffing levels for integrated organizations will require a full study of all the functions and tasks performed in each office of each organization as part of implementation.

Since TABS only requires estimates of savings, and since time and labor constraints do not allow full management studies of the organizations, TABS developed a process for estimating these savings. TABS sought assistance from the U.S. Army Manpower Analysis Agency (USAMAA) in order to get a benchmark for the savings an organizational consolidation should engender. The USAMAA stated that 10 percent savings is a reasonable assumption. Ten to 15 years ago, 20 percent was considered an objective savings. Cost and personnel reduction initiatives over this time may have made that estimate excessive in many cases.

Any savings that TABS estimates is due to elimination of overhead and the realization of economies of scale. While the manpower savings may be approximately equal to 10 percent of the sum of the organizational strengths, this is not always the case. Many other factors influence the extent to which two organizations can be integrated. These include the respective sizes of the organizations, the amount to which the two currently interact, the overlap of their customer bases, the amount of duplication in their common processes, amounts of past realignment and down-sizing, and the types of skills inherent in the two workforces. These factors can drive the savings as high as 50 percent or force

⁵ See Secretary of Defense memorandum Transformation Through Base Realignment and Closure. 15 Nov 2002. Also, the Secretary of the Army memorandum of the same titled dated 12 December 2002.

them substantially lower than 10 percent. In an effort to develop reasonable estimates of savings, TABS had to assess each organization type individually.

Organizations generally fell into two groups: headquarters and mission. Headquarters are organizations that oversee subordinate entities, issue policy and develop planning guidance. These units have ambiguous bases for staffing. The manpower requirements for a headquarters is often determined based upon current OPTEMPOs, funding prioritizations and skill availability. When assessing the consolidation of two headquarters it was necessary to address three different parts of each organization (described in V.4.1). Also, when possible, TABS coordinated with the organizations themselves. Mission organizations are units that have a specific identifiable major function. This function usually has a quantifiable workload driver that can be used to estimate staffing. For example, TRADOC schools train soldiers. The number of students is a quantifiable workload driver. Consolidating mission organizations required a shared workload driver and TABS developed models based upon these drivers to estimate staffing for the resultant organization.

The preferred method for analysis of estimating manpower requirements due to an organizational consolidation was to use previous manpower studies. Many of the consolidations that were proposed had been examined before by the organizations themselves or by the US Army Manpower Analysis Agency. These studies involve an in-depth analysis of the work performed by almost every individual in the organizations being studied, and yields the most accurate estimates of manpower savings.

V.4.1 Consolidation of Headquarters Organizations

TABS-generated savings estimates for headquarters consolidations are produced by assessing the savings from the integration of three organizational parts: the integration of the Command Groups, the integration of the overhead – or staff – offices, and the integration of mission-oriented activities. The first two parts can be consolidated by examining the TDA⁶ documents for the organizations. The TDAs offer a useful in-depth analysis because these functions are common to every organization and usually contain the same types of positions in every organization. The third part, the integration of the mission-oriented functions necessitate a different form of analysis, because those decisions require either an in-depth knowledge of the organization or a detailed study of functions and tasks performed.

V.4.1.1 Integration of Command Groups

Integration of two Command Groups into a single entity is straightforward. Since the functions of a Command Group do not expand or contract due to the size of an organization, integration of the two generally consists of eliminating one of them.

⁶ When using a TDA document to conduct analyses, it is necessary to specify which version of the TDA is being used because TDA documents can vary dramatically in content between one version and the next. For all organizations the TABS group used the version of the TDA that most resembled the TABS baseline. In most cases, this was the FY03 document. However, if the organizational consolidation involved a UIC that has undergone major reorganization since the development of the FY03 documents (in FY01 or FY02) it may have been necessary to use later versions of the TDAs.

However, it is essential to identify any positions in the Command Group that are not part of the leadership of an organization, such as Historians or Reserve Component Advisors. These types of positions advise the Commander on specific issues, as the special and personal staff provide advice. These positions need to be retained in the new organization, even if they are accounted for outside the new Command Group. The TABS Manpower Analyst used the following steps to integrate the Command Groups of two organizations:

1. Retain one of each of the positions that both groups have in common.
2. Retain all non-common positions that are not administrative in nature.
3. Retain one administrative position for the Commander/Director and for the Deputy Commander/Director (if present). Note that this may already be done under step 1.
4. Retain one administrative position for each General Officer equivalent (unless already accounted for in step 1 or 2).
5. If the resultant organization is larger than 100 authorizations, it may require a Chief of Staff or Administrative Officer to oversee organization-wide administrative issues.

V.4.1.2 Integration of Staff Offices

Unlike the Command Group, these types of offices may or may not expand with the growth of an organization. These types of offices may: develop mission-specific policy, implement organization-specific programs, or oversee the operation of subordinate organization staff offices. Therefore, combining them involves identifying the management and direct-labor positions in the offices and integrating the direct-labor positions while eliminating one set of management. In addition, a true integration of the offices will realize economies of scale, because as an office becomes larger, it requires increasingly greater amounts of workload to drive new personnel requirements. Since every organizational consolidation will vary depending on the inherent capabilities of the involved organizations, each must be assessed on its own merits. This led the TABS Manpower Analyst and the TABS Scenario Analysts to collaborate with the organizations to determine whether staff offices were pure management or whether it was necessary to identify direct-labor positions vs. management positions. The TABS Scenario Analysts are experts in their respective areas of scenario development and were often familiar with the organizations in question.

When the staff offices are deemed to be management, the smaller of the two integrated staff offices can be considered pure savings. If the office is determined to be a mix of management and direct-labor positions, the management positions in the office with the smallest set of management can be considered savings. Further savings may be realized in these cases depending on the level of synergy between the types of functions the two offices support. When this occurred TABS coordinated with the organizations in question to estimate savings.

V.4.1.3 Integration of Mission-Oriented Functions

The “meat” of a headquarters organization often consists of the positions that perform tasks that support the organizational mission. These offices probably do not directly accomplish the mission workload, this is often done by subordinate organizations. But, they more directly oversee the accomplishment of the mission than the Command Group and Staff. These offices are often called the “Operations” Directorate or Division and typically contain personnel with specific skill sets related to actual mission tasks. Integration of these offices requires a great deal of institutional knowledge or a complete study of all of the tasks and functions performed by each organization. When consolidating two headquarters organizations these offices were considered to become part of the resultant organization in their entirety (unless input from the organizations themselves indicated that there would be a savings).

V.4.2 Consolidation of Mission Organizations

A shared workload driver was needed when consolidating Mission Organizations. This driver was then used in conjunction with existing manpower standards (such as with TRADOC schools) or TABS used the drivers to establish a model of organizational size. For example, if TABS combined two Civilian Personnel Operations Centers, the number of civilians supported could be used to estimate the savings. This method of modeling organizational sizes is a common manpower practice and can yield excellent estimates of manpower costs; however, the estimates tend to work in the aggregate and ignore the minor missions that are specific to an organization. The implementation of these estimates requires much further study to identify exactly where in the resultant organization the savings can actually be taken.

V.4.3 Example

This example consolidates the Northeast Regional Headquarters of an Army Command with the Southeast Regional Headquarters and shows how the possible savings (in authorizations) from an organizational consolidation can approach 50 percent. The authorizations in the two Regional Headquarters in the example are purely overhead since the Command contracts out for other necessary labor in these organizations. The table below shows the TDA⁷ authorizations by function in each of the two Regional Headquarters. Since all of these positions are overhead, the larger of the two offices was retained in the resultant consolidated organization, the Eastern Regional Headquarters.

⁷ This example uses FY05 TDAs since the creation of the Command was not accurately documented until the FY05 TDAs. These TDAs present no difficulty in relation to the ASIP baseline since they closely resemble the baseline in numbers. It was necessary to use these documents for the consolidation analysis because the organization structure documented on the FY05 is more accurate than the FY03.

PARNO	Paragraph Title	Northeast				Southeast				Eastern Region			
		OFF	ENL	CIV	TOT	OFF	ENL	CIV	TOT	OFF	ENL	CIV	TOT
001	OFC OF THE DIRECTOR	1		2	3	1		2	3	1		2	3
001A	SPECIAL STAFF SECTION			7	7			11	11			11	11
001B	ADMIN OFFICE			1	1			1	1			1	1
002	RESOURCE MGT DIV			1	1			1	1			1	1
002A	MPWR, EQ & FRC ANL BR			4	4			4	4			4	4
002B	BUDGET & INTEGR BR			7	7			7	7			7	7
003	HUMAN RES DIV		1	2	3		1	2	3		1	2	3
003A	MILITARY PERS BR		1	3	4		1	3	4		1	3	4
003B	CIVILIAN PERS BR			3	3			3	3			3	3
003C	ACES			1	1			1	1			1	1
003N	CHAPLAIN OFFICE			1	1	1		1	2	1		1	2
004	PLANS DIV			1	1			1	1			1	1
004A	STRATEGIC PLANNING BR			2	2			2	2			2	2
004B	MGT INTEG BR			2	2			2	2			2	2
004C	INFO TECH INTEGR BR			1	1			1	1			1	1
004D	COMP SOURCING TM			4	4			4	4			4	4
005	OPERATIONS DIV			2	2			2	2			2	2
005A	OPS & MOBILIZATION BR			4	4			4	4			4	4
006	LOGISTICS DIV			1	1			1	1			1	1
006A	MAINT, SUP & SVCS BR			5	5			5	5			5	5
006B	TRANSPORTATION BR			3	3			3	3			3	3
007	DPW DIV			1	1			1	1			1	1
007A	PLANNING BR			6	6			6	6			6	6
007B	BUS MGMT & HSG BR			3	3			3	3			3	3
007C	PW OPS & MAINT BR			5	5			5	5			5	5
008	ENVIRNMT & NAT RES DIV			7	7			7	7			7	7
009	MWR & COM/FAM DIV			27	27			21	21			27	27
010	RCI DIV			3	3			3	3			3	3
TOTALS		1	2	109	112	2	2	107	111	2	2	113	117

Figure 8.

This consolidation yields a savings of 106 authorizations, 1 Officer, 2 Enlisted and 103 Civilians.

V.5 CONCLUSION

Force structure analysis across the US Army is a complex task in an ever-changing environment. The impacts of ongoing programs, such as IGPBS and modularity, will continue to be defined as more decisions are made. The challenge for the TABS group was to develop a methodology and set of assumptions that would allow the stationing of an Army force structure whose composition is constantly changing. This required a great deal of coordination with the Army Staff, the MACOMs, and the installations to best support BRAC recommendations.

ANNEX 2: Installation Population and Unit Counts.

The following tables show the 64 Installations that were used to develop the BASOPS model.

INSTALLATION	Dependent Variables				Total Populations							
	Contracted Percentage	BASOP Stationable Package	Adjusted BASOP Package	BASOP Package less Med Ctrs	Total Officers	Total Warrant Officers	Total Enlisted	Total Military	Total US Civilians	Total Other Civilians	Total Civilians	Total Population
ABERDEEN	0.260	1524	2059	1524	500	105	4297	4902	6471	3921	10392	15294
ADELPHI LB	0.527	4	8	4	18	3	43	64	756	354	1110	1174
ANNISTON	0.328	16	24	16	16	0	239	255	3368	1390	4758	5013
BELVOIR	0.390	1695	2779	1695	1410	214	2052	3676	10726	6026	16752	20428
BENNING	0.753	3111	12595	3111	2403	107	24079	26589	3199	4359	7558	34147
BLISS	0.420	3243	5591	1708	1562	283	10077	11922	3090	4013	7103	19025
BLUE GRASS	0.130	4	5	4	13	0	206	219	574	462	1036	1255
BRAGG	0.755	4078	16625	2629	4807	1119	36927	42853	4872	6906	11778	54631
CAMPBELL	0.519	2425	5042	2425	1916	1015	20553	23484	2964	6804	9768	33252
CARLISLE	0.336	185	279	185	650	4	151	805	435	496	931	1736
CARSON	0.506	2221	4496	2221	1240	292	12137	13669	1873	2404	4277	17946
DETRICK	0.320	444	653	444	297	11	879	1187	2385	2650	5035	6222
DETROIT AR	0.500	153	306	153	88	4	29	121	3674	426	4100	4221
DRUM	0.160	1518	1807	1518	974	267	10067	11308	1829	2207	4036	15344
EUSTIS	0.517	1248	2584	1248	883	326	8543	9752	2606	2295	4901	14653
GILLEM	0.072	364	392	364	197	13	404	614	754	1845	2599	3213
GORDON	0.530	2106	4481	1599	1343	165	10355	11863	1964	3131	5095	16958
HAMILTON	0.330	196	293	196	32	2	588	622	402	500	902	1524
HOOD	0.560	3176	7218	3176	3832	778	36279	40889	3856	5857	9713	50602
HUACHUCA	0.280	1041	1446	1041	958	159	6157	7274	2448	3440	5888	13162
IRWIN	0.670	1090	3303	1090	1018	310	9438	10766	1070	2786	3856	14622
KELLY SPT	0.310	90	130	90	28	5	123	156	123	27	150	306
KNOX	0.540	2474	5378	2474	1273	81	13590	14944	2782	3897	6679	21623
LEAVENWORT	0.022	837	856	837	2912	14	1611	4537	1512	2141	3653	8190
LEE	0.430	947	1661	947	980	117	7431	8528	2268	1620	3888	12416
LEONARD WD	0.597	1886	4680	1886	1387	60	22398	23845	2065	2813	4878	28723
LETTERKENN	0.212	8	10	8	2	0	0	2	1420	442	1862	1864
LEWIS	0.394	4329	7144	1935	2292	289	17106	19687	3333	4968	8301	27988
MCALESTER	0.400	5	8	5	4	0	42	46	1614	502	2116	2162
MCCOY	0.515	709	1462	709	137	7	814	958	1161	1830	2991	3949
MCNAIR	0.106	167	187	167	624	1	359	984	888	118	1006	1990
MCPHERSON	0.112	841	947	841	942	119	964	2025	1869	771	2640	4665
MEADE	0.300	1506	2151	1506	1275	200	7536	9011	18439	2754	21193	30204
MONMOUTH	0.668	481	1444	481	175	8	443	626	4824	2880	7704	8330
MONROE	0.270	338	463	338	664	11	465	1140	1409	668	2077	3217
PICATINNY	0.610	201	515	201	54	1	67	122	3036	887	3923	4045
PINE BLUFF	0.130	16	18	16	21	1	291	313	1096	1004	2100	2413
POLK	0.520	1800	3750	1800	1361	568	14421	16350	1989	2641	4630	20980
PRESIDIO	0.488	368	719	368	360	2	3505	3867	1375	601	1976	5843
PUEBLO	0.450	4	7	4	6	0	161	167	181	102	283	450
RED RIVER	0.200	7	9	7	4	0	4	8	2385	854	3239	3247
REDSTONE	0.480	1222	2350	1222	285	64	1542	1891	11318	11798	23116	25007
RICHARDSON	0.295	719	1020	719	168	24	2313	2505	969	862	1831	4336
RILEY	0.535	1818	3910	1818	905	129	8812	9846	2186	2797	4983	14829
ROCK ISLAN	0.590	39	95	39	150	15	295	460	5026	1024	6050	6510
RUCKER	0.630	962	2600	962	1280	1809	2521	5610	2184	5615	7799	13409
SAM HOUSTO	0.260	3760	5081	1278	2524	47	9636	12207	4109	4323	8432	20639
SCHOFIELD	0.430	1351	2370	1351	1253	344	14294	15871	1858	2669	4527	20398
SELFRIDGE	0.650	196	560	196	37	0	90	127	177	419	596	723
SHAFTER	0.410	192	325	192	332	54	904	1290	2016	2434	4450	5740
SIERRA	0.198	3	4	3	4	0	46	50	445	133	578	628
SILL	0.550	2678	5951	2678	2192	178	16893	19263	1990	3326	5316	24579
SSC	0.470	69	130	69	24	2	104	130	1133	203	1336	1466
STEWART	0.220	2362	3028	2362	1520	441	17047	19008	2503	3635	6138	25146
SUNNY POIN	0.350	2	3	2	6	0	75	81	238	200	438	519
TOBYHANNA	0.028	38	39	38	6	2	68	76	3013	337	3350	3426
TOOLEE	0.289	19	27	19	38	1	519	558	527	222	749	1307
UMATILLA	0.070	6	6	6	4	0	123	127	434	656	1090	1217
WAINWRIGHT	0.284	1311	1831	1311	385	99	3710	4194	1141	1084	2225	6419
WALTER REE	0.280	76	104	76	1298	10	1578	2886	2858	1299	4157	7043
WATERVLIET	0.090	8	9	8	7	0	13	20	823	94	917	937
WEST POINT	0.180	1500	1823	1500	789	10	5683	6482	2580	1017	3597	10079
WHITE SAND	0.450	813	1478	813	93	2	527	622	2300	3502	5802	6424
YUMA	0.530	248	528	248	14	3	151	168	950	995	1945	2113

