



Office of the Deputy Under Secretary of Defense

Installations

BRAC Knowledge Base

BRAC 1995

**Joint Cross-Service Group for
Economic Impact**

Volume II of IV

Meeting Minutes

**BRAC Knowledge Base
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BRAC Knowledge Base No. H9508

BRAC 95
JOINT CROSS-SERVICE GROUP
ON
ECONOMIC IMPACT

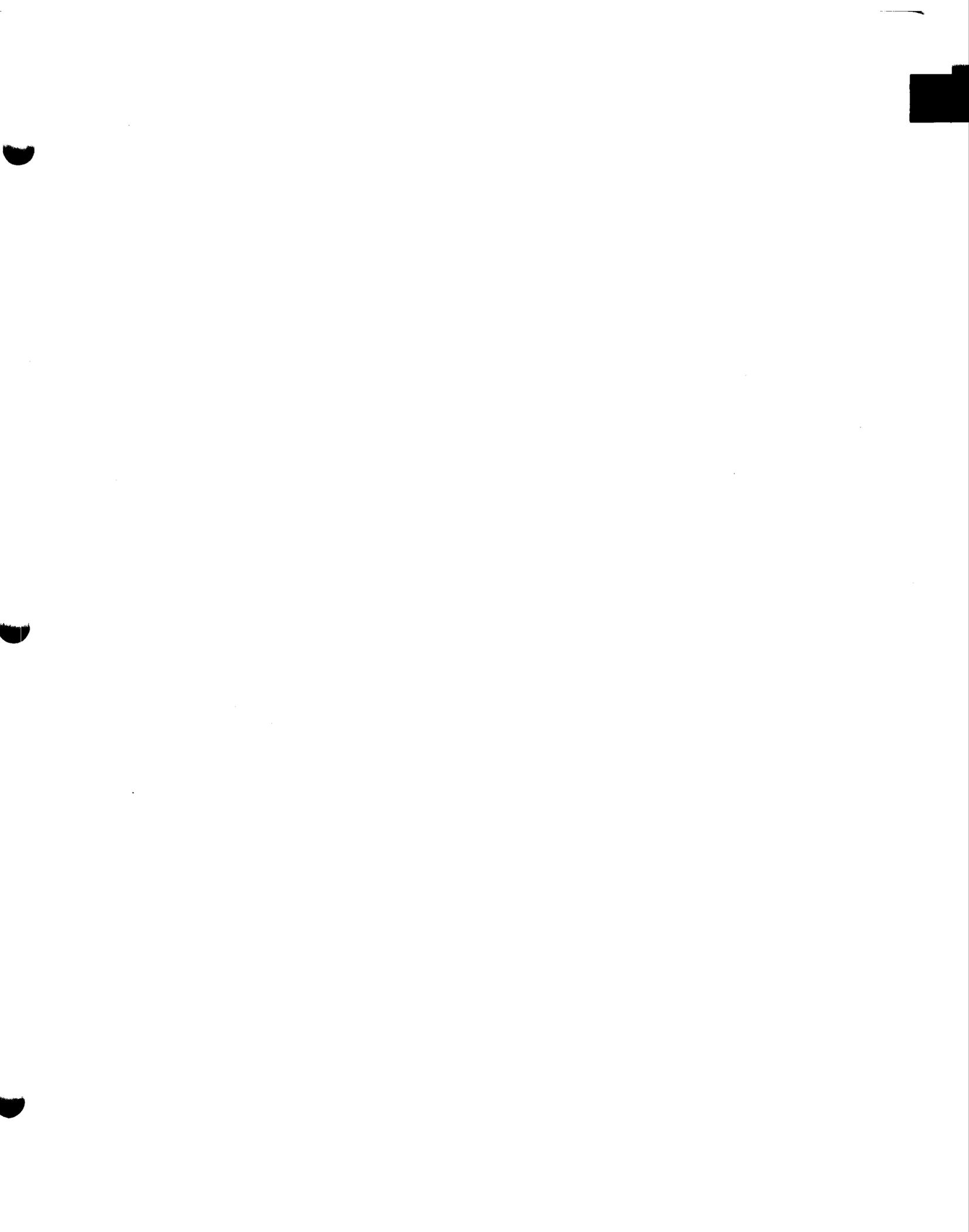
MEETING

MINUTES

BRAC 95
JOINT CROSS-SERVICE GROUP
ON
ECONOMIC IMPACT

MEETING MINUTES

<u>TAB</u>	<u>MEETING DATE</u>
1	January 11, 1994
2	January 13, 1994
3	January 25, 1994
4	January 27, 1994
5	February 10, 1994
6	March 2, 1994
7	March 22, 1994
8	April 5, 1994
9	May 2, 1994
10	May 27, 1994
11	November 10, 1994
12	December 19, 1994



BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

January 11, 1994

Minutes

The first Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(ER&BRAC), at 1600 hours on January 11, 1994 in Room 3E813, the Pentagon. The agenda and list of attendees are attached.

Mr. Bayer opened with remarks emphasizing the importance of the task at hand and an overview of the BRAC 95 process. A discussion immediately followed on the use of economic impact as a criterion for BRAC 95 noting that economic impact on communities is Criterion VI of the established DoD Base Closure Selection Criteria. The need to consider improvements in economic impact analysis and criticisms by the Defense Base Closure and Realignment Commission and the General Accounting Office were then reviewed. The dialogue continued with general comments on the possibility of using cumulative economic impact as a tool in the process, the type of data that might be needed, how to determine sources and consideration of existing analysis models.

Mr. Bayer then explained the roles of the senior level BRAC 95 Review Group, the BRAC 95 Steering Group, the Military Departments and the six Joint Cross-Service Groups.

Mr. Bayer continued by pointing out that the Group's charter is contained in the January, 3, 1994, memorandum from the Under Secretary of Defense for Acquisition and Technology (USD(A&T)) on 1995 Base Realignment and Closures. He stated that the Group's key tasks are to examine how economic impact and cumulative economic impact were used in previous BRAC rounds and develop standard measurements and methods for economic impact analysis for BRAC 95, including analysis of cumulative economic impact, if feasible. The Group's plan of action and milestones are due to the USD(A&T) by January 21, 1994.

At Mr. Bayer's request, representatives of the Military Departments briefly discussed how they had considered economic impact in BRAC 91 and BRAC 93. Discussion continued with Group consensus on the desirability of defining measures of merit and methodologies early in the process.

Mr. Berger distributed a draft plan of action and milestones (attached) for the Group to consider for future discussion. It was agreed that the Group should meet again on January 13, 1994.

There being no further matters to discuss, the meeting was adjourned at 1740 hours.

Approved:


Robert E. Bayer
Chairman

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

January 11, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Economic Reinvestment and BRAC)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Mr. Joe Cartwright, OEA
Mr. Paul Johnson, Army
MG John H. Little, Army
Ms. Maureen Wylie, Army
Mr. Charles Nemfakos, Navy
CAPT Brian V. Buzzell, Navy
CAPT Kevin Ferguson, Navy
Mr. Dave Wennergren, Navy
Mr. David Van Gasbeck, Air Force
Mr. Ken Reinertson, Air Force
Mr. Tom Harter, Air Force
Col Paul Thompson, OSD (Base Closure)
Mr. Bill Moore, LMI (Technical Assistance)

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Joint Cross-Service Group on Economic Impact

PLAN OF ACTION AND MILESTONES

Goal

The goal of the Joint Cross-Service Group on Economic Impact is to issue by March 31, 1994 guidance to the Military Departments and Defense Agencies on using economic impact as one of the criteria in the BRAC 95 process.

Membership

The Group will be chaired by the DASD(ER&BRAC) with members from each Military Department, the Office of Economic Adjustment, and other offices as considered appropriate by the DASD(ER&BRAC).

Process

The Group will work under the oversight of the BRAC 95 Review Group and BRAC 95 Steering Group.

The Group will review the use of economic impact, including cumulative economic impact, as a criterion in the previous base closure rounds; discuss and approve economic impact measures of merit and data elements to be used in BRAC 95; discuss and propose how to apply the economic impact measures of merit in BRAC 95; and draft, approve, and issue appropriate guidance.

To help safeguard the integrity of the entire BRAC process, the Group's work will be consistent with the letter and spirit of applicable laws and regulations. When appropriate, advice will be sought from the OSD General Counsel and DoD Inspector General. A designated member of the Group will prepare and circulate minutes from each meeting. The minutes will constitute the formal record of the Group's work.

Milestones

The Group shall submit to the USD(A&T) its plan of action and milestones by January 21, 1994 and shall issue its final guidance by March 31, 1994. Key milestones are displayed in the following table:

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Action	Deadline
Submit Plan of Action and Milestones to USD(A&T)	January 21, 1994
Review Use of Economic Impact in Earlier Base Closure Rounds	January 28, 1994
Agree on Economic Impact Measures of Merit for BRAC 95	March 4, 1994
Agree on How Economic Impact Measures of Merit Will Be Applied in BRAC 95	March 11, 1994
Circulate First Draft Guidance Memo	March 14, 1994
Circulate Second Draft Guidance Memo	March 21, 1994
Approve Final Guidance Memo	March 28, 1994
Issue Guidance Memo	March 31, 1994

Meetings

The Group shall meet at the call of the DASD(ER&BRAC) or his designed representative. In order to meet milestones, meetings are tentatively scheduled as followed:

Purpose of Meeting	Date
Kick-off Meeting Distribute Draft Plan of Action and Milestones	January 11, 1994
Approve Final Plan of Action and Milestones Receive Briefing on Economic Impact in Previous BRAC Rounds Receive Briefing on Options for Economic Impact Measures of Merit Task LMI for Further Analysis of Measures of Merit	January 20, 1994
Receive Status Report from LMI	February 11, 1994
Receive Status Report from LMI	February 28, 1994
Final Selection of Economic Impact Measures of Merit Discussion of Applying Measures of Merit	March 4, 1994
Final Selection of Method of Applying Measures of Merit	March 11, 1994
Discuss First Draft of Guidance Memo	March 16, 1994
Discuss Second Draft of Guidance Memo	March 23, 1994
Approve Final Guidance	March 28, 1994



BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

January 13, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Berger, ODASD(ER&BRAC), at 1605 hours on January 13, 1994 in Room 3E813, the Pentagon. The agenda and list of attendees are attached.

Mr. Berger opened with comment on Section 2925 of the FY 94 Authorization Act which requires a report if the base closure criteria are amended stating why they were amended and whether using other Federal costs was considered and if not why not.

Regarding contractor support, Mr Berger had consulted with legal counsel and further clarified the role of contractor support in the base closure process. A contractor may be used in a technical advisory role to the Group, but may not participate in BRAC process policy making or conduct analyses resulting in base closure and realignment recommendations. Decision making authority for base closure and realignment recommendations lies with the Secretary of Defense supported by the Secretaries of the Military Departments as established by law and DoD policy. Mr. Berger also emphasized the sensitivity of the documents and supporting data used to develop excursions and options as the DoD works toward final recommendations to the Commission. Preliminary documents and data should be considered "draft" and "Close Hold" and will be handled per law and DoD policy.

Mr. Wennergren led discussion on the proposed draft Plan of Actions and Milestones (attached) including the potential framework of the overall effort. The Group considered what would constitute a BRAC 95 recommendation specific economic impact and what tools exist to measure it. The Group also noted that the Navy and the Air Force had used the Economic Impact Forecasting System (EIFS) in the past. Discussion of the Office of Economic Adjustment (OEA) Spreadsheet noted that it was a simplistic spreadsheet and not a true model. The discussion turned to how to define cumulative economic impact and the consideration of developing some reasonable means to measure it. The concept of measuring cumulative economic impact over time was discussed. The Group noted that cumulative economic impact on a community is very dynamic and dependent on different variables (even the variables can change from community to community) many of which are not related to DoD policies or actions. Additionally, developing a model that can predict future economic conditions in any given community could prove to be beyond the capabilities of the DoD. The Group agreed that the Forest Service model should be considered for its potential use or as a point of departure. Mr Berger opined that the Group should also look at recent base closures to determine if any useful historical data could be gleaned from them.

The meeting moved on to the topic of total Federal, state and local government costs and whether any potential treatment would be only as a closure cost issue, as an economic impact issue, or as some combination thereof. Several considerations were raised including

CLOSE HOLD

the COBRA model being the accepted cost model for the BRAC process. Additionally, the Group noted that from a community impact perspective DoD closure actions may impact both local government operating revenues as well as expenditures and not necessarily in a negative way (e.g. local government expenditure savings). Concern was voiced that DoD does not control nor have vision into the numerous Federal, state and local operating policies and procedures which would drive assumptions for cost estimates. The Group agreed that this is one of several tough issues requiring further thought and consideration.

Mr. Berger introduced draft Principles for Discussion (attached) for consideration. The Group suggested ways to streamline and clarify the proposed principles, and Mr. Berger will continue to refine them.

The Group agreed they needed more understanding of what had been done in recent BRAC rounds with regard to economic impact analysis. Mr Berger tasked the representatives of the Military Departments to provide a presentation (at next meeting) on their BRAC 91 and BRAC 93 processes with regard to economic impact analysis. Additionally, the Logistics Management Institute (LMI) was tasked for technical assistance in searching for historical data on BRAC 88 and BRAC 91 closures and employment profiles at those locations. The Group will assess the information in an effort to better understand economic activity in closure communities. LMI will also search for data from the Defense Manpower Data Center (DMDC) about the disposition of DoD direct-hire civilians as a result of recent closures. LMI was also tasked to provide technical assistance in developing the first cut of an analytical framework for comparing economic models in order to give the Group a tool to help discriminate between the capabilities of different models.

There being no further matters to discuss, the meeting was adjourned at 1725 hours.

Approved:


Michael B. Berger
Acting Chairman

CLOSE HOLD

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

January 13, 1994

Key Attendees

Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Mr. Joe Cartwright, OEA
Mr. Don Manuel, Army
Ms. Maureen Wylie, Army
CAPT Kevin Ferguson, Navy
Mr. Dave Wennergren, Navy
Mr. David Van Gasbeck, Air Force
Mr. Ken Reinertson, Air Force
Mr. Tom Harter, Air Force
Col Paul Thompson, OSD (Base Closure)
Mr. Bill Moore, LMI (Technical Assistance)

Joint Cross-Service Group on Economic Impact

January 13, 1994

AGENDA

Draft Plan of Action and Milestones

Principles for Discussion

Briefings on Economic Impact in BRAC 93 and BRAC 91

Other Business

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Joint/Cross Service Group on Economic Impact

PLAN OF ACTIONS AND MILESTONES

Deadline

Action

21 Jan 1994 Submit Plan of Action and Milestones to USD(A&T)

Development of "Recommendation-specific" BRAC-95 Economic Impact Tools

28 Jan 1994 Review existing Economic Impact Models

- Receive briefings on OEA Spreadsheet, Economic Impact Forecasting System (EIFS) and any other models under consideration.

4 Feb 1994 Select Economic Impact Model(s) for BRAC-95 Use

- Choose primary economic impact model
- Analyze potential use of a secondary, corroborating economic model

11 Feb 1994 Identify any necessary improvements/enhancements to selected Economic Impact models

- Including a review of the potential utility of revising models to portray economic impact over time (as opposed to current, static portrayal of impact), e.g., taking into consideration mitigating offsets to short term job loss, economic recovery initiatives, other economic conditions, etc.

25 Feb 1994 Evaluation/development of a tool that will deal with economic impact in terms of costs to other Federal Agencies and State and Local Governments (revenue impacts, etc.)

Development of Cumulative Economic Impact Tools

15 Feb 1994 Review DoD Baseline of BRAC-88 - BRAC-93 Economic Impacts

15 Feb 1994 Begin analysis of potential options for calculating cumulative economic impact

- Cumulative impact of all proposed BRAC-95 actions
- Cumulative impact over time of all previous and proposed BRAC actions. This analysis will not focus on simply an accumulation of impacts, but rather, will be an examination of the impact of BRAC-95 proposed actions in light of both previous BRAC actions and subsequent changes in local economies (economic recovery initiatives, growth in other employment sectors, changing economic climate, etc.)

4 Mar 1994 Develop menu of options for analyzing cumulative economic impact

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PLAN OF ACTIONS AND MILESTONES (Continued)

Deadline

Action

11 Mar 1994 Select cumulative impact analysis process and identify standardized units of measure/data requirements

Preparation of Policy Guidance (analytical tools; units of measure)

14 Mar 1994 Prepare/circulate first draft of Guidance Memo

21 Mar 1994 Prepare/circulate second draft of Guidance Memo

31 Mar 1994 **Issue Guidance Memo**

Additional Tasks

14 Mar 1994 Identify standardized presentation tools/output requirements for consistent DoD-wide display of economic impact data.

- Portrayal of recommendations by Congressional District, Region of the Country, etc.
- Portrayal of DoD-wide totals
- Portrayal of Cumulative data over time, etc.

31 May 1994 Complete incorporation of enhancements/improvements (if any) to existing models. Complete development of any additional analytical tools.

30 Jun 1994 Update statistical data bases for economic models; complete testing and evaluation of model enhancements.

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January 13, 1994

Joint Cross-Service Group on Economic Impact

PRINCIPLES FOR DISCUSSION

The following principles are listed for the sole purpose of encouraging discussion. They have not been approved by the Group.

1. The Joint Cross-Service Group on Economic Impact seeks to identify measures of merit, data elements, and methodologies that will allow BRAC decision-makers to apply the economic impact criterion in a reasonable, fair, and consistent manner that complies with statutory and regulatory requirements.
2. Recognizing that there is a virtually unlimited potential for defining, conducting and improving economic impact analyses, achieving perfection is not a goal of the Group. Rather, the Group seeks to meet the standard identified in Principle #1 above.
3. The measures of merit, data elements, and methodologies used to assess economic impact should be easy to use and apply.
4. The measures of merit, data elements, and methodologies used to assess economic impact should be simple and straightforward, but not simplistic.
5. The measures of merit, data elements, and methodologies used to assess economic impact should be replicable and defensible.

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BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

January 25, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(ER&BRAC), at 1600 hours on January 25, 1994 in Room 3E813, the Pentagon. The agenda and list of attendees are attached.

Mr. Bayer began with comments on his expectations of the forthcoming Steering Group meeting scheduled for January 26, 1994, and the requirement for the Joint Cross-Service Groups to present their plan of action and milestones at that meeting. Therefore, a primary task for the Group at this meeting is to complete the review of its proposed plan of action and milestones and approve what will be presented to the Steering Group. Transitioning to the larger task at hand, Mr. Bayer offered that the Group should consider the possibility of developing tools that would allow both economic impact and cumulative economic impact to be appraised at the same time during the iterative analysis process versus waiting until near the end of the process to put a cumulative economic impact template over the proposed recommendations. The Group agreed that this issue deserves closer review.

Mr. Berger distributed the draft plan of action and milestones (attached) which had been refined as a result of inputs and comments at the last meeting. A lengthy discussion ensued as the Group reviewed the proposed plan. The Group noted the need to consider existing models with regard to both the user and the product. Some models may be too simple while others may be too complicated for either the user or the customer. A critical consideration in finding an existing model, developing a new model or modifying a model is that it be practical not only in terms of the user but also the output for the customer. The discussion of milestones highlighted the issue of timeliness (recency) of the data used to measure economic impact versus timeliness of data availability to support analysis for the base closure and realignment process. The Group discussed the concept of establishing a cutoff date for the data to be used with the possibility of an update later in the process. The problem of an update late in the process is that the effort could exceed the value added. The feasibility of conducting a sensitivity test on the approved analysis tools to determine the variance in output due to change in input data was discussed. Such a test could identify which input data elements are most sensitive with regard to change in the output of the analysis tools. Additionally, the Group talked about the need to consider methodologies and not just take a model perspective. At the conclusion of the review, the Group approved the plan of action and milestones with adjustments which Mr. Berger will incorporate.

With regard to broad policy issues which should be raised to the Steering Group at this time, Mr. Bayer opined, and the Group agreed, that such an issue is the question of treatment of non-DoD Federal costs. The issue is an important unknown which also requires a report to Congress.

CLOSE HOLD

Mr. Berger handed out the revised principles (attached) for reconsideration. Following a brief discussion, the Group adopted the principles as presented.

Ms. Wylie, Mr. Wennergren and Mr. Reinertson representing the Army, Navy and Air Force respectively each gave a short briefing on their Military Department's analyses of economic impact in BRAC 93 (briefing aids attached--Navy used none). Mr. Berger followed with a short talk on OSD treatment of cumulative economic impact (attached). Dialogue generated by the briefings included the potential of mitigation to economic impact of BRAC actions by non-BRAC economic actors, and possible mitigation of BRAC actions by adjustments to the implementation of a BRAC action. The Group also noted that the Air Force no longer maintains a contract for service from the Economic Impact Forecast System (EIFS).

There being no further matters to discuss, the meeting was adjourned at 1815 hours.

Approved: 
Robert E. Bayer
Chairman

CLOSE HOLD

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

January 25, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Economic Reinvestment and BRAC)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Mr. Bryan Jack, OSD (Program Analysis and Evaluation)
Mr. Joe Cartwright, OEA
Mr. Don Manuel, Army
MG John Little, Army
Ms. Maureen Wylie, Army
Mr. Joe Vallone, Army
CAPT Kevin Ferguson, Navy
Mr. Dave Wennergren, Navy
Mr. Ken Reinertson, Air Force
Mr. Tom Harter, Air Force
Col Paul Thompson, OSD (Base Closure)
Mr. Bill Moore, LMI (Technical Assistance)

Joint Cross-Service Group on Economic Impact

January 25, 1994

AGENDA

Discussion of Draft Plan of Action and Milestones

Identification of Broad Policy Issues

Briefings on Economic Impact Analysis in Earlier BRAC Rounds

Principles

Other Business

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JOINT CROSS-SERVICE GROUP ON ECONOMIC IMPACT

PLAN OF ACTIONS AND MILESTONES

<u>Deadline</u>	<u>Action</u>
21 Jan 1994	Submit Plan of Action and Milestones to USD(A&T)
04 Feb 1994	Complete Discussion of Broad Policy Issues <ul style="list-style-type: none">- Alter Economic Impact Criterion?- Roles of OSD and Military Departments in Analysis- Scope of Analysis- Mechanics of Analysis Process- Other Issues to be Identified By Group
11 Feb 1994	Approve Group Internal Control Plan for Data
Development of BRAC 95 Economic Impact Tools	
04 Feb 1994	Review Existing Economic Impact Models <ul style="list-style-type: none">- Receive briefings on BRAC 93 Spreadsheet, Economic Impact Forecasting System (EIFS) and any other models under consideration.
18 Feb 1994	Identify Economic Impact Model(s) for BRAC 95 Use <ul style="list-style-type: none">- Identify primary economic impact model<ul style="list-style-type: none">- To include cumulative economic impact of all proposed BRAC 95 actions and actions from BRAC 88, 91, and 93. Consider the feasibility of analyzing impacts of previous BRAC rounds <u>and</u> subsequent changes in local economies (economic recovery initiatives, growth in other employment sectors, etc.)- Discuss potential use of a secondary, corroborating economic model
25 Feb 1994	Identify Any Necessary Improvements/Enhancements to Selected Economic Impact Models <ul style="list-style-type: none">- Review the potential utility of revising models to portray economic impact over time (as opposed to current, static portrayal of impact), e.g., taking into consideration mitigating offsets to short term job loss, economic recovery initiatives, other economic conditions, etc.
04 Mar 1994	Determine the Feasibility of Analyzing Economic Impact in Terms of Costs to Other Federal Agencies and State and Local Governments (revenue impacts, etc.). If feasible, consider the contribution and cost-effectiveness of such data to the BRAC selection process.
Preparation of Policy Guidance (analytical tools; units of measure)	
14 Mar 1994	Prepare/Circulate First Draft of Guidance Memo
21 Mar 1994	Prepare/Circulate Second Draft of Guidance Memo
31 Mar 1994	Issue Guidance Memo

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PLAN OF ACTIONS AND MILESTONES (CONTD)

Deadline

Action

Additional Tasks

- | | |
|--------------------|---|
| 14 Mar 1994 | Identify Standardized Presentation Tools/Output Requirements for Consistent DoD-wide Display of Economic Impact Data. <ul style="list-style-type: none">- Portrayal of recommendations by locality, region of the country, etc.- Portrayal of DoD-wide totals- Portrayal of cumulative data over time, etc. |
| 31 May 1994 | Complete Incorporation of Enhancements/Improvements (if any) to Existing Models. Complete Development of any Additional Analytical Tools. |
| NLT
30 Jun 1994 | Update Statistical Data Bases for Economic Models; Complete Testing and Evaluation of Model Enhancements (if any) |

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January 25, 1994

Joint Cross-Service Group on Economic Impact

PRINCIPLES

1. The Joint Cross-Service Group on Economic Impact seeks to identify measures of merit, data elements, and methodologies that will allow BRAC decision-makers to apply the economic impact criterion in a reasonable, fair, and consistent manner that complies with statutory and regulatory requirements.
2. Recognizing that there is a virtually unlimited potential for defining, conducting and improving economic impact analyses, achieving perfection is not a goal of the Group. Rather, the Group seeks to meet the standard identified in Principle #1 above.
3. The measures of merit, data elements, and methodologies used to assess economic impact should be easy to use and apply; simple and straightforward, but not simplistic; auditable; replicable; and defensible.