Army and Non-Army Populations									
INSTALLATION	Army Officers	Army Warrant Officers	Army Enlisted	Army Military	Army US Civilians	Army Other Civilians	Army Total Civilians	Army Total Population	Total Non-Army Population
ABERDEEN	308	28	1150	1486	6199	0	6199	7685	7609
ADELPHI LB	18	3	13	34	685	0	685	719	455
ANNISTON	4	0	20	24	3110	0	3110	3134	1879
BEL VOIR	550	134	1037	1721	4906	108	5014	6735	13693
BENNING	1173	105	9537	10815	2818	0	2818	13633	20514
BLISS	1179	261	8044	9484	2195	0	2195	11679	7346
BLUE GRASS	3	0	2	5	529	0	529	534	721
BRAGG	4090	1081	33549	38720	3656	0	3656	42376	12255
CAMPBELL	1893	1011	20218	23122	1993	0	1993	25115	8137
CARLISLE	166	4	93	263	352	0	352	615	1121
CARSON	1193	292	11902	13387	1657	0	1657	15044	2902
DETRICK	190	10	664	864	1289	1	1290	2154	4068
DETROIT AR	79	4	25	108	3212	0	3212	3320	901
DRUM	957	267	9540	10764	1373	0	1373	12137	3207
EUSTIS	462	170	4741	5373	2121	0	2121	7494	7159
GILLEM	186	10	355	551	535	0	535	1086	2127
GORDON	849	114	4678	5641	1723	0	1723	7364	9594
HAMILTON	30	1	386	417	339	0	339	756	768
HOOD	3767	774	35495	40036	3133	0	3133	43169	7433
HUACHUCA	481	98	3352	3931	2186	0	2186	6117	7045
IRWIN	591	110	4224	4925	495	0	495	5420	9202
KELLY SPT	28	5	123	156	73	0	73	229	77
KNOX	827	80	5213	6120	2352	0	2352	8472	13151
LEAVENWORT	953	11	1026	1990	1351	0	1351	3341	4849
LEE	487	65	2282	2834	1482	0	1482	4316	8100
LEONARD WD	659	35	4288	4982	1897	0	1897	6879	21844
LETTERKENN	2	0	0	2	1225	0	1225	1227	637
LEWIS	2243	282	16134	18659	2896	0	2896	21555	6433
MCALISTER	2	0	4	6	1147	0	1147	1153	1009
MCCOY	81	4	277	362	988	0	988	1350	2599
MCNAIR	54	1	317	372	290	0	290	662	1328
MCPHERSON	919	117	898	1934	1809	0	1809	3743	922
MEADE	412	86	2394	2892	2109	0	2109	5001	25203
MONMOUTH	140	7	143	290	4554	2	4556	4846	3484
MONROE	530	9	337	876	1341	0	1341	2217	1000
PICATINNY	47	1	21	69	2817	0	2817	2886	1159
PINE BLUFF	10	0	27	37	1020	0	1020	1057	1356
POLK	886	166	7125	8177	1788	0	1788	9965	11015
PRESIDIO	90	1	288	379	1341	0	1341	1720	4123
PUEBLO	1	0	0	1	181	0	181	182	268
RED RIVER	3	0	4	7	1713	0	1713	1720	1527
REDSTONE	227	40	663	930	8187	0	8187	9117	15890
RICHARDSON	155	21	2219	2395	920	0	920	3315	1021
RILEY	853	127	8644	9624	1611	0	1611	11235	3594
ROCK ISLAN	84	11	80	175	4483	23	4506	4681	1829
RUCKER	457	726	1861	3044	1813	0	1813	4857	8552
SAM HOUSTO	1585	40	3430	5055	3785	0	3785	8840	11799
SCHOFIELD	1009	316	11152	12477	1289	2	1291	13768	6630
SELERIDGE	10	0	40	50	104	0	104	154	569
SHAETER	270	47	809	1126	1353	7	1360	2486	3254
SIERRA	2	0	0	2	442	0	442	444	184
SILL	1082	137	9045	10264	1479	0	1479	11743	12836
SSC	23	2	69	94	743	0	743	837	629
STEWART	1466	435	16492	18393	1728	0	1728	20121	5025
SUNNY POIN	6	0	8	14	237	0	237	251	268
TOBYHANNA	5	2	31	38	2839	0	2839	2877	549
TOOLE	3	0	19	22	471	0	471	493	814
UMATILLA	2	0	5	7	434	0	434	441	776
WAINWRIGHT	377	99	3668	4144	752	0	752	4896	1523
WALTER REE	1208	10	1349	2567	2717	0	2717	5284	1759
WATERVLJET	3	0	3	6	641	0	641	647	290
WEST POINT	738	10	672	1420	2231	0	2231	3651	6428
WHITE SAND	63	1	203	267	2010	0	2010	2277	4147
YUMA	10	3	104	117	599	0	599	716	1397

Unit Counts							
INSTALLATION	Number of Stationable Packages	Total Number of Units	Army Units	Other Service Units	DoD & Joint Units	Other Units	Student Units
ABERDEEN	138	173	74	6	11	27	20
ADELPHI LB	17	20	10	1	2	4	0
ANNISTON	17	21	9	0	5	3	0
BELVOIR	212	301	116	20	44	21	11
BENNING	133	159	88	5	7	22	11
BLISS	150	177	93	9	8	31	9
BLUE GRASS	16	18	10	1	1	4	0
BRAGG	369	382	298	12	9	19	31
CAMPBELL	140	161	110	4	6	16	4
CARLISLE	31	36	11	3	2	13	2
CARSON	150	187	109	8	5	25	3
DETRICK	54	80	27	12	8	6	1
DETROIT AR	33	40	13	3	5	12	0
DRUM	117	201	85	6	5	20	1
EUSTIS	196	281	118	11	7	37	23
GILLEM	89	101	56	4	6	23	0
GORDON	131	139	80	6	6	17	22
HAMILTON	53	65	24	5	3	21	0
HOOD	289	310	251	9	4	18	7
HUACHUCA	116	129	54	8	13	23	18
IRWIN	59	60	41	1	3	14	0
KELLY SPT	20	24	13	0	1	6	0
KNOX	154	252	89	5	7	40	13
LEAVENWORT	105	121	43	15	6	29	12
LEE	116	128	59	3	19	15	20
LEONARD WD	150	155	48	8	5	31	58
LETTERKENN	12	20	7	0	4	1	0
LEWIS	248	277	211	9	6	17	5
MCALESTER	23	37	8	5	2	7	1
MCCOY	69	88	45	1	4	12	7
MCNAIR	34	35	10	10	2	5	7
MCPHERSON	96	108	59	9	8	20	0
MEADE	260	282	93	86	14	61	6
MONMOUTH	72	89	35	7	6	22	2
MONROE	63	90	34	8	4	15	2
PICATINNY	42	44	19	1	5	17	0
PINE BLUFF	18	20	11	0	0	7	0
POLK	95	102	67	3	7	15	3
PRESIDIO	35	50	10	3	8	9	5
PUEBLO	8	9	4	0	0	4	0
RED RIVER	20	21	8	0	4	8	0
REDSTONE	85	135	42	3	15	21	4
RICHARDSON	77	95	46	3	8	19	1
RILEY	105	117	74	2	10	17	2
ROCK ISLAN	59	73	32	7	11	9	0
RUCKER	72	99	47	3	3	9	10
SAM HOUSTO	204	231	110	20	10	34	30
SCHOFIELD	218	252	115	25	8	69	1
SELFRIDGE	22	23	11	2	1	8	0
SHAFTER	179	218	89	10	3	74	3
SIERRA	15	18	3	0	1	11	0
SILL	132	134	76	4	11	30	11
SSC	32	39	16	1	1	14	0
STEWART	178	212	136	6	12	19	5
SUNNY POIN	9	12	7	1	0	1	0
TOBYHANNA	32	33	15	0	6	9	2
TOOELE	16	25	5	2	2	7	0
UMATILLA	4	5	3	0	0	1	0
WAINWRIGHT	77	103	52	1	5	19	0
WALTER REE	34	38	17	0	2	9	6
WATERVLIET	24	26	8	2	2	12	0
WEST POINT	33	55	12	0	5	14	2
WHITE SAND	41	56	19	5	4	13	0
YUMA	20	29	10	2	2	6	0

ANNEX 3: BASOP Model Development.

Three different forms of dependent variable were analyzed by TABS; the total BASOP stationable package at each installation (BASOP_PACK), the BASOP stationable package adjusted for contractor support (ADJ_BASOP) and the BASOP stationable package with the Army Medical Centers removed (BAS_NO_AMC). The chosen equation for the model is listed in section V.3.3. The following tables and charts show some of the exploratory results obtained using SPSS.

Dependent Variable: BASOP_PACK

A. Non-Linear Regression Results:

Curve Estimation Regression Results
Dependent Variable: BASOP Stationable Package Size

Independent: TOT_POP									
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1	b2	b3
BASOP_PA	LOG	.654	62	117.26	.000	-5221.9	718.586		
BASOP_PA	CUB	.799	60	79.73	.000	-168.14	.1397	-2.E-06	1.1E-11
BASOP_PA	POW	.708	62	150.46	.000	.0007	1.4745		

Independent: AR_TOT									
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1	b2	b3
BASOP_PA	LOG	.646	62	112.94	.000	-4404.5	678.997		
BASOP_PA	CUB	.785	60	72.95	.000	-156.86	.2885	-8.E-06	8.6E-11
BASOP_PA	POW	.617	62	99.85	.000	.0078	1.3090		

Independent: TOT_MIL									
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1	b2	b3
BASOP_PA	LOG	.630	62	105.68	.000	-1819.8	393.379		
BASOP_PA	CUB	.815	60	88.20	.000	77.9232	.2478	-8.E-06	1.0E-10
BASOP_PA	POW	.770	62	207.11	.000	.5576	.8573		

Independent: TOT_SP									
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1	b2	b3
BASOP_PA	LOG	.603	62	94.22	.000	-2525.8	872.940		
BASOP_PA	CUB	.699	60	46.52	.000	-355.86	22.1115	-.0622	9.2E-05
BASOP_PA	POW	.777	62	216.24	.000	.0969	1.9542		

Figure 9.

Some of these models have acceptable R^2 , although not as good as the chosen model. Also, the cubic regressions have inflection points that lie in the middle of the data. This makes the growth in BASOPS exponential after that point and explodes the BASOPS requirements for large installations. Since many BRAC scenarios look to establish larger, joint installations, these equations could not be realistically applied. The power equations could not be used unless the exponent was less than 1. This is because an exponent greater than one creates an exponential explosion in predicted values for large installations. An exponent of less than one would realize the expected economies of scale.

B. Stepwise Regression Results:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874 ^a	.764	.760	560.247
2	.890 ^b	.792	.786	529.387
3	.898 ^c	.807	.797	514.874
4	.910 ^d	.829	.817	489.276
5	.921 ^e	.848	.835	464.339
6	.919 ^f	.844	.833	467.038

- a. Predictors: (Constant), TOT_POP
- b. Predictors: (Constant), TOT_POP, AR_UIC
- c. Predictors: (Constant), TOT_POP, AR_UIC, AR_WO
- d. Predictors: (Constant), TOT_POP, AR_UIC, AR_WO, TOT_DAC
- e. Predictors: (Constant), TOT_POP, AR_UIC, AR_WO, TOT_DAC, AR_ENL
- f. Predictors: (Constant), TOT_POP, AR_UIC, TOT_DAC, AR_ENL

Figure 10.

Models 4, 5 and 6 above have an R^2 that exceeds the chosen BASOPS model, however, they can not be easily applied (more than three independent variables) and the standard error of the estimate on all of these models exceeds that of the chosen model. Models 1,2 & 3 are also better from a statistical standpoint, however, they do not realize the economies of scale that the chosen equation does.

C. Scatterplot vs. Total Installation Population:

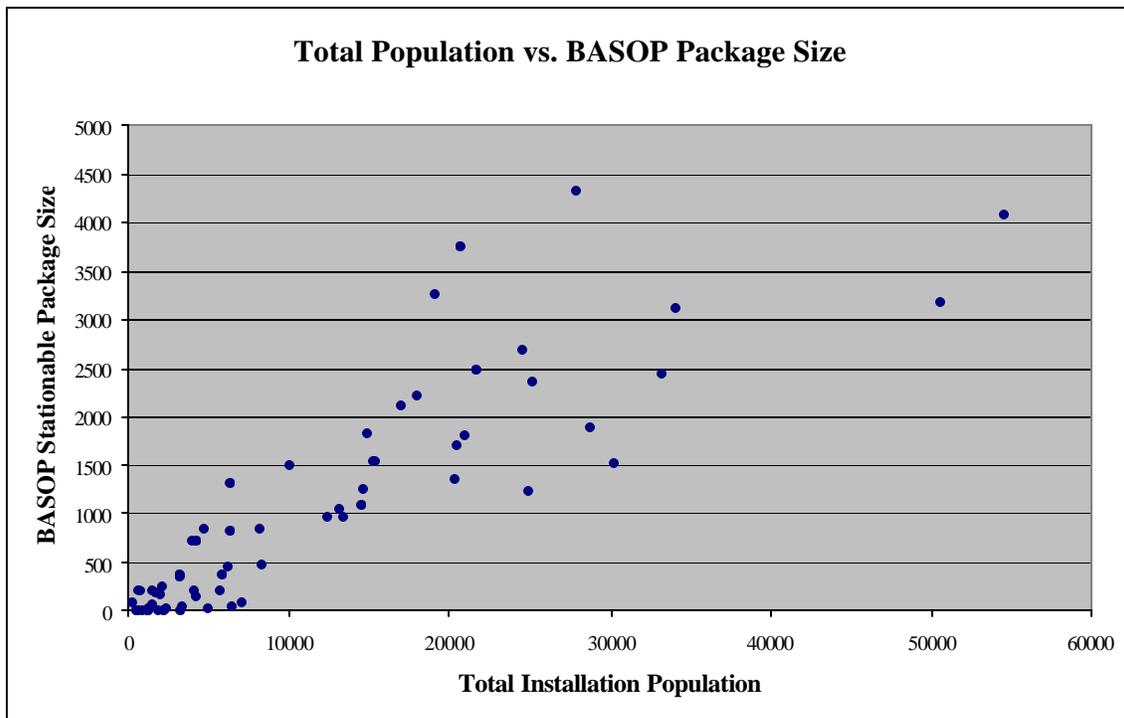


Figure 11.

Dependent Variable: ADJ_BASOP

A. Non-Linear Regression Results:

Curve Estimation Regression Results									
Dependent Variable: Contractor Adjusted BASOP Stationable Package Size									
Independent: TOT_POP									
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1	b2	b3
ADJ_BASO	LOG	.501	62	62.34	.000	-12296	1657.68		
ADJ_BASO	CUB	.789	60	74.73	.000	-295.52	.2333	-3.E-06	6.1E-11
ADJ_BASO	POW	.715	62	155.18	.000	.0005	1.5723		
Independent: AR_TOT									
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1	b2	b3
ADJ_BASO	LOG	.494	62	60.58	.000	-10403	1565.35		
ADJ_BASO	CUB	.695	60	45.61	.000	-457.45	.6182	-2.E-05	3.2E-10
ADJ_BASO	POW	.619	62	100.84	.000	.0068	1.3922		
Independent: TOT_MIL									
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1	b2	b3
ADJ_BASO	LOG	.460	62	52.78	.000	-4287.9	885.389		
ADJ_BASO	CUB	.806	60	83.02	.000	199.751	.3263	-5.E-06	9.0E-11
ADJ_BASO	POW	.762	62	198.43	.000	.6664	.9055		
Independent: TOT_SP									
Dependent	Mth	Rsq	d.f.	F	Sigf	b0	b1	b2	b3
ADJ_BASO	LOG	.422	62	45.28	.000	-5711.2	1924.10		
ADJ_BASO	CUB	.667	60	40.05	.000	-1392.7	78.6231	-.4677	.0010
ADJ_BASO	POW	.765	62	202.18	.000	.1073	2.0586		

Figure 12.

Some of these models have acceptable R^2 , although none are as good as the chosen logarithmic equation.

B. Stepwise Linear Regression Results:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.897 ^a	.804	.801	1344.945
2	.907 ^b	.823	.817	1289.268

a. Predictors: (Constant), TOT_MIL

b. Predictors: (Constant), TOT_MIL, TOT_OCIV

Figure 13.

Both of these equations have a better R^2 than the chosen equation, however, the standard error of the estimate is almost triple the size of the chosen equation.

C. Scatterplot vs. Total Installation Population:

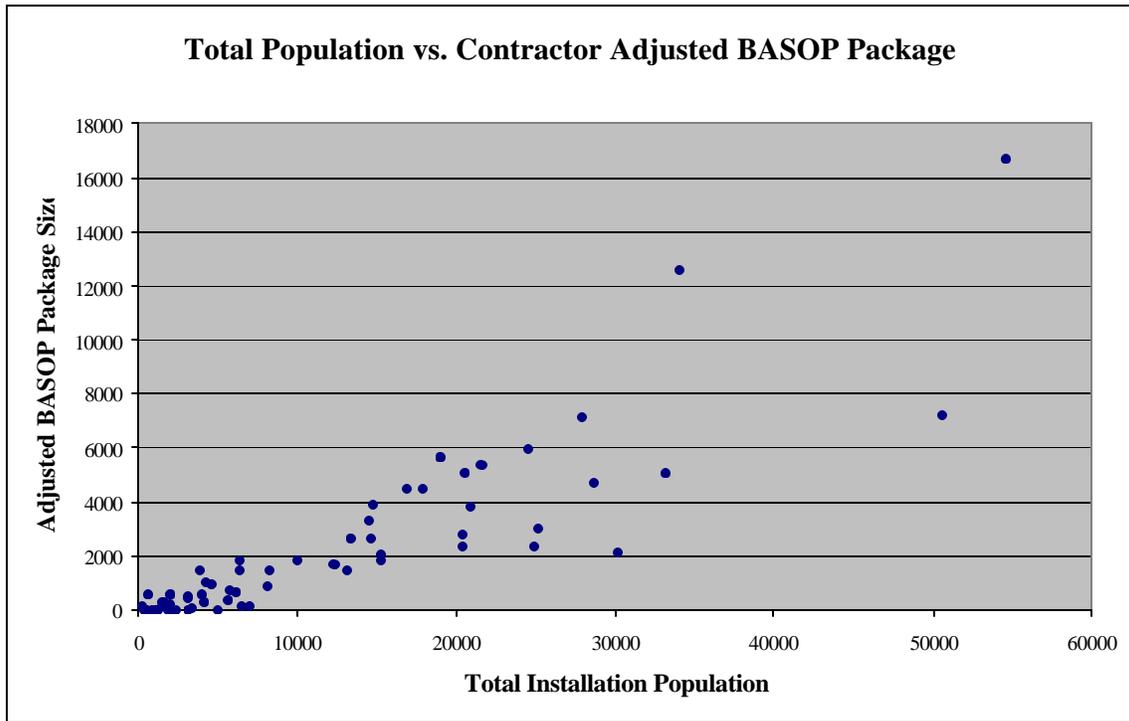


Figure 14.

Dependent Variable: BAS_NO_AMC

A. Non-Linear Regression Results:

Curve Estimation Regression Results
Dependent Variable: BASOP Stationable Package less Med Centers

Independent: TOT_POP									
Dependent	Mth	Rsqr	d.f.	F	Sigf	b0	b1	b2	b3
BAS_NO_A	LOG	.728	62	166.07	.000	-4335.8	601.810		
BAS_NO_A	CUB	.864	60	126.64	.000	-83.479	.1096	-1.E-06	-4.E-13
BAS_NO_A	POW	.698	62	143.35	.000	.0010	1.4310		

Independent: AR_TOT									
Dependent	Mth	Rsqr	d.f.	F	Sigf	b0	b1	b2	b3
BAS_NO_A	LOG	.697	62	142.37	.000	-3580.9	559.872		
BAS_NO_A	CUB	.818	60	90.09	.000	-130.06	.2745	-1.E-05	1.2E-10
BAS_NO_A	POW	.603	62	94.36	.000	.0106	1.2655		

Independent: TOT_MIL									
Dependent	Mth	Rsqr	d.f.	F	Sigf	b0	b1	b2	b3
BAS_NO_A	LOG	.708	62	150.52	.000	-1497.9	331.017		
BAS_NO_A	CUB	.869	60	132.48	.000	135.915	.1824	-5.E-06	4.8E-11
BAS_NO_A	POW	.762	62	198.43	.000	.6287	.8338		

Independent: TOT_SP									
Dependent	Mth	Rsqr	d.f.	F	Sigf	b0	b1	b2	b3
BAS_NO_A	LOG	.623	62	102.50	.000	-1968.6	704.297		
BAS_NO_A	CUB	.682	60	42.98	.000	-390.78	24.7157	-.0946	.0001
BAS_NO_A	POW	.762	62	198.24	.000	.1191	1.8911		

Figure 15.