CUMULATIVE ECONOMIC IMPACT IN BRAC 93

- ANALYSIS PERFORMED BY OSD AFTER THE SERVICES SUBMITTED RECOMMENDATIONS
- OSD DEFINED UNACCEPTABLE CUMULATIVE ECONOMIC IMPACT AS:
 - JOB LOSS GREATER THAN 5 PERCENT
 - ASSUMPTIONS
 - 3 PERCENT JOB LOSS "NORMAL CHANGE"
 - 5 PERCENT SUBSTANTIALLY MORE THAN 3 PERCENT
 - IN COMMUNITIES WITH EMPLOYMENT GREATER THAN 500,000
 - ASSUMPTION
 - ECONOMIC RECOVERY WOULD BE MORE DIFFICULT IN A LARGER THAN SMALLER AREA

GAO BRAC 93 REPORT CRITICIZED CUMULATIVE ECONOMIC IMPACT ANALYSIS

"It appears that OSD's standard of over 500,000 and over 5 percent is arbitrary. In discussions with officials from OSD, the Logistics Management Institute, the Office of Economic Adjustment, and the Department of Commerce, we were unable to validate the standard." (GAO/NSIAD 93-173, page 22)

GAO RECOMMENDATION

"We recommend that the Secretary of Defense... [e]stablish a supportable standard for assessing cumulative economic impact and review its process to make sure there is sufficient time to consider the results of these assessments." (GAO/NSIAD 93-173, page 25)

BASE CLOSURE AND REALIGNMENT COMMISSION ALSO CRITICIZED CUMULATIVE ECONOMIC IMPACT ANALYSIS

"Although DoD provided reasons for creating this standard, the Commission believed, and the General Accounting Office (GAO) concurred in its April 15 report, that this standard was arbitrary and discriminatory. The Commission was unable to validate why these exact figures of five percent and 500,000 were chosen as discriminators. Additionally, economic impact was just one of the eight criteria. The first four military-value criteria were required to be given priority consideration. To remove a base as a closure or realignment candidate based solely on cumulative economic impact in isolation of the military value criteria could be inconsistent with DoD's and the Commission's mandate." (Commission Report, p. 2-5)

COMMISSION RECOMMENDATION

"...the Commission recommends the Secretary of Defense make clear that cumulative economic impact alone is insufficient cause for removing a base with inadequate military value from consideration for closure or realignment. Economic impact should be given weight only when analyzing candidate bases with comparable, sufficient military value. The Commission recommends, in assessing cumulative impact, clarifying and standardizing geographic areas of measurement." (Commission Report, p. 2-5)

POINT PAPER ON AIR FORCE SOCIOECONOMIC
ANALYSIS APPROACH AND METHODOLOGY FOR BASE CLOSURES

(Does not include OSD-Wide Employment Impact Analysis)

General Background:

- Done for 100 or so Air Force, Air National Guard, and Air Reserve bases subject to 10 USC 2687
- Air Force analysis used latest available Economic Resource Impact Statement (ERIS) for inputs and the Economic Impact Forecast System (EIFS) for outputs and analysis

Basic Approach:

- EIFS was developed by U.S. Army Corps of Engineering Research Laboratories (CERL) at Champaign-Urbana in the mid-70's and Air Force and other agencies have used it for various analyses
- EIFS is operated on a contractual basis for CERL by the Department of Urban and Regional Planning at the University of Illinois at Champaign-Urbana
- EIFS submodels draw on county-unit information provided on a continuing basis from the Bureau of Economic Analysis and the Bureau of the Census of the U.S. Dept. of Commerce, the Bureau of Labor Statistics of the U.S. Dept of Labor, and the IRS
- For base closure socioeconomic analysis, the Air Force uses a contractor (ERTECH) and subcontractor (RDN) to run the EIFS model with ERIS inputs

EIFS Methodology for Employment, Income, and Population Impacts

- ERIS inputs (personnel, payroll, procurement) are inputted into EIFS to determine hypothetical employment, population, and income impacts for each bases Region of Influence (ROI)
- ROIs are geographic areas of primary impact whose building blocks are the county
 - ROIs in metropolitan areas almost always contain the same boundaries as Metropolitan Statistical Areas; in non-metropolitan areas they were determined by the OSD/OEA
 - Air Force ROI's are the same as those of the OSD/OEA for the latter's OSD-wide employment impact exercise
- For each of employment, population, and income, at each ROI,

the EIFS-developed maximum negative deviation system was utilized to eventually determine ratings as follows:

- The 20-year average change was determined
- Within the 20-year period, the year of lowest possible growth or greatest decline was subtracted from the 20-year average change to determine the "maximum negative deviation"
- The proposed closure impact was then divided into the maximum negative deviation to come up with a resulting number
- The Air Force then came up with a classification system to judge these resulting number impacts as either, "adverse," "moderate," or "minor. The classification system is:"
- "Adverse" ratings score 1.0 or above and are colored green; "moderate" ratings score from .50 through .99 and are colored yellow; and "minor" ratings score below .50 and are colored red

EIFS Methodology for Local Government Finance Impacts

- Within an ROI, the EIFS allows, at year of impact, for a determination of the ratio of "local government expenditures saved" as measured against "local government finances lost"
- For this ratio the Air Force developed a classification scheme as follows:
 - If local expenditures saved are less than 75 percent of revenues lost, then the impact is "adverse" and colored green
 - If local expenditures saved are 75 through 99 percent of revenues lost, then the impact is "moderate" and colored yellow
 - If local expenditures saved are 100 or more percent than local revenues lost, then the impact is "minor" or "beneficial" and colored red
- Please note that, conceptually and in EIFS model, the analysis for employment, income, and population is stronger than that for local government finance

Mr. Lee Schoenecker, CEVP, 25 Jan 94, Ext 5-8942

THE ECONOMIC IMPACT ON COMMUNITIES.

1. Employment:

GREEN - Reductions exceed the historic high reduction

YELLOW - Reductions are between 50% of the historic high reduction and the historic high reduction

RED - Reductions are less than 50% of historic high reduction, or negligible

2. Population:

GREEN - Reductions exceed the historic high reduction

YELLOW - Reductions are between 50% of the historic high reduction and the historic high reduction

RED - Reductions are less than 50% of the historic high reduction, or negligible

3. Income:

GREEN - Reductions exceed the historic high reduction

YELLOW - Reductions are between 50% of the historic high reduction and the historic high reduction

RED - Reductions are less than 50% of the historic high reduction, or negligible

**4. Local Government
Operating Revenues
Expenditures:**

GREEN - The net fiscal impact on local government is negative and comparatively large. (Expenditures savings are less than 75% of revenue losses)

YELLOW - The net fiscal impact on local government is negative, but comparatively small. (Expenditures savings are 75% or more of revenue losses)

RED - The net fiscal impact on local government is neutral or positive. (Expenditures savings exceed revenue losses)

**5. Installation
Restoration
Programs (IRP)**

GREEN - Actual clean-up time is estimated to be lengthy (> 5 yrs)

YELLOW - Actual clean-up time is estimated to be moderate (about 5 yrs)

RED - Actual clean-up time is estimated to be relatively short (< 5 yrs)



DoD SELECTION CRITERIA

IN SELECTING MILITARY INSTALLATIONS FOR CLOSURE OR REALIGNMENT, DOD, GIVING PRIORITY CONSIDERATION TO MILITARY VALUE (THE FIRST FOUR CRITERIA BELOW), WILL CONSIDER:

MILITARY VALUE:

1. THE CURRENT AND FUTURE MISSION REQUIREMENTS AND THE IMPACT ON OPERATIONAL READINESS OF DOD'S TOTAL FORCE.
2. THE AVAILABILITY AND CONDITION OF LAND AND FACILITIES AT BOTH THE EXISTING AND POTENTIAL RECEIVING LOCATIONS.
3. THE ABILITY TO ACCOMMODATE CONTINGENCY, MOBILIZATION, AND FUTURE REQUIREMENTS AT BOTH THE EXISTING AND POTENTIAL RECEIVING LOCATIONS.
4. THE COST AND MANPOWER IMPLICATIONS.

RETURN ON INVESTMENT:

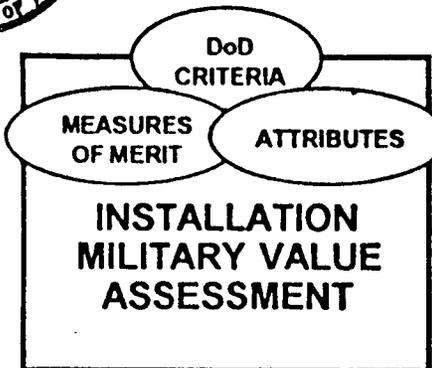
5. THE EXTENT AND TIMING OF POTENTIAL COST SAVINGS, INCLUDING THE NUMBER OF YEARS, BEGINNING WITH THE DATE OF COMPLETION OF THE CLOSURE OR REALIGNMENT, FOR THE SAVINGS TO EXCEED THE COSTS.

COMMUNITY IMPACTS:

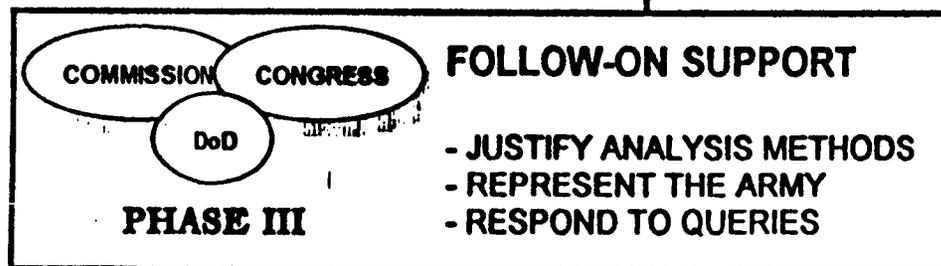
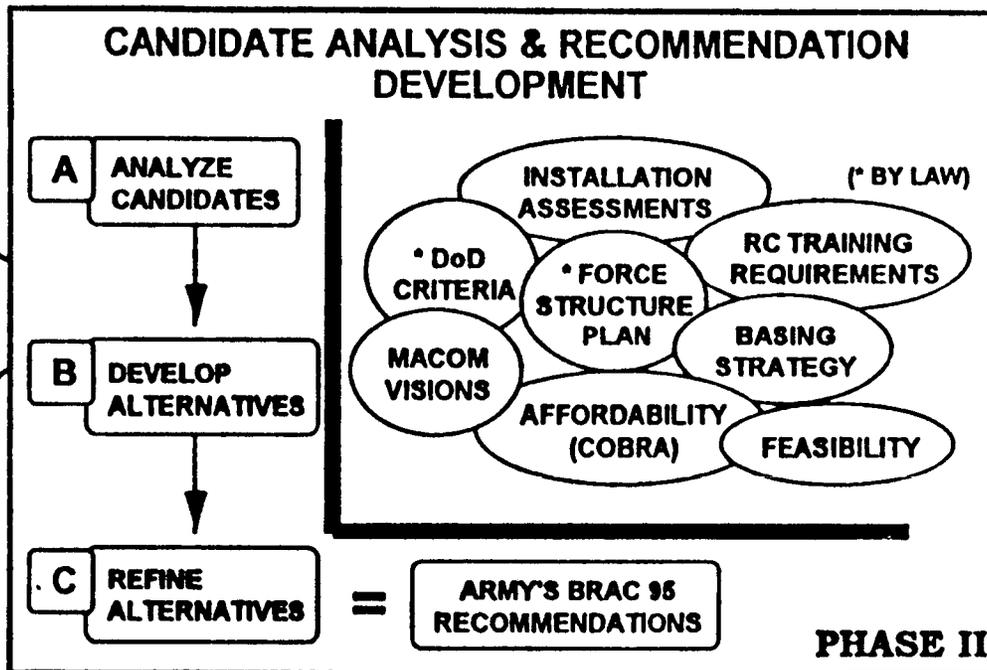
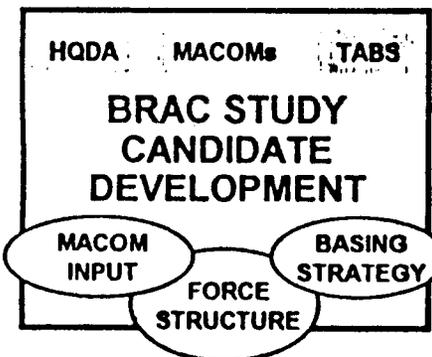
6. THE ECONOMIC IMPACT ON COMMUNITIES.
7. THE ABILITY OF BOTH THE EXISTING AND POTENTIAL RECEIVING COMMUNITIES' INFRASTRUCTURE TO SUPPORT FORCES, MISSIONS, AND PERSONNEL.
8. THE ENVIRONMENTAL IMPACT.



TABS PROCESS - BRAC 93



PHASE I





TABS 93 OUTPUT

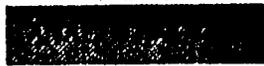
ALT DOCUMENTATION SET

DETAILED ANALYSIS

CONSTRUCTION [HQRPLANS]



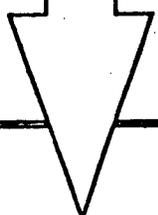
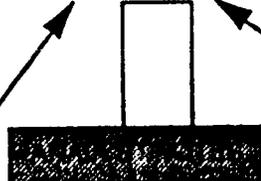
PERSONNEL
[ASIP]
[BOSMM]
[MEDICAL EQUATIOND]



EQUIPMENT
[TAFCS]
[CBS-X]



COST [COBRA]



PROCESS DESCRIPTION

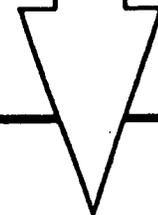
ONE PAGE SUMMARY

MVA
[D-PAD MODEL]
[IEBS]
[NARRATIVE]

CAPACITY ANALYSIS

ECONOMIC IMPACT ON COMMUNITY
[OEA MODEL]

ENVIRONMENTAL IMPACT



STANDARD
FACTORS

ALGORITHMS

COMMISSION MEMBERS,
AUDITORS, CONTRACTORS,
THE PUBLIC

ARMY BASING STUDY



~~CLOSE HOLD~~

DEPARTMENT OF THE ARMY
BASE REALIGNMENT AND CLOSURE 1993
(BRAC 93)

SA/CSA DECISION BRIEFING

12 FEB 1993

~~CLOSE HOLD~~

ARMY BASING STUDY



RECOMMENDATION: Realign Tooele

Depot to a depot activity. Transfer depot maintenance functions to Red River.
Retain ammo storage & chem demil & CMF.

	94	95	96	97	98	99
COSTS	1	14	4	61		
O&M	2	2	2	46		Includes \$9 M
MILCON	1	10				MCA cost avoidance in 94
OTHER		2	2	15		
NET	-8	5	-22	31	-45	-51

PAYBACK PERIOD (YR) IMMIED BREAK EVEN 1998 STEADY STATE (\$M) 51



IMPACT SUMMARY

OPERATIONAL:

Retains conventional ammunition storage capability. Retains chem demil.

PERSONNEL:

ELIMINATIONS

MIL

CIV

1052

REALIGNMENTS

16

1055

ENVIRONMENTAL:

No limitations to realignment.

SOCIOECONOMIC: LOSS OF 31 % OF JOBS IN SURROUNDING COMMUNITY
CURRENT UNEMPLOYMENT RATE: 5.4 %

* Tooele & Dugway are in same SMSA. Cumulative impact = -41 %

OTHER SERVICE / DOD CONSIDERATIONS:

ALTERNATIVES CONSIDERED:

Status quo



CONSIDERATION OF ECONOMIC IMPACT DURING BRAC 93

OEA MODEL RESULTS:

- **ARE SIMPLE AND EASY TO UNDERSTAND**
- **ARE DIRECTLY RELATED TO LOST SALARIES, TAXES, SCHOOL FUNDING,
AND OTHER MORE DETAILED ANALYSIS.**
- **ARE EASY TO PRODUCE**
- **RELY ON DATA AVAILABLE WITHIN THE DEPARTMENT**



BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

January 27, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Berger, ODASD(ER&BRAC), at 1600 hours on January 27, 1994, in Room 3E813, the Pentagon. The agenda and list of attendees are attached.

Mr. Berger opened with comments on preparation for the Review Group meeting to be held January 28, 1994. He distributed the plan of actions and milestones agreed upon at the previous meeting (attached). Additionally, he noted that one of the issues to be considered by the Review Group is whether or not to recommend changes to the established DoD selection criteria for base closure and realignment.

The meeting continued with a general discussion of the roles of OSD and the Military Departments in economic impact analysis. Mr. Berger opined that the Group needs to provide the Military Departments with a common tool soon enough to allow consideration of cumulative economic impact as proposed recommendations and alternatives are developed during the process. Several terms including cumulative economic impact and region of influence need to be defined in order to accomplish the task. Cumulative economic impact with respect to past closure rounds, the Military Departments and the region are possible considerations to be addressed. With regard to the scope of analysis, issues which need to be resolved include determination of whether it would be technically feasible to develop an accurate estimate of the costs to Federal, state and local governments; whether the estimate contributes to the exercise (even if technically feasible); and whether the value added would justify the costs and resources required (even if there is contribution).

Mr. Moore of the Logistics Management Institute (LMI) presented a preliminary analysis of historical data from BRAC impacted counties (attached). Mr. Moore pointed out that the term "R Squared" in the slides should be "R" instead. The preliminary analysis suggests that at the local level, changes in non-DoD civilian employment can not be linked statistically to changes in DoD employment. This finding indicates that there are many other factors in the national and local economies that are responsible for employment changes.

Mr. Berger asked LMI to provide technical assistance in determining the high-dollar value Federal programs that could be affected by base closure and realignment actions for Group review. LMI was also tasked to provide the Group with a basic introduction to economic models and to develop a listing of available models.

There being no further matters to discuss, the meeting was adjourned at 1655 hours.

Approved: 
Michael B. Berger
Acting Chairman

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

January 27, 1994

Key Attendees

Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Mr. Bryan Jack, OSD (Program Analysis and Evaluation)
Mr. Joe Cartwright, OEA
Mr. Paul Johnson, Army
MAJ Jeff Dorko, Army
CAPT Kevin Ferguson, Navy
Mr. Dave Wennergren, Navy
Mr. Ken Reinertson, Air Force
Mr. Tom Harter, Air Force
Col Paul Thompson, OSD (Base Closure)
Mr. Bill Moore, LMI (Technical Assistance)

Joint Cross-Service Group on Economic Impact

January 27, 1994

AGENDA

Discussion of Policy Issues

Preliminary Analysis of Economic Data from BRAC Communities

Review List of Installations and Economic Areas

Discussion of Costs of BRAC Actions to Other Federal Agencies and State and Local Government

Distribution of Plan of Action and Milestones

Next Meeting: February 1, 4:00 pm, 1E801, Conference Room #2

Other Business

JOINT CROSS-SERVICE GROUP ON ECONOMIC IMPACT

PLAN OF ACTIONS AND MILESTONES

<u>Deadline</u>	<u>Action</u>
21 Jan 1994	Submit Plan of Action and Milestones to USD(A&T)
04 Feb 1994	Complete Discussion of Broad Policy Issues <ul style="list-style-type: none">- Will the Economic Impact Criterion be Altered?- Roles of OSD and Military Departments in Analysis- Scope of Analysis- Mechanics of Analysis Process- Other Issues to be Identified By Group
11 Feb 1994	Approve Group Internal Control Plan for Data
Development of BRAC 95 Economic Impact Tools	
04 Feb 1994	Review Existing Economic Impact Methodologies <ul style="list-style-type: none">- Receive briefings on BRAC 93 Spreadsheet, Economic Impact Forecasting System (EIFS) and any other tools or models under consideration.
18 Feb 1994	Identify Economic Impact Methodologies for BRAC 95 Use <ul style="list-style-type: none">- Identify primary economic impact methodology/methodologies<ul style="list-style-type: none">- To provide capability to analyze cumulative economic impact of potential BRAC 95 actions and actions from BRAC 88, 91, and 93. Consider the feasibility of analyzing impacts of previous BRAC rounds <u>and</u> subsequent changes in local economies (economic recovery initiatives, growth in other employment sectors, etc.)- Discuss potential use of a secondary, corroborating economic tool- Review available cumulative economic impact data from previous BRAC rounds
25 Feb 1994	Identify Any Necessary Improvements/Enhancements to Selected Economic Impact Methodologies
04 Mar 1994	Determine the Feasibility of Analyzing Economic Impact in Terms of Costs to Other Federal Agencies and State and Local Governments (revenue impacts, etc.). If feasible, consider the contribution and cost-effectiveness of such data to the BRAC selection process.
Preparation of Policy Guidance (analytical tools; units of measure)	
14 Mar 1994	Prepare/Circulate First Draft of Guidance Memo
21 Mar 1994	Prepare/Circulate Second Draft of Guidance Memo
31 Mar 1994	Issue Guidance Memo

PLAN OF ACTIONS AND MILESTONES (CONTD)

Deadline

Action

Additional Tasks

- | | |
|--------------------|---|
| 14 Mar 1994 | Identify Standardized Presentation Tools/Output Requirements for Consistent DoD-wide Display of Economic Impact Data. <ul style="list-style-type: none">- Portrayal of recommendations by locality, region of the country, etc.- Portrayal of DoD-wide totals- Portrayal of cumulative data over time, etc. |
| 31 May 1994 | Complete Incorporation of Enhancements/Improvements (if any) to Existing Methodologies. Complete Development of any Additional Analytical Tools. |
| NLT
30 Jun 1994 | Update Statistical Data Bases; Provide Baseline Data (as required); Complete Testing and Evaluation of Enhancements (if any); Complete User Training |

PRELIMINARY ANALYSIS OF BRAC IMPACTED COUNTIES

DRAFT 27 January, 1994

LMI

LIMITATIONS OF ANALYSIS

- Based upon employment for 1990 thru 1993 e.g. much of BRAC 91 and BRAC 93 impact has not occurred yet
- Counties used as the geographic unit of analysis since regions of influence / impact areas not yet defined
- Employment data based upon place of work for both DMDC and BLS data

DEFINITIONS

- DoD employment is DMDC civilian and uniformed military employment (direct only) by place of work (Appropriated fund only)
- Non-DoD civilian employment is all other employment (minus DoD employment) by place of work (BLS data), Note: this includes DoD contract related employment and DoD indirect and induced jobs

IMPACT FOR ALL COUNTIES

- Of 135 counties affected by BRAC actions 47% had changes in non-DoD civilian employment in same direction (+ or -) as the BRAC action
- 39% of the counties losing DoD employment also lost non-DoD civilian employment, while 61% had increases in non-DoD employment
- Note: non-DoD civilian employment could include DoD contract related employment

TOTAL EMPLOYMENT CHANGES IN COUNTIES AFFECTED BY ALL BRAC ROUNDS

- Total employment losses in the 135 counties for all BRAC rounds equal:
 - ▶ 120,000 DoD jobs
 - ▶ 635,000 non-DoD civilians

SUMMARY OF BRAC 88 IMPACTS FOR 17 MAJOR FY88 CLOSURES

- 10 of 17 locations had increases in non-DoD civilian employment of 48,000 jobs
- 7 of 17 locations had decrease in non-DoD civilian employment of 58,000 jobs
- Net change in non-DoD civilian employment for the period is a loss of 10,000 jobs
- DoD employment losses for the same period was 21,700

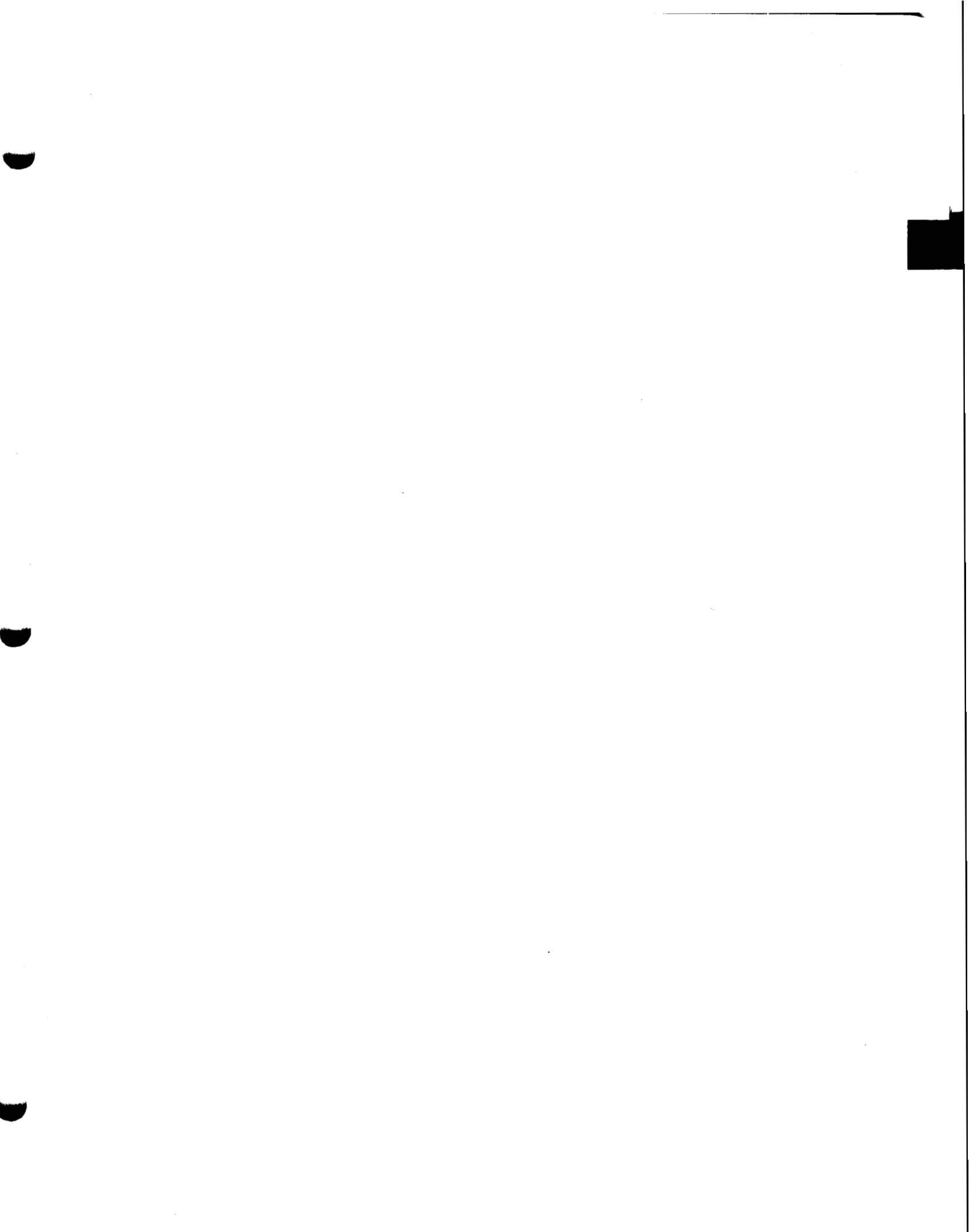


RELATIONSHIP OF DoD EMPLOYMENT CHANGE TO NON-DOD CIVILIAN EMPLOYMENT CHANGE (ALL BRAC ROUNDS)

- Relationship for all BRAC Rounds:
 - Independent variable is change in DoD employment
 - Dependent variable is change in non-DoD employment
 - Stand. Error of Estimate = 21,811.97
 - R Squared = -.04738

RELATIONSHIP OF DoD EMPLOYMENT CHANGE TO NON-DoD CIVILIAN EMPLOYMENT CHANGE (BRAC 88)

- Relationship for BRAC88 Closings:
- Independent variable is change in DoD employment
- Dependent variable is change in non-DoD employment
- Stand. Error of Estimate = 9,571
- R Squared = .0034



BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

February 10, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(ER&BRAC), at 1600 hours on February 10, 1994, in Room 3E813, the Pentagon. The list of attendees is attached.