Only the cubic model with Total Military as an independent variable has a correlation coefficient as high as the equation chosen by TABS. This model has an inflection point with a total military population of over 34,700. Since the curve does not turn concave up until after this point, it reflects the expected BASOPS economies of scale. However, this equation does not have representation of all population types.

B. Stepwise Linear Regression Results:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.900 ^a	.810	.806	399.265
2	.908 ^b	.825	.819	385.971
3	.920 ^c	.847	.839	363.769
4	.927 ^d	.859	.849	352.477
5	.937 ^e	.877	.867	331.533
6	.941 ^f	.886	.874	322.789
7	.946 ^g	.895	.882	311.655
8	.952 ^h	.905	.892	298.763

- a. Predictors: (Constant), TOT_POP
- b. Predictors: (Constant), TOT_POP, TOT_DAC
- c. Predictors: (Constant), TOT_POP, TOT_DAC, DEF_UIC
- d. Predictors: (Constant), TOT_POP, TOT_DAC, DEF_UIC, AR_TOT
- e. Predictors: (Constant), TOT_POP, TOT_DAC, DEF_UIC, AR_TOT, ST_UIC
- f. Predictors: (Constant), TOT_POP, TOT_DAC, DEF_UIC, AR_TOT, ST_UIC, TOT_UIC
- g. Predictors: (Constant), TOT_POP, TOT_DAC, DEF_UIC, AR_TOT, ST_UIC, TOT_UIC, TOT_SP
- h. Predictors: (Constant), TOT_POP, TOT_DAC, DEF_UIC, AR_TOT, ST_UIC, TOT_UIC, TOT_SP, AR_OCIV

Figure 16.

Many of the equations above have an R^2 that exceeds the chosen equation, however, linear models do not yield the expected economies of scale.

C. Scatterplot vs. Total Installation Population:

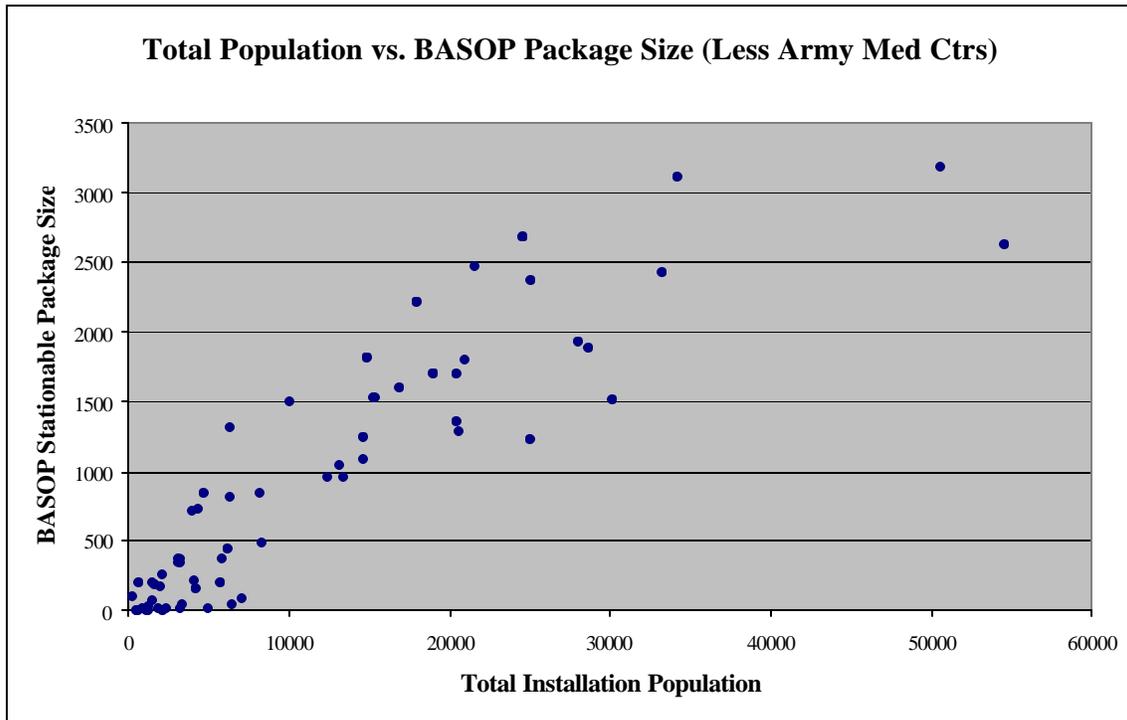


Figure 17.

ANNEX 4: Army Organizational Consolidation Analyses

TABS determined estimates for manpower savings associated with organization consolidations that are recommended as part of Army and Joint Cross-Service Group (JCSG) BRAC Candidate Recommendations. The methodology for estimating savings is detailed in The Analytical Framework (TAF) document for the Army, in Appendix V: Force Structure, section 4. The methods used by the Army were certified by the US Army Manpower Analysis Agency, and the certification can be found in TAB B.

This document specifically describes the savings estimates for all Army Candidate Recommendations and for JCSG Candidate Recommendations where the Army provided the manpower analysis. These include:

CR #	Candidate Recommendation	Estimated Savings			
		OFF	ENL	CIV	TOT
E&T-0029	Prime Power School	-2	0	-4	-6
E&T-0061	Net Fires Center	-70	-397	-67	-534
E&T-0062	Aviation Center	-205	-329	-232	-766
E&T-0063	Maneuver Center	-136	-1,221	-149	-1,506
E&T-0064	CSS Center	-188	-769	-322	-1,279
HSA-0065	ATEC Consolidation	-8	-4	-45	-57
HSA-0092R & USA-0222R	ACA Region Consolidation	-2	0	-1	-3
HSA-0092R, USA-0113R & USA-0222R	IMA Region Consolidations	-2	-3	-200	-205
HSA-0092R, USA-0113R & USA-0222R	NETCOM Region Consolidations	0	0	-10	-10
USA-0046	Drill Sergeant Schools	0	-29	0	-29
USA-0136	Land Warfare Center	-151	-53	-135	-339
USA-0223	USMA Preparatory School	-4	-9	-11	-23
USA-0227	SSC Research Unit Consolidations	-1	-1	-26	-28
TOTALS		-769	-2,815	-1,202	-4,785

These savings are estimates by the Army for the purpose of pricing out BRAC recommendations. The implementation of these scenarios will require a full manpower study to accurately predict the manpower impacts.

I. E&T-0029, PRIME POWER SCHOOL CONSOLIDATION

A. SUMMARY:

This scenario consolidates the Prime Power School at Ft. Belvoir with the Engineer School at Ft. Leonard Wood.

B. SAVINGS ESTIMATES:

The Prime Power School is a small organization of 41 authorizations and 61 students. The school consolidation will produce savings in overhead functions and in instructor positions. Detailed information was unavailable concerning the course data and levels of overlap between the Engineering School curriculum and the Prime Power curriculum. Savings were only taken in overhead functions, namely the Office of the Commandant of the Prime Power School, and include 2 Officers and 4 Civilian positions.

II. E&T-0061, NET FIRES CENTER

A. SUMMARY

This scenario consolidates the Field Artillery (FA) Center & School at Ft. Sill with the Air Defense Artillery (ADA) Center & School at Ft. Bliss. The new Net Fires Center will be located at Ft. Sill.

B. SAVINGS ESTIMATES

All savings for this consolidation were estimated using a regression model based on student loads. A detailed description of this model can be found in TAB A to this document. The following table summarize where manpower savings were estimated under this scenario.

School	OFF	WOF	ENL	CIV	TOTAL
Field Artillery	-35	-4	-209	-32	-280
Air Defense Artillery	-22	-9	-188	-35	-254
TOTALS	-57	-13	-397	-67	-534

III. E&T-0062, AVIATION CENTER

A. SUMMARY

This scenario combines the Aviation Logistics School at Ft. Eustis with the Aviation Center & School at Ft. Rucker. The combined school to be located at Ft. Rucker.

B. SAVINGS ESTIMATES

All savings for this consolidation were estimated using a regression model based on student loads. A detailed description of this model can be found in TAB A to this document. The following table summarize where manpower savings were estimated under this scenario.

School	OFF	WOF	ENL	CIV	TOTAL
Aviation Logistics	-3	-3	-83	-22	-111
Aviation	-63	-136	-246	-210	-655
TOTALS	-66	-139	-329	-232	-766

IV. E&T-0063, MANEUVER CENTER

A. SUMMARY

This scenario combines the Infantry Center & School at Ft. Benning and the Armor Center & School at Ft. Knox into a Maneuver Center & School, to be located at Ft. Benning.

B. SAVINGS ESTIMATES

All savings for this consolidation were estimated using a regression model based on student loads. A detailed description of this model can be found in TAB A to this document. The following table summarize where manpower savings were estimated under this scenario.

School	OFF	WOF	ENL	CIV	TOTAL
Infantry	-78	-1	-591	-66	-736
Armor	-53	-4	-630	-83	-770
TOTALS	-131	-5	-1221	-149	-1506

V. E&T-0064, COMBAT SERVICE SUPPORT CENTER

A. SUMMARY

This scenario combines the various logistics schools and the Combined Arms Support Command (CASCOM) to form a Combat Service Support (CSS) Center. The schools considered under these scenarios include the Transportation Center & School at Ft. Eustis, the Ordnance Maintenance School at Aberdeen Proving Grounds, the Ordnance Munitions school at Redstone Arsenal, and the Army Logistics Management College (ALMC) at Ft. Lee. These four schools and the CASCOM, at Ft. Lee, are to be combined at Ft. Lee.

B. SAVINGS ESTIMATES

All savings for this consolidation were estimated using a regression model based on student loads. A detailed description of this model can be found in TAB A to this document. The following table summarize where manpower savings were estimated under this scenario.

School	OFF	WOF	ENL	CIV	TOTAL
Ordnance Munitions	-8	-6	-109	-36	-159
Ordnance Maintenance	-19	-8	-267	-51	-345
Transportation	-23	-5	-120	-51	-199
Quartermaster	-26	-6	-233	-39	-304
Logistics Management	-20	0	-4	-39	-63
Combined Arms Support	-57	-10	-36	-106	-209
TOTALS	-153	-35	-769	-322	-1279

VI. HSA-0065, ARMY ATEC CONSOLIDATION.

A. SUMMARY

This scenario consolidates the Army Test and Evaluation Command (ATEC) HQs in Alexandria, VA, ATEC HQ-N at Aberdeen Proving Grounds, the Army Evaluation Center (AEC) in Alexandria, AEC-N at Aberdeen Proving Grounds and the Developmental Test Command (DTC) at Aberdeen into one organization to be located at Aberdeen Proving Grounds.

B. SAVINGS ESTIMATES

1. ASIP Stationable Package BASELINE:

Organization	UIC	Source	Authorizations					
			OFF	WO	ENL	MIL	CIV	TOT
ATEC (Alexandria)	W3Q2AA	Data Call	36	0	16	52	82	139
ATEC (APG)	W3Q2!A	ASIP	0	0	0	0	15	15
AEC (Alexandria)	W3U6AA	Data Call	103	0	26	129	145	292
AEC (APG)	W3U6!A	ASIP	0	0	0	0	150	150
DTC	W0JEAA	ASIP	6	0	4	10	135	145

2. ANALYSIS:

This scenario combines three headquarters units into a single entity. This enables savings in common overhead functions that all three headquarters currently possess. The savings was estimated by reviewing the TDA documents and eliminating positions and skills that were duplicated in each of these offices. The following table shows the current strengths in these areas and the estimated strengths for the new combined command. Mission functions for each of the three commands and the contracting function at ATEC HQs were left intact.

Further, the analysis, and subsequent reductions, are based on the FY03 TDA documents because the TDAs enabled the TABS manpower analyst to identify positions as mission or overhead. This analysis is being performed at a high level, without detailed workload data. Implementation of this scenario will require a more in-depth study of the duplicated capabilities and overlap in mission functions.

ATEC HQs					
Function	OFF	WO	ENL	CIV	TOT
Command Group	7	0	5	12	24
Security & Intelligence	15	0	1	26	42
Resource Management	1	0	0	19	20
Personnel	1	0	3	16	20
Information Management	3	0	0	13	16
Engineering & Environment	1	0	0	10	11
Contracting	0	0	0	20	20
Mission Functions	5	2	14	61	82
TOTALS	33	2	23	177	235

ARMY EVALUATION CENTER					
Function	OFF	WO	ENL	CIV	TOT
Command Group	5	0	3	24	32
Security & Intelligence	0	0	0	0	0
Resource Management	1	0	3	9	13
Personnel	0	0	3	5	8
Information Management	0	0	0	0	0
Engineering & Environment	0	0	0	0	0
Contracting	0	0	0	0	0
Mission Functions	119	5	21	187	332
TOTALS	125	5	30	225	385

DEVELOPMENTAL TEST COMMAND					
Function	OFF	WO	ENL	CIV	TOT
Command Group	5	0	4	34	43
Security & Intelligence	0	0	0	9	9
Resource Management	1	0	0	27	28
Personnel	0	0	0	0	0
Information Management	0	0	0	0	0
Engineering & Environment	0	0	0	18	18
Contracting	0	0	0	0	0
Mission Functions	0	0	0	61	61
TOTALS	6	0	4	149	159

CONSOLIDATED ATEC HQs					
Function	OFF	WO	ENL	CIV	TOT
Command Group	14	0	10	56	80
Security & Intelligence	12	0	1	28	41
Resource Management	2	0	2	44	48
Personnel	1	0	5	17	23
Information Management	2	0	0	10	12
Engineering & Environment	1	0	0	22	23
Contracting	0	0	0	20	20
Mission Functions	124	7	35	309	475
TOTALS	156	7	53	506	722

3. *Savings Summary:*

The total savings from each organization is shown below:

Region	OFF	ENL	CIV	TOTAL
ATEC HQs	-2	-2	-14	-18
AEC	-6	-2	-12	-20
DTC	0	0	-19	-19
TOTALS	-8	-4	-45	-57

VII. HSA-0092R & USA-0222R, ARMY CONTRACTING AGENCY CONSOLIDATION

A. SUMMARY:

This scenario moves the Southern Hemisphere region HQs from Ft. Buchanan to Ft. Sam Houston and consolidates it with South Region HQs moving from Ft. McPherson to Ft. Sam Houston.

B. SAVINGS ESTIMATES:

1. ASIP Stationable Package BASELINE:

Organization	UIC	CCNUM	Authorizations					
			OFF	WO	ENL	MIL	CIV	TOT
ACA Region South	W6BBAA	1003	3	0	0	3	36	39
ACA Southern Hemi	W6BYAA	1003	4	0	4	8	35	43

2. ANALYSIS:

Both of these organizations are small organizations so reductions in mission positions are not as feasible as they would be in large organizations. The savings reflect elimination of overhead positions, namely, the Director’s Office at the Southern Region HQs. The Southern Region Director’s Office is the smaller of the two Director’s offices and consists of 2 Officer positions and one Civilian position. Both organization TDAs are shown below (eliminated positions in red):

SOUTHERN REGION					S. HEMISPHERE REGION				
PARNO	Office	Position	Grade	Auth	PARNO	Office	Position	Grade	Auth
001	REG HQS	DEPUTY	O6	1	001	CNTRT ELE - SO HEMISPHER DIRECTOR		15	1
001	REG HQS	OPERATIONS OFF	O5	1	001	CNTRT ELE - SO HEMISPHER S/CONTR SPEC		14	1
001	REG HQS	MGMT ANALYST	O9	1	001	CNTRT ELE - SO HEMISPHER PROC ANALYST		13	1
002	GEN COUNSEL	PROC OFF	O4	1	001	CNTRT ELE - SO HEMISPHER PROC ANALYST		12	1
002	GEN COUNSEL	PROC ANALYST	13	1	001	CNTRT ELE - SO HEMISPHER COMP SPECIALIST		12	1
002	GEN COUNSEL	PROC ANALYST	12	2	001	CNTRT ELE - SO HEMISPHER ADMIN LOG OFCR		11	1
003	CONTR OPS DIV	PROC ANALYST	13	2	001	CNTRT ELE - SO HEMISPHER ADMIN ASST		09	1
003	CONTR OPS DIV	PROC ANALYST	12	6	002	MISSION SPT DIV	CH. MISSION SPT	O4	1
003A	INNOV & EFF BR	OFC SVCS ADMIN ASST	07	1	002	MISSION SPT DIV	CONTRACT OFCR	O4	1
003B	OPS SPT DIV	CONTR SPEC	13	1	002	MISSION SPT DIV	CONTR SPEC	13	1
004	BUS SYS DIV	CONTRACT SPEC	12	1	002	MISSION SPT DIV	CONTRACT OFCR	O3	2
004	BUS SYS DIV	CONTRACT SPEC	11	3	002	MISSION SPT DIV	CONTRACT SPEC	12	1
004	BUS SYS DIV	CONTRACT SPECIALIST	07	1	002	MISSION SPT DIV	CONTR SPEC	11	2
004A	PROC & PROG BR SUPV CONTR SPEC		13	1	002	MISSION SPT DIV	CONTR SPEC	09	5
004A	PROC & PROG BR CONTRACT SPEC		12	4	002	MISSION SPT DIV	SR PROC NCO	E7	1
004A	PROC & PROG BR CONTRACT SPECIALIST		11	4	002	MISSION SPT DIV	PROCUREMENT NCO	E6	3
004A	PROC & PROG BR CONTRACT SPECIALIST		09	2	002	MISSION SPT DIV	PROC CLK (OA)	06	1
004A	PROC & PROG BR PROC TECH		06	1	003	BUCHANAN DIV	DIVISION CHIEF	14	1
004A	PROC & PROG BR PURCHASE AGENT		06	2	003	BUCHANAN DIV	CONTR SPEC	13	1
004A	PROC & PROG BR PURCHASE AGENT		05	1	003	BUCHANAN DIV	CONTR SPEC	12	2
004A	PROC & PROG BR PROC TECH		05	1	003	BUCHANAN DIV	CONTR SPEC	11	6
004B	RES SPT BR	COST/PRICE ANALYST	12	1	003	BUCHANAN DIV	CONTR SPEC	09	3
					003	BUCHANAN DIV	ADMIN ASST	07	2
					003	BUCHANAN DIV	PROC CLK (OA)	06	3
TOTAL AUTHORIZATIONS				39	TOTAL AUTHORIZATIONS				43

3. Savings Summary:

Total Savings at each existing region are shown below:

Region	OFF	ENL	CIV	TOTAL
Southern	-2	0	-1	-3
Southern Hemisphere	0	0	0	0
TOTALS	0	0	-3	-3

VIII. HSA-0092R, USA-0113R & USA-0222R, INSTALLATION MANAGEMENT AGENCY REGIONAL CONSOLIDATIONS

A. SUMMARY:

This scenario merges the IMA Northeast Region Office at Ft. Monroe with the Southeast Region Office at Ft. McPherson and places the proposed Eastern Region Office at Ft. Eustis. Further, it consolidates the Northwest Region Office at Rock Island Arsenal with the Southwest Region Office at Ft. Sam Houston and places the proposed Western Region Office at Ft. Sam Houston.