Mr. Berger opened with comments on the subgroup which was formed to facilitate and support the work of the Group (see attachment). The subgroup is responsible to the Group to complete assigned tasks and make recommendations to the Group for consideration.

Mr. Berger led the discussion on the subgroup's progress report (attached). He reviewed the subgroup's tasks including a review of alternative methods and models. With regard to discussion on potential parameters, Mr. Berger stated that the subgroup discussed six possible types of parameters: income, employment, unemployment, tax-base related, expenditures, and demographics. For each type of parameter, Mr. Berger recapped the subgroup's assessment of which were "not so difficult to estimate" and which were "difficult to estimate accurately." Based on these assessments, Mr. Berger offered the subgroup's recommendation which was to concentrate primarily on employment (jobs), noting that relevant parameters were not so difficult to estimate, data were available, estimates for indirect employment effects could be obtained through use of multipliers, and concentrating on employment would avoid highly uncertain projections of future local economic adjustment. The Group accepted the subgroup's recommendation.

Mr. Berger continued with an overview of two types of models considered: input-output and econometric. For input-output models, Mr. Berger stated that although they present a "static projection" (i.e. without regard to time), they are available at the national, regional, state, and local levels. He said that the subgroup considered five input-output models based on the University of Delaware study (attached). The University of Delaware technical analysis concluded, among other things, that no one input-output model was consistently superior to others. For econometric models, Mr. Berger stated that while they add the element of time to economic analysis and are generally available at the national, regional and state level, they are not available at the local level. Mr. Berger said that the subgroup considered five different econometric models based on the Urban Institute study (attached). He also noted that the subgroup received a briefing on the Economic Impact Forecasting System (EIFS), an "economic base" model.

As a result of its review, Mr. Berger stated that the subgroup recommended using the RIMS II input-output model run by the Bureau of Economic Analysis of the Department of Commerce to derive indirect and induced employment effects. He said the subgroup did not recommend using econometric models because they were not available at the local level. Mr. Bayer asked if there were any disadvantages to RIMS II. Mr. Berger responded that as with

other input-output models, the RIMS II provides a snapshot in time and not a temporal look. The Group accepted the subgroup's recommendation.

Mr. Berger then presented five potential options for incorporating the RIMS II model (see the progress report handout attached). Group discussion included the observation that Option 1 was the minimalist approach, and that Option 2 was Option 1 with new multipliers. Discussion of Option 3 noted concern about how to determine whether the projected indirect effects of earlier base closure and realignment actions really occurred. Option 4 would require DoD to break new ground in projecting future local economic conditions--a task at which even economic-oriented agencies and institutions have limited success. Dr. Jack noted that DoD is not an expert in economic forecasting. The Group also pointed out the complexity of producing an accurate forecast with adequate treatment of "trip wire" government programs with transfer payments. In discussing the options, the Group observed that it would be difficult, if not impossible, to satisfy every potential critic with regard to methodology and analysis tools.

Mr. Berger continued by stating that the subgroup's recommendation was to further develop Option 3. The Group accepted the subgroup's recommendation and tasked the subgroup to review the categorization of economic areas (regions of influence) and multipliers and to make recommendations to the Group for consideration. The subgroup will also develop standard methods and guidance for use of the tools and analytic framework. Mr. Bayer opined that the tools and products of this Group should be used uniformly by the Military Departments and Defense Agencies during the BRAC process.

There being no further matters to discuss, the meeting was adjourned at 1745 hours.


Approved: Robert Bayer
Chairman

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

February 10, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Economic Reinvestment and BRAC)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Mr. Bryan Jack, OSD (Program Analysis and Evaluation)
Ms. Sherry Holliman, OSD (Office of Economic Adjustment)
MAJ Jeff Dorko, Army
Ms. Maureen Wylie, Army
Mr. Joe Vallone, Army
Mr. Dave Wennergren, Navy
CAPT Kevin Ferguson, Navy
Mr. Ken Reinertson, Air Force
Mr. Tom Harter, Air Force
Col Paul Thompson, OSD (Base Closure)
Mr. John Delaware, DoDIG (Audit)
Mr. Bill Moore, LMI (Technical Assistance)



ECONOMIC SECURITY

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3300 DEFENSE PENTAGON
WASHINGTON, DC 20301 3300



81 JAN 1994

MEMORANDUM FOR THE JOINT CROSS-SERVICE GROUP ON ECONOMIC IMPACT

SUBJECT: Establishment of Subgroup on Economic Methodologies and Meeting Schedule

I believe that the work of the Joint Cross-Service Group on Economic Impact would be facilitated by establishing a Subgroup on Economic Methodologies. The Subgroup shall review different methods of estimating economic impact and, based on its review, recommend to the full Group economic impact methodologies for use in BRAC 95. The Subgroup should plan to report on its review and recommendations to the full Joint-Cross Service Group on February 10.

Accordingly, there will be no meetings of the full Joint-Cross Service Group on Economic Impact until February 10.

I request that the Military Departments and OSD organizations designate individuals to participate in the Subgroup and have them attend the Subgroup's first meeting, which will be on Tuesday, February 1, at 4:00 pm in 1E801, Conference Room 2.

Robert E. Bayer
Deputy Assistant Secretary of Defense for
Economic Reinvestment and Base
Realignment and Closure



PROGRESS REPORT
SUBGROUP ON ECONOMIC METHODOLOGIES

FEBRUARY 10, 1994

TASKS

ESTABLISHED IN MEMORANDUM OF JANUARY 31, 1994

REVIEW DIFFERENT METHODS OF ESTIMATING ECONOMIC IMPACT AND
CUMULATIVE ECONOMIC IMPACT

REPORT ON ITS REVIEW AND MAKE RECOMMENDATIONS TO THE JOINT
CROSS-SERVICE GROUP

ALL DECISION MAKING AUTHORITY REMAINS IN FULL JOINT CROSS-
SERVICE GROUP

PARTICIPANTS

DEPARTMENT OF THE ARMY

DEPARTMENT OF THE AIR FORCE

DEPARTMENT OF THE NAVY

OSD OFFICE OF THE DASD FOR ECONOMIC REINVESTMENT AND BRAC

OSD PROGRAM ANALYSIS AND EVALUATION

OSD COMPTROLLER

OFFICE OF ECONOMIC ADJUSTMENT

TECHNICAL ASSISTANCE

LOGISTICS MANAGEMENT INSTITUTE

SUBGROUP TASKS

TASK	STATUS AND KEY ACTIVITIES
IDENTIFY POTENTIAL PARAMETERS	IDENTIFIED 6 GROUPINGS OF POTENTIAL PARAMETERS
REVIEW METHODS AND MODELS	RECEIVED BRIEFING ON DIFFERENT TYPES OF ECONOMIC MODELS (ECONOMETRIC, INPUT-OUTPUT, ECONOMIC BASE)
REVIEW ALTERNATIVE METHODS AND MODELS	REVIEWED LIST OF 12 AVAILABLE MODELS RECEIVED BRIEFING ON ECONOMIC IMPACT FORECASTING SYSTEM (EIFS) RECEIVED BRIEFING ON BRAC 93 SPREADSHEET

TASK	STATUS AND KEY ACTIVITIES
<p>REVIEW FRAMEWORK OF ANALYSIS AND EVALUATE ALTERNATIVE MODELS</p>	<p>REVIEWED INDEPENDENT COMPARISONS OF 10 OF 12 IDENTIFIED MODELS (5 ECONOMETRIC AND 5 INPUT-OUTPUT). REQUEST INCLUDING THESE COMPARISONS WITH THIS PRESENTATION IN THE MINUTES TO THIS MEETING</p> <p>DISCUSSED FRAMEWORK FOR EVALUATING DIFFERENCES AMONG MODELS</p> <p>EVALUATED ADVANTAGES AND DISADVANTAGES OF ALTERNATIVE PARAMETERS</p> <p>CIRCULATED LIST OF REGIONS OF INFLUENCE FROM BRAC 93</p>

TASK	STATUS AND KEY ACTIVITIES
AGREE ON RECOMMENDATIONS FOR MODELS AND METHODS	RECOMMEND OPTION 3 BELOW
DISCUSS IMPLEMENTATION OF RECOMMENDATIONS	SOME ISSUES REMAIN, SUCH AS HOW TO DISPLAY RELEVANT INFORMATION
PREPARE BRIEFING TO JOINT CROSS-SERVICE GROUP	

STATUS: DEFINE PARAMETERS

PARAMETER GROUPINGS IDENTIFIED:

INCOME

EMPLOYMENT

UNEMPLOYMENT

TAX-BASE RELATED

EXPENDITURES

DEMOGRAPHIC PARAMETERS

PARAMETERS, CONTINUED

NOT SO DIFFICULT TO ESTIMATE	DIFFICULT TO ESTIMATE ACCURATELY
Employment	
CHANGE IN EMPLOYMENT (JOBS) BEFORE ECONOMIC ADJUSTMENT	CHANGE IN EMPLOYMENT AFTER ECONOMIC ADJUSTMENT
Unemployment	
	CHANGE IN UNEMPLOYMENT RATE (BEFORE AND AFTER ECONOMIC ADJUSTMENT) CHANGE IN NUMBER OF UNEMPLOYED PERSONS (BEFORE AND AFTER ECONOMIC ADJUSTMENT)

NOT SO DIFFICULT TO ESTIMATE	DIFFICULT TO ESTIMATE ACCURATELY
Income	
CHANGE IN PERSONAL EARNINGS BEFORE ECONOMIC ADJUSTMENT	CHANGE IN PERSONAL INCOME AFTER ECONOMIC ADJUSTMENT

NOT SO DIFFICULT TO ESTIMATE	DIFFICULT TO ESTIMATE ACCURATELY
Tax-Base Related	
	<p>CHANGE IN SALES TAX REVENUE (ASSUMING NO CHANGE IN TAX RATES)</p> <p>CHANGE IN SALES TAX REVENUE (IF RATES ARE CHANGED)</p> <p>CHANGE IN PROPERTY VALUES</p> <p>CHANGE IN PROPERTY TAX RATES</p> <p>CHANGE IN LOCAL GOVERNMENT REVENUES (ASSUMING NO CHANGE IN TAX RATES)</p> <p>CHANGE IN LOCAL GOVERNMENT REVENUES (IF TAX RATES ARE CHANGED)</p> <p>CHANGE IN LOCAL GOVERNMENT OUTLAYS</p>

NOT SO DIFFICULT TO ESTIMATE	DIFFICULT TO ESTIMATE ACCURATELY
Expenditures	
CHANGE IN EXPENDITURES BEFORE ECONOMIC ADJUSTMENT	CHANGE IN EXPENDITURES AFTER ECONOMIC ADJUSTMENT
Demographic Parameters	
CHANGE IN INSTALLATION POPULATION BEFORE ECONOMIC ADJUSTMENT CHANGE IN BASE PUBLIC SCHOOL ENROLLMENT BEFORE ECONOMIC ADJUSTMENT	CHANGE IN LOCAL POPULATION AFTER ECONOMIC ADJUSTMENT CHANGE IN PUBLIC SCHOOL ENROLLMENT AFTER ECONOMIC ADJUSTMENT

PARAMETER RECOMMENDATION

**RECOMMEND CONCENTRATING PRIMARILY ON EMPLOYMENT (JOBS)
BEFORE ECONOMIC ADJUSTMENT**

NOT SO DIFFICULT TO ESTIMATE

**DATA FOR DIRECT EMPLOYMENT AVAILABLE AND AN INTEGRAL PART
OF BRAC PROCESS**

**ESTIMATES FOR INDIRECT AND INDUCED EMPLOYMENT CALCULATED
THROUGH MULTIPLIERS**

**AVOIDS HIGHLY UNCERTAIN PROJECTIONS OF FUTURE LOCAL
ECONOMIC ADJUSTMENT**

MODELS CONSIDERED

INPUT-OUTPUT MODELS

PRIMARY LEVELS OF ANALYSIS:

NATIONAL

REGIONAL

STATE

LOCAL

STATIC PROJECTIONS

INPUT-OUTPUT MODELS CONSIDERED

* REGIONAL INPUT-OUTPUT MODELING SYSTEM II (RIMS II,
DEPARTMENT OF COMMERCE)

* ADOTMATR

* REGIONAL SCIENCE RESEARCH, INC. (RESI)

* IMPLAN

* TYPE SCHAFFER MODEL

* SUBGROUP REVIEWED TECHNICAL ANALYSIS

ECONOMETRIC MODELS

PRIMARY LEVELS OF ANALYSIS

GENERALLY NOT AVAILABLE AT LOCAL LEVEL

NATIONAL

REGIONAL

STATE

PROJECTIONS OVER TIME

ECONOMETRIC MODELS CONSIDERED

- * MULTI-REGIONAL POLICY IMPACT SIMULATION MODEL (MRPIS)
- * NATIONAL REGIONAL IMPACT ESTIMATING SYSTEM (NRIES)
- * REGIONAL ECONOMIC MODELS, INC (REMI)
- * WHARTON ECONOMETRIC FORECASTING ASSOCIATES (WEFA)
- * DATA RESOURCES, INC. (DRI)

INFORUM (U-MD)

ECONOMIC BASE MODEL CONSIDERED

- ** EIFS
- * SUBGROUP REVIEWED TECHNICAL ANALYSIS
- ** SUBGROUP RECEIVED BRIEFING

MODEL EVALUATION FRAMEWORK

ECONOMETRIC MODELS	ALL MODELS
TIME UNIT OF FORECAST	FREQUENCY OF MODEL UPDATE
SOURCE OF PARAMETER ESTIMATES	GEOGRAPHIC UNIT
NUMBER OF ASSOCIATED NATIONAL MODELS	DETAIL OF INDUSTRY SECTORS
DETAILED FEDERAL SPENDING CATEGORIES	COST PER MODEL RUN OR LOCATION (MONEY, TIME, PERSONNEL)
	EASE OF UNDERSTANDING
	ACCEPTABILITY BY ACADEMIC AND PROFESSIONAL COMMUNITY

RECOMMENDATION OF MODEL TYPE

RECOMMEND RIMS II INPUT-OUTPUT MODEL TO DERIVE MULTIPLIERS

ECONOMETRIC MODELS: GENERALLY NOT AVAILABLE AT THE LOCAL LEVEL; THEREFORE NOT GENERALLY APPROPRIATE FOR BRAC 95 PURPOSES

INPUT-OUTPUT MODELS: AVAILABLE AT THE LOCAL LEVEL PROVIDE KEY OUTPUT--MULTIPLIERS TO ESTIMATE INDIRECT AND INDUCED EFFECTS

ECONOMIC BASE MODEL: AVAILABLE AT LOCAL LEVEL; UNABLE TO AGGREGATE RUNS ACROSS DOD; EXPENDITURE-BASED

RIMS II ADVANTAGES

UPDATED FREQUENTLY

SUBSTANTIAL INDUSTRY DETAIL (500+ SECTORS)

REASONABLE COST

WELL UNDERSTOOD

WIDELY ACCEPTED U.S. GOVERNMENT MODEL

COMPARED FAVORABLY IN INDEPENDENT REVIEW

OPTIONS

GROUP IDENTIFIED FIVE OPTIONS FOR BRAC 95 METHODOLOGIES

OPTION 1: UPDATE BRAC 93 PROCESS

OPTION 2: UPGRADE BRAC 93 MULTIPLIERS

OPTION 3: REDEFINE CUMULATIVE ECONOMIC IMPACT

OPTION 4: NEW PROCESS BASED ON RECOVERY POTENTIAL

OPTION 5: CREATE NEW EARNINGS-BASED MEASURES

OPTION SPECIFICS

Option	Economic Impact Method	Cumulative Economic Impact Method	Tools
Option 1: Update BRAC 93 Process	BRAC 95 Job Loss as a Percent of Local Employment	BRAC 95 plus Unrealized BRAC 88-93 Job Loss as a Percent of FY 93 Local Employment [addresses cumulative impact not yet realized]	BRAC 93 Spreadsheet • Updated for More Recent Data Development: Feasible
Option 2: Upgrade BRAC 93 Multipliers	BRAC 95 Job Loss as a Percent of Local Employment	BRAC 95 plus Unrealized BRAC 88-93 Job Loss as a Percent of FY 93 Local Employment [addresses cumulative impact not yet realized]	BRAC 93 Spreadsheet • Updated for More Recent Data • New Multipliers (RIMS II) Development: Feasible, new multipliers are available "off-the-shelf"

Option	Economic Impact Method	Cumulative Economic Impact Method	Tools
Option 3: Redefine Cumulative Economic Impact	BRAC 95 Job Loss as a Percent of Local Employment	BRAC 95 plus Unrealized BRAC 88-93 Job Loss as a Percent of FY 93 Local Employment [addresses cumulative impact not yet realized] and Typical Annual Local Employment Growth Rate, 1983(?) to 1993 [addresses cumulative impact realized and other local factors]	BRAC 93 Spreadsheet <ul style="list-style-type: none"> • Updated for More Recent Data • New Multipliers • Added Measure of Merit: Typical Annual Local Employment Growth Rate, 1983(?) to 1993 <p>Development: Feasible, but requires additional data collection and analysis (can be done by OSD)</p>

Option	Economic Impact Method	Cumulative Economic Impact Method	Tools
Option 4: New Process Based on Recovery Potential	BRAC 95 Job Loss as a Percent of Local Employment, Measured Against Projected Local Job Growth for 1994 to 2001	BRAC 95 plus Unrealized BRAC 88-93 Job Loss as a Percent of Local Employment, Measured Against Projected Local Job Growth	<p>BRAC 93 Spreadsheet</p> <ul style="list-style-type: none"> • Updated for More Recent Data • New Multipliers • Added Measure of Merit: Projection of Local Job Growth (through statistical analysis) <p>Development: Feasible, but requires additional data collection and analysis (can be done by OSD)</p> <p>Note: Breaks new ground by projecting future local economic conditions</p>

Option	Economic Impact Method	Cumulative Economic Impact Method	Tools
<p>Option 5: Create New Earnings-Based Measures</p>	<p>BRAC 95 Earnings Changes as a Percent of Local Income</p>	<p>BRAC 95 plus Unrealized BRAC 88-93 Earnings Loss as a Percent of FY 93 Local Earnings [addresses cumulative impact not yet realized] and</p> <p>Average Annual Local Earnings Growth Rate, 1983(?) to 1993 [addresses cumulative impact realized]</p>	<p>New Earnings-Based Spreadsheet</p> <p>Feasible, but requires substantial new effort: new multiplier estimates, new information collected and analyzed by OSD, and certified data call from Military Departments.</p> <p>Note: Earnings effects are very closely related to employment effects.</p>

OPTION RECOMMENDATION

**RECOMMEND OPTION 3: REDEFINE CUMULATIVE ECONOMIC IMPACT AS
THE BASIS FOR ALL BRAC 95 DECISIONS**

MEASURE FOR ECONOMIC IMPACT

BRAC 95 JOB LOSS AS A PERCENT OF LOCAL EMPLOYMENT

MEASURES FOR CUMULATIVE ECONOMIC IMPACT

**BRAC 95 PLUS UNREALIZED BRAC 88-93 JOB LOSS AS A PERCENT OF
FY 93 LOCAL EMPLOYMENT**

[ADDRESSES CUMULATIVE IMPACT NOT YET REALIZED]

**TYPICAL ANNUAL LOCAL EMPLOYMENT GROWTH RATE, 1983(?) TO
1993**

**[ADDRESSES CUMULATIVE IMPACT REALIZED AND OTHER
LOCAL FACTORS]**

RATIONALE FOR RECOMMENDATION

OPTION 3

FOCUSES ON EMPLOYMENT

**EASILY ACCOMMODATES MULTIPLIERS BASED ON RIMS II TO
ESTIMATE INDIRECT AND INDUCED EFFECTS**

**DOES NOT REQUIRE HIGHLY UNCERTAIN PROJECTIONS OF FUTURE
LOCAL ECONOMIC CONDITIONS**

**RESPONDS TO CRITICISM OF OPTIONS 1 & 2 THAT NOT ALL
CUMULATIVE EFFECTS HAVE BEEN CONSIDERED**

FURTHER ACTIONS FOR SUBGROUP

**RECOMMENDATION ON ACTUAL LAYOUT OF SPREADSHEET OR
DATABASE TOOL**

FINALIZE WORK ON NEW MULTIPLIERS

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The Variation of Estimated Impacts from Five Regional Input-Output Models

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ABSTRACT Since construction of a regional input-output model for impact analysis is very time-consuming, a market for ready-made regionally customized model systems has developed. This article compares five such systems. It is based on a survey of five modelers who estimated impacts of seven hypothetical regional development scenarios. The article presents the estimates generated; then compares them, focusing on the degree of variation among the estimates and also comparing them to a survey model's results. Although estimated impacts were relatively similar for regionwide output and income impacts, there was great dissimilarity among employment impact estimates.

1. Introduction

Input-output analysis is an important and frequently used tool in regional economic impact studies. Those who use it have traditionally allocated most of their research time to the construction and customization of such a model for their region. In the early 1980s, several products became commercially available that enabled regional scientists to acquire a region-specific input-output model without spending the time and money to construct one. Potential users of these newly available models want mainly consumer information on prices, packaging, and user friendliness.