B. SAVINGS ESTIMATES:

1. ASIP Stationable Package BASELINE:

Organization	UIC	EDate	Authorizations					TOT
			OFF	WO	ENL	MIL	CIV	
Northeast Region	W6BEAA		1	0	1	2	113	115
Southeast Region	W6BFAA		1	0	1	2	107	109
Northwest Region	W6BGAA		1	0	1	2	104	106
Southwest Region	W6BHAA		1	0	1	2	107	109

2. ANALYSIS:

All four of these organizations are overhead and act to reduce the span of control over garrison organizations that IMA Headquarters would be burdened with if the Regional Offices did not exist. As intermediate organizations they all contain very few positions for each function that is overseen. For each functional area the proposed Eastern & Western Regions retain the larger functional office from the two being combined. A summary is shown below:

PARNO	Office	FY03 AUTHORIZATIONS				New AUTHs	
		NE	SE	NW	SW	East	West
001	OFC OF THE DIRECTOR	3	3	3	3	3	3
001A	SPECIAL STAFF SECTION	12	12	12	12	12	12
001B	ADMIN OFFICE	1	1	1	1	1	1
002	RESOURCE MGT DIV	1	1	1	1	1	1
002A	MPWR, EQ & FRC ANL BR	4	4	4	4	4	4
002B	BUDGET & INTEGR BR	7	7	8	8	7	8
002C	COMP SOURCING TM	4	4	2	2	4	2
003	HUMAN RES DIV	2	2	3	3	2	3
003A	MILITARY PERS BR	4	4	4	4	4	4
003B	CIVILIAN PERS BR	3	3	3	3	3	3
003C	ACES	1	1	1	1	1	1
004	PLANS DIV	1	1	1	1	1	1
004A	STRATEGIC PLANNING BR	2	2	2	2	2	2
004B	INSTL QUALITY MGT BR	2	2	3	3	2	3
004C	INFO TECH INTEGR BR	1	1	1	1	1	1
005	OPERATIONS DIV	2	2	2	2	2	2
005A	OPS & MOBILIZATION BR	4	4	4	4	4	4
006	LOGISTICS DIV	1	1	2	2	1	2
006A	MAINT, SUP & SVCS BR	5	5	7	7	5	7
006B	TRANSPORTATION BR	3	3	3	3	3	3
007	DPW DIV	1	1	3	3	1	3
007A	PLANNING BR	6	6	6	6	6	6
007B	BUS MGMT & HSG BR	3	3	5	5	3	5
007C	PW OPS & MAINT BR	5	5	3	3	5	3
008	ENVIRNMT & NAT RES DIV	7	7	7	7	7	7
009	MWR & COM/FAM DIV	27	21	15	18	27	18
010	RCI DIV	3	3	0	0	3	0
TOTALS		115	109	106	109	115	109

The Savings computed for the proposed Eastern Region is 1 Officer, 1 Enlisted and 107 Civilians. These savings should be taken prior to the NE and SE regions moving to Ft. Eustis. Further, the position eliminations should be spread between the two organizations. The estimated strength for the new consolidated Eastern Region will contain one Officer, one Enlisted and 113 Civilians. The positions supplied by each existing region to construct this new organization are arrived at by pro-rating the positions based upon the number of installations managed. Since the NE Region currently contains 61% (22 of 36) of the Eastern installations it will supply 61% of the positions to the proposed Eastern Region. This equates to one Officer and 69 Civilians. This total should also include one Enlisted position (mathematically) but the resultant organization only has two military positions so one was taken from each existing region. This means that the SE Region will supply one Enlisted and 44 Civilians to create the Eastern Region. Repeating this analysis for the Western Region, the NW Region supplies one Enlisted and 48 Civilians and the SW Region supplies one Officer and 59 Civilians.

3. Savings Summary:

Total Savings at each existing region are shown below:

Region	OFF	ENL	CIV	TOTAL
Northeast	0	-1	-44	-45
Southeast	-1	0	-63	-64
Northwest	-1	0	-56	-57
Southwest	0	-1	-48	-49
TOTALS	-2	-2	-211	-215

IX. HSA-0092R, USA-0113R & USA-0222R, NETCOM REGIONAL CONSOLIDATIONS

A. SUMMARY:

This scenario consolidates the four Network Enterprise Technology Command (NETCOM) Regional Support Offices at Ft. McPherson, Ft. Monroe, Rock Island Arsenal and Ft. Sam Houston into two regional offices. The two Regional offices, the Eastern and Western Regions, will be located at Ft. Eustis and Ft. Sam Houston, respectively.

B. SAVINGS ESTIMATES:

1. ASIP Stationable Package BASELINE:

Organization	UIC	CCNUM	Authorizations					
			OFF	WO	ENL	MIL	CIV	TOT
NETCOM – NE	W6FXAA	0103	0	0	1	1	25	26
NETCOM – SE	W6FYAA	0103	0	0	1	1	25	26
NETCOM – NW	W6FZAA	0103	0	0	1	1	26	27
NETCOM - SW	W6F0AA	0103	0	0	1	1	26	27

2. ANALYSIS:

All four of these organizations are small organizations so reductions in mission positions are not as feasible as they would be in large organizations. The savings reflect elimination of overhead positions, namely, the Director’s Office at the Southeast Region and the Director’s Office at the Northwest Region. All four Director’s Offices contain five Civilian authorizations. The organization TDAs are shown below (eliminated positions in red):

NORTHEAST REGION					SOUTHEAST REGION				
PARNO	Office	Position	Grade	Auth	PARNO	Office	Position	Grade	Auth
001	OFFICE OF RICO	SPV IT SPEC	15	1	001	OFFICE OF RICO	SPV IT SPEC	15	1
001	OFFICE OF RICO	INFO MGT SP	13	1	001	OFFICE OF RICO	INFO MGT SP	13	1
001	OFFICE OF RICO	BUDGET	12	1	001	OFFICE OF RICO	BUDGET	12	1
001	OFFICE OF RICO	ADMIN MGR	11	1	001	OFFICE OF RICO	ADMIN MGR	11	1
001	OFFICE OF RICO	ADMIN SP	07	1	001	OFFICE OF RICO	ADMIN SP	07	1
002	CUSTOMER SPT DIV	SPV IT SP(PLNS/P	14	1	002	CUSTOMER SPT DIV	SPV IT SP(PLNS/P	14	1
002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS	13	1	002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS	13	1
002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1	002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1
002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1	002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1
002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1	002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1
002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS)	13	1	002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS)	13	1
002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	12	1	002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	12	1
002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS)	12	1	002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS)	12	1
002	CUSTOMER SPT DIV	INFO TECH SP	12	1	002	CUSTOMER SPT DIV	INFO TECH SP	12	1
002	CUSTOMER SPT DIV	VISUAL INFO SP	12	1	002	CUSTOMER SPT DIV	VISUAL INFO SP	12	1
002	CUSTOMER SPT DIV	MGT ANALYST	12	1	002	CUSTOMER SPT DIV	MGT ANALYST	12	1
003	NETWORK SERVICE CTR	IT SPEC(NETWK)	E6	1	003	NETWORK SERVICE CTR	SPV IT SPEC(NETW	14	1
003	NETWORK SERVICE CTR	SPV IT SPEC(NETW	14	1	003	NETWORK SERVICE CTR	IT SPEC(SYS)	13	1
003	NETWORK SERVICE CTR	IT SPEC(SYS)	13	1	003	NETWORK SERVICE CTR	IT SPEC(SYS ANL)	13	1
003	NETWORK SERVICE CTR	IT SPEC(SYS ANL)	13	1	003	NETWORK SERVICE CTR	IT SPEC(GENERAL)	13	1
003	NETWORK SERVICE CTR	IT SPEC(GENERAL)	13	1	003	NETWORK SERVICE CTR	LD IT SP(NTWK)	13	1
003	NETWORK SERVICE CTR	LD IT SP(NTWK)	13	1	003	NETWORK SERVICE CTR	IT SPEC (IA)	13	1
003	NETWORK SERVICE CTR	IT SPEC (IA)	13	1	003	NETWORK SERVICE CTR	IT SPEC(GENERAL)	12	1
003	NETWORK SERVICE CTR	IT SPEC(GENERAL)	12	1	003	NETWORK SERVICE CTR	IT SPEC(NETWK)	12	1
003	NETWORK SERVICE CTR	IT SPEC(NETWK)	12	1	003	NETWORK SERVICE CTR	IT SPEC (NETWK)	12	1
003	NETWORK SERVICE CTR	IT SPEC (NETWK)	12	1	003	NETWORK SERVICE CTR	IT SPEC (IA)	12	0
003	NETWORK SERVICE CTR	IT SPEC (IA)	12	0	003	NETWORK SERVICE CTR	IT SPEC(NETWK)	E6	1
TOTAL AUTHORIZATIONS				26	TOTAL AUTHORIZATIONS				26

NORTHWEST REGION					SOUTHWEST REGION				
PARNO	Office	Position	Grade	Auth	PARNO	Office	Position	Grade	Auth
001	OFFICE OF RICO	SPV IT SPEC	15	1	001	OFFICE OF RICO	SPV IT SPEC	15	1
001	OFFICE OF RICO	INFO MGT SP	13	1	001	OFFICE OF RICO	INFO MGT SP	13	1
001	OFFICE OF RICO	BUDGET	12	1	001	OFFICE OF RICO	BUDGET	12	1
001	OFFICE OF RICO	ADMIN MGR	11	1	001	OFFICE OF RICO	ADMIN MGR	11	1
001	OFFICE OF RICO	ADMIN SP	07	1	001	OFFICE OF RICO	ADMIN SP	07	1
002	CUSTOMER SPT DIV	SPV IT SP(PLNS/P	14	1	002	CUSTOMER SPT DIV	SPV IT SP(PLNS/P	14	1
002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS	13	1	002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS	13	1
002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1	002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1
002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1	002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	13	1
002	CUSTOMER SPT DIV	IT SPEC (SYS ANL)	13	1	002	CUSTOMER SPT DIV	IT SPEC (SYS ANL)	13	1
002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS)	13	1	002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS)	13	1
002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	12	1	002	CUSTOMER SPT DIV	IT SPEC(SYS ANL)	12	1
002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS	12	1	002	CUSTOMER SPT DIV	IT SPEC(PLNS/SYS	12	1
002	CUSTOMER SPT DIV	INFO TECH SP	12	1	002	CUSTOMER SPT DIV	INFO TECH SP	12	1
002	CUSTOMER SPT DIV	VISUAL INFO SP	12	1	002	CUSTOMER SPT DIV	VISUAL INFO SP	12	1
002	CUSTOMER SPT DIV	MGT ANALYST	12	1	002	CUSTOMER SPT DIV	MGT ANALYST	12	1
003	NETWORK SERVICE CTR	SPV IT SPEC(NETW	14	1	003	NETWORK SERVICE CTR	SPV IT SPEC(NETW	14	1
003	NETWORK SERVICE CTR	IT SPEC(SYS)	13	1	003	NETWORK SERVICE CTR	IT SPEC(SYS)	13	1
003	NETWORK SERVICE CTR	IT SPEC(SYS ANL)	13	1	003	NETWORK SERVICE CTR	IT SPEC(SYS ANL)	13	1
003	NETWORK SERVICE CTR	IT SPEC(GENERAL)	13	1	003	NETWORK SERVICE CTR	IT SPEC(GENERAL)	13	1
003	NETWORK SERVICE CTR	LD IT SP(NTWK)	13	1	003	NETWORK SERVICE CTR	LD IT SP(NTWK)	13	1
003	NETWORK SERVICE CTR	IT SPEC (IA)	13	1	003	NETWORK SERVICE CTR	IT SPEC (IA)	13	1
003	NETWORK SERVICE CTR	IT SPEC(GENERAL)	12	1	003	NETWORK SERVICE CTR	IT SPEC(GENERAL)	12	1
003	NETWORK SERVICE CTR	IT SPEC(NETWK)	12	1	003	NETWORK SERVICE CTR	IT SPEC(NETWK)	12	1
003	NETWORK SERVICE CTR	IT SPEC (NETWK)	12	1	003	NETWORK SERVICE CTR	IT SPEC (NETWK)	12	1
003	NETWORK SERVICE CTR	IT SPEC (IA)	12	1	003	NETWORK SERVICE CTR	IT SPEC (IA)	12	1
003	NETWORK SERVICE CTR	IT SPEC(NETWK)	E6	1	003	NETWORK SERVICE CTR	IT SPEC(NETWK)	E6	1
TOTAL AUTHORIZATIONS				27	TOTAL AUTHORIZATIONS				27

3. Savings Summary:

Total Savings at each existing region are shown below:

Region	OFF	ENL	CIV	TOTAL
Northeast	0	0	0	0
Southeast	0	0	-5	0
Northwest	0	0	-5	0
Southwest	0	0	0	0
TOTALS	0	0	-10	-10

X. USA-0046, DRILL SERGEANT SCHOOL CONSOLIDATIONS

A. SUMMARY

This scenario consolidates the three Army Drill Sergeants Schools from Ft. Jackson, Ft. Benning and Ft. Leonard Wood at Ft. Jackson.

B. TRADOC MANPOWER STANDARDS APPLICATION

This manpower savings estimates for these consolidations were developed using existing TRADOC manpower standards for NCO Academies and Drill Sergeant Instruction. These standards were applied to data taken from the FY05 ATRRS Database. These standards are 13 years old and when comparing the actual strengths of the Drill Sergeant Schools with the results of the standards there was some disparity. To account for changes in DS instruction that may have taken place over the last 13 years, TABS used the standards as a basis for estimating a

percentage change in strength¹. The following standards and the data that was input to them are shown below:

1. *ATRRS Data*

TRADOC supplied TABS with the FY05 Data from the ATRRS system that is necessary to apply the manpower standards. However, the ATRRS Data supplied was incomplete. The Instructor Contact Hours (ICH) field for the classes taught at Ft. Jackson and Ft. Leonard Wood were blank. These were filled in by using the Ft. Benning Data. Ft. Benning has a 9 week, 40 student class with 324 ICH. This implies 0.90 ICH per student per week. TABS assumed this rate was constant and applied it to Ft. Jackson and Ft. Leonard Wood.

The numbers in red below were filled in by the TABS manpower analyst. The number of Class Starts (Cls Starts) and the Monthly Instructor Contact Hours (MOICH) are computed by following the directions for applying these standards. These directions and standards can be found on the TRADOC Manpower Requirements Analysis Division (MRAD) webpage.

FY05 ATRRS Data											
SCH	SCHOOL NAME	COURSE NUMBER	Cls Size	ICH	Type	WKS	DYS	HOURS	REQMT	Cls Starts	MOICH
615	JACKSON	012-SQIX	75	607.5	8	9	0	0	650	8.67	438.919
615	JACKSON	012-SQIX (RECERT)	20	196	5	2	0	0	15	0.75	12.250
652	LEONARD WD	012-SQIX	75	607.5	8	9	0	0	781	10.41	527.006
698	BENNING	012-SQIX	40	324	8	9	0	0	400	10	270

2. *Manpower Standards*

There is a specific standard for the Drill Sergeant School. However, this standard is for DSS instruction and is included as part of a set of standards that cover NCO Academies. In order to include overhead and non-instruction pieces of the DS School the other standards for NCO Academy overhead, operations, logistics, and non-academic support were also applied to just the DS ATRRS workload.

- Drill Sergeant Instruction: $y = 181.4 + 1.454x$ $x = \text{MOICH}$
- PLDC: $y = 7.288x^{0.7928}$ $x = \text{MOICH}$
- Non-Academic Support: $y = 6.516 + 2.384x$ $x = \# \text{ of students programmed}$
- Logistics: $y = 222.2 + 1.799x$ $x = \# \text{ of students programmed}$
- Operations: $y = 247.3 + 1.498x$ $x = \# \text{ of students programmed}$
- Admin/Support Personnel: $y = 141.7 + 1.565x$ $x = \text{requirements supported}^2$
- Office of the Commandant: $y = 0.02075 + 0.001271x$ $x = \text{requirements supported}^3$

The results of all of these equations, with the exception of the Office of the Commandant, produce the requirement in terms of man-hours per month. To get the actual requirement in man-year equivalents divide the results by 145 man-hours per month (see AR570-4). The Office

¹ Similar to how the Power Equation was used in estimating changes in the Center and School manpower. See section A.

² The requirements supported are determined by summing the results of the DSS, PLDC, non-academic support, operations and logistics standards.

³ The requirements supported are determined by summing the results of all of the other listed standards.

of the Commandant standard yields an answer that is already in man-year equivalents. To obtain the requirement for the DS School as a whole, sum the results (in man-year equivalents) and round off the answer to the nearest whole number.

3. Application

The Standards were applied to the existing DSS structure (at three locations) to get an “expected” staffing number (TOTAL column). These results are shown below:

SCHOOL NAME		TRADOC STANDARD APPLICATION							
SCHOOL NAME	COURSE NUMBER	DSS	OPS	LOG	PLDC	NA SPT	ADMIN	CMDT	TOTAL
JACKSON	012-SQIX	5.65	2.28	2.22	0.00	0.96	1.00	0.00	13
JACKSON	012-SQIX (RECERT)	1.37							
LEONARD WD	012-SQIX	6.54	2.38	2.34	0.00	1.11	1.00	0.00	13
BENNING	012-SQIX	3.96	2.05	1.95	0.00	0.59	1.00	0.00	10

Then the ATRRS data was totaled to get class sizes and MOICH for a single location. The manpower standards were then applied to this data. Results are below:

FY05 Conlolidated ATRRS Data										
CONSOLIDATED	012-SQIX	75	607.5	8	9	0	0	1831	24.41	1235.76
	012-SQIX (RECERT)	20	196	5	2	0	0	15	0.75	12.25

SCHOOL NAME		TRADOC STANDARD APPLICATION							
Consolidated	012-SQIX	13.64	3.29	3.44	0.00	2.57	1.00	0.00	24
	012-SQIX (RECERT)	1.37							

Currently Ft. Jackson has 35 authorizations, Ft. Leonard Wood has 27 and Ft. Benning has 23. The manpower standards results only give a percentage of these actual strengths. For example, at Ft. Jackson, the actual strength is 2.69 times greater than the standards results. A weighted average of these size differences was developed upon the student requirements for each. This weighted average says that the actual consolidated Drill Sergeant school manpower requirements should be 2.347 times bigger than the results of the manpower standards application, or 56 (24*2.347). The consolidated school has an estimated manpower requirement of 56 spaces.

4. Savings Summary:

DSS Location	OFF	WOF	ENL	CIV	TOTAL
Ft. Jackson	0	0	-12	0	-12
Ft. Leonard Wood	0	0	-9	0	-9
Ft. Benning	0	0	-8	0	-8
TOTALS	0	0	-29	0	-29

XI. USA-0136, LAND WARFARE CENTER

A. SUMMARY

This scenario consolidates the Combined Arms Center and the Command & General Staff College, both at Ft. Leavenworth, with the Army War College at Carlisle Barracks to form a Land Warfare Center, to be located at Ft. Leavenworth.

B. SAVINGS ESTIMATES

All savings for this consolidation were estimated using a regression model based on student loads. A detailed description of this model can be found in Appendix A to this document. The following table summarize where manpower savings were estimated under this scenario.

School	OFF	WOF	ENL	CIV	TOTAL
War College	-127	-1	-45	-93	-266
CAC & CGSC	-23	0	-8	-42	-73
TOTALS	-150	-1	-53	-135	-339

XII. USA-0223, USMA PREPATORY SCHOOL**A. SUMMARY**

This scenario moves the US Army Military Academy Preparatory School from Ft. Monmouth to West Point.

B. SAVINGS ESTIMATES

Savings for this consolidation were estimated by examining the TDA documents for both the Military Academy and the Prep School and eliminating functions at the Prep School that are already duplicated at the Academy. The mess operations at the Prep School were eliminated since the Academy has an extensive mess hall operation. Additional savings were estimated in English and Mathematics instructors based upon student loads.

1. Instructor Savings

The FY03 TDA for the Prep School has nine instructor authorizations in each department (English & Math) for a student load of 202. West Point proper has 61 instructor/professor authorizations in the Math Department and 42 in the English Department (not including admin positions or the Department Head and a Deputy). West Point Proper has a student load of 4,820 in FY03 (40 Officers are included in this number).

Using simple pro-rating, West Point will gain 202 students, or another 4.2%. Applying a 4.2% increase to both the English and Math Departments gives a new requirement of 64 instructors in the Math Department and 44 in the English Department. Hence, three Math instructors and two English instructors a savings will transfer with the Prep School t West Point. This results in a savings of 13 (4 Officers and 9 Civilians) authorizations from the Prep school since only 5 of the 18 Prep School instructors are required to fill the increase to West Point.

2. Mess Hall Operations

The FY03 TDA for the Prep School shows 11 authorizations for Mess Hall Operations. These include nine Enlisted Cooks and Food Operations Sergeants, and two Civilian Cooks. All of these positions are considered savings when the Prep School consolidates with the Military Academy.

3. *Total Savings*

Total Savings estimated for this scenario are shown below:

School	OFF	WOF	ENL	CIV	TOTAL
USMA Preparatory School	-4	0	-9	-11	-23

XIII. USA-0227, CLOSE SOLDIER SYSTEM CENTER

A. SUMMARY:

The closure of Natick Laboratories necessitates moving the research functions to Aberdeen Proving Grounds in accordance with the TJCSG scenario TECH-0045.

B. SAVINGS ESTIMATES:

1. *ASIP Stationable Package BASELINE:*

The RD&E Center (W1D1AA) in the stationable packages is split between Aberdeen and Natick. The Soldier & Biochemical research organization (W4MLAA) is also split between the two locations. The total authorizations for each unit are shown below:

Organization	NATICK	ABERDEEN	TOTAL
RD&E Center	427	812	1239
Soldier Bio -Chem	178	558	736
TOTALS	605	1370	1975

2. *ANALYSIS:*

The candidate recommendation consolidates the parent and the derivative UICs. This means that duplicated skill sets can be viewed as savings. However, in research organizations this can be particularly difficult since the TDAs are usually organized in several large paragraphs that include a variety of scientific skills. This enables the organizations to task organize around projects that may require different disciplines at different stages of the research. In order to estimate the savings the TABS manpower analyst reviewed the TDAs and removed management types of positions that were duplicated in paragraphs that appeared to have similar functions. Management positions were identified by title and by grade. Also considered savings were positions that were low-graded and heavily duplicated in the organization already located at Aberdeen.

3. *W1D1AA – RD&E Center.*

This organization is split between Aberdeen and Natick. The derivative UIC W1D101 is located at Aberdeen Proving Ground, the parent TDA is located at Natick. The Command Group of the APG piece is considered savings since it can be absorbed into the parent organization Command Group. In addition to these savings (4 civilian positions), 22 other civilian positions can be considered savings. These positions, found in the parent organization, are management graded and duplicate skills can be found in similar paragraphs of the derivative (at APG). The four

positions estimated as savings from the derivative UIC organization at APG and the 22 positions from the parent at Natick are shown below:

ABERDEEN									
PARNO	PARATITLE	LN	TITLE	GRADE	POSCO	BRNCH	IDENT	RQD	AUTH
120	EDGEWOOD CHEM BIO CEN	02	PD DOM PREP	15	00340	GS	C	1	1
120	EDGEWOOD CHEM BIO CEN	03	GEN ENGR	15	00801	GS	C	1	1
120	EDGEWOOD CHEM BIO CEN	06	SECY	07	00318	GS	C	1	1
120	EDGEWOOD CHEM BIO CEN	02A	PROG DIR	15	00801	GS	C	1	1

NATICK									
PARNO	PARATITLE	LN	TITLE	GRADE	POSCO	BRNCH	IDENT	RQD	AUTH
130	NATICK SOLDIER CENTER	01	DIRECTOR	00	01301	ES	C	1	1
131	SUPPORTING SCIENCE DIR	01	DIRECTOR	15	01301	GS	C	1	1
131	SUPPORTING SCIENCE DIR	06	RSCH CHEMIST	15	01320	GS	C	2	2
131	SUPPORTING SCIENCE DIR	11	RSCH GEN ENGR	14	00801	GS	C	1	1
131	SUPPORTING SCIENCE DIR	14	CHEM ENGR	14	00893	GS	C	1	1
131	SUPPORTING SCIENCE DIR	15	RSCH CHEM ENGR	14	00893	GS	C	1	1
131	SUPPORTING SCIENCE DIR	16	PHYS SCI	14	01301	GS	C	2	2
131	SUPPORTING SCIENCE DIR	17	RSCH CHEMIST	14	01320	GS	C	2	2
131	SUPPORTING SCIENCE DIR	41	RSCH BIOLOGIST	11	00401	GS	C	1	1
131	SUPPORTING SCIENCE DIR	06A	RSCH CHEMIST	15	01320	GS	C	1	1
131	SUPPORTING SCIENCE DIR	20A	RSCH BIOLOGIST	13	00401	GS	C	1	1
132	COMBAT FEEDING DIR	54	SUPPLY TECH	06	02005	GS	C	1	1
133	OPS & CUST INTF DIR	10	SUPV GEN ENGR	14	00801	GS	C	1	1
133	OPS & CUST INTF DIR	11	LEAD PHYS SCI	14	01301	GS	C	1	1
133	OPS & CUST INTF DIR	12	PHYS SCI ADMIN	14	01301	GS	C	1	1
133	OPS & CUST INTF DIR	13	INTEL RSCH SP	13	00132	GS	C	1	1
133	OPS & CUST INTF DIR	29	LIBRARIAN	12	01410	GS	C	2	2
133	OPS & CUST INTF DIR	37	STDZN ASST	07	00303	GS	C	1	1

4. W4MLAA – HQs Soldier & BioChem research.

The parent UIC for this organization is located at Aberdeen Proving Ground, and it has directorates located at several installations around the U.S. Two of these directorates, Acquisition & Readiness Directorate and the Logistics Directorate, are located at Natick Labs. The Army assumption is that if these two directorates are to move to Aberdeen Proving Ground, they will remain directorates of the parent organization and will not gain efficiencies from consolidation. However, two Chaplain Positions (1 Officer & 1 Enlisted) at Natick Labs can be considered savings since the parent organization at APG already has a Chaplain's Office.

TAB A. SCHOOL CONSOLIDATION MANPOWER MODEL

A.1 INTRODUCTION

Both the Army and the Education & Training Joint Cross Service Group have proposed scenarios that consolidate Army Center & Schools. When an organizational consolidation occurs manpower savings are realized (see Appendix V of the TAF). In order to estimate these savings TABS developed a model to predict the size of a consolidated school. The model uses a power equation that uses the student load as an independent variable.

Several other methods of estimating the manpower savings for these scenarios were attempted but proved to be less predictive or problematic. These included using the TRADOC manpower standards published on the TRADOC HQs Manpower & Requirements Division website. These standards are 13 years old (or older) and in some cases apply to schools that no longer exist independently. Further, some of the information required to apply these standards was not available. Other independent variables, such as the number of Military Occupational Specialties (MOSs) managed by the schoolhouse, were examined and discarded as statistically invalid.

A.2 ANALYSIS AND METHODOLOGY

Developing a manpower estimating model for any organization involves three distinct steps. The first is to identify what is to be predicted. The second is to find the variable or set of variables that can be used as a basis for a statistically valid equation. The last step, and perhaps the most difficult, is to balance the set of mathematical analyses with reality using military judgement. Mathematics and statistics can highlight relationships, but interpretation of these relationships must have a way to account for differences in the individual data points. Organizations differ in the Army and each accomplishes its own mission using the best tools and methods available to it. TABS developed a manpower estimating model for TRADOC training organizations. The equation it is based upon is statistically valid, and it includes adjustments to account for the differences in individual schools.

During the efforts to develop an estimating equation TABS adhered to a set of criteria that were desired in a model. These criteria set forth the level of statistical validity desired as well as establishing guidelines for realism in the model. These criteria included:

- Statistical Validity $\Rightarrow R^2$ must be greater than .75 and the standard error should not exceed the size of a significant number of data points.
- The model should realize “economies of scale”. In other words, as the independent variable grows the growth rate in the dependent variable should slow. All manpower estimating models should realize these economies.
- On average, the predicted dependent variable should not differ from the actual value by significant amounts.¹

A.2.1 The Dependent Variable

Estimating the size of a school means predicting the number of authorizations that the school has based upon some independent variable. However, identifying the authorized positions at a

¹ This criterion is an interpretation of the standard error criteria expressed under statistical validity.

school requires some definition and the consolidated authorizations included as part of the “school” must be identified. For example, the Army Field Artillery Center and School is at Ft. Sill, Ft. Sill also has an Army Training Center. In the Ft. Sill case, TABS needed to identify whether these two organizations were one “school” or two separate organizations. Another related situation occurs when an installation contains both a Center & School organization and a higher headquarters, such as at Ft. Lee. The Combined Arms Support Command (CASCOM), the Quartermaster Center and School, and the Army Logistics Management College (ALMC) all reside on Ft. Lee with the two schools subordinate to CASCOM.

TABS coordinated with TRADOC to clarify some of these relationships and discovered that when collocated, TRADOC training organizations tend to overlap. For example, certain doctrine, combat development and training development for the Quartermaster School is undertaken by CASCOM (CASCOM also does this for other schools). In other locations these functions are part of the school. In the case when an ATC and a school reside on the same installation TRADOC has implemented One Station Unit Training (OSUT), a method for sending trainees through Basic Training and Advanced Individual Training (AIT) at one location. The ATC may also handle higher headquarters type functions for the school such as staff oversight and management. Since the level of interaction between separate organizations varied, TABS treated each location, where training activities resided, as one “school”. For example, the TABS data point called “Aviation School²” at Ft. Rucker includes the Aviation Center and School, the NCO Academy, the Army Safety Center, the Aviation Medical School and the Warrant Officer Career Center. There were two exceptions to these situations; both the Transportation School and the Aviation Logistics schools reside on Ft. Eustis and were considered separate organizations, and the Chaplain’s School at Ft. Jackson was not included under the Ft. Jackson ATC.

The authorization strengths for each of the schools were obtained from the TABS stationable packages (see TAF Chapter V: FORCE STRUCTURE). The stationable package that contained each school was segregated into several parts, the Center (or higher headquarters), the schools, Army bands, AMC units, ATEC units, other Service Liaison offices and other DoD units. This was done to facilitate the consolidation analyses. Each move and consolidation involved the school’s stationable package, which contains more than just the school itself. For example, if two schools were consolidated and both had a Band, one Band was considered savings. Also, many of the non-school units in the stationable package are associated with the schoolhouse in order to support testing and acquisition programs that are equipment specific. These types of units were not included in consolidation. When looking for relationships, and hence an equation, the dependent variable chosen was the aggregate strength of the Center/Higher HQs and the Schoolhouse.

A.2.2 The Independent Variable and Model Equation

TABS examined three different independent variables, the number of courses taught by the school, the number of Military Occupational Specialties (MOS) managed by the school, and the student load. The first two proved to have no direct relationship to the size of a school (see section A.3 Other Analyses). However, the student load proved to be statistically valid for three different types of equations. The student loads used in the model were taken from the FY03 ASIP baseline of stationable packages that TABS used for all of its analyses.

² The Aviation School data point was eventually removed from the data as an outlier. See section (A.2.2.2)

A.2.2.1 Analyzed Data

The stationable package totals and student loads for each school organization are shown below in *figure 1*.

SCHOOL	SUB-SCHOOL	Courses Taught	Students	NCO Academy Students	TOTAL Students	School & Center Auths	Army Band	AMC Auths	ATEC Auths	Other Service LNOs	Other Unit Auths
ADA	ADA	34	1194	160	1354	1530	40	1	0	302	30
ARMOR	ARMOR	29	731	0	731	3883	0	11	0	0	0
ARMOR	ATC KNOX	38	7205	368	7573	0	40	0	3	57	3
AV LOG	AV LOG	34	1669	122	1791	569	0	214	0	0	0
AVIATION	AVIATION	90	2101	73	2174	3095	40	4	112	2	3
AVIATION	AVN MEDICAL	0	30	0	30	87	0	0	0	0	36
AVIATION	SAFETY CTR	0	19	0	19	132	0	0	0	0	0
AVIATION	WO CAR CTR	5	192	0	192	65	0	0	0	0	0
CAC	CAC	0	0	0	0	1581	0	4	0	83	125
CAC	CGSC	21	1894	0	1894	58	0	0	0	0	0
CASCOM	ALMC	69	365	0	365	201	0	0	0	0	0
CASCOM	CASCOM	0	0	0	0	664	40	134	3	92	106
CASCOM	QM	76	4794	401	5195	967	0	0	0	0	0
CHAPLAIN	CHAPLAIN	17	177	0	177	105	0	0	0	0	0
DLI	DLI	83	3255	0	3255	1322	0	0	0	141	9
FA	ATC SILL	14	6191	0	6191	1025	40	54	56	0	109
FA	FA	81	1850	199	2049	983	0	0	0	99	0
INFANTRY	ATC BENNING	12	11417	0	11417	3388	40	0	3	62	285
INFANTRY	INFANTRY	37	2929	657	3586	524	0	0	0	0	0
INTEL	INTEL	74	2844	192	3036	1818	40	513	0	80	10
MANCEN	ATC LW	89	14580	844	15424	482	40	6	3	0	0
MANCEN	CHEMICAL	28	456	0	456	786	0	0	0	0	0
MANCEN	ENGINEER	30	475	0	475	1271	0	0	0	0	0
MANCEN	MANCEN	0	0	0	0	993	0	0	0	1368	5
MANCEN	MP	29	676	0	676	577	0	0	0	0	0
MIL PACK	MIL PACK	7	18	0	18	0	0	0	0	0	0
ORD MAINT	ORD MAINT	90	2565	383	2948	969	40	2156	0	126	46
ORD MUN	ORD MUN	40	775	135	910	507	0	0	0	25	0
SGM ACAD	SGM ACAD	11	420	0	420	230	0	0	0	0	0
SIGNAL	SIGNAL	124	4339	496	4835	1976	40	0	3	111	267
SMDC	SMDC	5	5	0	5	0	0	0	0	0	0
SSI	ATC JACKSON	21	15037	306	15343	2176	40	0	0	8	0
SSI	DSS JACKSON	2	119	0	119	0	0	0	0	0	0
SSI	SSI	0	137	0	137	592	0	0	0	0	0
SSI	SSI-AG	25	2268	0	2268	0	0	0	0	0	0
SSI	SSI-FIN	17	239	0	239	0	0	0	0	0	0
SSI	SSI-R&R	13	615	0	615	0	0	0	0	0	0
TRANS	TRANS	46	884	106	990	634	0	20	0	26	2
W HEMI	W HEMI	25	159	0	159	220	0	0	0	2	0
WAR COLLEGE	WAR COLLEGE	0	508	0	508	454	0	0	0	10	0

figure 1

The Data shown in *figure 1* was rolled up at the School level to provide 20 Data points. These were analyzed using three different types of regression analysis, linear, logarithmic and power.

A.2.2.2 Model Equation Development

Prior to performing regression analyses, TABS examined the data to discover outliers or deviations. TABS identified one particular anomaly that prompted further examination. Three of the data points showed a school that had more authorizations than it had students. These three were the Aviation school, the ADA School and the School of the Western Hemisphere. TABS examined leaving all three out of the analysis; however, in an effort to include as much data as possible, only the Aviation school was treated as an outlier. Including the Aviation school drastically reduced the validity of the equation, whereas inclusion of the other two had little impact.

The equation chosen to model the size of a school based upon its student load is a power equation. The equation is as follows (where x = the student load):

$$\text{School size} = 5.28890x^{0.68594}$$

The data summary and scatter plots are shown in *figures 2-4*.