However, regional scientists (many of whom contemplate using these models) want both the consumer type information and infor-

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mation about the inner workings of the "black boxes" available as ready-made regional input-output models. Users and researchers alike are concerned with the accuracy of estimates generated by such models. To assess this, they need to know more about the methodologies and how each model performs when used to estimate impacts.

Since published materials about the model systems provided an insufficient basis for relevant comparisons, a survey of the model builders themselves was undertaken. Several modelers were asked to provide information about user options, detailed descriptions of methodologies, and actual impact estimates from hypothetical situations. User information from that survey has appeared in the *Review of Regional Studies* accompanied by comments from the modelers themselves (Brucker, Hastings, and Latham 1987).

The purpose of this article is to present and compare the second half of the survey results in which each of the five models was used to estimate the impacts of a hypothetical economic change on a region. All models were used to estimate the same seven changes.

The article is divided into three parts: a comparison of model methodologies and assumptions; a presentation of each model's impact estimates for seven different hypothesized disturbances; and some conclusions about the use and construction of ready-made models and implications for future research.

Although it would be desirable to determine which model produces the most accurate results, there is no acknowledged way to identify the actual impacts; thus, there is no correct or true number with which to compare the estimates. In lieu of actual "true" impacts (and in keeping with precedents in the literature of assuming a survey-based model to have more accuracy than a nonsurvey-based model),¹ two scenarios were defined so that the partially survey-based Texas model could be a basis for comparison. In addition, the similarity of the five models' estimates to one another are compared across scenarios and measures. This will shed light on both the degree and areas of agreement among the models surveyed.

Initially, this article was to focus on all marketed models that incorporated an input-output type impact analysis for each region of the United States. However, the number of such models is too large and their structures and features are too diverse to embrace them all. Thus, the scope of the article was narrowed to include five representative models which are marketed to provide a regional input-output model for any region in the United States. This excluded all the linked econometric, demographic, and community impact models that have an input-output block in them (e.g., Harris' model at the University of Maryland, Treyz's REMI, Polenske's MRIO, and various community impact models included in Nelson 1985). They

¹ See studies such as Cartwright, Beemiller, and Gustely 1981; McManamin and Haring 1974; Morrison and Smith 1974; and Schaffer 1972.

are important tools which are beyond the scope of our present comparison. A logical future extension of this study would be to include these linked models.

The survey was conducted early in 1986. Five major model systems were chosen to represent the choices in the rapidly growing ready-made input-output model market. The modelers and their models are: Richard Beemiller and Zoe Ambargis (Cartwright, Beemiller, and Gustely 1981), Regional Input-Output Modeling System II (RIMS II); Charles N. Lamphar and Ronald T. Konecny (1986), ADOTMATR; Benjamin Stevens (1983), RSRI; Gregory Alward (Palmer, Siverts, and Sullivan 1985), IMPLAN; and William Schaffer (Schaffer and Davidson 1985), SCHAFER. If the reader is not familiar with the models, descriptions appear in the *Review of Regional Studies* article (Brucker, Hastings, and Latham 1987) and the article's listed references.² A discussion of the characteristics and methodologies of the models will be based on the detailed comparison in table 1.

2. Comparison of Model Methodologies

In terms of general methodological characteristics, the five models have many similarities (table 1). All regionalize the 1977 national United States model although ADOTMATR can accommodate other available reference models.

Although none of the models are dynamic, they do update their one-period models in a variety of ways (section 1 of table 1). These differences explain some of the later disparities in employment estimates. The models use either the Leontief inverse or the iterative approach to estimate indirect and induced effects. IMPLAN has an additional step to estimate the induced effects.

Section II of table 1 compares the sectoring schemes of the five models and indicates some differences among them. All of the models have over 500 disaggregated sectors which are compatible with the national sectors. All models except ADOTMATR (SCHAFER for custom defined sectors) do no aggregation until after the inversion or iterative procedures. ADOTMATR is limited to a maximum of 150 sectors for matrix inversion and therefore requires some sector

² RIMS II, which was designed in the mid-70s to provide multipliers for any county, now also provides tables of total requirements for earnings and employment to the user. In both RSRI and SCHAFER, after the user defines the final demand vector, the modeler uses input-output analysis to estimate impacts and presents a one-time report. RSRI can also be obtained as a computer model for multiple scenario estimation. ADOTMATR, a large, user-friendly computer program, facilitates the construction of nonsurvey regional input-output models. The user provides regional employment data, designs sector definitions, and regionalizes the reference model. IMPLAN, a mainframe computer program, enables a user with a federal account to access the Ft. Collins computer to supply sector definitions and a vector of changes and receive estimates of impacts on-line.

aggregation. Defined by the user. Both the level of disaggregation and who defines the sectors varies (table 1).

Section III of table 1 compares the data and definitions used in the five models. Variations in data chosen to estimate the physical labor coefficients are certain to explain some of the differences in employment impacts presented below. Although ADOTMATR requires the user to provide the data, for this survey ADOTMATR, IMPLAN, and SCHAFFER all used a ratio of County Business Patterns employment (U.S. Bureau of the Census 1982) to total output, while RIMS II and RSRI used two-step processes. RIMS II used Bureau of Economic Analysis employment-to-earnings ratios and then the earnings/output ratio from the household row of their technical coefficients table. RSRI used CBP earnings and employment data with adjustments for proprietor's income and then earnings to output ratios. The models also vary with regard to the data sources used to adjust regional household income rows, consumption columns, and regional trade patterns.

Section IV of table 1 briefly describes the methods used to adjust the national coefficients for unique regional characteristics. Product mix is adjusted by keeping the analysis at the disaggregated level, using employment weights, or using transactions. The models differ in how they adjust for regional consumption patterns, mostly adjusting the household column. RIMS II and RSRI both make several adjustments to the final payments rows.

All of the models have some adjustments for regional trade patterns. Since they use a variety of RPC, supply-demand pool, and location quotient approaches which have been shown to produce widely different results in earlier work (Schaffer and Chu 1969; Morrison and Smith 1974), this is an area of major difference in the models. None of the models have standard routines to adjust for technological differences. However, IMPLAN can adjust the technical coefficients to agree with regional factor payments data and both IMPLAN and ADOTMATR have a routine that enables the user to specify an industry's technical coefficients. All of the models account for variations in regional technology attributable to labor productivity with labor to output ratios using data described above.

Section V of table 1 compares the output provided to the users of the five models. ADOTMATR and IMPLAN are the only two models that provide a transactions table as part of their standard output. All, except RIMS II, provide iterative impact estimates for a vector of final demands. All, except IMPLAN, provide regionwide total multipliers. All but RSRI also provide a table of disaggregated multipliers. Each model meets a segment of market demand with special features.

Modeling differences that would be expected to lead to differences in estimated impacts include regionalizing procedures, handling and defining the household row and column, and data used for

regional employment. The differences would be hypothesized to show up most often in measures which included induced or employment effects, where a large percent of interindustry purchases are nonlocal, or where technology differs greatly from the United States average technology.

3. Comparison of Model Impact Estimates

In order to better understand how these differences in methodology relate to differences in the estimates of impacts, each modeler was asked to estimate the impacts of seven final demand change scenarios (table 2). The specific scenarios were chosen to enable a comparison of how the models' estimates respond to a change in one variable while others are held constant. For example, Texas was chosen for the first two scenarios to allow comparisons with the Texas semisurvey input-output table for 1979 (Texas Input-Output Model) and to facilitate a controlled comparison between two industrial sectors. Other scenario pairings control the sector while changing the region.

It is hypothesized that estimates for more self-sufficient regions requiring less adjustment for trade patterns will be more similar since a major difference among the models is the regionalizing procedure. Since the other major difference in the models is how they handle household income and consumption, it would be expected that type I effects and output results would be more similar than income, employment, or type II output effects.

There will be two types of comparisons made.³ In tables 3 and 4 the five models' estimates will be compared to estimates from the Texas model. These comparisons will focus on the closeness of the individual model's estimates to the Texas estimates. Although some regional scientists (most notably Jensen 1978) question whether similarity to a survey model such as Texas is necessarily a good measure of accuracy, for the purposes of this article, closeness to the Texas model will be considered a proxy for accuracy.

A second type of comparison will focus on closeness of each model's estimate to the 5-model mean (tables 5 and 6). Note that

³ Comparison of the models' estimates is complicated by a lack of standardization. The results presented in tables 3 through 6 reflect every effort to assure the estimates are reported in a comparable format. However, the following unique characteristics remain: IMPLAN reports type III effects which roughly correspond to the other models' type II effects (direct, indirect, and induced), using the modified methodology of calculating the induced effects; IMPLAN adjusted all initial disturbances to 1977 dollars; IMPLAN total estimates were recalculated to make them comparable with the 1984 dollars effects reported by all other models, but the disaggregated impacts remain in 1977 dollars; RIMS II uses the column sum of the total requirements table net of the household row as total output effects. For comparison purposes, the household row was added back in since all other models included it in their total output effect.

TABLE 2
DEFINITION OF SCENARIOS

Scenario Number	Short Title	Region Impacted	Sector Description	Sector SIC Code	Magnitude of Final Demand Change ^a
1	TEX PET	Texas	Petroleum Refining	2911	\$5,800,000
2	TEX COMP BQ	Texas	Computer Equipment	3573	\$10,800,000
3	NC D PROC	North Carolina	Data Processing Services	7374	\$1,700,000
4	3-CO D PROC	Durham, Wake, & Orange Counties, NC	Data Processing Services	7374	\$1,700,000
5	NC VECTOR	North Carolina	Banking	60	\$6,900,000
			New Housing	1521	\$25,700,000
			Milk	2026	\$2,400,000
6	DE P PROC	Delaware	Transportation Equipment	3711	\$9,300,000
			Poultry Processing	2016	\$1,700,000
			Poultry Processing	2016	\$1,700,000
7	NC P PROC	North Carolina	Poultry Processing	2016	\$1,700,000

^a Reported in 1984 dollars.

TABLE 3
PERCENT DIFFERENCE FROM THE TEXAS ESTIMATES

Scenario	S-Model Mean	Texas	RIMS II	ADOTMATR	RSRI	DAPLAN	SCHAFFER	S-Model Average Deviation from Texas	from Mean
Output									
TEX PETRO	\$14,168	\$11,354	6.9	17.8	7.6	5.2	7.2	6.8	5.9
TEX COMP BQ	\$30,349	\$25,980	6.1	-39.9	-39.7	-5.9	-17.9	17.9	14.7
Average			6.5	23.4	18.6	3.5	12.6	13.3	
Income									
TEX PETRO	\$1,967	\$1,413	-32.7	-37.8	-15.3	-17.8	-38.2	-28.2	13.8
TEX COMP BQ	\$6,788	\$6,894	6.4	-15.9	-7.7	28.5	-1.4	12.0	12.8
Average			19.5	-26.5	11.5	23.2	19.8	20.1	
Employment^a									
TEX PETRO	97.7	57.7	-39.6	-74.2	-22.6	-9.2	-58.6	-40.8	34.5
TEX COMP BQ	417	204.9	-16.1	-55.8	-23.6	49.4	-30.4	39.5	36.2
Average			27.8	65.0	24.1	29.3	34.5	48.2	
AB-Measure Average			18.0	38.3	18.1	19.3	29.8		

^a Measured in number of persons.

TABLE 4
COMPARISON OF SELECTED DISAGGREGATED IMPACT ESTIMATES^a

Sector Name	S-Model Mean	Texas	RIMS II	ADOTMATR	RSRI	DAPLAN	SCHAFFER
Impacts from Texas Petroleum Scenario							
Credit Oil	\$2,689,368	\$1,356,620					
% Difference, Mean			-12.4	-8.7	38.9	37.7	NA ^b
% Difference, Texas			73.6	80.9	23.8	23.3	
Organic Chemicals	\$118,239	\$485,420					
% Difference, Mean			-15.4	24.3	6.6	-15.3	NA
% Difference, Texas			-75.3	-63.8	-48.9	-75.3	
Petroleum Refining	\$6,034,982	\$6,581,840					
% Difference, Mean			6.4	12.8	31.5	-6.8	-9.9
% Difference, Texas			-2.4	2.6	28.6	-32.5	-11.9
Utilities	\$230,054	\$349,160					
% Difference, Mean			36.6	-34.1	45.6	48.1	NA
% Difference, Texas			-2.2	-52.7	4.3	-62.9	
Communications	\$62,152	\$51,620					
% Difference, Mean			11.1	41.6	-32.4	-20.2	NA
% Difference, Texas			33.7	70.4	-18.6	-3.9	
Average % Difference, Texas			37.4	54.1	65.3	6.2	
Impacts from Texas Computer Equipment Scenario							
Computer Machinery	\$12,222,665	\$10,804,262					
% Difference, Mean			3.4	6.8	-8.1	6.7	NA
% Difference, Texas			16.9	13.1	1.7	20.7	
Rubber & Plastics	\$151,610	\$350,224					
% Difference, Mean			40.5	-39.2	-36.5	102.1	-47.8
% Difference, Texas			-39.2	-73.7	-81.2	-12.5	-77.1
Primary Nonferrous	\$183,430	\$890,010					
% Difference, Mean			2.9	-93.1	6.3	62.0	22.8
% Difference, Texas			-73.4	-98.2	-71.7	-56.8	-67.6
Utilities	\$478,740	\$741,576					
% Difference, Mean			6.9	67.7	7.1	67.8	NA
% Difference, Texas			-31.8	-79.1	-48.8	8.3	
Communications	\$333,796	\$173,840					
% Difference, Mean			18.1	-23.2	-43.5	78.9	NA
% Difference, Texas			92.8	47.4	4.7	23.4	
Average % Difference, Texas			46.5	62.3	39.9	66.6	
Average % Difference, Mean (10 listed above)			14.6	34.4	38.8	48.5	
Average % Difference, Texas (10 listed above)			42.8	58.2	52.7	55.8	

^a Percent difference from Texas and from the five-model mean.

^b NA = not disaggregated enough for comparison.

TABLE 3 MEASURES OF DISPERSION OF THE FIVE MODELS' ESTIMATES^a

Scenario	TEC PETRO	TEC COMP BQ	3-CO D PROC	NC VECTOR	DE P PROC	NC P PROC	Average
Output Impact	113.35	123.50	123.06	124.29	124.98	125.50	\$1,235
Income Impact	11.41	12.84	12.15	12.14	12.15	12.15	\$1,415
Employment Impact	127.45	128.08	128.12	128.16	128.17	128.18	\$1,274
Average	113.35	123.50	123.06	124.29	124.98	125.50	\$1,235
TEC PETRO	113.35	123.50	123.06	124.29	124.98	125.50	\$1,235
TEC COMP BQ	123.50	123.50	123.06	124.29	124.98	125.50	\$1,235
3-CO D PROC	123.06	123.50	123.06	124.29	124.98	125.50	\$1,235
NC VECTOR	124.29	123.50	123.06	124.29	124.98	125.50	\$1,235
DE P PROC	124.98	123.50	123.06	124.29	124.98	125.50	\$1,235
NC P PROC	125.50	123.50	123.06	124.29	124.98	125.50	\$1,235

^aReported in number of person.
^bPercent difference from mean estimate.

TABLE 6 COMPARISON OF DISPERSION OF SELECTED DISAGGREGATED IMPACT ESTIMATES^a

Scenario	Com- munications	Eating & Drinking		Paper Products	Primary Input	Scenario Average
		Utilities	FIRE			
TEX PETRO	26.3	41.1	14.6	36.9	19.9	25.1
TEX COMP BQ	(31.7) ^d	(28.4)	(15.5)	(59.2)	(17.6)	(27.5)
NC D PROC	1.9	35.1	34.4	76.1	13.8	31.9
3-CO D PROC	4.8	20.0	30.8	24.2	98.7	32.2
NC VECTOR	32.6	26.1	12.0	34.6	69.1	40.6
DE P PROC	49.8	37.4	56.7	45.2	37.7	42.5
NC P PROC	49.2	35.5	57.0	46.2	34.9	46.0
Average %						
Difference, mean ^e	29.1	33.2	36.2	33.3	26.8	36.9

^aAverage percent difference from the five-model mean.

^bFor these sectors the average was for four models since Schaffer's aggregation was not comparable.

^cPrimary input for each scenario is defined by largest direct requirement: 1) petroleum refining; 2) computer machinery; 3) and 4) business services; 5) lumber, wood, and furniture; 6 and 7) dairy, poultry, and eggs. Since the vector included four different sectors, there really is no single primary input; if the average were calculated without the NC VECTOR, then average percent difference from the mean for primary inputs would be 19.7.

^dFigures in parentheses represent percent difference from Texas estimates.

^eBy impacted sector.

the purpose is not to evaluate any one model's accuracy but rather to examine the similarity of the five to each other. In these comparisons, the average deviation from the five-model mean is used as a measure of dispersion. Closeness to the mean by any one model does not indicate accuracy since there is no reason to believe that an arithmetic mean of these estimates is a proxy for the true impact. However, average deviation from that mean does provide a relative measure with which to indicate dispersion or lack of it and therefore the degree of agreement among the models. Finally, estimates of disaggregated impacts will be compared to discern patterns where the five models are more similar in their estimates.

Comparison to the Texas Model

The scenario choice for Texas was based on its level of imports. The Texas input-output direct requirements table indicates that the petroleum refining industry imports 38 percent of its total purchases while the computer equipment industry imports only 19 percent. Thus, the TEX COMP EQ, requiring less trade pattern adjustments, was expected to be more accurately estimated. The contrast between

the two cases less clear-cut due to TEX PETRO's technology being more similar to the nation. Table 3 is designed to show which of the model's estimates are most similar to the Texas model (hereafter referred to simply as Texas). The percent deviation from the Texas estimate is shown for each of the five models for statewide type II impacts (output, income, and employment impacts).⁴ No single model is consistently similar to Texas. IMPLAN is closest to Texas for three out of the six presented impact estimates, but in some cases by very small margins. In fact, if a six-measure average deviation from Texas were calculated,⁵ both RIMS II and RSRI would have lower average deviations from Texas.⁶

In order to discern any pattern of closeness to Texas, five-model average deviations from Texas were calculated. These five-model average deviations indicate that the output impact estimates for the TEX PETRO scenario are the closest to the Texas model. The five-model mean for total regionwide output change for the TEX PETRO scenario is \$13,554,257 (8.8 percent different from Texas), while the five-model mean output impact for the TEX COMP EQ scenario is \$25,580,000 (18 percent different from Texas). In the TEX PETRO scenario, all of the models except ADOTMATR were within 8 percent of the Texas estimate. However, in the TEX COMP EQ case, although both IMPLAN and RIMS II were about 6 percent different from Texas, the other models were 18 percent or higher. Therefore, for type II output impacts it seems that the models were more similar to Texas for the TEX PETRO scenario, perhaps indicating that the similarity to the national industry was more important than regional trade pattern adjustments.

When estimating regionwide income impacts, the average deviation from Texas for the TEX PETRO scenario is 28 percent while for the TEX COMP EQ scenario it is only 12 percent. Thus, although the five models better estimated output impacts for the PETRO scenario, they better estimated income impacts for the COMP EQ scenario.

Finally, when the estimates for total employment effect are compared, there is a much greater average deviation from the Texas estimate (about 40 percent for each scenario). For the COMP EQ scenario, these percentages represent a range of estimated employment effects from IMPLAN's high of 623 to ADOTMATR's low of 184.2.

⁴ It is regrettable that the hypothesis that type I impacts would be more accurately estimated cannot be tested since some of the models do not provide type I impacts.

⁵ Average deviation is defined here as the sum of the absolute values of the percent differences from the Texas model for all selected impacts divided by the number of impacts (six).

⁶ Although ADOTMATR is consistently the farthest from the Texas model, ADOTMATR impacts, estimated for demonstration purposes, do not represent the accuracy that IMPLAN provides when local data and judgment are incorporated.

If the five-model average deviation from Texas for all three impacts (output, income, and employment) are averaged, the average percent deviation from Texas is then 25.9 for the TEX PETRO scenario and 23 percent for the TEX COMP EQ scenario. Given the inconsistency of the results and this small difference in average percent deviation, the hypothesis that the TEX COMP EQ scenario would be more accurately estimated is not supported.

A final point should be noted. Closeness to the mean is a necessary but insufficient condition for closeness to the Texas model estimate.⁷ For example, the models' estimates of the income impact for TEX PETRO are on average 13 percent different from the mean; but since they are all underestimates, they range from 15 to 40 percent different from Texas. Therefore, a small average deviation from the mean does not always assure a small deviation from Texas. It follows that the model estimate closest to the mean is not necessarily closest to Texas. For example, although RSRI is closest to the Texas income impact estimate for the TEX PETRO scenario, RIMS is closest to the five-model mean. In the TEX COMP EQ scenario, SCHAFFER's output impact is only 2.94 percent different from the mean while 18 percent different from Texas. Thus, when the only measure of closeness presented is the average deviation from the mean of the five model estimates, closeness to the mean is not a proxy for (nor even consistent with) closeness to a survey model's estimates.

To determine whether the five models were better able to estimate some disaggregated impacts than others, their estimated impacts were compared (table 4). Again, there is no one model which is consistently closest to Texas. Although for an all-ten impact average measure, RIMS II had the smallest average percent difference (42 percent), it was the closest to Texas in only two of the ten cases. The percent differences from Texas for these disaggregated output impacts are greater than the percent differences for the total output effects. In 19 of the 43 cases, the percent difference from Texas is over 60 percent. In the 16 instances when the model was less than 25 percent different from Texas, it was most often for impacts on the principal diagonal elements, petroleum refining and computer equipment, or the service industries, utilities, and communications.

The estimates of disaggregated impacts for both industrial scenarios were not close to Texas. The average percent difference for

⁷ In terms of relative magnitude, the closeness of all the models to Texas and all the models to their own mean seems to follow the same pattern in these two scenarios. When the average percent difference from the five-model mean is less than 20 percent, the average percent difference from Texas is also 20 percent. When the average percent difference from the five-model mean is over 35 percent, the average percent difference from Texas is about 40 percent. Although being relatively close to each other does not assure being close to Texas, widely disparate estimates cannot all be close to the Texas estimate.

TEX PETRO was 50 percent and 54 percent for the TEX COMP EQ scenario, thus failing to support the hypothesis that impacts in a sector with fewer imports would be more accurately estimated.

Dispersion of the Five Models' Estimates

Table 5 is a summary table of all five models' estimated output, income, and employment impacts for the seven scenarios.⁹ It includes an additional measure of dispersion, the coefficient of variation ($V = s/|\bar{x}|$, where s = standard deviation). This measure accounts for the large differences in the scale of the impacts being estimated. However, it seems that the relative size and ranking of dispersion is the same whether the average deviation from the five-model mean or the coefficient of variation is used. Comparing the results from all seven scenarios, the estimates from the five models for total region-wide output and income effects are quite similar, regardless of region or industrial sector affected. The coefficients of variation range from .083 to .276 for output impacts and from .136 to .235 for income impact estimates. However, the range of coefficients of variation for employment impacts is from .398 to .514. Some background may be helpful in understanding this wide variation. SCHAFFER and ADOT-MATR are both consistently far below the five-model mean. SCHAFFER uses only nonagricultural employment which should explain the low estimates and is consistent with greater deviation in the agricultural, P PROC, scenarios. Furthermore, IMPLAN is consistently far above the five-model mean.

If similarity implies consensus by the modelers as to the magnitude of these impacts, then the dissimilarity of the estimates of total regionwide employment impacts is cause for concern for modelers. As indicated previously, closeness to a five-model mean is a necessary condition for all five models to be close to the Texas model. Since employment impacts are the most frequently used and requested, this seems to indicate an area for future research and model improvement.

The size ranking of coefficients of variation by scenario is consistent across all three impacts, Texas estimates consistently having the least variation. The exception to this condition is the 3-CO D PROC scenario for which the five model estimates have a low coefficient of variation (relative to the 6 other scenarios) for output impacts.

When industry was controlled for, it was expected that the average deviation for the 3-CO D PROC would be greater than for NC D PROC, reflecting the need for greater trade adjustments. However, the coefficients of variations for the two scenarios are of similar magnitude and consistently lower for the 3-CO D PROC scenario.

⁹ The full tables from which this table was drawn present actual dollar estimates of each model for all seven scenarios and are available from the authors upon request.

For each type of impact, the three scenarios with the largest dispersion are the NC VECTOR and the two P PROC scenarios. This could be explained by the fact that all include fairly large agricultural linkages and most modelers admit weakness in agricultural employment data.⁹ The difference between the less dispersed DE P PROC estimates and the NC P PROC estimates might reflect the greater interdependency of the poultry processing industry in Delaware. The NC VECTOR scenario was included to determine whether summing the impacts of a vector of final demands would result in greater dispersion of estimated impacts. However, the coefficients of variation are not beyond the range of the six single final demand change scenarios.

To identify areas of agreement among the models, several disaggregated impacts were compared for all seven scenarios (table 6). It was expected that estimates of the impacts (of any scenario) on a service sector would be closer to each other than estimates of impacts on manufacturing or resource sectors, since service sectors typically import a smaller percent of their inputs. Across all scenarios, the average percent deviation from the five-model mean is considerably larger for the paper products sector than for the service sectors. The relative rankings of dispersion by scenario exhibit the same pattern as estimates of total output, with TEX PETRO having the smallest average deviation.

The results reveal that the five model estimates of major or primary inputs for a given industry are less dispersed around the mean than are estimates of other disaggregated impacts. In the primary inputs column the impact on the input with the largest direct requirements coefficient for that industry was estimated by each model. The average percent deviation from the mean for estimates of primary inputs is 19 percent (without the NC VECTOR scenario),¹⁰ considerably lower than for other disaggregated impacts. The impacts on the communications sectors for the D PROC scenarios also exhibit relatively small deviations from the mean, possibly because communication is a major input into the data processing industry.

Conclusions about the similarity of the models' estimates to each other include: the models' estimates are closer to each other for output and income impacts than for employment impacts; the estimates of disaggregated impacts generally are very dissimilar but seem to exhibit some agreement for the impacts of the TEX PETRO scenario and also for primary inputs into an industry's production.

⁹ Although this may not appear to affect all types of impacts, several modelers use employment ratios to determine regional product mix and/or location quotients which would be used throughout the model.

¹⁰ Since there is no obvious primary input for a vector of four very diverse final demands, the 59 percent deviation in the estimation of the impacts on lumber is inappropriate for this column.

The estimates of the impacts on local service industries seem to be relatively more similar than estimates of impacts on manufacturing industries.

Assessment of the Models

A major criterion in any objective assessment of the five models would be their ability to predict accurately. However, even if the assumption that closeness to the Texas model is an adequate proxy for accuracy is accepted, the question of which model is the most accurate remains moot. None of the models are consistently close to the Texas estimates. Nor do any of the models consistently provide estimates of employment impacts or disaggregated impacts in an acceptable range of closeness to the Texas model.

Therefore, judgment must be based on the models' relative merits in terms of criteria other than accuracy per se. If the criteria include monetary and time cost to the user, flexibility, nature of required input (data, human and physical capital), and nature of output, the determination of the best model for a particular user will depend on the user's weighting of the importance of the various criteria. Thus, an evaluation of the models can only be undertaken within the context of specific uses and user situations. For example, if a user is completely computer and input-output illiterate, has no region-specific data, has over \$1500 and very little time, this user would find the nature of required input prohibitive and thus assess both ADOTMATR and IMPLAN to be poor choices. On the other hand, if a user had access to regional data bases, lots of time and little money, the monetary cost criterion in combination with the opportunity to produce a hybrid model would lead to a choice of ADOTMATR or IMPLAN.

If a user puts very heavy weight on monetary and time costs but understands input-output and a spreadsheet well enough to use a total requirements table for repeated analysis, then the better model would be RIMS II. However, if time costs are more heavily weighted than money and if the user wants round-by-round impacts, then RSRI or SCHAFFER would be the best model.

IMPLAN, a middle-of-the-road model, is less costly and more flexible than RSRI, RIMS II, or SCHAFFER, but requires less user time, regional data, and knowledge of input-output and computers than does ADOTMATR. For the user with some time, money, computer and input-output literacy, and regional data, IMPLAN offers a reasonable alternative.

Each model provides unique features and will appeal to and be the wise choice for different users. In general, although the existence of these ready-made models has altered the nature of the choice facing potential users of regional input-output analysis, many of the regional scientists' tradeoffs still remain. A survey model still takes

more work, time, and money than a nonsurvey model, but both still require some knowledge of the region and the input-output framework to be accurately used for analysis. While the models are certainly all time savers, they range from being a tool to help a user estimate his own model (ADOTMATR) to estimating the regional model for the user (RSRI, SCHAFFER and RIMS II).

Whether users are making sacrifices in quality by opting for one of these models depends on the steps the user would have undertaken if the ready-made option were not available. If the user would have borrowed a model from a nearby region or applied simple location quotients to an aggregated national table, then the purchase of an interdependence table from RIMS II would both save time and likely improve quality.

If a user would have collected survey data and estimated a regional model based on a full transactions matrix, then collecting the same data and using the ADOTMATR tool to accomplish the rote programming associated with the input-output analysis and facilitate applications through "what if" analysis will save the user much time without any sacrifice of quality.

If a user needs to determine detailed and varied impacts of a one-time change, RSRI or SCHAFFER will save much time and money over the user's own hasty, inexperienced efforts to construct a nonsurvey model.

Implications for the Future Direction of Regional Input-Output Modeling

Many regional scientists will agree with Jensen's reaction to the existence of these models: "the commercial availability of ready-made models presents the profession with an inevitable trade-off between the cheaper, more expeditious, but more suspect ready-made methods and the more expensive but more accurately representative partly-hybridized models" (1987, 20-25). However, as indicated above, it is unclear that this is the most commonly experienced tradeoff. Although this describes well the tradeoff for carefully crafted models such as Texas, Washington state, and West Virginia, there are many one-time local models where the tradeoff is between a cheaper ready-made model and a more expensive inexperienced nonsurvey model generated without hybridization through simplistic location quotient methods to save time and money. It is in these cases where the cheaper ready-made model can free up resources to be used to improve accuracy. If this is the more common tradeoff, then the alternative use of the freed resource becomes the major concern. This concern can point to the direction for future research and also to a measure of the value of the ready-made models.

As Bourque states, "if the days of survey-based models are over, the development of fact-based input-output models should receive

increasing emphasis within the context of PC and other ready-made procedures" (1987, 29). The literature reflects just such an increasing emphasis. The work by Jensen, West, and Hewings (1986) to identify the Fundamental Economic Structure (FES) and Nonfundamental (NFES) reveals a greater need for additional information in some sectors and economies more than others. Research by Lahr (1987) and Stevens (1987) concerning sectors most sensitive to trade pattern differences also will provide clues as to where the additional data should be gathered. A comment from Bourque (1987, 28) also suggests that regional researchers become better skilled (and trained) in mining less commonly used secondary data sources for "facts" to input into an input-output model. Since nonsurvey modelers and their critics agree that the most likely direction for the future is toward hybrid models, it is incumbent upon researchers to identify and evaluate hybridization techniques. As Stevens (1987, 28) states, "ultimately, it is a question of cost-effectiveness: how can the analyst or user make the greatest improvement in the model per dollar of survey funds?"

Stevens's comment raises the issue of who should be collecting and adding the "superior" data to the model. He refers to "the analyst or the user." If we are to reap the greatest benefits of the specialization inherent in ready-made models, a local user who is familiar with a specific region's economic structure and data sources should be the one responsible for providing survey data. Such division of labor necessitates at least two priors. First, that the profession set forth clear and approved methods for determining in which sectors or for which behaviors data collection is most accuracy-enhancing. Second, that ready-made models facilitate the accommodation of "coefficient fix-ups and source data wherever they exist" (Round 1987, 27). Given a consensus of dissatisfaction with current trade pattern adjustment techniques (location quotient, supply-demand pool and even RPCs), a truly flexible ready-made model will enable the introduction of survey-based trade coefficients in some sectors while continuing to balance the rest of the sectors in an unbiased manner.

Hence, the evaluation of the above five models should include their ability to accommodate survey-based data at several points in the analysis — total output, region-specific technology coefficients, and unique trading patterns. Jensen (1987) goes so far as to state "inclusion of survey data in these region-specific sectors should be a primary basis of distinction between the more-recommended and less-recommended ready-made models and that user information should contain warnings on the probable inadequacies of pure ready-made models" (p. 20-25).

When the models were originally studied, only one model, ADOTMATR, encouraged the insertion of locally provided survey data. IMPLAN also had a technology routine which enabled users to override the coefficients from the national table. Both SCHAFER

and RSRI, while not enabling the user to specify survey-based coefficients, did include some hybrid types of procedures in their own techniques. Since the original study, all of the models have been changing in response to academic critics and/or market forces. Although most are now available in PC versions, only ADOTMATR and IMPLAN allow the user to input data other than the final demand change. ADOTMATR now provides a spreadsheet-like format, which facilitates scenario impact assessments. But more significantly, in light of the discussion above, the user can change technological or purchase coefficients and assess the sensitivity of the model to such changes.

As Miernyk (1987, 17) notes, the conclusion that these models should free up time for some survey data collection has "moved the ancient debate about 'top down' versus 'bottom up' input-output tables back to square one." The irony is not that nonsurvey models are likely to become semisurveys (or hybrid models), but that, as anyone who has constructed a survey-based model knows, the choice as to where to best spend survey dollars is nothing new. It is hoped that choices in the future can be based on research like Jensen's and Lahr's and others currently underway (e.g., Greenstreet 1988; Gillies and Jamnick 1988).

In addition to the accuracy of the model estimates themselves, the effective use of any regional impact models may well depend on the correct specification of the final demand changes put into the model and the clarity of the output from the model. Although not a new concern, it may loom larger as the distance between modeler and user grows. To assure accurate impact assessment, it is critical to have software and/or handbooks that guide the user (professional or lay) through the intricacies of final demand determination. It is encouraging to note that all of the models are expanding efforts to aid users in defining a final demand change. For example, RSRI is incorporating it into the software, while RIMS II is making an earnings/output ratio available for situations where final demand in terms of output is difficult to determine. SCHAFER and IMPLAN have consistently emphasized this step.

Another future area of refinement will be to provide estimates of impacts on the actual variables which concern planners, such as employment of those currently unemployed in their region rather than generic employment impacts.

In summary, the best models will be those which are flexible and "friendly" enough to incorporate additional survey data and to be easily joined with local demographic and labor market data to provide more refined measures of employment impacts.

4. Conclusions

The five nonsurvey-based regional input-output models have many similarities in methodology but differ in trade pattern and consumption regionalization procedures and regional employment

data sources. They also differ in the involvement of the user in the construction of the model.

In spite of these differences, the five models provide estimates of impacts of seven various final demand change scenarios that are similar to each other and also to the semi-survey Texas model for total output and total income estimates. However, employment estimates are very disparate, as are the estimates for the impacts on disaggregated sectors.

From a user's perspective, all of the models save time without a perceived loss of accuracy. Whether this is an optimal change from the profession's perspective depends in large measure on the model accuracy and the overall resource efficiency involved. Although this study does not rank the five models for accuracy, it does suggest which models are structured to encourage more accurate regional analysis by efficient resource reallocations (the saved time). To the extent that the freed resources are reallocated to regional data acquisition and accurate final demand determination, the models are flexible enough to incorporate such information, and as the profession undertakes research to determine which data best increase overall model accuracy, the existence of these models will move regional impact analysis to a higher plane of improved accuracy and wider, more effective use.

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NRIFS - NAT'L REGIONAL IMPACT
EVALUATION SYSTEM

Regional Labor Market Performance

and

U.S. Department of Labor Programs

Draft Final Report

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Chapter 4. Models of Regional Economic Activity

Multiregional economic models help address several analytic and policy questions facing regions, states and metropolitan areas.

The models are useful for analyses of state and municipal transportation needs, population growth and economic development. They also can make forecasts of revenues and expenditures to assist the budget processes of state and local governments. The effects of defense expenditures on a local economy, for example, both the initial direct effects on defense industries as well as the subsequent multiplier effects on other industries, can be estimated using these models. More generally, the effects changes in government tax and/or expenditure policy on employment, unemployment and population growth in the local labor market can be inferred from such models.

The present project will trace the effects of differing time paths of federal expenditures and taxes on regional labor markets for the decade of the 1990s. To do this, alternative assumptions are made regarding federal tax and expenditure policy for the decade, and then a multiregional model is used to infer the effects on output and employment by region. The principal concern of the model-based analysis is to estimate the effects of federal budget policy on regional output, population and unemployment. The regional geographic units of particular interest are the ten administrative regions used by the U.S. Department of Labor in the administration of its major programs.

Chapter 2 used multiple regressions based on historic data to demonstrate that the demand for services from the major DOL programs (UI, ES and JTPA) is linked to regional labor market performance. Chapter 3 showed how DOL financial allocations to the states change in response to state labor market indicators such as unemployment, long term unemployment, the size of the civilian labor force and average income. When regional unemployment rises, all three DOL programs experience changes in the numbers of workers served as well as changes in expenditures for services and changes

in monies available for program administration. To anticipate future changes in demand for services from these programs, forecasts of regional labor market outcomes, e.g., unemployment rates and rates of population growth, are needed. This chapter describes multiregional economic models, and selects one, the National-Regional Impact Evaluation System (NRIES), to be used in a simulation analysis of the 1990s.

Multiregional Models

Regional economic models used in forecasting and policy applications have been developed for a variety of sub-national geographic areas. Most of the models were developed with one specific geographic area in mind, often a state or a metropolitan area. The parameters embedded in such models are specific to that one area, reflecting the local industrial structure, demographics, tax laws and other local institutional features.

This project is concerned with economic performances across all regions of the U.S. economy. In describing and evaluating regional economic models, attention will be restricted to just the models that cover all geographic areas and yield national averages and totals as well as projections of economic variables by region.

Multiregional economic models can be divided into two broad classes; input-output (I-O) and econometric models. Input-output models provide a detailed representation of the interindustry linkages of a local economy. Their central feature is an input-output table that shows the detailed pattern of sales between industries. For a given level and industrial pattern of final goods sales, I-O models show the total volume of intermediate sales plus final sales by detailed industry and the labor requirements associated with producing these levels of final output. These models have been developed for the aggregate U.S. economy and for regions, states and MSAs. Recent surveys of regional I-O models are found in Bolton, Jackson and West (1990) and Brucker, Hastings and Latham (1987).

Two features of I-O models limit their potential ability to meet the simulation needs of this project. First, I-O coefficients are static or timeless, i.e., they do not show the time path followed by output and employment (labor requirements) in response to changes in final demand. Labor productivity growth is usually assumed to be zero, making long term employment projections suspect. Second, I-O models usually do not include a complete characterization of the important labor market variables. In particular, they usually do not make forecasts of labor force growth, unemployment and unemployment rates. Since unemployment is an important determinant of demand for services from the three DOL programs, this second weakness precludes from use in the present project the operational I-O models currently available.

Regional econometric models develop behavioral supply and demand relationships in the labor market as well as relationships for the various product markets and sometimes the money market. They usually reflect aspects of the competitiveness of the region such as the major export and import-competing industries. They can make forecasts of population, the labor force and unemployment on a regional basis. These models have much less industrial detail than I-O models, but they can incorporate productivity growth, population growth and other dynamic relationships present in sub-national economies. One survey of regional econometric models is given in Bolton (1985).

Multiregional economic models can also be classified according to the assumed direction of the causal relationship between national and regional economic activity. Top-down (or shift-share) models assume the primary direction of causation is from national to regional activity. When there are several regions, top-down models apportion national activity among the regions and the regions do not interact (or if they do interact, national aggregates are not affected by regional interrelations). Early versions of regional models developed by the major national GNP forecasting companies such as Data Resources Inc. (DRI) and Wharton Econometric Forecasting Associates (WEFA) used an exclusively top-

down approach in making forecasts for states and municipalities.

Bottom-up models develop national aggregates as sums and averages of economic variables determined at a sub-national level. In these models it is possible for the regions to influence one another in arriving at national aggregates. Three multiregional models that incorporate bottom-up features are NRIES-National-Regional Impact Evaluation System of the U.S. Department of Commerce, REMI-Regional Economic Models Inc. developed by George Treyz and associates¹ and MRPIS-The Multi-Regional Policy Impact Simulation model developed at the Boston College Social Welfare Institute (1984).

The top-down and bottom-up approaches to regional modeling each have advantages and drawbacks. Top-down models ensure that the sum of projected regional values for a particular variable agrees with a national total for that variable projected in a national model. Bottom-up models derive national totals from regional summations. In most top-down models the interrelations among the regions are not explicitly recognized. Bottom-up models are capable of capturing the regional interrelations but then must decide how to set national totals. Should the national total for a basic variable such as real GNP be the unconstrained sum of regional GNPs or a value constrained by some external control? Either choice presents problems. An unconstrained sum could produce a national total that is not "realistic" while constraints on the national total imply an iterative solution procedure to ensure agreement between the sum-of-regions and the national total.

Because the pure top-down and bottom-up approaches each have important limitations, most of the major multiregional models are now structured so that aspects of both approaches are utilized. This is accomplished in different ways, but a common feature is to have a "forcing function" which takes the sum of the projected results from the regions and forces the sum to conform to a predetermined national total, often a total derived from a national

¹ See Treyz, Rickman and Shao (1990).

macro model. This hybrid approach is followed in the National-Regional Impact Evaluation System (NRIES) developed at the Regional Economic Analysis Division of the Bureau of Economic Analysis of the U.S. Department of Commerce (Kort, Cartwright and Beemiller (1986)). Details of the bottom-up and top-down features of the NRIES model are given later in this chapter.

After an initial reading of summary documentation and conversations with several analysts familiar with multiregional models, the field of potentially eligible models was narrowed to five. These five with associated acronyms are: (1) MRPIS - the Multi-Regional Policy Impact Simulation model, (2) NRIES - the National-Regional Impact Evaluation System, (3) REMI - Regional Economic Models Inc., (4) DRI - Data Resources Inc., and (5) WEFA - Wharton Econometric Forecasting Associates. For each model we contacted the professional staff that support the model and obtained more detailed documentation. Based on the documentation and a series of phone conversations, memos were prepared describing each model.² These memos were then circulated to the modeling staffs for comments regarding the accuracy of the descriptions and the correctness of the interpretations of how the models function. The following pages are based on the original project memos after making revisions that incorporate comments made by the model builders.³

² The professional staff at the Urban Institute who participated in this process and their respective model responsibilities were as follows: MRPIS - Dr. Wayne Vroman, NRIES - Ms. Kelleen Worden and Dr. Genevieve Kenney, REMI - Dr. Douglas Wissoker, DRI - Ms. Kelleen Worden, and WEFA - Dr. Wayne Vroman.

³ We particularly wish to thank the following persons associated with the individual models: MRPIS - Dr. John Havens, NRIES - Dr. John Kort and Dr. Thomas Lienesch, REMI - Dr. George Treyz, DRI - Ms. Rosalyn Greenstein, and WEFA - Dr. Stanley Duobinis. All were most helpful in supplying the information we requested and answering our questions. Any remaining errors in the characterizations of the models are the sole responsibility of the principal investigator.

The MRPIS Model

The Multi-Regional Policy Impact Simulation (MRPIS) Model was developed to examine the distributional consequences of governmental policies.⁴ Policy effects on the distribution of household income and the distribution of employment were of central interest to the developers of MRPIS. To accomplish a distributional analysis, the model characterizes the important tax and transfer systems which directly affect household incomes. It also determines employment responses with attention to the industrial, occupational and regional aspects of employment change. Regional totals can be derived from variables determined at the state level.

Model Structure

MRPIS has four main sectors or modules: (1) the household sector, (2) the product market, (3) the industrial sector and (4) the labor market. Each sector has empirical relationships derived from a cross section data base such as the 1984-1985 Survey of Consumer Expenditures (SCE) used to estimate household expenditure relationships. The spirit of the estimation used in each sector is empirical, not the result of an approach that consistently applies a single analytic framework. This stands in contrast with Computable General Equilibrium (CGE) models which specify many or most of their behavioral parameters from a priori considerations.

The income of each household can change in MRPIS through changes in labor market earnings, dividend income, taxes or transfers. Except for dividend income, all are simulated on a micro basis. Changes in labor market earnings are determined in the labor market module (discussed below), while the other income sources are modeled in the household sector.

The household sector has two basic components, the MRPIS data

⁴ See Boston College Social Welfare Institute (1984) and (1989).

set and the tax and transfer simulators. The data set currently uses household income for calendar year 1985 as reported in the March 1986 Current Population Survey (CPS), but supplemented in certain ways. One CPS income field, for example, has the combined dollar amount from unemployment insurance (UI), workers' compensation and veteran's benefits along with three separate 0-1 indicators to signal the presence of the individual transfers. For persons reporting UI income, the model then applies a set of decision rules to assign the receipt of UI at the micro level.

There are four major tax and transfer simulation modules in the household sector. For each household these modules determine the payment of federal personal taxes, state personal income taxes, social security payroll taxes as well as the receipt of UI benefits. Since the three tax modules are of less immediate interest here, only the UI benefits module will be described.

When an individual becomes unemployed he or she is assigned a probability of receiving UI benefits. The probability is derived from 1985 state data on proportions of the unemployed who received UI benefits. For recipients, the level of benefits is based on the average statewide replacement rate (the ratio of the average weekly benefit to the average weekly wage) multiplied by the person's average weekly wage. Benefits go to those who lose 40 or more hours of employment. The model documentation notes that the assignment of benefits has errors at the micro level, but argues that the assignment yields accurate statewide totals. There is no discussion of how the duration in benefit status is assigned to the micro records or how the underreporting of UI benefits in the CPS is addressed. Also there is no discussion of the calculation of a statewide unemployment rate. Presumably the self-reported unemployment of the previous year (from March CPS work experience questions) is used to estimate annual statewide counts of persons with unemployment, but there is no indication that state TURs are

calculated.⁵ When output, employment and unemployment change, the UI benefits module provides a way to assign benefits from this cyclically sensitive program to individual workers.

Household expenditure patterns link the household sector to the product market. Data from the 1984-1985 Consumer Expenditure Survey (CES) were used to estimate the marginal propensity to consume (MPC) and the marginal budget share (MBS) (the marginal share of spending on individual commodity groups) for each family. Families were then aggregated by region and income class to generate the aggregate income variables (including an aggregate estimate of dividend income) used in the actual consumption functions. The consumption functions are organized so that a change in disposable income translates into changes in consumer final demand by region (51 states), income class (20 classes) and multiregional input-output sector (124 sectors). This detail on effective consumer demand then provides a vehicle for effecting output and employment by state and industry.

The industrial sector of the model is its third module. This sector translates household and other final demands into output through detailed multiregional input-output tables. In the model documentation there is no description of the specifics of this sector.⁶

The labor market sector of MRPIS does four things. (1) It translates changes in industry output into changes in industry employment. (2) It distributes changes in each industry's employment across a set of occupations. (3) Employment changes are aggregated into a matrix of 11 industries and 8 occupations. (4) It

⁵ A statewide annual average TUR can be viewed as the ratio of two weekly averages: the number unemployed divided by the number in the labor force. Since MRPIS emphasizes counts of persons with unemployment, a duration factor must be projected in order to compute the weekly average of unemployment. A similar issue is present in measuring the labor force. It appears the calculation of a TUR would not be a trivial undertaking in MRPIS.

⁶ There is a blank section for Industry Sector in Chapter 2 of Boston College Social Welfare Institute (1989).

allocates changes in labor demand for industry-occupation-region cells to individual household records.

When the model indicates there are changes in hours worked, the changes are allocated to three types of workers: job stayers, labor force entrants (or dropouts) and job changers. The changes in hours are also distributed across eight demographic groups (women and men, blacks and whites, and over 25 and under 25). The labor market thus links the earnings of individual households to movements in output.

Evaluation

The MRPIS model has important strengths that should be highlighted. (1) There are several policy variables in the model. The three tax simulators and the UI benefits simulator that make adjustments to household income provide four direct policy handles. The effects of exogenous changes in government expenditures, labor productivity and labor market demand can also be evaluated. (2) The model is structured so that the multiplier effects as well as initial impacts of policy changes can be estimated. Thus aggregate output and aggregate household income are endogenous to the MRPIS model. This represents a major improvement over static microsimulation models such as TRIM (supported by The Urban Institute) and MATH (supported by Mathematica Policy Research, Inc.) where labor market earnings and income from capital are given. MRPIS estimates the multiplier effects of any change by sequentially looping through the four sectors described above until the changes in endogenous variables between successive iterations are very small. In practice, convergence is achieved after six or seven income rounds.

(3) Because the spirit of the model is empirical in each sector, it may give a better representation of actual behavior than models which rely more on a priori considerations to derive their parameter estimates. (4) The labor market predicts employment changes with detail by industry, occupation and region. (5) Because

state-level output and employment are standard outcome variables the states can be aggregated to any desired regional configuration. In particular, MRPIS can show the effects of policy and other changes for DOL regions as well as the Census divisions and regions.

At the same time there are four major limitations of the model as it has been developed to date. (1) A number of important sectors are omitted altogether, most notably the financial sector and the wage-price sector. The model is akin to an old line Keynesian macro model wherein only real variables are determined and money does not matter. (2) The MRPIS model is designed to simulate outcomes for a particular year. As such no attention is given to the time path taken by policy variables and outcome variables of interest in moving from the present to a specified future year. For the present project the future date of interest is a year in the late 1990s. At present, however, MRPIS is calibrated to do simulations for the year 1985. The data base would need to be aged forward for more than a decade. Also, the tax adjustments in the household income sector need to be updated to reflect changes in the federal tax code resulting from the tax legislation of 1986.