SCHOOL	STUDENTS	AUTHS	Predict	% Diff.
ADA	1354	1530	744	-0.51
ARMOR	8304	3883	2581	-0.34
AV LOG	1791	569	901	0.58
CAC	1894	1639	936	-0.43
CHAPLAIN	177	105	184	0.75
DLI	3255	1322	1358	0.03
FA	8240	2008	2567	0.28
INFANTRY	15003	3912	3872	-0.01
INTEL	3036	1818	1294	-0.29
MANCEN	17031	4109	4224	0.03
ORD MAINT	2948	969	1268	0.31
ORD MUN	910	507	566	0.12
CASCOM	5560	1832	1960	0.07
SGM ACAD	420	230	333	0.45
SIGNAL	4835	1976	1781	-0.10
SSI	18721	2768	4507	0.63
TRANS	990	634	600	-0.05
W HEMI	159	220	171	-0.22
WAR COLLEGE	508	454	380	-0.16
AVERAGES	5007	1604	1591	0.06

figure 2

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.94126				
R Square	0.88579				
Adj. R Square	0.87926	Power Regression Model			
Standard Error	0.36611				
Observations	19				
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig F</i>
Regression	1	17.70371	17.70371	132.08710	0.00000
Residual	17	2.27863	0.13404		
Total	18	19.98234			
Coefficients					
	<i>Coefficients</i>	<i>Standard Error</i>	<i>T</i>	<i>Sig T</i>	
Intercept	5.28890	2.48097	2.13200	0.04790	
STUDENTS	0.68594	0.05967	11.49300	0.00000	

figure 3

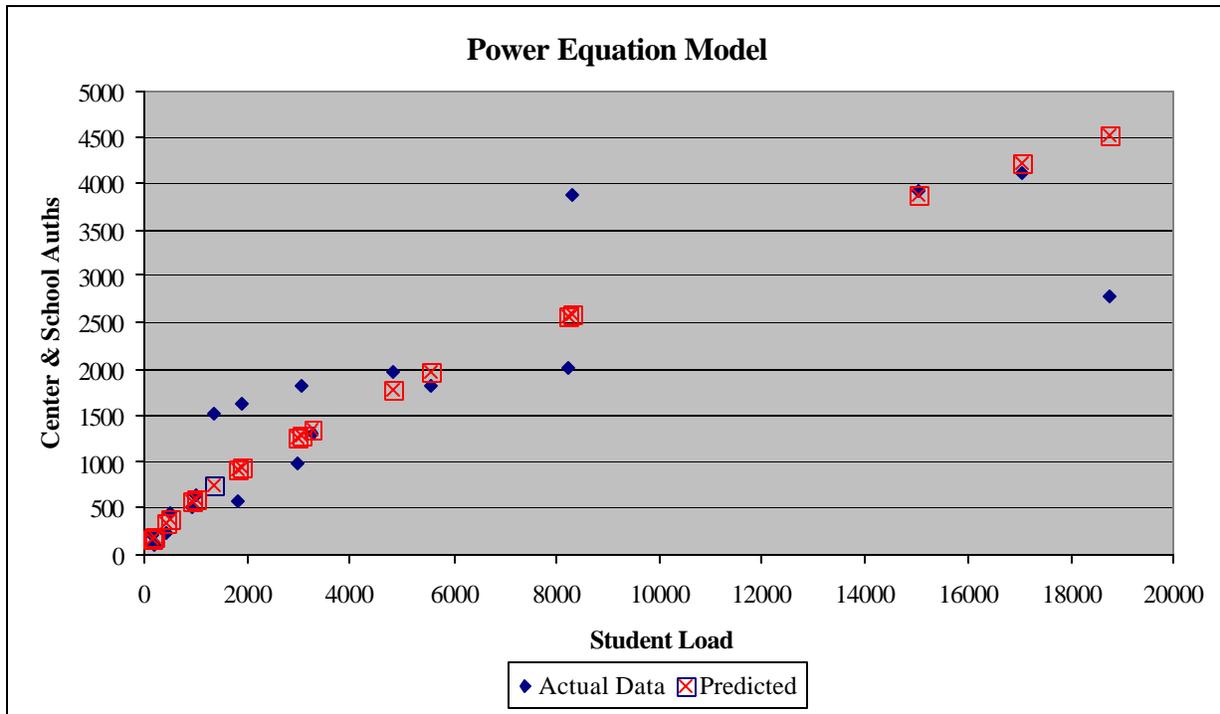


figure 4

The power equation was chosen over the others for the following reasons:

- The power equation had the highest R² value of those examined.
- The predicted values, on average, are only 6% larger than the actual school size.
- The model realizes “economies of scale”, which we expect within school scenarios.

- The equation has a zero intercept (i.e. the equation starts with a school size of zero when the number of students is zero).

A.2.2.3 Rejected Equations

The linear and logarithmic regression equations were both rejected in favor of a power equation. The data used to develop the equations, what each equation gives as a predicted size for the schools and the percent difference between actual and predicted sizes are shown in *figure 5*.

SCHOOL	STUDENTS	AUTHS	LINEAR		LOGARITHMIC	
			Predict	% Diff.	Predict	% Diff.
ADA	1354	1530	917	-0.40	1199	-0.22
ARMOR	8304	3883	2225	-0.43	2609	-0.33
AV LOG	1791	569	999	0.76	1417	1.49
CAC	1894	1639	1018	-0.38	1460	-0.11
CHAPLAIN	177	105	695	5.62	-383	-4.65
DLI	3255	1322	1275	-0.04	1881	0.42
FA	8240	2008	2213	0.10	2603	0.30
INFANTRY	15003	3912	3487	-0.11	3069	-0.22
INTEL	3036	1818	1233	-0.32	1827	0.00
MANCEN	17031	4109	3869	-0.06	3167	-0.23
ORD MAINT	2948	969	1217	0.26	1804	0.86
ORD MUN	910	507	833	0.64	890	0.76
CASCOM	5560	1832	1709	-0.07	2297	0.25
SGM ACAD	420	230	741	2.22	289	0.26
SIGNAL	4835	1976	1572	-0.20	2188	0.11
SSI	18721	2768	4187	0.51	3241	0.17
TRANS	990	634	848	0.34	956	0.51
W HEMI	159	220	692	2.15	-466	-3.12
WAR COLLEGE	508	454	757	0.67	437	-0.04
AVERAGES	5007	1604	1605	0.59	1604	-0.20

figure 5

A.2.2.4 Linear Regression Results

A summary of the linear regression results and a scatter plot of the school size vs. the student load are shown in figures 6 & 7 below. Also shown on the scatter plot are the linear regression equation predicted values.

SUMMARY OUTPUT						
<i>Regression Statistics</i>						
Multiple R	0.86133					
R Square	0.74188					
Adj. R Square	0.72670					
Standard Error	670.70772					
Observations	19					
LINEAR Regression Model						
<i>ANOVA</i>						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig F</i>	
Regression	1	21980388.46470	21980388.46470	48.86172	0.00000	
Residual	17	7647430.27214	449848.83954			
Total	18	29627818.73684				
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	661.56237	204.62680	3.23302	0.00489	229.83755	1093.28719
STUDENTS	0.18831	0.02694	6.99012	0.00000	0.13147	0.24515

figure 6

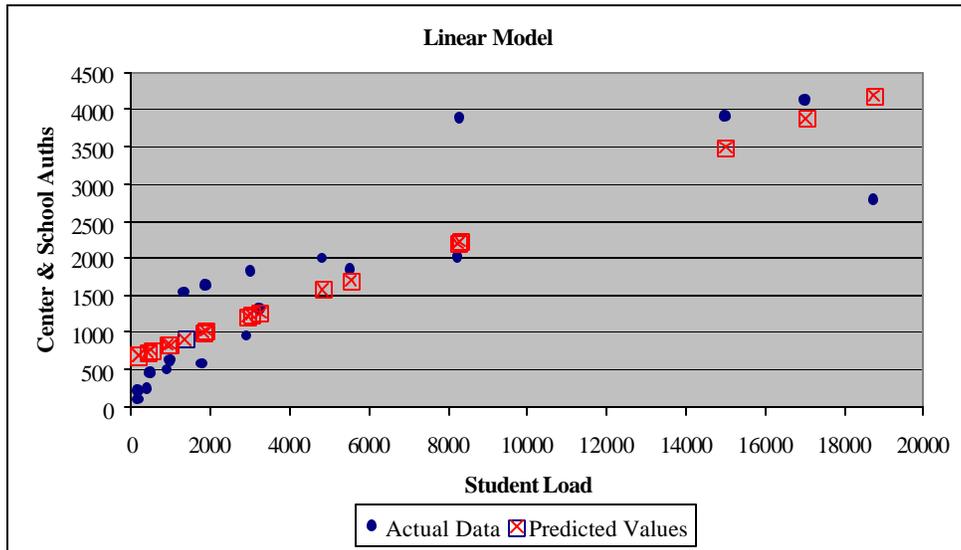


figure 7

The linear model was rejected for the following reasons:

- On average the equation predicted values that were 59% larger than the actual school sizes.
- The standard error was bigger than 7 of the 19 schools in the data.
- The R² value was lower than the power model.
- A linear model does not realize any “economies of scale”

A.2.2.5 Logarithmic Regression Results

A summary of the logarithmic regression results and a scatter plot of the school size vs. the student load are shown in figures 8 & 9 below. Also shown on the scatter plot are the logarithmic regression equation predicted values.

SUMMARY OUTPUT					
<i>Regression Statistics</i>					
Multiple R	0.87601				
R Square	0.76739				
Adj. R Square	0.75307				
Standard Error	636.71001				
Observations	19				
LOGARITHMIC Regression Model					
ANOVA					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Sig F</i>
Regression	1	22736024.90000	22736024.90000	56.08299	0.00000
Residual	17	6891793.80000	405399.60000		
Total	18	29627818.70000			
<i>Coefficients</i> <i>Standard Error</i> <i>T</i> <i>Sig T</i>					
Intercept	-4406.21614	815.80143	-5.40100	0.00000	
STUDENTS	777.34510	103.80022	7.48900	0.00000	

figure 8

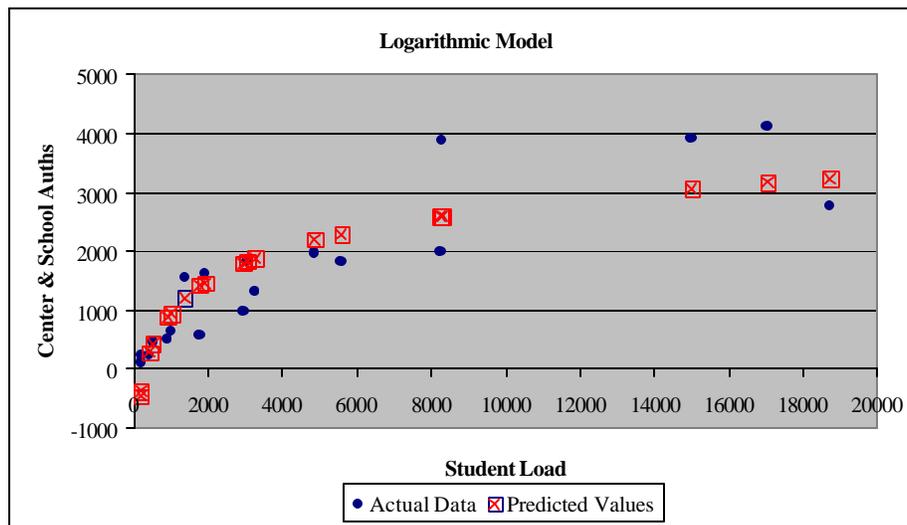


figure 9

The linear model was rejected for the following reasons:

- On average the equation predicted values that were 20% smaller than the actual school sizes.
- The standard error was bigger than 7 of the 19 schools in the data.
- The R^2 value was lower than the power model.
- For any school with less than 290 students (2 of the 19), the equation gives a negative number of authorizations.

A.2.3 Other Considerations and Model Application

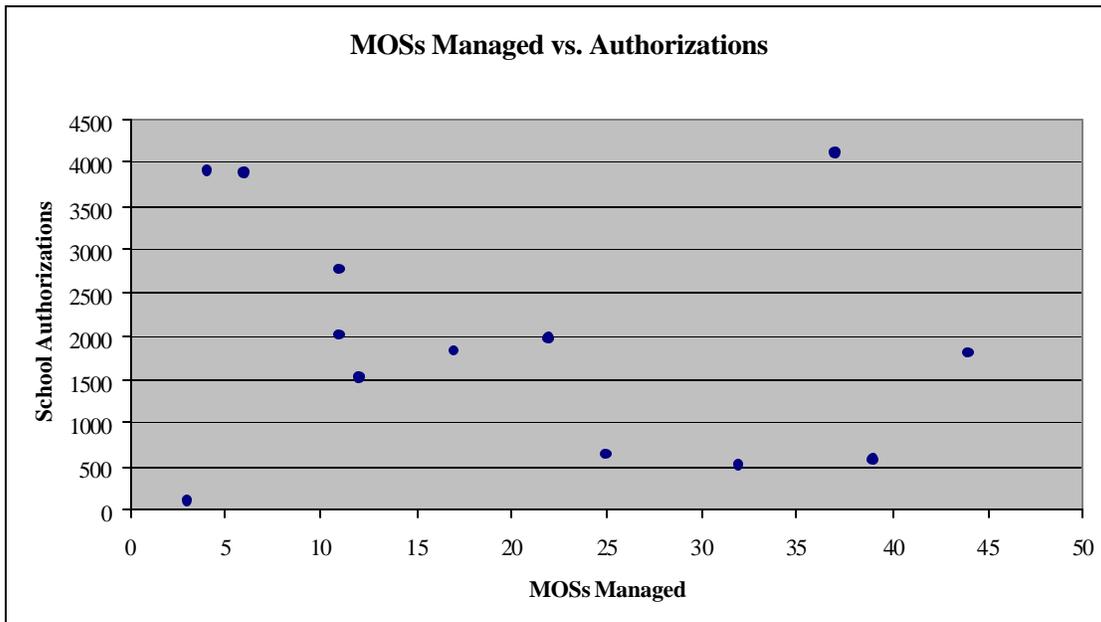
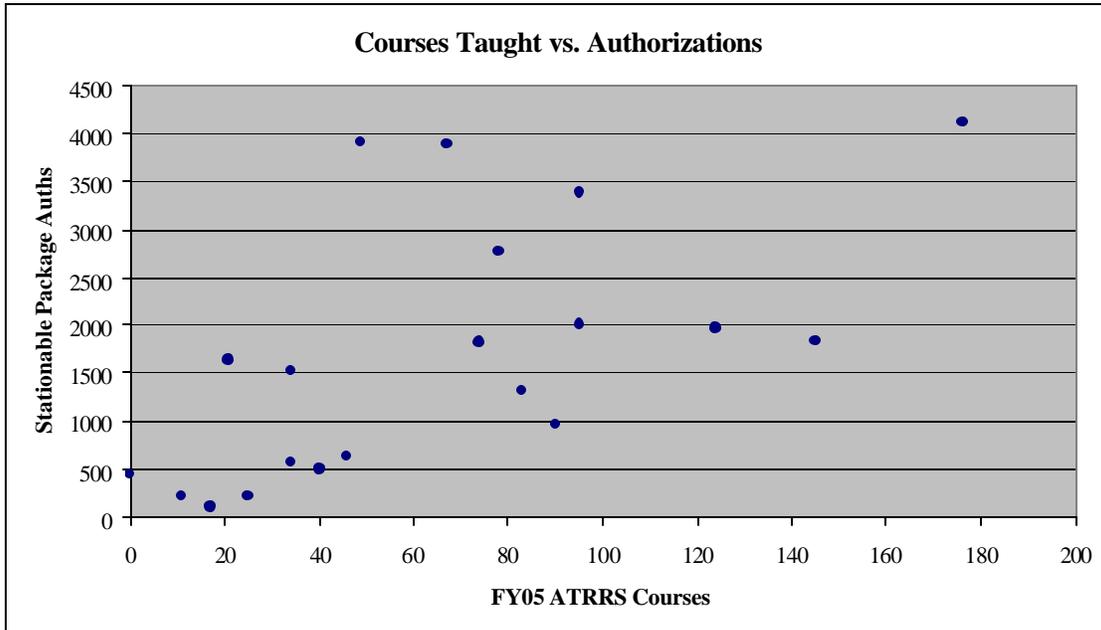
Traditional uses of regression analysis dictate that a value for the independent variable be input to the equation and the result is the expected value of the dependent variable. The power equation developed for this model is not used in that manner. Since each school contains different functions, teaches different subjects, and has varying levels of non-instruction related staffing, TABS included another step in the actual application of the equation. The equation is used as a predictor of the rate that economies of scale are realized at a school. When consolidating two schools the equation is used to identify the percent that the single consolidated organization is, of the sum total of the two original organizations. The model is applied in the following steps:

1. Apply the equation to each of the individual schools to obtain predicted values for the size of each individual school. Call these values p_1 and p_2 .
2. Apply the equation by inputting the sum of the student loads of the two schools. The result is then the predicted value of the consolidated organization, p_C .
3. Obtain the percent that p_C is of $(p_1 + p_2)$. Call this value x . So, $x = \frac{p_C}{(p_1 + p_2)}$.
4. Now apply this percentage to each of the two actual school sizes to get each of their contributions to the new resultant school. So if a_1 and a_2 are the actual sizes of the two schools, the estimated size of the new consolidated organization S_N is:

$$S_N = xa_1 + xa_2$$

A.3 OTHER ANALYSES

The TABS group also looked at developing equations using the number of MOSs that a school manages and the number of courses that a school teaches to predict the authorized strengths. These both proved to be statistically invalid. Figure 10 and figure 11 below show the scatter plots using these two pieces of information. Both charts make it easy to see the lack of correlation. Further, the number of MOSs managed was not useable because not all schools manage an MOS.





DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
INSTALLATIONS AND ENVIRONMENT
110 ARMY PENTAGON
WASHINGTON DC 20310-0110

21 MAR 2005

MEMORANDUM FOR RECORD

SUBJECT: Manpower savings determination in the Army BRAC process

1. One of the goals of BRAC 2005 process is to identify opportunities to improve the efficiency of Army operations. These efficiencies are realized through BRAC recommendations that seek to fulfill transformational objectives and provide better methods of training, centralization of management functions, and elimination of redundant processes. These recommendations impact on Army operational capabilities and the value of military organizations and installations.
2. One of the most tangible impacts is the effect of BRAC recommendations on Army manpower. Recommendations that improve efficiencies will often realize a savings in personnel and estimating the extent of those savings becomes an integral part of determining cost impacts.
3. The BRAC process is a very intense analytical process that does not provide the resources or time necessary to conduct full manpower analysis of each of the recommendations put forth. The three Services, DoD, and the Joint Cross Service Groups use a variety of methods to address manpower savings.
4. The Army developed a detailed methodology for determining manpower savings when assessing Base Operations impacts, and when consolidating organizations (see attachment). In the absence of full manpower studies, I certify that the methods used by The Army Basing Study (TABS) Group are analytically sound and provide quality estimates of savings that are likely to be achievable during implementation of BRAC initiatives.


Jay D. Aronowitz
Director
U.S. Army Manpower Analysis Agency

Attachments: As stated

W. PRIORITIZATION PROCESS

W.1 INTRODUCTION

A set of scenarios that gives the best overall military value based on the MVI and other analysis outputs, is referred to as an Option. Options that receive final approval by the DASA (IA) are forwarded to the BRAC Senior Review Group (BRAC SRG) for approval. TABS developed a process to prioritize packages of TABS scenarios into Options for senior leadership.¹

The Option Determination and Evaluation Model (ODEM) illustrated below, is an optimization-based multi-objective decision analysis (MODA) model that will assist TABS in the scenario-packaging process. The ODEM approach is analogous to the MVI approach used early in the TABS analytical process to determine an installation's MV.² ODEM prioritizes BRAC scenarios using a set of attributes, many of which TABS uses to evaluate installations within other TABS models. In fact, TABS scenarios are products of multiple analyses that are conducted during the scenario analysis process. The following figure illustrates the steps necessary to develop TABS scenarios that lead to Options that provide high *Military Value*.