Two aspects of the labor market are also problematical. (3) There is no explicit solution for the unemployment rate. Given the decision rules regarding UI benefits, the model carries information on the number who experience unemployment in each state, but the state's average weekly unemployment (TU) and the annual unemployment rate (TUR) are not standard outcome variables. Since the present project is very interested in state and regional TURs both as indicators of labor market performance and as determinants of DOL program outcomes, this is a serious omission. It is not apparent how much developmental work would be required to add the TUR to the standard set of outcome variables. (4) Migration of the population from declining regions to expanding ones is an important aspect of long term labor market adjustment. MRPIS does not provide for this type of adjustment. Population projections for future years treat state and regional population growth as exogenous. This

is particularly serious limitation of the model in light of the differences in regional population growth that might result from alternative future macro policies. California's growth, for example, could be considerably lower in the 1990s if defense spending declines substantially.

The NRIES Model

NRIES-2 is a multiregional, economic impact and forecasting model. The model consists of 51 state economic subroutines and 2 national subroutines and can be used in a bottom-up fashion (observing how changes in the state-level variables affect national variables and feed back to the state variables) and to a limited degree in a top-down fashion (observing how changes in the national model affect variables in the state models). Most applications use the bottom-up model because of the greater scope for analyzing policy impacts. This description of NRIES draws from several papers that contain applications of the model, from the set of estimated equations in the California, Michigan and national models and from conversations with the NRIES modelers.⁷

Model Structure

The individual state models in the NRIES-2 system are large scale with 320 equations. Behavioral equations in each state model are estimated separately using time-series data, often with estimation periods from 1963 through 1987. Of the 320 equations in the state models, 106 are behavioral.

State-level manufacturing output levels are determined at the 2-digit level of Standard Industrial Classification (SIC) detail

⁷ The most important papers are Kort, Cartwright and Beemiller (1986), Kort, Lienesch and Ambargis (1987) and Isserman and Kort (1988). Dr. John Kort and Dr. Thomas Lienesch were very helpful in supplying documentation, answering questions and reviewing a draft memo that described the NRIES-2 model.

while nonmanufacturing output levels are generally determined at the 1-digit SIC level.⁸ The equations for nonmanufacturing output vary greatly across industries and states and may include disposable income or some other total demand variable for that state. Manufacturing output levels are nearly always a function of lagged output in the industry and an interstate trade index which captures the net interstate demand for that industry's production. Many manufacturing output levels are specified as functions of national output and earnings in that industry. National and state population, the ratio of state-to-national average earnings and the level of demand from an adjacent state are included in selected manufacturing output equations.

The level of the interstate allocation index is based on two components. The first captures the net export position of a state developed for each pair of states based on the 1977 Census of Transportation, Commodity Transportation Survey, and the second updates this overall net export position using the most recently available data on the location of production by state. The interstate indexes are interactive with the model.

Industry-specific employment levels are estimated at the 1-digit SIC code level. They are often a function of the lagged employment level and the current output level in the corresponding industry. While one recent use of NRIES-2 indicated that the employment equations had been modified to include real wages as explanatory variables, we note that in the operating versions of California and Michigan models real wages appear in only a few industries. Overall, the NRIES staff estimates that about 30 percent of the employment equations include real wages. The basis for the employment equations are short-run profit maximizing behavior by firms with no binding supply-side constraints.

Total employment is the sum of civilian and (exogenous) noncivilian employment, but the civilian component being central to

⁸ Greater detail is used in the trade, services and government sectors.

the model. The industry employment levels used to calculate civilian employment in each state are modelled as behavioral equations, usually as a function of lagged industry employment, industry output and real industry earnings. Total employment, in turn, enters calculations of both total average annual earnings and labor productivity. Civilian employment is used in calculating two forms of the employment rate, one as a rate of the working age population and one as a rate of the labor force. In the Michigan model, the percent change in civilian employment enters a behavioral equation determining the labor force participation rate. The employment rates enter behavioral equations (as labor market demand pressure variables) that determine average annual earnings in several industries in both states.

Although the model contains no wage rates, only annual earnings, both nominal and real earnings series are determined for each one digit industry. The most important variable in determining nominal industry earnings is the national CPI. The employment rate also enters about 40 percent of the industry employment equations. Real earnings by industry are determined as nominal earnings deflated by the national accounts personal consumption deflator. This disaggregation allows employment demand by industry to be influenced by the associated industry earnings rather than aggregate earnings.

Labor force participation rates are determined by different specifications in individual states. Currently the participation rate is a function of the percentage change in civilian employment in Michigan and of a time trend in California. The impact of the participation rate is indirect, through its role in affecting the labor force. The labor force, in turn, enters many identities including the total unemployment rate and the employment rate.

Total population is derived as a sum over several age groups for which there are separate behavioral equations. Although the behavioral equations vary across states, there are common elements in the age-specific population equations. The population under the age of five is determined by the birth rate, lagged population and

net migration. Relative state disposable income and the ratio of state-to-nation employment are key variables in estimating the population of working age, i.e., 25 to 44 and 45 to 64. Population variables in both states have a direct or indirect effect on net migration, retail sales, and local government grants from the federal government. In addition, there is a demand effect of population in California on the output of transportation and retail trade, and in Michigan on retail sales and local government output.

An additional population variable in the model is net migration. It is determined as total population less total population lagged less births plus deaths. Net migration enters the state models through the effects of the ratio of state-to-nation employment and relative disposable income on the level of the population of working age. In California, Michigan and other states, net migration plays a direct role in determining the level of the population under age 5 and ages 5 to 17.

Two national models complete the NRIES-2 modeling system. The first national model has detailed equations that predict individual categories of federal expenditures and federal taxes. There is also a monetary sector in this model which determines interest rates, inflation and financial sector variables. Top-down aspects of a simulation would be initiated from this model.

Interaction between the state and national models occurs mainly through the sum-of-states national model. This second national model aggregates the states variables in various sectors for various industries. These national aggregates then enter back into the state models to create a multiplier effect.

Evaluation

Equations in the state models are estimated using ordinary least squares, with a Cochrane-Orcutt correction for first-order correlation. Dynamics are built into many of the equations for industry-specific employment, earnings, and output through the inclusion of lagged dependent variables and first-order auto-

correlation terms. However, testing and correcting for autocorrelation pose problems in the face of lagged dependent variables which have not been addressed by the NRIES modelers. One omission from published documentation is a discussion of the standard errors associated with the estimated equations. None of the published studies present confidence intervals for forecasts. One unpublished set of comparisons between the model's forecasts and historical values was supplied.⁹ Confidence in using the model is enhanced by these unpublished comparisons.

The production and consumption sectors that underlie the output and employment equations are not spelled out. Employment does not derive from an explicitly defined production function (i.e., Cobb Douglas) that allows substitution between labor and other inputs such as capital. One problem in this area is the lack of generally available time series data on the components of the capital stock by state. It should also be noted that a model may produce sound forecasts even if it has no explicit theoretical foundation. The coefficients on included variables may reflect correlations with excluded variables, but if the correlations persist into the forecast period, accurate forecasts will be obtained.

While there is no rigorous derivation for certain equations, the NRIES model has several positive features. First, it offers complete state-level detail, and results can be aggregated to DOL regions without great difficulty. Results are currently aggregated to the national level and to the level of the eight Bureau of Economic Analysis (BEA) regions. Second, since each state model is estimated separately, state-level predictions made from the model may be better than those produced from models that constrain

⁹ The NRIES modelers have assured us that diagnostic statistics for the individual regression equations are available. In response to a preliminary memo, they supplied a summary table showing mean absolute percent errors for GDP, employment, personal income and population by state for the four years 1986 through 1989.

coefficients to be the same in all states. To the extent that the underlying behavioral equations differ significantly across states (no information is given on that point directly, but the actual equations used for Michigan and California have different parameter estimates, and, for a given dependent variable, will often include different explanatory variables), a pooled time-series cross-sectional model would produce misleading parameter estimates. The modelers estimated separate OLS regressions for each state, thus ignoring the possible gain in efficiency that one can get by estimating the equations in a seemingly unrelated regression framework. That estimation strategy would exploit the fact that the disturbance terms are likely to be correlated across states and industries within a given year.

Third, the interstate interaction indexes are appealing in that they explicitly link up output and demand in all 51 states. The percentage change in total income or output within an industry is used to update the interstate indexes from the last year in which data were available to calculate them. The updating takes into account the shifting location of production across states.

Fourth, the range of policy impacts that can be and have already been studied is fairly large. One concern that has been raised is the extent to which the top-down model can be used to estimate the impact of national policy changes on state and regional labor market outcomes. Two national variables that lend themselves to this type of analysis are national price variables and the minimum wage level. National price variables can be exogenously changed and would feed into state-level output, real earnings, and employment variables. The minimum wage affects earnings in some state equations. In particular industries such as finance, trade and services the minimum wage frequently appears. It is included in the Michigan but not the California earnings equations. Unfortunately though, the minimum wage does not affect the demand for labor directly in the employment equations, so the positive effects of raising the minimum wage are likely to be overstated.

Probably the most important national policy variables are those that summarize the flows of taxes and expenditures in the federal budget. The national model has six major expenditure categories of which defense expenditures is one. The major federal taxes are all represented as well. Finally the national model also has an explicit foreign trade sector which could be modified to show the effects of achieving an improved foreign trade balance.

Analysis of other policy changes is accomplished through use of the bottom-up model. An example of how this can be done is given in the 1988 paper that presented simulated impacts of an increase in the immigrant population of 100,000.¹⁰ The allocation of the new immigrants is assumed to correspond to "the previous pattern" of immigrant settlement. Since much of NRIES policy analysis applications have been performed in restricted geographic areas with the aid of an input-output model, the amount of work needed to develop formulas to allocate effects across industries and states, as well as collect the necessary historical data, could be substantial. This could be especially burdensome if the assumption of a future allocation mirroring past allocations is not tenable.

In summary the NRIES model has a number of advantages and disadvantages for the present project. Among its advantages four are important. (1) It has been used to produce state-level projections in several earlier applications. (2) We understand the workings of the model because of the amount and detail of available documentation and the proximity of the modelers. (3) The model appears readily adapted for this project. (4) The fact that the modelers have been very forthcoming and helpful in providing documentation and answering questions suggests a good working relationship would develop over the course of the project.

At the same time there are a number of disadvantages of using NRIES that also should be noted. (1) It is unclear how important the behavioral component of interstate migration is. In California

¹⁰ See Isserman and Kort (1988).

and Michigan, this component is present in equations which calculate the middle-age (18-44 and 45-64) population variables as a function of relative state disposable personal income and ratios of state-to-nation employment variables. A more complete specification of the determinants of interstate migration might be desirable. (2) No theoretical underpinning is offered for the output and employment equations. (3) There is no discussion of decision rules used to determine when to drop explanatory variables with insignificant t-statistics from the equations. Many of these disadvantages can be identified only because the modelers have been forthcoming in sharing model documentation with us. Of all the models examined, the volume of information supplied on the NRIES model has been the most extensive.

The REMI Model

The REMI model was started as an attempt to bring together disparate elements of the regional science modeling literature. Early work on the model appeared in 1980 and focused on the employment sector for Massachusetts. The most recent version of the model allows all states to be modeled together and includes features such as a migration sector.¹¹

Model Structure

The model uses a national forecast as the starting point. Bureau of Labor Statistics national forecasts (produced every 2 years) are used in combination with other forecasting models to provide the national outcomes.

Most regional outcomes in the model are estimated relative to the national outcome. Although the local economy can be modeled at any level of geographic detail this discussion will presume the

¹¹ Most of the detail in this overview is based upon Treyz, Rickman and Shao (1990).

REMI model has been structured to use states as the local geographic units and aggregates state outcomes to yield simulated regional outcomes. When all states are solved simultaneously, the national outcome adjusts to changes made at the state level. Although the model can be shocked at the national level, most simulations are created changing state variables. These variables are most likely to have substantial inter-regional effects.

Demand

Demand for state-produced goods depends upon two endogenous variables: share of state demand provided by production within the state and share of export demand from other states met locally. These variables depend upon state production costs relative to costs in other states.

State-level consumption demand is formulated as a share of national consumption demand based on historical consumption patterns and real disposable income relative to national real disposable income. Relative prices of goods and services do not affect consumption patterns. Since disposable income is net of state and local taxes as well as federal taxes changes in tax levels can be applied either equally across states or on a state by state basis. Real disposable income is determined primarily wage rates and employment. State wage rates, by industry, weighted by the employment of each industry, as well as a regional estimate of fringe benefits enter into the calculation of disposable income. A state price deflator developed within the model provides another link between state consumption and state costs: the price deflator is constructed as the marginal cost of production in each industry weighted by the industry's share of state consumption.

State demand for capital goods (equipment and non-residential structures) produced by an industry depends upon the U.S. demand for investment goods supplied by that industry, the ratio of optimal capital (summed over all industries) in the state relative to the U.S., the share of equipment and non-residential structures supplied by that industry, and a factor to adjust for differential

investment in the region. Local optimal capital stock depends upon the ratio of local to U.S. anticipated employment by industry weighted by U.S. capital intensity, relative wages and capital costs for the industry, as well as a measure of U.S. optimal capital stock. Anticipated employment includes an adjustment to take into account that changes in employment occur with a lag.

There are six government spending categories: Federal civilian, Federal military, state and local education, state and local health and welfare, state and local safety, and all other state and local expenditures. Federal spending is exogenous to the model. According to a recent paper, REMI allocates military spending in each industry across states based on each state's share of production in that industry. This is a questionable procedure, especially since many industries are rather heterogeneous. A preferred strategy for estimating the impacts of a military build down would be to estimate independently the likely decline in spending in each industry in each state. State and local spending on an industry's production depends upon the state's share of U.S. population, the national share of government spending in that industry, and total U.S. state and local government spending. Demand is adjusted for regional differences in expenditures.

Production

At the heart of model is a production sector. In each local area 49 industries and each have their own Cobb-Douglas production function with employment, capital, and energy as inputs. Capital includes residential structures, non-residential structures, and equipment and land. Three types of energy sources enter the production functions. Coefficients are based on input-output tables. The production functions are the source for model predictions of the demand for labor, labor intensity, and a measure of production costs relative to the U.S. The measure of relative production costs is in turn an important determinant of both the share of intrastate demand produced within the state and exports produced in the state. It should be noted that REMI can be run

using 14 or 49 sector industry detail.

The most recent descriptive paper from REMI indicates the production sector predicts value added rather than total output.¹² Intermediate inputs and value added are each fixed shares of output, based on the U.S. input-output tables. In each industry, value added is a function of the various input factors. Dr. Treyz has indicated that the data are in value-added terms and that adjustments are made to obtain total output.

Labor Market

Employment is measured using establishment data and then adjusted for dual job holdings. The model predicts employment as a derived demand, depending upon the state and national level of value-added in the industry, relative productivity, the state share of national employment, and the "obtainable" labor intensity in the industry. "Optimal" labor intensity depends upon the ratio of state to national costs of labor, capital, and fuel. Labor intensity, however, cannot always be set at the optimal level because capital is slow to adjust. The "obtainable" labor intensity in the state is therefore a weighted average of the obtained labor intensity in the previous year and the optimal intensity, with the weights based on the expected life of capital. The employment levels in the model thus depend upon relative input prices via the measure of labor intensity, previous employment intensities, and measures of the relative productivity. Relative productivity (state to U.S.) serves as a policy handle for simulations in which the productivity of the workforce is increased in a state or in an industry.

The migration sector of the model allows population, and consequently labor supply, to respond to labor market conditions. In particular, migration for economic reasons depends upon current and past measures of (i) the state employment rate relative to U.S., (ii) average wages in the state relative to the U.S., and (iii) the mix of wages across industries relative to the U.S.

¹² See Treyz, Rickman and Shao (1990).

industrial mix. Region-specific intercepts are included in the regression model to allow differential employment growth due to differential amenities. Local population levels then depend upon economic and non-economic migration levels, as well as usual trends in birth and death rates based on 1980 census data. International migration is allocated across states based on past trends in Census Bureau migration estimates.

Costs and Wages

Wage growth by industry is linked to labor demand (employment) and supply in regressions that utilize Current Population Survey data on wages and personal characteristics from 1986 and 1987. The regression determines wage growth for individuals using: (i) state employment in the occupation divided by a distributed lag function of recent state employment in the occupation; (ii) whether the occupation is a high-skilled occupation; and (iii) the ratio of state employment and the "potential labor force" divided by a weighted average of recent values of this ratio. The second component (whether the occupation is highly skilled) is interacted with the measure of state employment. Additional variables such as race, gender and education are included in the regression to control for differences in individual traits.

In their 1990 paper the authors discuss an additional step in estimation that links the wage growth coefficients to state labor market opportunities. This step incorporates the results of a least squares regression explaining industry wage growth by state and year using annual data on industry wages in all states from 1970 to 1987. The independent variables are those listed in the previous paragraph. The coefficients are estimated by minimizing the sum of squared differences between observed average wages by industry (from BEA) and wages predicted using the three primary variables by occupation described above. The occupational wage variables are weighted by the distribution of employment by occupation across the various industries. Industry wage growth is thus linked to demand for labor by occupation. The model also

includes the growth in consumer prices lagged by one period.

Other Costs

The price of capital is essentially exogenous to the model. Interest rates are determined at the national level and do not vary across states. The model does not include a monetary sector, which would be necessary for an endogenous cost of capital. This is not unusual for regional economic models.

Capital costs can, however, differ across states because of differences in state tax policy. The tax variables built into the model include national corporate profit tax rates, investment tax credit rates, and state equipment tax rates.

Relative cost of fuel is exogenous to the model.

The relative cost of production in an industry is based on relative cost of wages, capital, and fuel, as well as relative productivity of the industry. Relative here refers to the ratio of local to national levels. A change in relative production costs affects the relative profitability for industries that are primarily in national markets and cannot pass on their costs. A relative cost change affects the price of industry output for industries that primarily serve local markets in all regions and can therefore pass on their costs.

Market Shares

Two measures of the state market share for each industry link the costs of production and the demand for production in the state. The share of state demand satisfied locally, i.e., by state-level production, is calculated using data from the 1977 Census of Transportation. The share of total exports from all states satisfied locally is calculated as a residual, using measures of state output, state final demand, the state's regional purchase coefficient, and an estimate of exports from other states.

The relationship between an industry's local market share and the industry's input costs depends upon whether the industry is national or regional in scope. Separate econometric relationships

are estimate for national and regional sets of industries. For national industries, the change in the shares of local demand and out-of-state export demand produced locally are assumed to change in proportion to changes in the industrial mix and the U.S. regional purchase coefficients. A regression based upon these assumptions yields a positive effect of relative profitability on both the region purchase coefficient and the share of exports produced locally.

For regional industries, the regional purchase coefficient and the share of exports produced locally both depend upon changes in industry costs. Both shares thus depend upon the relative costs of production: via industry selling prices for regional industries and via relative profitability for national industries.

Evaluation

Four strengths of REMI are (1) it focuses on supply and demand for employment by industry; (2) it has numerous policy handles such as tax rates and several types of government spending in local areas; (3) migration is responsive to relative economic opportunity which includes the probability of employment and real wage rates; and (4) the amount of local demand met locally and the share of exports satisfied locally both depend upon the relative costs of local production.

The model provides a number of desirable links between local area demand, production, employment, and several policy instruments. For intermediate run (five to ten year) applications such as needed in the present project, the migration sector is a strong point. The population in each state, and in turn, state wages and employment, depend upon state output performance. Furthermore, the dependence of the demand for local production on the relative costs of production seems to incorporate important features of the shift in employment across regions that occurred in the last several decades.

The model has a number of policy tools that fit with the

expressed interests of this project. Government military spending for each state is an exogenous variable in the model. In 1986, the model was used to simulate the net gain and loss of jobs associated with a military build-up.¹³ It should be a comparable task to simulate a military build-down.

The model appears adequate to examine the effects of changes in taxes such as an income tax or changes in corporate taxes. Assumptions concerning the effect of such taxes on total local taxes would have to be made for each state. The impact of changes in taxes on the consumption of alcohol or gasoline, as have been contemplated during 1990-1991, are more difficult to evaluate. To simulate the effect of an increase in the alcohol tax, for example, it is necessary to make assumptions concerning the effects of increased prices on local final demand and on local area price levels. One general problem associated with examining the effect of increased income tax rates is that there is no strong financial sector that would provide reduced interest rates associated with a reduced deficit. This scenario might require use of a large national model to provide elements of the simulation beyond the direct effect of a change in income taxes.

The impact of the war in Iraq could be calculated, since the model includes fuel costs by type in the production sector. An increase in fuel costs would be associated with a reduced demand for fuel, since the expenditure share associated with fuel would be fixed in the Cobb-Douglas framework. Once again, assumptions would have to be made concerning the likely impact on final demand for fuel and autos. It should be noted that this type of scenario is not usually the focus of regional economic models.

A further scenario of interest would be the impact of

¹³ See Treyz, Stevens, Ehrlich, Anderson, Frisch and Oden (1986) and Anderson, Frisch and Oden (1986). These 1986 reports were assembled for Employment Research Associates, a non-profit consulting firm that specializes in examining the effects of government policies on the U.S. economy.

balancing the budget. This could be simulated through assumptions about changes in the level of government demand and changes in taxes. An additional effect of such changes, beyond their direct effects, is on interest and on the price of capital. REMI may not be appropriate for examining this scenario since interest rates are exogenous to the model, and there is no monetary sector in the model. Such an analysis might be possible using as inputs the results of a simulation from one of the national forecasting firms.

A final scenario of interest is the impact of reducing the trade deficit. As in the case of the budget deficit this requires assumptions about the specific changes that need to be made. Variables such as exchange rates, which provide the mechanism for the effects of changes in the balance of trade are not incorporated in this model.

An major reservation in selecting the model is whether reliable estimates of the unemployment rate by the region can be obtained. REMI does not include unemployment rates partly because Treyz and his associates do not trust the CPS unemployment figures. Instead REMI uses a natural labor force concept that attempts to remove the effects of local unemployment rates from the local labor force participation equation. By estimating a labor force participation rate equation as a function of unemployment rates and then evaluating it using a national unemployment rate, it is argued that any feedback between local unemployment rates and local labor force participation rates is purged from the equation. This approach yields an estimate of the natural labor force participation rate, but not the actual participation rate.

Treyz has offered suggestions for ways to attach state unemployment rate estimates to the model. His preferred suggestion was to run a regression linking unemployment rates by state with the ratio of employment to the natural labor force (NLF). The

regression equation would probably need to be non-linear.¹⁴

Finally, the simulations for this model can be performed using either states or regions as the unit of analysis. If desired, the simulations could be performed at the state level, and then the outcomes could be aggregated to obtain the results at the regional level. Alternatively, simulations could be performed using DOL regions as the geographic units.

The ability of REMI to perform the analysis at the level of states or DOL regions implies that several parameters in the model are not based on relations derived empirically at the regional level. This could reduce our confidence in the simulated time paths used to estimate the impacts of alternative federal policies on regional labor markets.

The WEFA Model

The Wharton Econometric Forecasting Associates (WEFA) Group has an elaborate regional modelling capability that can produce detailed forecasts of output, employment and other economic variables for states and regions.¹⁵ The model routinely produces quarterly forecasts for periods of up to 12 quarters for metropolitan areas and states, and, for special projects, forecasts of up to ten years. A seven to ten year forecast horizon needed for the present project would not overburden the WEFA models.

The WEFA Group has developed models for all 50 states plus the District of Columbia. Their data services can make available to

¹⁴ Treyz also suggested that he would be wary of calculating a TUR in the model as the residual difference between local employment and local labor force (not currently in the model). He believes that there is too much noise in the estimates local labor force participation rates to use a residual-based measure.

¹⁵ This description is based on: The WEFA Group, "State and Metropolitan Area Forecasts: Structure and Methodology," undated. Dr. Stanley Duobinis kindly answered many questions that were not fully covered by the model documentation.

subscribers detailed time series from 11 different data bases, and they publish a number of periodic reports. Their documentation notes the availability of individual state models on Pcs or mainframe computers. The documentation also notes that WEFA can undertake "larger" regional studies.

Model Structure

The WEFA modelling strategy incorporates elements of both the top-down and bottom-up approaches into regional models. Each geographic area (state or MSA) is modeled individually but then is linked to a national model. Thus national totals come mainly from an associated national model (not from sum-of-states as in bottom-up models) while state variables are determined mainly by state-level behavior (not a fixed proportion of the corresponding national variable as in top-down models). Following this approach permits the individual models to reflect differences in both the cyclical responsiveness and the long run growth tendencies of the states. The WEFA modelers claim to use equation specifications that reflect these interstate differences. Cost variables are incorporated in each state model to capture the interstate cost differentials that give comparative cost advantages to the states.