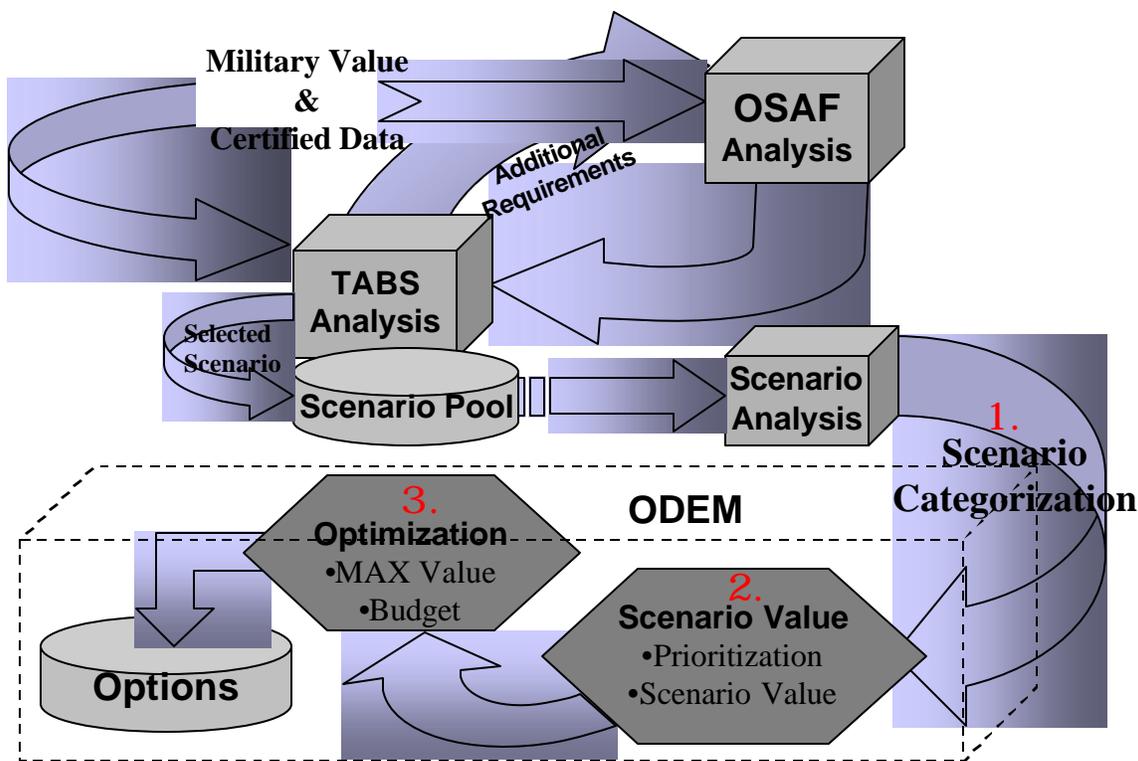


Figure 1: ODEM Option Generation Process

¹ As defined earlier in the TAF, scenarios are groups of stationing actions (SA) that may influence two or more installations.

² Although the ODEM and MVA are both MODAs, they contain significant differences, which are detailed in their respective documentation.

After all scenarios have been analyzed, they are categorized to ensure that the SAs contained within separate scenarios are mutually exclusive (Step 1), i.e., scenarios that have SAs within the same units are not independent; they must be identified and cannot be combined within one Option.

For an example of Step 1, assume we have Case 1 in Table 1; Scenario A contains three SAs – A1, A2, and A6 (stationing actions impact unit 1, unit 2, and unit 6 respectively), and Scenario B contains SAs B3, B4, and B5 (unit 3, unit 4, and unit 5). Because both scenarios are mutually exclusive (include different units), then they will be allowed to fall into the same Option.

	CASE 1		CASE 2	
Scenario A	A1		A1	
	A2		A2	
	A6			
Scenario B		B3		B3
		B4		B4
		B5	A5	B5

Table 1. Step 1 Example

Now suppose we change SA A6, contained within Scenario A, from affecting unit 6 to affecting unit 5 (now A5) as illustrated above as Case 2. Because Scenarios A and B both contain SAs that affect unit 5 (gray boxes above), then they must be segregated, i.e., not allowed within the same Option. Obviously, the same unit cannot be placed in the same Option, because we cannot place a unit at two different locations.

Once all scenarios have been reviewed for like SAs, the process proceeds to Step 2. The scenarios are evaluated using the ODEM value model.

W.2 MODEL

ODEM contains the same basic technical elements as the MVA, i.e., capabilities, missions, attributes, value functions, and weights. Value functions and weights are assessed using the same methodology as described for the MVA. The value functions for the ODEM attributes are based on the outputs of TABS analyses used to develop scenarios and any prioritization guidance from OSD.

Model’s Goal: Determine the highest-valued scenario

Model’s Capabilities and Attributes:

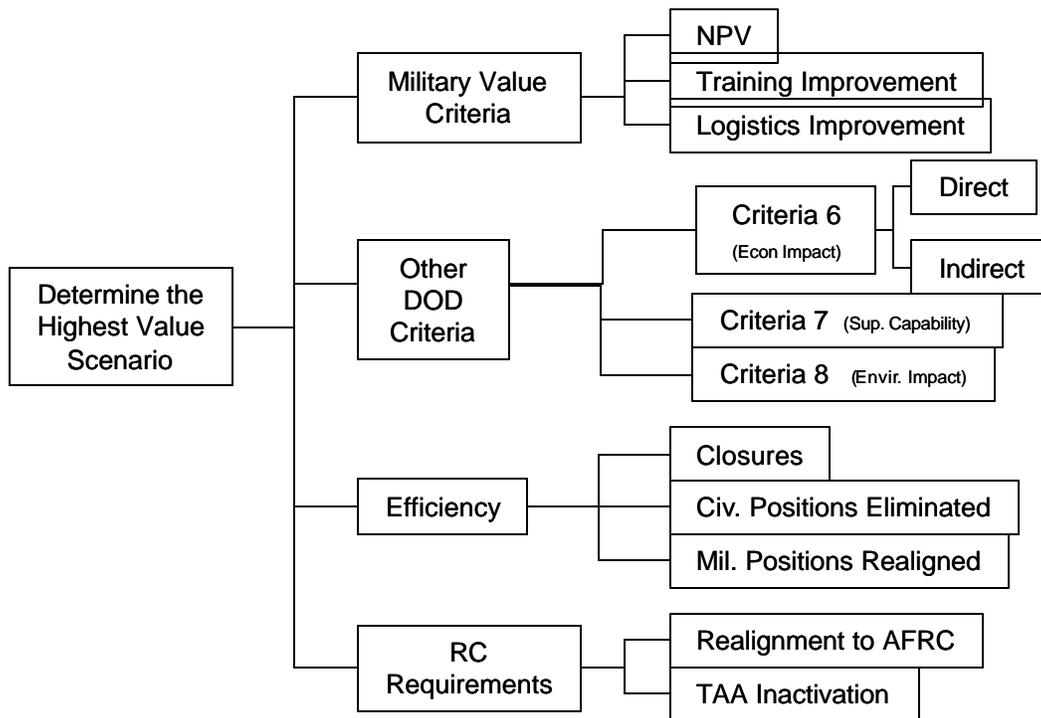


Figure 2. Capabilities and Attributes

The primary goal for ODEM’s second step is to determine the highest value scenario based on the attributes (far right of Figure 2) that support the capabilities listed above (Military Value, Other DoD criteria, Efficiency, and RC Requirements). Additional attributes may be added to the final model as necessary, e.g., OSD prioritization or requirements.

Each scenario receives a Scenario Value, which enables Step 3 in the process. The value is based on how each scenario contributes to the attributes above, which is analogous to evaluating an installation’s value within a MODA construct. In Step 3, scenarios are combined in such a manner to maximize the overall Option’s Military Value (the sum of the Scenario Values contained within the Option), while meeting a budget constraint. This method is analogous to solving a Capital Budgeting problem, where the different alternatives are optimized to maximize total value subject to a budget constraint. In all Options the model ensures that all scenarios are independent and therefore can be implemented, and the aggregate cost of all scenarios is less than the stated budget constraint (additional scenarios could be completed if schedule was considered).

TABS develops an efficient frontier of Options that are based on the implementation funds that are available. For example, TABS may be able to complete five scenarios with a billion dollars, 20 scenarios with two billion, 25 with three billion, etc. At each level of

dollars the chosen scenarios provide the best “value” based on the ODEM model and the scenario’s cost.

As additional scenarios are added to the scenario pool, Step 3 is repeated for different budget constraint values, which informs the DASA (IA), and the BRAC SRG which Options maximize total value for the given budget.

The ODEM model can also be used to conduct sensitivity analysis and explore impacts of changes in funding. For example, if a two billion dollar budget completes five scenarios, but one scenario is disapproved, the result may allow six scenarios for the same cost, but less value. With sensitivity analysis, TABS can determine what scenarios come out of or enter their optimal Option given additional dollars. In all cases, these sensitivities provide insights on optimal Options as well as assist with budget decisions.

W.3 SUMMARY

ODEM provides TABS a means to integrate scenarios into Options under different budget constraints and to examine sensitivities across different solutions. ODEM takes advantage of the MODA analysis TABS completed for MVI and ensures MVI is considered when integrating scenarios into Options. ODEM is flexible in that it examines Options at different budget constraints, can add new attributes as needed, and can examine sensitivities.

X. LEASED SPACE

X.1 INTRODUCTION

This appendix discusses the analytical approach used in BRAC 2005 to evaluate Army leased space. The Headquarters and Support Activities (HSA) Joint Cross Service Group (JCSG) reviewed the Army lease sites per a directive issued by the BRAC Infrastructure Steering Group (ISG). HSA deferred analytical responsibility for two of the Army lease sites: the Army JAG School to the Education and Training JCSG, and PEO STRICOM/Army Research Office to the Technical JCSG.

X.2 INVENTORY OF LEASE SITES

The Army BRAC 2005 study list contained 11 lease sites (later amended to 10) which were treated the same as Army installations under Army analyses. These sites were organized around particular organizations, or were geographical areas or office complexes that contained a number of Army activities, each of which leased their office space. To arrive at the leased activities that were in each site TABS began with a comprehensive list of all of the leases the Army manages. This list was grouped into the 11 Army leased sites after first reducing the list by removing many leased facilities from BRAC consideration. There were six categories of lease that were excluded from the list. The Army manages leases for several DoD activities, while these leases were evaluated by the HSA JCSG, the organizations in them were not Army so they were not included in the population of activities in the 11 Army leased sites. Several leases directly supported an installation, providing housing, storage or land. These sites were evaluated as part of the installations they supported. Other leases that were not considered part of the BRAC sites were overseas leases, Corps of Engineer organizations, Pentagon renovation space and leases that were required to support the local communities, such as Reserve Component activities or recruiting stations.

The list of all Army leases was developed through the HSA JCSG Capacity Data Call (CDC) question #462 (within 100 miles of the Pentagon) and CDC question #311 (outside 100 miles of the Pentagon). Responses to these questions provided the amount of Useable Square Feet and the number of personnel at each of the sites. The data call process also helped to identify those activities located in Pentagon renovation space. The HSA JCSG designated three major buildings as Pentagon Renovation space: Presidential Tower, Crystal City, VA; 1500 Wilson, Rosslyn, VA; and Rosslyn Plaza North, Rosslyn, VA. Many of the activities located in those buildings are scheduled to return to the Pentagon when renovation is completed; therefore, they are not being considered for alternative moves.

The original 11 leased sites were reduced to 10 during the analysis of proposals and scenarios because an activity in the Ballston lease site moved outside the BRAC process. This left the Army Legal Agency (originally a stand-alone leased site) as the only activity in the Ballston area, so the two were combined into one leased site. The 10 sites and the activities contained in them are shown in *table 1*.

Army Lease Site	Army Activity	Army Lease Site	Army Activity
ATEC	Army Test and Evaluation Command	Crystal City	Deputy Undersecretary of the Army (OR)
Ballston	US Army Legal Agency		Ofc Chief Army Reserve
ARPERCEN	HRC St. Louis		National Guard Bureau
JAG School	Judge Advocate General School		ASA M&RA ARBA/EEO
STRICOM	PEO STRICOM		Army Research Institute
ARO	Army Research Office		Army Safety Office
Bailey's Crossroads	Ofc of The Surgeon General		Army Environmental Policy Institute
	Army Audit Agency		Ofc Environmental Technology
	CFSC		G8 Force Development
	Army Contracting Agency		HRXXI
	Joint PEO Chem & Bio Def		Senior Executive PA Training
	Army Center for Substance Abuse Programs		Admin Asst to the Secretary of the Army
Hoffman Building	Ofc of The Surgeon General		NISA -P-D training/storage facility
	Space Deployment & Distribution Command		SAAA Defense Supply Store & POAC
	Army Contracting Agency E-Commerce		OSAA Defense Supply Service
	CECOM Contracting and Acquisition		Army G-3 AMSO
	Human Resources Command Alexandria		Installation Management Agency (IMA)
	SAAA Publications		NETCOM
	SAAA Defense Supply Store/Photo Svcs		Space and Missile Defense Command
	G1 Personnel Transformation		G6/DISC4
	G1 CPO		Ofc of the Chief of Chaplains
Rosslyn	Family Liaison Office		
	Def Telecommunications Svc		
	JTRS JPO		

Table 1

X.3 LEASE COSTING

Once the inventory of activities within the National Capital Region (NCR) was completed, the Army's Space and Building Management Office, part of the Office of the Administrative Assistant Secretary of the Army, provided TABS with the current cost of each lease that was being evaluated. For those activities outside the NCR, the Army data called individual activities using Army Capacity Data Call question #836.

This data provided a basis for analysis, however, when assessing the savings for vacating a lease the HSA JCSG did not use the current lease cost. The cost avoided when vacating a lease is the amount that the Army would have to pay in order to *renew* the lease. The renewal costs were estimated to include costs for various force protection improvements that would be necessary if the organization remained in leased space. The NCR cost avoidance for leased space was estimated at \$37.29 per gross square foot of space¹ and AT/FP improvement cost avoidances

¹ Gross Square Feet = 1.25 * Useable Square Feet

were estimated at \$28.28 per square foot. Lease cost avoidances in areas outside the NCR were estimated at varying rates depending on local commercial rental rates.

X.4 ARMY COORDINATION WITH HSA JCSG

The TABS analytical team coordinated extensively with the HSA JCSG about organizations in leased space and provided insight to HSA on which activities in lease space could be moved outside the National Capital Region and which organizations needed to remain inside the Region. Activities determined to be candidates for realignment outside the NCR were Commands, Field Operating Units, and Direct Reporting Units. Activities recommended by TABS analysts to remain within the 100 miles were HQDA staff and secretariat elements. The HSA JCSG reviewed and accepted TABS analysis.

X.5 RECOMMENDATION DEVELOPMENT & CONCLUSIONS

The HSA JCSG developed candidate recommendations along functional lines, evaluating Army leased-space activities and proposing realignment of these activities to owned space. Activities that could not be captured under a particular function consolidation or organizational co-location were rolled into a Miscellaneous Lease Space scenario, which moved the non-aligned NCR activities to an installation. TABS ensured that all activities within Army lease sites were included in HSA candidate recommendations to ensure the Army had the potential to close these sites. Seven of the 10 Army leased sites were closed by the various BRAC recommendations. The three that were not closed include the Bailey's Crossroads site (although only one organization was left in a leased facility), the Army JAG School and PEO Simulation, Training & Instrumentation Command (STRICOM).

APPENDIX Y. INTEGRATION

Y.1 INTRODUCTION

BRAC 2005 conducted functional analysis performed by Joint Cross Service Groups (JCSGs) as well as installation level analysis performed by the Military Departments (MILDEPs). To understand the total impacts on an installation and to avoid miscounting costs and savings, the recommendations from the seven JCSGs and the MILDEPs required extensive integration. The integration efforts consisted of three parts:

1. Allocation of cumulative installation impacts,
2. Elimination of duplicated actions, and
3. Packaging of recommendations.

During the development of BRAC recommendations, the MILDEPs and the JCSGs assessed the feasibility of each recommended action on its own merits. This meant that the costs and savings impacts of the proposals were analyzed as if all other stationing actions across the military were held constant. Once the MILDEPs and JCSGs had a firm list of candidate recommendations, the Services analyzed the cumulative impact of recommendations on each installation. Over 30 Army installations were impacted by more than one BRAC recommendation; capacity, use of excess space, housing availability, community facility requirements and other costs were reviewed at each location. Costs and facilities were then “allocated” to the recommendations that impacted that installation.

The three Services and seven JCSGs often had overlapping areas of analysis. Coordination between the 10 groups during the development stage minimized the number of conflicting recommendations (i.e. two recommendations moving the same unit to two different locations); This sometimes occurred due to the size and scope of the functions analyzed. This stage of integration also identified stationing actions that were contained in more than one recommendation. These duplications were eliminated in order to avoid double counting costs and savings associated with the action.

The third phase of integration was the packaging of recommendations. After recommendations were de-conflicted and installation costs accurately estimated, recommendations were examined and grouped into over-arching functional “packages”. This meant that recommendations in each package supported both each other, and one or more BRAC objectives.

Integration also supported analysis of both Army and JCSG recommendations. This included determining what and how recommendations impacted Army installations. Impacts were measured in terms of personnel, military construction (MICON), and financial impact (costs and savings).

Y.2 ALLOCATION PROCESS

The act of allocating installation cumulative costs and savings among recommendations was dependent on the identification of duplicated actions. Therefore, the allocation part of integration occurred in parallel with the identification phase of eliminating duplicated actions (see section 2.3). Once all the units and organizations moving to or from an installation were identified, the allocation of costs covered four main areas; required MILCON, shut-down square

footage, costs to improve installation infrastructure, and addition and reductions in base operations (BASOPS) personnel.

Y.2.1 MILCON Allocations

MILCON at Army installations falls into three types of facilities; core facilities (common organizational and unit required buildings), community facilities and specialized facilities. **Table 1** shows the actual facilities that fall in each category. The Real Property Planning and Analysis System (RPLANS) was used to determine core and special facility requirements for Army units. Requirements for other-Service and Defense units were determined by those organizations. Community facility requirements were determined based on the total population changes at an installation and were determined using TABS developed models. Specialized facility requirements were determined by the organizations involved and the BRAC entity that developed the recommendation. These three types of requirements represented the *demand* for space on an installation.