Having the regional models linked to a national model allows the user to explore the impacts of national policies as well as state policies. The effects of national policies affecting military spending and federal taxes and state policies affecting local taxes and utility costs all can be examined.

There are two major groups of equations (blocks) in the WEFA models. Each state model has an export sector (usually agriculture, mining and manufacturing) that serves a national market, but whose production generates income in the local market. There is also a local sector driven by local economic forces. Within the local sector particular attention is given to the determination of state personal income which is built-up from detailed components. The models also incorporate a demographic section where change in the

population base reflects births, deaths and net migration which, in turn, is responsive to differing economic opportunities across local areas. Since the export and local blocks form the core of every state model, both will be described in more detail.

Each state model has a detailed industrial representation of production and employment in manufacturing. In most states manufacturing accounts for the largest share of export industry output and employment. Other export industries are agriculture, mining, federal civilian and military activity and occasionally industries in the finance and service sectors such as banking and hotels. Export industries sell their output in the national market, but their activity generates income for the local economy.

Manufacturing employment for a detailed (two digit) state industry is modeled as a function of several state and national variables with parameter estimates based on time series regressions. Although the equation specifications vary across states and industries, the principal explanatory variables are: national employment in the industry, state industry mix (a variable that accounts for differences between the state and national mix of three digit industries within a given two digit industry), relative interindustry demand (based on detailed input-output relations and transportation costs to potential markets), relative state costs (relative to the U.S.), labor productivity and a final demand term. Relative state costs explicitly consider labor costs, transportation costs, energy costs (natural gas and electric power) and local tax costs.

The preceding list shows that the manufacturing employment relationships incorporate a number of economic considerations. The first two explanatory variables (U.S. manufacturing employment and state industry mix) require knowledge of national variables available from employment equations of the WEFA national model. Information on energy costs is obtained from the WEFA energy group. In fact, outputs from three other WEFA modelling services (the national macro model, the energy model and the agricultural model)

are needed in order to do regional model simulations.¹⁶ This would add to the costs of using WEFA to perform the simulation analysis of this project. The WEFA national model would need to be run several times to provide national employment estimates by industry under varying assumptions regarding the levels of defense purchases, federal taxes and the level of the federal deficit.

The local economy in each state builds upon the external stimulus provided by the export sector to generate additional income and employment. The six local industrial sectors are construction, transportation, wholesale and retail trade, finance, services, and state and local government. Local industries perpetuate the multiplier process, amplifying any stimulus provided by the export sector. State population dynamics are important to local economies affecting both demand and supply.

Four key factors affect output and employment in the local economy: measures of sector activity, local costs, national conditions important to the local sector and the stage of the business cycle. Local sector activity measures include real income, population and export sector activity. The designation of the sector activity measure(s) used in a particular local industry varies from one industry to the next. The WEFA modelers argue that the most important single summary measure of aggregate state activity is real personal income. Several equations are used to determine personal income. (See below.) It is affected by the level and composition of state employment. Real personal income is, in turn, an explanatory variable in all local demand equations. Local demand in many sectors also depends on population variable, either total population or a particular age segment. The demand for education services, for example, depends on the population of school age while the demand for medical services depends on the population over age 65.

¹⁶ Costs from the agricultural sector are the least important input required from the three national models. In conversations WEFA representatives have suggested that the prices of agricultural inputs could be held fixed for purposes of the regional analysis.

Labor costs affect location decisions in manufacturing while in nonmanufacturing they affect employment through their impact on unit costs of local production. National trends in demand, eg. the secular growth in services demand, and national credit conditions, affect local demand. Business cycle swings, as measured by an employment rate (employment-to-population ratio) or capacity utilization, affect employment with a lag reflecting delays in employment adjustments over the business cycle.

Each state model derives personal income from a detailed set of 16 income components of which nominal wages are the largest single component. Nominal wage growth in four industrial groupings - - mining-construction, manufacturing, private services and state and local government - - is determined by an equation in which the principal explanatory variable is "generated" wages. This is a construct which weights the local industry distribution of employment by national wages in each industry. Changes in generated wages reflect both secular and cyclical changes in the industry distribution of local employment. This variable and an explicit proxy for labor market tightness (the ratio of unemployment to the population of working age) are the two principal explanatory variables explaining nominal wage growth in mining-construction, manufacturing and private services. Wage growth for state and local employees is determined primarily by wage growth in the private services sector.

A variety of approaches are used in the determination other personal income components at the state level. State unemployment affects two transfer payments, unemployment insurance and AFDC. Other labor income (fringe benefits), farm and nonfarm proprietors income, interest income and property income are among the other large income components which are modeled. For the smaller personal income components, a linkage with the corresponding national income variable is often used. Personal income is then simply the sum of its component parts.

Population change at the local level is modeled with explicit relations determining births, deaths and net migration. Change is

modeled using a "cohort components" technique, ie. using age-specific birth rates, death rates and net migration rates. A quarterly population sector is imbedded within each local model. State-specific birth rates and death rates are used in developing projections of these components of change.

The bulk of resources in determining population change are devoted to projecting net migration. The WEFA approach presumes that much of net migration is to areas of greater economic opportunity. Migration both responds to local economic growth and reinforces economic growth at the local level through its demand-side effects.

The net migration rate for a local area (the ratio of net migration to lagged population) has a number of determinants. Relative employment growth or relative unemployment (relative to the national average) is a major determinant. Also included in the specifications are relative per capita income, relative housing costs and relative housing market activity. All explanatory variables are lagged so that there is no question as to the direction of causation. Because net migration is modeled on an age-specific basis there is the possibility of different directions of net migration for different age groups.

Evaluation

From the preceding description it is clear that the WEFA regional modelling capability is comprehensive. A typical state model has about 150 equations. Since there are 51 state models, the large volume of detail in the individual equations and across states would be difficult to master in a short period. The documentation which we have reviewed identifies the variables used in individual equations, but not the coefficients which indicate of the importance of each included variable or the functional forms.

Some clear advantages offered by this set of models include the following. (1) Since there are models for each state, model outputs can be aggregated to the level of DOL regions. (2) Some

advantages flow from having the regional models attached to a national GNP forecasting model, eg. the ability to examine effects on regions of differing U.S. balance-of-payments scenarios and differing federal budget scenarios. The regional implications of balancing the federal budget (or substantially reducing the deficit) through expenditure reductions and/or tax increases can be explored. (3) Because the WEFA Group also supports energy models, the effects on the regions of energy-related supply shocks can be examined.

There are some shortcomings of WEFA regional models that also should be noted. (1) Because the labor market models do not directly predict an unemployment rate (TUR), some sort of side relationship between state population and state labor force would need to be developed. This would convert an unemployment-to-population ratio to a standard unemployment rate (TUR) for states and regions. There are assertions in the documentation that published CPS unemployment rate estimates at the state level are too noisy. Therefore the WEFA modelers use the ratio of unemployment to the working age population as the measure of labor market tightness in many equations. Do they have an internal document to buttress this assertion? In considering how unemployment rates are calculated, the volatile component in the TUR is not the denominator (labor force) but rather the numerator (unemployment). It is not obvious that normalizing unemployment by a different variable (working age population) would yield much improvement on this noise problem. Also for this project which needs annual labor market indicators, the noise problem would be much attenuated if the underlying quarterly simulation outputs were aggregated to annual variables. Annual averages of regional TURs, employment and the labor force are to be used in the analysis of demand for services from the three DOL programs.

(2) The scale of the full system of WEFA equations, however, raises the question of its costs. It appears that to produce a ten year simulation of labor market outcome variables at the level of DOL regions the following steps must be followed. National output,

employment and demographic projections must be obtained from a simulation using the WEFA national model. The time paths of energy prices must be obtained from the WEFA energy group. Simulations of all 51 state models must be conducted. The state-level output of interest must be aggregated to DOL regions. These four steps must be followed for each simulation scenario to be examined. Since there will be at least three different simulation scenarios the cost of using WEFA could be substantial. Probably the key impediment to using WEFA is the cost question.

The DRI Model

Data Resources Inc. (DRI), a division of the McGraw-Hill corporation, provides macroeconomic forecasting services that are widely used by private sector employers and governments. One division of DRI produces economic forecasts for regions, states and metropolitan areas.

Model Structure

DRI's Regional Information Service (RIS) forecasts economic performance for nine regions, 50 states and the District of Columbia, and 313 metropolitan areas, with varying degrees of economic detail for the different geographic levels. For the 51 states and nine regions the model contains 432 industry detail for employment and industrial production. Also provided at this level are 26 income and wage variables as well as population, number of households by age group, birth and death rates, the labor force, the labor force participation rate, the total unemployment rate, the CPI, investment in residential and nonresidential construction, and retail sales.

The nine geographic regions used by RIS are New England, Middle Atlantic, South Atlantic, East North Central, East South Central, West North Central, West South Central, Pacific Northwest and Pacific Southwest. The first seven areas are standard Census

Bureau divisions while the latter two areas are a north-south split of the combined Census Bureau Mountain and Pacific divisions.

RIS is solved in a "two-step" process, solving first for the regional values, and second for the values of the states in each region. At the first "Core model" level, exogenous variables are selected from the Macro, Input/Output (I/O), Agriculture, and Energy models. The second or regional level looks almost identical, with the exogenous variables coming from the Core model. These models are divided into four blocks: manufacturing, nonmanufacturing, wages and income, and housing. Once state-level output has been simulated it can then be aggregated up to Department of Labor (DOL) regions.

The manufacturing sector is dominated by export activity. Exogenous national demand levels are taken from the Input/Output model and combined with "demand pull" variables which capture inter-industry links and weight by geographical distance the national demand affecting each region. In a given region, the demand pull variable for a particular product will sum across 29 industries the national inter-industry demand times the region's share of each industry, and will sum across sectors the national final demand times the region's share of each sector. Summing these two sources of demand yields each region's total demand. The portion of the national market which will be met by a supplying region is calculated by summing across regions each demand level discounted by the geographical distance from the supplying region. The demand pull variable yields the "share of the market in which the (supplying) region has a transportation advantage over other (supplying) regions."

The method of estimation is pooled least squares (PLS), which yields regression coefficients that are constant not only across time but across geographical sections. DRI describes the most important advantage of this technique as a "zero-sum game...the sum of the parts equals the whole," meaning that a given change in one region is equally offset by changes in other regions of the opposite sign, keeping the same overall total.

The domestic side of regional economic activity is provided in the nonmanufacturing block, including most retail, real estate, utilities, local government and other services. Nonmanufacturing demand is determined in an equation where personal income is the key variable, and is then deflated using wage rates to reflect actual purchasing power. This demand index is further adjusted to make it more sensitive to changes in long run income expectations, with short run changes in income showing up more as saving or dissaving. Finally a term measuring the ratio of labor to capital costs is included to capture the labor/capital substitution effect. There are a few nonmanufacturing industries which fall into the export sector rather than the domestic sector. These industries include mining and, in a few states, banking. Government activity, both state and local, is also treated differently across areas, depending on the specification of tax collections.

The wage income which drives domestic demand is estimated with average hourly earnings for manufacturing as the predominant explanatory variable. A second term, the percentage of employees in high-paying industries, is included to capture the wage mix not reflected in the manufacturing wage rate. These wages provide the link between the domestic and export sectors. Wages generated by the export sector determine personal income which increases domestic demand, increasing overall employment and further increasing wages and salaries. The export wage multiplier equals the ratio of personal income to export wages. Total personal income is an identity which sums wages and salaries, farm proprietors' income, nonwage personal income, and a residence adjustment factor which redistributes commuters' income by residence.

The final block of the RIS model is the housing sector which concentrates on single family housing. Housing starts are determined by the level of unmet housing demand, and a variable to capture the supply and demand for financing. The latter variable affects both the consumption and construction of housing. Construction employment is also calculated in this block, driven

mainly by residential and nonresidential investment.

The documentation provided by DRI also describes the collection, cleaning and disaggregation of data, especially in the employment sector. Considerable resources have been devoted to the development of a consistent method for measuring employment by industry in each state.

Value added weights were also used for several industries to provide state specific industrial production indexes. In most cases DRI found that the national two-digit index was highly correlated with each of its three-digit components and no individual state index was constructed. However, in six industries the national two-digit index differed significantly from its three-digit components, meaning that a variation in three-digit industry mix across states could produce significantly different two-digit indexes. For these industries (Chemicals and Products, Rubber and Plastics, Primary Metals, Nonelectrical Machinery, Electrical Machinery, and Transportation Equipment) state specific three-digit industry mixes based on value added shares were used to construct each state's industrial production index.

Evaluation

The documentation received from DRI¹⁷ is aimed more at providing a general overview of the RIS capabilities, rather than a detailed description of how the pieces fit together. There is no detailed description of how the exogenous variables are generated in the macro model or the other models. No code has been provided displaying the actual equations in the regional model or their estimation period, and even the documentation itself is undated. Although there is a comprehensive list of the different variables appearing at each geographic level, there is no description of how many of these variables, such as the industrial production indexes, interact within the model. Perhaps because the literature received

¹⁷ See DRI, "Regional Information Service" (undated).

from DRI is a marketing tool focused predominantly on the business community, there is no mention that DRI has any experience undertaking the kind of study needed for the present project, and there is little emphasis of significant policy levers within the model. Questions posed to DRI regarding these concerns yielded further information about RIS as well as the cost of using the RIS services.

The RIS documentation stresses the advantages of pooled least squares (PLS) in the estimation of behavioral equations. This procedure imposes equality constraints on the coefficients for different areas and over time. Although time-invariant coefficients are common in models, the imposition of constancy across areas may introduce problems due to different regional behavioral responses to common impulses. Such a constraint on the coefficients could affect the reliability of the simulation estimates in regions whose responses differ most from the national average. Also the "zero sum game" in PLS coefficients, ie. constraining the sum of the parts to equal the whole, seems to rule out the possibility of a regional-to-national multiplier effect and seems to contradict their statement that the RIS model is both top-down and bottom-up.

Because the RIS service interfaces the regional models with several other DRI models it is expensive to use. During conversations with DRI, their representatives indicated that interfacing with the macro model and other models (the I/O model, the energy model, and the agricultural model) would be necessary in using RIS to simulate the effects of a policy intervention such as changes in real defense purchases. DRI representatives further indicated that the cost of this service would exceed the project's budget for a modeling subcontract by a wide margin.

Comparisons of the Models

The model summaries of the preceding pages indicate that substantial project resources were devoted to developing an understanding of the five models. This section compares the models

to help assess their suitability for use in the project's simulation analysis. By becoming familiar with each one, comparisons across the models could be made with more confidence and greater accuracy. This helped assure that the appropriate model was chosen for use in macro simulations of the 1990s.

Table 4.1 which identifies several specific features of the models is organized under four headings: (1) main features of the regional models, (2) macroeconomic variables and policy handles, (3) labor market features, and (4) the cost of simulations. Several observations about the models are suggested by the table.

The basic structures of the models fall into two groups. The three that were developed primarily as regional models (MRPIS, NRIES and REMI) are mainly bottom-up models. Of the three, only NRIES has an associated macro model developed by the same modelling team, and the NRIES staff are careful to emphasize the limitations of their national models.¹⁸ For conducting simulations of the regional effects of a national policy they recommend distributing a given national total across the states, simulating the individual state models and then using the sum-of-states model to ensure consistency of outcomes with predetermined national totals.

In contrast to MRPIS, NRIES and REMI, the other two regional models (WEFA and DRI) are directly tied to a national forecasting model. For both, the development of the national model preceded the regional model, and national totals and averages from the macro model are routinely used as inputs into state and regional simulations. Since the state models in both the WEFA and DRI systems identify explicit export sectors there is interaction among the states, but it is more constrained than in bottom-up models.

The WEFA and DRI regional models are alike in their use of more than a single national model to produce state and regional simulations. Besides having a national GNP forecasting model both

¹⁸ Recall there are two national models in the NRIES system, a macroeconomic model and a sum-of-states model that ensures consistency between outcomes derived from summing state-level outcomes and outcomes from the national model.

have energy and agriculture models to provide explicit treatment of output and price determination in these volatile sectors. DRI also has an input-output model provide additional industrial detail.

The five regional models also fall into the same two groupings in the designation of the basic time unit of analysis, quarterly for WEFA and DRI and annual for the other three. Having quarterly detail adds precision as to the timing of business cycle effects but increases the total volume of simulation outputs. It also requires temporal aggregation of the labor market outcomes to place them into the same annual time units as the measurement of the DOL program variables employed in earlier chapters, e.g., insured unemployment, ES placements and JTPA placements.

All regional models can produce simulations at the level of individual states. Thus one way to obtain DOL regional detail is to add state outcomes for appropriate groupings of states. It would be more convenient and less expensive to obtain outputs for DOL regions directly, but only REMI offers this possibility. Because many of REMI's parameter estimates are derived from a priori or theoretical considerations (as opposed to multiple regressions) the model can be configured to yield outputs at this geographic level of detail.¹⁹ Validating the accuracy of the regional parameters is an issue that would arise in using REMI.

Four models can simulate the time paths of economic variables for several years in the 1990s. MRPIS is the only one that simulates output for a single year. Thus, dynamic relations involving lags could not be discerned with simulations based on MRPIS.²⁰ An additional disadvantage of MRPIS is its current

¹⁹ The NRIES and DRI models routinely produce outputs at the regional level but the regions differ from DOL regions. NRIES has aggregation routines that add state outputs to the level of the eight Bureau of Economic Analysis (BEA) regions. DRI can produce outputs for nine regions which are essentially Census Bureau divisions.

²⁰ One example is the relation between insured unemployment (IU) and total unemployment (TU). In annual data IU depends positively on contemporaneous TU but negatively on TU lagged one

configuration to simulate outcomes for the year 1985. The "aging" of this model to the late 1990s or the year 2000 would require the use of substantial resources.

The second panel in Table 4.1 summarizes the availability of macro variables and macro policy handles for the regional models. Because WEFA and DRI routinely make macro forecasts, all the macro variables are potentially available for the associated regional models (detailed federal spending and tax categories, a monetary sector, a foreign trade sector and an energy sector).

These macro features are less available for the other three regional models. Although most of the macro variables are modeled in the NRIES macro model, the model staff have indicated that the macro model is not routinely used in conjunction with the regional models. Thus the quality of the macro-regional interrelations is not well understood. In conversations they have recommended making the allocations of assumed changes in federal spending outside the macro model, i.e., directly in the individual state models. Similarly they do not have great confidence that assumed changes in monetary policy and/or the foreign trade balance as represented in the macro model would routinely be distributed in a reliable manner at the state level.

However weak the macro features of NRIES may be, they are stronger than the macro aspects of MRPIS and REMI. MRPIS is not linked to any macro model, and it lacks both a financial sector and a wage-price sector. The REMI documentation notes its reliance on BLS labor market forecasts,²¹ and the forecasts of the major forecasting services. Earlier it was also noted that monetary variables and interest rates are not determined in REMI. Despite these limitations it should be remembered that REMI was the vehicle

year (recall the regressions summarized in Tables 2.1, 2.2 and 2.3). Also, for both the ES and JTPA programs, the time period of the data is a program year (July to June). The unemployment rate and labor force data used as explanatory variables in the ES and JTPA regressions use information from two adjacent calendar years.

²¹ See Treyz, Rickman and Shao (1990).

for assessing the state-level employment effects of the 1981-1985 military build-up.²² Finally, because MRPIS, NRIES and REMI all lack a well developed energy sector, none would be well suited to assess the regional implications for real output and unemployment of a rapid run-up in energy prices.

The labor markets of the models differ in several ways. Only NRIES and DRI routinely calculate TURs at the state level. For the other three models some type of bridge would be needed to link their standard labor utilization variable to a TUR. For MRPIS a link between the annual number with unemployment and average weekly unemployment would need to be developed. For REMI the natural labor force would need to be linked to the actual labor force to compute a TUR. For WEFA a bridge between the population of labor force age and the actual labor force would need to be developed.

Because all the models make aggregate employment projections and projections by industry, development of the necessary bridges when the TUR is not routinely calculated probably would not pose important problems. In all instances, however, there would be the need to translate a standard output into a TUR which in turn would drive the projections of DOL program variables like insured unemployment, ES applications, service rates and placement rates, and JTPA penetration rates and placement rates. One approach to follow would be to build the bridge capability as a spreadsheet which takes variables simulated in the model as inputs and then estimates a TUR using relations within the spreadsheet.

Four of the five models, all but MRPIS, include interregional migration in the labor market. When the behavioral relations driving migration are compared they reveal considerable similarity. Typically they have six age groups: under 5, 5-17, 18-24, 25-44, 45-64 and 65 and older. A principal determinant of migration among 24-44 and 45-64 year-olds is a measure of economic opportunities (interregional differences in employment probabilities and real wages). Thus all four models provide mechanisms for having the

²² See Anderson, Frisch and Oden (1986).

population and labor force respond to differences in labor market opportunities across the individual regions.

The costs of using the different models is also an important consideration. With the amount available in the project budget for a modeling subcontract, it appears that only two models could meet this budget constraint. DRI quoted an informal price of at least \$100,000, and WEFA suggested \$25,000 to \$40,000 for a single full simulation to the late 1990s. Since we are interested in assessing the regional implications of a baseline and two alternative macro scenarios in the 1990s, these two models were too expensive to utilize. Their high cost reflects the need to run three or four national models as well as 51 individual state models for each simulation scenario. MRPIS did not quote a price, but the need to age the model to the late 1990s as well as the need to make other modifications (update the federal personal tax simulator to incorporate provisions of the 1986 law) mean its cost would probably exceed \$50,000 by a substantial margin. On a cost basis the strongest candidates were NRIES and REMI.

The Selection of the NRIES Model

After several reviews of the five models and following a meeting at DOL involving Urban Institute staff, two project consultants and DOL representatives, the NRIES model was selected for use in the project's macro simulation analysis. Initially the choice was narrowed from five models to two models, NRIES and REMI. The choice between NRIES and REMI was a close one with each model having features that the other model did not have. In making the comparisons, we concluded that either model would produce usable simulations. Ultimately, we selected NRIES because it had more unique features compared to REMI.

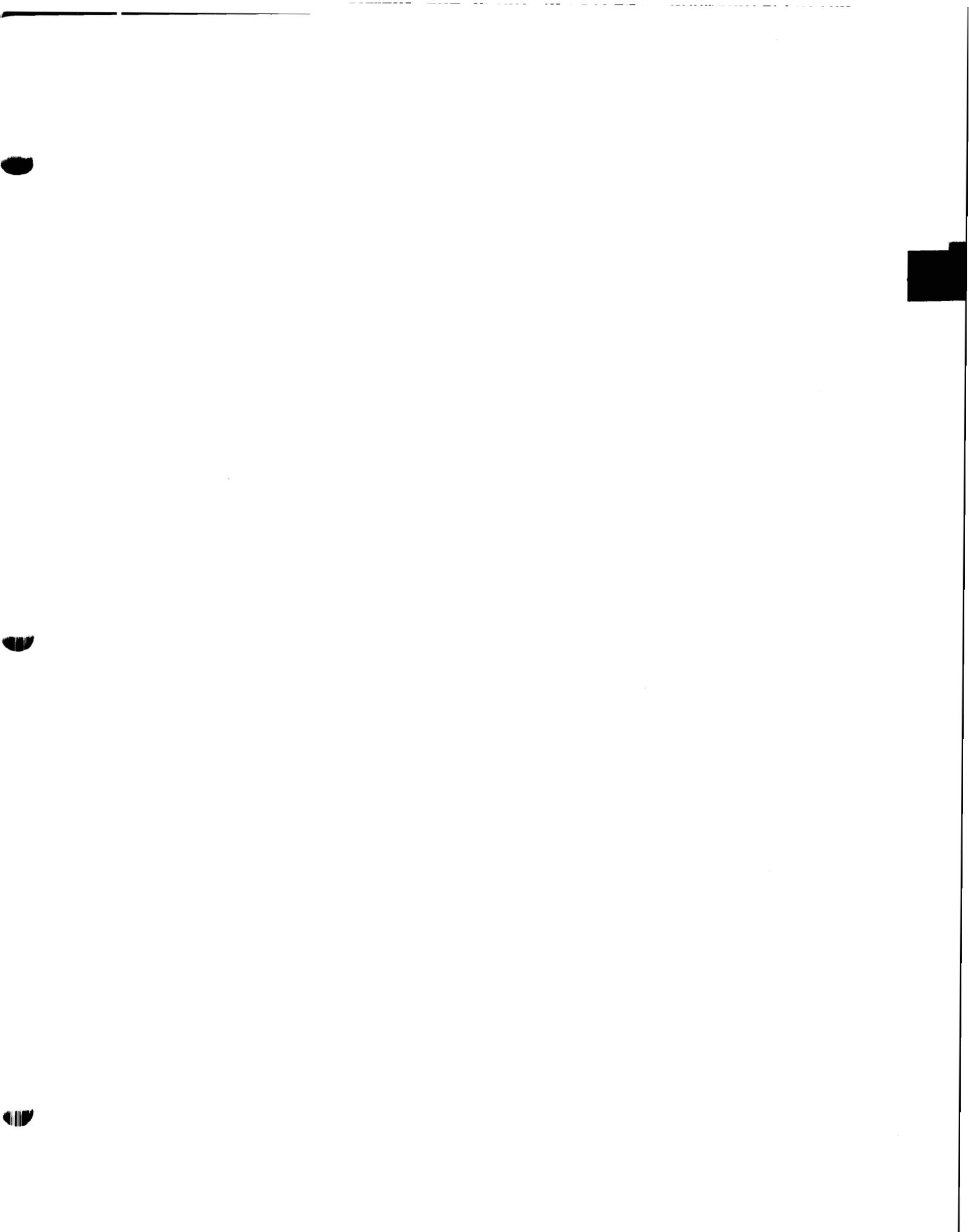
Two considerations argued for REMI. First, the demographic relations in REMI were judged to be superior as they were linked to ongoing research on migration by Dr Treyz. Second, REMI had been used in an earlier analysis of the regional effects of federal

fiscal policy (Anderson, Frisch and Oden (1986)).