CORE Facilities		Community Facilities		Specialized Facilities
FAC Code	Facility	FAC Code	Facility	
1711	General Instruction Bldg	7361	Chapel	These facilities include unit or recommendation specific buildings that are not included in the Core or Community Facilities. These can include: <ul style="list-style-type: none"> • Laboratories • Reserve Centers • Prisons • Warehouses • Airfields • Simulators
1712	Applied Instruction Bldg	7349	Commissary	
1717	Organizational Classroom	7346	Exchange Sales Facility	
2111	Aircraft Maintenance Hangar	7421	Indoor Physical Fitness Facility	
2141	Vehicle Maintenance Shop	7371	Nursery & Child Care Facility	
6100	General Administrative Bldg	7417	Recreation Center	
6101	Small Unit Headquarters	5100	Hospital	
6102	Large Unit Headquarters	5400	Dental Facility	
7210	Enlisted UPH			
7213	Student Barracks			
7218	Recruit/Trainee Barracks			
7220	Dining Facility			
7240	Officer UPH			
8521	Vehicle Parking, Surfaced			

Table 1. Facility Types

The *supply* of space available for Core & Specialized facilities on an Army installation was determined using RPLANS. RPLANS also provided the flexibility to remove units from an installation prior to stationing other units to the same installation. This allowed the supply to be adjusted so that space vacated by departing organizations could be used by those moving onto the installation. The supply and demand for Community facilities was addressed using a series of regression models based on installation population (see section 2.2.1.3). The current supply of Core facilities at US Army installations, the current demand incurred by units on the installation, and the resultant excess (if any) was part of the Army capacity analysis. Capacity analysis is described more completely in The Army Section of the BRAC Report (Volume III), Appendix A.

Y.2.1.1 Use of Excess facilities

Prior to the integration process, the MILCON requirements in each recommendation contained allowances for excess space in various types of facilities. For example, if an installation had excess administrative space, this space was used to fill part (or all) of the administrative space requirement for the recommendation. This resulted in every recommendation, with an administrative space requirement, filling up the excess space before building the remainder of their requirement. To avoid this situation and assign each recommendation a fair and accurate amount of MILCON, the total requirement at an installation for each facility type was determined and the excess available at the installation was removed from the requirement (effectively filling the excess space). This left the amount of facilities that required new construction. The new construction requirement was then allocated among the recommendations that added personnel or functions to the installation.

This allocation method allowed every recommendation adding to an installation to share the available excess space. Upon actual implementation of the BRAC recommendations this will not actually occur since the needs of each organization being added to an installation will dictate the actual use of the excess space. The method does ensure that this space is only used once and it ensures that BRAC MILCON is not underestimated.

Y.2.1.2 Allocation of new construction requirements for Core Facilities

The new construction requirement for Core facilities at an installation was divided among the recommendations that added organizations or functions to that installation. This division of new MILCON to each recommendation was allocated according to the percentage of personnel the recommendation moved to the installation. The allocation used military added to the installation, civilians added, students added and the total population added to the post to allocate the various types of facilities. For example, the requirement for Enlisted Unaccompanied Personnel Housing was divided based on the military moved to the installation. This was because the civilians that move to an installation typically have no impact on the requirement for *Enlisted* housing.

In addition, if requirements for a particular Core facility were generated by only one of the recommendations impacting the installation, the entire MILCON requirement was allocated to that recommendation. Examination of recommendations prior to integration, demonstrated that a particular facility was constructed by only one of the recommendations. This did not mean, however, that such a recommendation generated all the facility requirements. It meant that only one of the recommendations had a large enough requirement to generate MILCON. Hence, the allocation of the MILCON may have spread requirements for a facility type to a recommendation that did not have to build that facility type prior to integration.

The population types used to allocate Core facility requirements are shown in *Table 2*.

FAC Code	Facility	Population Type
1711	General Instruction Bldg	Students
1712	Applied Instruction Bldg	Students
1717	Organizational Classroom	Students
2111	Aircraft Maintenance Hangar	Total Population
2141	Vehicle Maintenance Shop	Total Population
6100	General Administrative Bldg	Total Population
6101	Small Unit Headquarters	Total Population
6102	Large Unit Headquarters	Total Population
7210	Enlisted UPH	Total Military
7213	Student Barracks	Students
7218	Recruit/Trainee Barracks	Students
7220	Dining Facility	Total Military
7240	Officer UPH	Not constructed ¹
8521	Vehicle Parking, Surfaced	Total Population

Table 2. Core Facility Requirements

Y.2.1.3 Allocation of new construction requirements for Community Facilities

The Community Facilities on an Army installation were assessed differently than the other two facility categories. The RPLANS data base was used to determine the current supply of each type of facility at every Army installation. This supply was then analyzed against the total population of the installation and a regression equation was developed for each facility type. This set of equations was used to assess the demand for community facilities at each installation where the BRAC recommendations created a change in the installation population. A complete description of the models used by TABS to determine Community facility requirements is located in the main body of the TAF. Facility requirements were allocated based on the percentage of personnel that a recommendation moved to the installation. An allocation example can be found in section 2.2.1.5.

Y.2.1.4 Allocation of new construction requirements for Specialized Facilities

Facilities and buildings not included under the analyses of Core and Community facility were termed “Specialized” facilities. These building were specific to an organization or recommendation. An analysis of the required space and the availability of that type of space at an installation was included as part of the development of each recommendation (prior to integration). So the integration process only had to ensure that two recommendations did not use the same excess space for a special facility on a given installation. If not, then no change was required to the MILCON determined during recommendation development. The specialized facilities that were found in recommendations that touched Army installations are shown in *Table 3*.

¹ Officer Unaccompanied Personnel Housing is not constructed by the Army within the United States. The RPLANS requirements for these facilities were deleted from all recommendations.

FAC Code	Facility
1112	Rotary-Wing Landing Area, Surfaced
1122	Rotary-Wing Taxiway, Surfaced
1131	Aircraft Apron, Surfaced
1163	Aircraft Washing Pad, Surfaced
1404	Emergency Operations Center / SCIF
1714	Reserve Training Facility
1724	General Purpose Simulator Facility
2142	Vehicle Maintenance Shop, Depot
2144	Vehicle Maintenance Shop, Reserve
3101	RDT&E Laboratory
3102	Medical Research Laboratory
3111	Aircraft RDT&E Facility
3151	Weapons RDT&E Facility
3161	Ammunition, Explosive, and Toxic RDT&E Facility
3171	Electronic and Communication RDT&E Facility
3191	Miscellaneous Item and Equipment RDT&E Facility
3711	RDT&E Range Building
4421	Covered Storage Building, Installation
5500	Dispensary And Clinic
7110	Family Housing Dwelling
7312	Prison/Confinement Facility

Table 3. Specialized Facilities

Y.2.2 Allocation of shut-down square footage

The COBRA model contains an entry for the square footage of facilities vacated by an organization moving off an installation. This vacated square footage creates a monetary savings in the cost analysis by adjusting the sustainment and recapitalization costs for the installation. If BRAC recommendations affecting an installation created a net impact that required a smaller footprint than the installation previously supported, then square footage of facilities could be shut-down and a savings realized. Facilities could also be vacated if BRAC recommendations changed the types of facilities required to support the mission focus of the installation. The square footage of shut-down space was allocated across recommendations that removed organizations from the installation. Each of these recommendations was allocated a percentage of the total vacated square footage equal to the percentage of the total personnel the recommendation removed from the installation.

Y.2.3 Allocation of installation infrastructure improvement costs

Several other standard costs were allocated across BRAC recommendations. These costs were associated with improvements to an installation due to increases in base population or military construction. Costs included; utilities infrastructure improvements such as sewage, water and electrical connections to planned construction; upgrades to installation networks and communications systems; Residential Community Initiative (RCI) costs for contract housing; environmental studies costs such as, NEPA, Air Conformity, and Environmental Baseline studies; and outside-the-fence costs, which included road and land improvements. Utilities infrastructure costs were allocated based on MILCON allocations and were computed as

approximately 18% of the MILCON cost. Each recommendation was allocated a percentage of the infrastructure improvement costs equal to the percentage of the total personnel the recommendation added to the installation.

Y.2.3 Allocation of Base Operations personnel additions and reductions

The TABS office developed a non-linear model for estimating BASOPS personnel requirements. Because the model is non-linear (recognizes economies of scale) the impacts of individual recommendations could not be added together to get the net impact of at an installation. The net population change caused by the recommendations was inputted in the model and the result was allocated amongst the recommendations. If the net population change at an installation was an increase in population, each of the recommendations were allocated a percentage of the required BASOPS equal to the percentage of the total personnel the recommendation added to the installation. If the net population change at an installation was a decrease in population, each of the recommendations were allocated a percentage of the BASOPS reduction, equal to the percentage of the total personnel the recommendation removed from the installation.

Y.3 ELIMINATION OF DUPLICATED ACTIONS

This stage of integration was a process of review and de-confliction. The process identified recommendations that moved units or functions to two or more places by different JCSGs and/or MILDEPs. For example, medical research could be addressed by both the Medical JCSG and the Technical JCSG. The integration process also sought to ensure that stationing actions from overlapping scenarios were only contained in one of scenario. This most often occurred when recommendations closed an installation since closures require every BRAC organization on the installation to be moved to a new location. While the actual closure would be an Army recommendation, a JCSG has to move (i.e. realign) a unit/function from that installation as part of its supporting recommendation. The integration process, in turn, placed that particular move into only one of the two recommendations to avoid double-counting of costs or savings.

To resolve conflicting stationing actions, BRAC groups analyzing the action were coordinated with to determine which action would take precedence, and which recommendation would move the unit. Where a closure recommendation had overlapping actions with another scenario, the closure took precedence for containing the action. Any other recommendations that overlapped were simply coordinated with the analyzing groups to ensure the action was only contained in one recommendation.

Y.4 PACKAGING STAGE

Packaging relates to how the recommendations are presented; It is the process of grouping recommendations together in order to support each other. The groups could be functionally aligned, such as recommendations that impact the same function on several different installations, or they could be aligned by installation. Additionally, packaging could be in terms of the report (i.e., within a Service or JCSG section of the report) in order to capture organization of recommendations by state, strategic theme, or public affairs areas.

The packaging effort did not look to combine recommendations, but the process did sometimes result in a set of recommendations being integrated into a single recommendation in which the justification and other documentation supported the accomplishment of the whole. At other times, the packaging was expressed in a way that supported a specific Army objective or strategic theme. The goal of the packaging effort was to ensure that Army BRAC recommendations had synergies and impacts that supported each other, and that the set of recommendations is a whole product, not a collection of disparate entities.

Y.5 ANALYSIS SUPPORT

Each recommendation submitted by the JCSGs and the MILDEPs was reviewed to determine the recommendation's impacts on Army Installations. If a recommendation impacted multiple services and/or installations, the recommendation was analyzed for impacts at the installation level and the Army only costs and savings were estimated to determine impacts on the Army's overall budget.

The COBRA model provides personnel impacts and military construction (MILCON) at an installation level. It does not provide service specific costs and savings resulting from the recommendation's actions. Army specific costs and savings were estimated by calculating the percentage of Army personnel impacted by the recommendation and multiplying the costs and savings in the recommendation COBRAs by the percentage of personnel. Where the Army was a host installation and no Army personnel were involved in the recommendation, no costs or savings accrued for the Army.

The personnel and MILCON impacts were used to determine the recommendation's environmental impact. Additionally, the cumulative personnel and MILCON impacts on an installation were determined and used to develop installation cumulative environmental impacts.

Z. ARMY DESIGN CONSTRAINTS

This appendix describes the Army’s BRAC 2005 design constraints, their development, and role in the analytical process. Design constraints are defined as the physical assets, such as maneuver/range space and building space, needed to support the Army’s force structure. They also include those capabilities and relationships that have an impact on physical infrastructure or assets. The constraints represent the minimum requirements that TABS must adhere to ensure that the final portfolio of Army installations can satisfy specific unit requirements. As such a key factor in the final portfolio, Army design constraints helped drive the Military Value Portfolio (MVP).¹

Each analyst had access to the Army design constraints and used them to help guide his or her analysis. Specifically, design constraints were used in capacity, military value, OSAF, and scenario analyses.

The Army developed design constraints within the following categories—Operational Army, Institutional Army, Industrial Base, and Environment. The constraints applicable to each category are described below.

Z.1 OPERATIONAL ARMY

Operational design constraints consist of the following categories:

1. Physical assets
 - a. Unit structure
 - b. Range requirements documented in RPLANS (type, days)
 - c. Special ranges not in RPLANS (e.g., UAV, airspace, live fire, test ranges)
 - d. Maneuver land (acres and acre-days)
2. Portfolio capabilities
 - a. Stationing of up to 48 Maneuver Brigades
 - b. Stationing of up to 16 Support and/or Maneuver Enhancement Brigades
3. Relationships
 - a. Stationing a Brigade and its support UAs together (UEs and others can be independent)
 - b. Command/support relationships with other units (need to station together)
 - c. Proximity to other units (possible command relationships)

Many of the Army’s recent initiatives impact the requirements for facilities, training, leader development, mobilization, health care, and other key activities associated with stationing. The Army developed the Army Campaign Plan to further define these initiatives. The primary drivers for BRAC analysis are the Army’s transformation to modular structures and the Integrated Global Positioning and Basing Strategy (IGPBS).

To address the impacts of these two initiatives, TABS worked with the office of the Army Deputy Chief of Staff for Operations (G3) to develop “*Army BRAC: Implications of Current Initiatives.*” This document outlines the assumptions, imperatives, design constraints, and transformational options for the stationing of Army forces that will be necessary to successfully execute BRAC 2005 analysis.

¹ See Book III of Volume VI of the Army BRAC Report.

The *Initiatives* document was completed in June 2004; however, many of the critical decisions that impact Operational Army design constraints were not made prior to June. TABS analysts continued to work with the Army G3, primarily the force management and training directorates, to consolidate and revise the design constraints. TABS presented the initial set to the BRAC Army Senior Review Group (SRG) on 16 July 04. Subsequent decisions on modularity required revision to the design constraints. The final set incorporated the latest changes in Operational Army Force Structure and revised training requirements for Heavy, Infantry, Stryker, and Support brigades.

The document was coordinated with the Army Staff (ARSTAF) principals who are members of the BRAC SRG and submitted to the Vice Chief of Staff, Army for final approval.

The Operational Army Design Constraints served as inputs to the Optimal Stationing of Army Forces (OSAF) model. They also provided analysts with additional tools that, when applied with military judgment, formed the genesis for Operational Army stationing proposals. The final, VCSA-approved Operational Army Design Constraints are attached.

Z.2 INDUSTRIAL BASE

The Army developed design constraints for the analysis of the industrial base. These constraints consisted of the following categories:

- Munitions Production
- Ammunition Storage
- Depot Maintenance
- Supply and Storage
- RDT&E Mission Diversity

Z.2.1. Munitions Production

Ammunition functions include production, maintenance, storage and demilitarization (demil) of munitions. Within these, demil has traditionally had the lowest overall priority. Production and maintenance are critical to having the right ammunition on hand and storage is the key to having it in the right place.

Most ammunition installations perform more than one of these processes. Ammunition activities should be retained based on how they support the munitions processes starting with production, then maintenance, storage and demil until each of the process requirements are met.

As each installation is retained for its primary process, an inventory of its other munitions processes must be made so that this additional capability can be applied against the related munitions process requirement.

The Army developed several minimum requirements for Munitions Production – 50 percent of all explosive process capabilities, one of two metal-part installations, and 21 of 49 LAP processes.

Z.2.2. Ammunition Storage

The Ammunition Storage minimum capacity requirements are 85 percent of the ammunition storage on hand. The Industrial JCSG has determined the Army requirement for square feet to support future requirements.

Z.2.3 Depot Maintenance

The minimum requirement for depot maintenance must meet the 10 U.S.C. 2464(a)(2) requirements to complete core requirements using government owned and operated facilities, equipment, and personnel. The current core requirement for FY 05 is a total of 13.4 million direct labor hours (DLHs) distributed across 5 maintenance depots.

The 13.4 M DLHS can be surged to 21.4 M DLHs by expanding the work week to 6 days at 10 hours per day during wartime.

In periods of Peace, the minimum Core capability can meet the average workload requirement while keeping essential infrastructure, skills, and equipment operational.

For the fiscal years 2003 – 05 the average workload was 13.7 M DLHS. Overtime and additional shifts can be used to cover small and periodic shortfalls in core capacity.

The minimum requirement for the maintenance was set at 85 percent of the direct labor hours (DLH) on hand, and the production requirement was set at 62 percent of the DLH on hand. This production constraint was based on an actual usage rate of 36 percent.

Z.2.4 Supply and Storage

The Army established a minimum requirement for Supply and Storage (S&S) capacity at 85 percent of S&S square footage on hand.

S&S capacity is based on several factors. These factors are:

1. Quantity of inventory computed as the cubic feet of supplies.
2. Characteristics of storage facility include cubic feet. Consideration must also be given to stacking height, floor capacity (length and width), and structural clearances.
3. Equipment capabilities—Vertical storage space may be restricted due to the restrictions on equipment capabilities.
4. Commodity characteristics—Stacking heights are influenced by the characteristics of the materiel or its packaging. These factors may limit the stacking to the height available in open or covered storage. The commodity characteristics must be considered in determining whether the gross cube available of a storage area can be filled.

Taking these key factors into consideration, it is evident that storage capacity in a covered storage facility will never equate to 100% of the physical dimensions of the facility, length, width, and height. In addition, space should be reserved for support of supply and storage operations. This space or “elbow room” includes space used for receiving, shipping, preservation and packing, inspection and identification, packing, box shop, assembly, offices, MHE parking areas, battery charging stations, employee rest rooms, locker rooms, etc. It also provides for space allowed for operational flexibility to minimize the continuous relocation of stocks to fit additional receipts into storage

locations. This “elbow room” should be limited to the absolute minimum for effective storage capacity. The Joint Service Manual on Storage and Materials Handling, TM 38-400 states, “fifteen percent of the net available space is considered an adequate allowance for “elbow room” for general supplies.” Therefore, 85 percent of the net available storage space in a covered storage facility is considered one hundred percent maximum storage capacity.

Z.2.5 RDT&E Mission Diversity

The Army’s minimum requirement for RDT&E Mission Diversity is to maintain, at a minimum, one of each location that has the ability to satisfy each of the 13 RDT&E missions.

Z.3 INSTITUTIONAL ARMY

Design constraints for institutional training are defined as the physical classroom space needed to support training. The two categories of classroom space are:

- General instructional facilities
- Applied instructional facilities

In conjunction with TRADOC and G3, TABS determined the design constraints for both general and applied instructional facilities to be 90 percent of current requirements. The requirement balanced the potential for an increasing mission load against potential opportunities for efficiencies.

Z.4 ENVIRONMENT

Design constraints for environment are provided in appendix N in the TAF.

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