Several considerations favored the selection of NRIES. It has a link to an explicit macro model, and it routinely produces estimated TURs by state. That most of the model's estimated parameters were derived from multiple regressions was also an advantage. The responsiveness of the professional staff, e.g., answering questions and providing documentation, was a consideration as was the close proximity of the NRIES professional staff to the Urban Institute and the national office of the U.S. Department of Labor. The close physical proximity of the NRIES staff meant not only easier access and communication, but it also had cost implications. Since several project meetings involving NRIES staff were held at the Urban Institute and at DOL, savings on staff time and transportation costs were realized. Based on the totality of the preceding factors, NRIES was selected for the project's simulations.

Table 4.1 Major Features of Five Multiregional Economic Models

	MRPIS	NRIES	REMI	WEFA	DRM
(1) Main Features of the Regional Models					
Structure	Bottom-up	Mostly Bottom-up	Mostly Bottom-up	Mixed	Mostly Top-down
Time Unit	Annual	Annual	Annual	Qtly.	Qtly.
Basic Geographic Unit	State	State	Region or State	State	Region or State
Source of Parameter Estimates	Regress.	Regress.	Regr. and Theory	Regress.	Regress.
No. of Associated National Models	None	Two	None	Three	Four
Simulate Time Paths to Late 1990s?	No	Yes	Yes	Yes	Yes
(2) Macroeconomic Variables and Policy Handles					
Explicit Macro Model?	No	Yes	No	Yes	Yes
Detailed Federal Spending Categories?	Yes	Yes	Yes	Yes	Yes
Detailed Federal Tax Categories?	Yes	Yes	Yes	Yes	Yes
Monetary Sector?	No	Yes	No	Yes	Yes
Foreign Trade Sector?	No	Yes	No	Yes	Yes
Energy Sector or Energy Model?	No	No	No	Yes	Yes
(3) Labor Market Features					
Calculation of a TUR?	No	Yes	No	No	Yes
Interregional Migration?	No	Yes	Yes	Yes	Yes
Detailed-1 or 2 Dig. Industry Employment?	Yes	Yes	Yes	Yes	Yes
(4) Simulations for \$50,000 or less?					
	No	Yes	Yes	No	No



BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

March 2, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(ER&BRAC), at 1505 hours on March 2, 1994, in Room 3E813, the Pentagon. The list of attendees is attached.

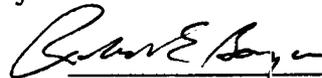
Mr. Berger began with administrative comments and then introduced Mr. Moore of the Logistics Management Institute (LMI) to comment on the technical efforts to identify other Federal high-dollar value programs that could be affected by base closures and realignments. Mr. Moore stated that to accomplish calculations in these areas almost always requires highly uncertain assumptions, as well as assumptions on assumptions. Additionally, determining the timing and the extent to which Federal aid programs might be affected would require development of further assumptions in areas such as the number of people which remain unemployed, the number of people who actually fall to the poverty level, the number of people who apply for help, and so forth, in any given locality which is also affected by national, regional, state and local economic factors outside of any DoD actions. Mr. Moore summarized by noting that after a review of available information it appeared that estimates of costs to other agencies, even with heroic assumptions, would be highly uncertain. The Group discussed potential direction from this point. Mr. Bayer opined that there was reasonable sentiment in Congress that DoD ought to consider costs not its own. He continued that concern about uncertain or inaccurate analysis of other Federal costs may not be enough reason not to look further. Group discussion led to consensus that the subgroup should look at a few case studies of communities closed as a result of earlier base closure rounds. Mr. Bayer pointed out that the Group needs to cut this subject several ways before making a decision.

Mr. Berger led the discussion of the subgroup's progress report (attached). Discussion of national-level and local-level views included the difference between estimating direct and indirect costs. The Group also noted that what is true for the nation may not be true for a particular locality. At the local level, accurate estimates would require extensive surveys at a high cost in resources, or estimates of lesser accuracy and value based on uncertain assumptions and/or uncertain projections of local economic recovery. The Group opined that actual funding levels by other Federal agencies through the budget process seem to be little affected by DoD actions. A discussion of potential options for further action left the Group with the sense that it was heading in the direction of two different analyses: one at the installation level and one at the overall BRAC recommendation package level, pending on-going study and consideration.

Mr. Bayer noted that DoD must forward a report to Congress if the decision is to not include costs to other Federal agencies. He suggested the subgroup contact the GAO representatives for additional insight on the subject. He also tasked the subgroup to conduct case studies as discussed earlier in the meeting. Mr. Bayer then outlined the deliverables for

the upcoming Review Group meeting, including the cumulative economic impact analysis tool to be used for BRAC 95, addressal of non-DoD costs, and policy and guidance to be issued to the DOD Components.

There being no further matters to discuss, the meeting was adjourned at 1655 hours.



Approved: Robert Bayer
Chairman

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

March 2, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Economic Reinvestment and BRAC)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Mr. Don Manuel, Army
MAJ Jeff Dorko, Army
Ms. Jill McLean, Army
Mr. Dave Wennergren, Navy
Col Paul Thompson, OSD (Base Closure)
Mr. Bill Moore, LMI (Technical Assistance)
Mr. Tom Muller, LMI (Technical Assistance)

PROGRESS REPORT
SUBGROUP ON ECONOMIC METHODOLOGIES

MARCH 2, 1994

TASK

CONSIDER THE FEASIBILITY OF ESTIMATING ACCURATELY THE COST OF
BASE CLOSURES AND REALIGNMENTS ON OTHER FEDERAL
AGENCIES AND STATE AND LOCAL GOVERNMENTS

BACKGROUND

INTEREST FROM CONGRESS AND GAO

APPROACH

TASKED LMI TO PERFORM A STUDY OF HIGH DOLLAR VALUE FEDERAL
PROGRAMS THAT COULD BE AFFECTED BY BRAC ACTIONS

SUBGROUP DISCUSSED STUDY DRAFT AND OTHER ISSUES

PRELIMINARY OBSERVATIONS

QUESTION #1: DO "HIDDEN" COSTS OF BRAC ACTIONS TO OTHER AGENCIES OFFSET BRAC SAVINGS?

- NATIONAL LEVEL OF ANALYSIS
- PRELIMINARY FINDING: EVEN UNDER UNREALISTIC WORST-CASE ASSUMPTIONS, TOTAL COSTS TO OTHER FEDERAL AGENCIES ARE AN ORDER OF MAGNITUDE SMALLER THAN BRAC SAVINGS; CONFIRMS SUBSTANTIAL BRAC SAVINGS

GENERAL OBSERVATION ON FEDERAL PROGRAM COSTS

- REDISTRIBUTING AND INCREASING PROGRAM COSTS

PRELIMINARY OBSERVATIONS (CON'T)

QUESTION #2: SHOULD BRAC DECISIONS ATTEMPT TO INCORPORATE DIRECT MEASUREMENTS OF COSTS TO OTHER FEDERAL AGENCIES?

- PRELIMINARY FINDING: ACCURATE ESTIMATES CAN BE OBTAINED ONLY AT EXTREMELY HIGH COSTS (TIME, PERSONNEL, MONEY) THAT ARE WELL BEYOND THE CAPACITY OF THE BRAC PROCESS.
 - FOR EXAMPLE, EXTENSIVE SURVEYS OF EACH BRAC COMMUNITY WOULD BE REQUIRED TO OBTAIN HIGH CONFIDENCE ESTIMATES.
 - LESS ACCURATE ESTIMATES REQUIRE HIGHLY UNCERTAIN ASSUMPTIONS AND/OR PROJECTIONS OF LOCAL ECONOMIC RECOVERY.

OPTIONS FOR FURTHER ACTION

OPTION 1: FINALIZE CURRENT ANALYSES; DO NOT PURSUE FURTHER

OPTION 2: ATTEMPT TO DETERMINE STATISTICAL RELATIONSHIP BETWEEN COSTS TO OTHER FEDERAL AGENCIES AND AN APPROPRIATE JOB LOSS OR EMPLOYMENT MEASURE

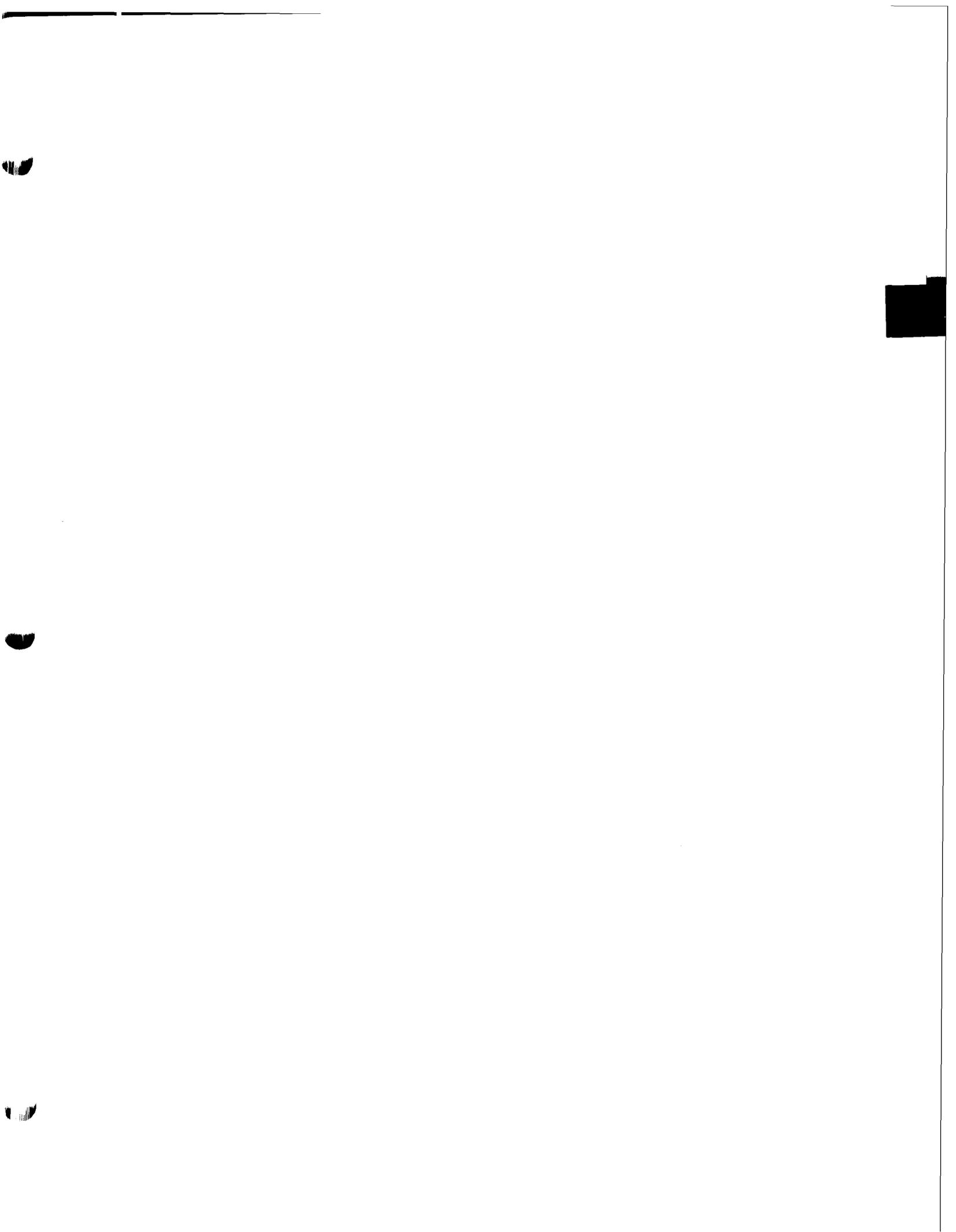
- WOULD EXAMINE WHETHER EMPLOYMENT CHANGES ARE A GOOD INDICATOR FOR OTHER FEDERAL PROGRAM COSTS

OPTION 3: SEEK TO DEVELOP MEASURE OF MERIT FOR PROPENSITY OF CERTAIN COMMUNITIES TO REQUIRE NEW FEDERAL FUNDS

- HISTORY CASTS DOUBT ON RELIABILITY

OPTION 4: ESTIMATE COSTS TO OTHER FEDERAL AGENCIES OF FINAL BRAC 95 RECOMMENDATIONS (WHEN AVAILABLE)

OTHERS???



BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

March 22, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(ER&BRAC), at 1510 hours on March 22, 1994, in Room 3E813, the Pentagon. The list of attendees and agenda are attached.

Mr. Bayer opened with comments on requirements for products to the DoD Components and preparation for presentations to the Steering and Review Groups.

Mr. Berger then led the discussion of the subgroup's progress report (attached). The Group talked about proposed measures for cumulative economic impact. Mr. Wennergren opined that the absolute number of jobs changes should be added as a measure, and after more dialogue the Group agreed. A lengthy discussion followed on the scope of the proposed measures and potential for using other additional supporting data and analysis to validate the tools and methodologies developed by the Group. Views on the applicability, value, and use of additional supporting data and analysis outside the guidance and measures to be issued by the Group varied. At the close of the discussion, Mr. Bayer recognized the Group's lack of consensus and noted the Navy's dissenting view on this point. Mr. Bayer reiterated that the policy, guidance, and measures approved and issued by the Group should be applied uniformly (without supplementation) by the DoD Components during the BRAC analysis process. The Group agreed to discuss this further at a future meeting.

The Group then addressed the proposed framework for consideration of cumulative economic impact in the BRAC 95 process including the importance of timely interaction by the joint cross-service groups and the DoD Components. Mr. Berger and Mr. Moore walked the Group through the subject of current multipliers and proposed new multipliers. They described the differences between the old and the proposed new multipliers, highlighting changes in the multiplier values and a more rigorous approach to the size of economic areas. They also noted that the proposed new multipliers were based on a more quantitative analysis and more recent data. The Group consensus was to use the new multipliers. Next, the Group considered the general layout of the database tool and the handout on proposed data structure (attached). The Group approved the subgroup's recommendation to use a database and to refine the data structure.

Mr. Berger then guided the discussion on the status of work on costs to other agencies and pointed out that a meeting with GAO representatives had occurred on March 16, 1994. The Group discussed preliminary feedback from the meeting. Mr. Berger and Mr. Moore talked through a subgroup statistical analysis on impact on other Federal programs for Group consideration (handout attached). Following this discussion Mr. Bayer tasked the subgroup to develop proposed text to explicate the conclusions in the handout. The Group also conferred on the work-in-progress on estimated expected values for key programs. Discussion included the potential for offsetting costs and savings in some of the programs. Mr. Cartwright noted

the presentation format and description of cost might be more effectively portrayed. The Group also pointed out the propensity for localities to tax or cut services based on local economic conditions thereby making accurate estimation of these program costs difficult at best. A related follow-on discussion about the ability to gather meaningful, common, and comparable local tax base data and the enormity of such a task led to no proposed solution. Next, Mr. Berger noted the subgroup's recommendation that a section on economic impact be included in the Secretary of Defense's base closure and realignment report to the Commission. Discussion of proposed draft guidance to the DoD Components was deferred pending further refinement by the subgroup.

There being no further matters to discuss, the meeting was adjourned at 1815 hours.


Approved: Robert Bayer
Chairman

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

March 22, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Economic Reinvestment and BRAC)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Mr. Joe Cartwright, OSD (Office of Economic Adjustment)
Ms. Maureen Wylie, Army
Mr. Joe Vallone, Army
Mr. Dave Wennergren, Navy
CAPT Kevin Ferguson, Navy
Mr. Ken Reinertson, Air Force
Mr. Tom Harter, Air Force
Lt Col Mike Callaghan, Air Force
Col Paul Thompson, OSD (Base Closure)
Mr. Bill Moore, LMI (Technical Assistance)
Mr. Tom Muller, LMI (Technical Assistance)

Joint Cross-Service Group on Economic Impact

March 22, 1994

AGENDA

Measures of Merit and Supporting Data for Cumulative Economic Impact

Consideration of Cumulative Economic Impact in BRAC 95

Decision About New Multipliers

General Layout of Database Tool

Status of Work on Costs to Other Agencies

Recommendation for Write-Up on Economic Impact

Draft Guidance

Other Business

PROGRESS REPORT
SUBGROUP ON ECONOMIC METHODOLOGIES

MARCH 22, 1994

KEY TOPICS TO ADDRESS TODAY

Measures of Merit and Supporting Data for Cumulative Economic Impact

Consideration of Cumulative Economic Impact in BRAC 95

Decision About New Multipliers

General Layout of Database Tool

Status of Work on Costs to Other Agencies

Recommendation for Write-Up on Economic Impact

Draft Guidance

**MEASURES OF MERIT AND SUPPORTING DATA FOR
CUMULATIVE ECONOMIC IMPACT**

Joint Cross-Service Group February 10 Meeting Adopted Measure of Merit for
Cumulative Economic Impact:

BRAC 95 plus Unrealized BRAC 88-93 Job Loss as a Percent of FY 93
Local Employment [addresses cumulative impact not yet realized] and

Typical Annual Local Employment Growth Rate, 1983(?) to 1993 [addresses
cumulative impact realized and other local factors]

**MEASURES OF MERIT AND SUPPORTING DATA FOR
CUMULATIVE ECONOMIC IMPACT (CON'T.)**

Subgroup Recommends the Following Change:

Separate into two categories:

Measure of Merit

Job Changes as a Percent of Community Employment

Supporting Data

Total Community Employment (1984-93)

Average Annual Percent Change in Employment (1984-93)

Personal Income Per Capita (1984-92)

Average Annual Percent Change in Personal Income (1984-92)

Recent Unemployment Rates

**MEASURES OF MERIT AND SUPPORTING DATA FOR
CUMULATIVE ECONOMIC IMPACT (CON'T.)**

Key Concept:

Measure of Merit Addresses Future Potential Effects of BRAC
Supporting Data Address Past and Current Effects of BRAC and Other Factors

Supporting Data Enhance Understanding of Cumulative Economic Impact and
Communities' General Economic Condition.

Highest Priority for Measures of Merit; Lowest for Supporting Data

CONSIDERATION OF CUMULATIVE ECONOMIC IMPACT IN BRAC 95

Process for Multiple BRAC 95 Actions in the Same Communities

Potential Recommendations

Services Share Potential Recommendations

Review Multiple BRAC 95 Actions Before Final Recommendations

Final Recommendations

Joint Cross-Service Group Reviews Final Recommendations

**Directs Military Departments and DLA to Review Final Recommendations in
Light of New Multiple BRAC 95 Impacts**

Military Departments and DLA Review and Report Back

Process for BRAC 95 Communities with Prior BRAC Actions

Military Departments and DLA will use database tool with Prior BRAC Actions

**CONSIDERATION OF CUMULATIVE ECONOMIC IMPACT IN BRAC 95
(CON'T.)**

**For Considering Multiple BRAC 95 Potential Recommendations, Multiple BRAC 95
Recommendations, and All Prior BRAC Actions**

**Cumulative Economic Impact Must Be Considered As Part of the Economic
Impact Criterion**

**The Economic Impact Criterion Must Be Considered in the Context of all 8
Final Decision Criteria**

DECISION ABOUT NEW MULTIPLIERS

Current Multipliers

Used Since 1988

Based on Professional Judgment

No Hard Quantitative Backup

Based Roughly on Data from 1977

Commerce Assessment: Not Unreasonable

Potential New Multipliers

Developed Through Quantitative Analysis

Based on 1989 Data

RIMS II Model at Commerce

Generally Lower than Current Multipliers

More Explicit Recognition of the Effects of Community Size on Multipliers

Commerce Assessment: Concurs with Methodology

DECISION ABOUT NEW MULTIPLIERS (CON'T.)

Current Multipliers

Installations that are Mostly Military		Installations that are Mostly Civilian	
Non Metro Area	0.4		
Mid-range MSA	0.6	Non-MSA	0.6
Large non-MSA	0.6	Other/Large MSA	1.0
Large MSA	0.8	Shipyards	1.6
Trainees	0.2	Aircraft Repair	1.8
Reserves (Full Time)	0.8		

DECISION ABOUT NEW MULTIPLIERS (CON'T.)

Potential New Multipliers

Type	Employees in Economic Area		
	Over 250,000	50,000 to 250,000	Less than 50,000
Military Personnel	0.5	0.4	0.3
Civilian DoD & Other	0.8	0.7	0.5
Military Trainees	0.2	0.2	0.1
Maintenance Depots	1.7	0.8	0.4
Research and Development	1.2	1.0	0.8
Ammunition	1.5	0.6	N/A

Based on RIMS II Runs for 53 Economic Areas (445 of 1066 Installations)
 Highest Value for Each Type Used
 Includes Base Purchases

DECISION ABOUT NEW MULTIPLIERS (CON'T.)

Option 1:

Decide Preliminarily to Use New Multipliers for BRAC 95

Request Assessment from Commerce

Review Preliminary Decision After Commerce Assessment

Option 2:

Decide to Use Current Multipliers for BRAC 95

GENERAL LAYOUT OF DATABASE TOOL

Subgroup recommends database instead of spreadsheet

- Easier to Use

- More Resistant to Unintended Modifications

- Produces Standard Reports

See Handout

Some Front-End Programming Required

Should Be Completed Well Before June 30

Follow-on Work

- Inputs from Military Departments

 - Current Base Personnel

 - Ins and Outs by Fiscal Year by BRAC Round

 - First Review of Assignment of Installations to Communities

 - Design of Standard Reports

STATUS OF WORK ON COSTS TO OTHER AGENCIES

Met with General Accounting Office on March 16

Preliminary Feedback

DoD Should Present "Significant" Non-DoD Costs

Costs to GSA a Primary Concern

Driven by a Few Particular Examples

Medicare Has Also Been a Primary Concern

Links to Broader Hospital Policies

Other Types of Costs

There are Limits to What DoD Should/Can Do

Primarily a COBRA/Return on Investment Issue

Will Respond Soon in Writing

LMI Statistical Analyses of Selected BRAC Communities--Handout

Subgroup Estimated Expected Values for Key Programs

Program	Expected Cost (Takes into Account Probability that BRAC Actions Create Demand and Relative Cost of New Participation)
Maintenance and Caretaker Costs Incurred by Other Federal Agencies (e.g. Park Service, Fish and Wildlife)	Low
GSA Lease Liabilities	Low
Service Provider Substitution (e.g. FAA, Coast Guard)	Low
AFDC	Low
Medicaid	Low
Medicare	Low
SSI	Low
Unemployment Compensation	Medium

Program	Expected Cost (Takes into Account Probability that BRAC Actions Create Demand and Relative Cost of New Participation)
Housing Assistance Programs	Low
EDWAA, DCA, DDP	Low
Defense Economic Adjustment	Low
Food Stamps	Low
Sales and Excise Taxes	Medium
School Impact Assistance	???
State Income Tax	Medium
Personal Property Taxes	Low
Real Property Taxes	Low

STATUS OF WORK ON COSTS TO OTHER AGENCIES (CON'T.)

Follow-On Actions

Review Further LMI Statistical Analysis

Review GAO Submission

Prepare Concrete Recommendations

Obtain Decision from Joint Cross-Service Group

Draft Report to Congress

RECOMMENDATION FOR WRITE-UP ON ECONOMIC IMPACT

Recommend a Section or Appendix on Economic Impact in the Secretary of Defense's 1995 Report to the Commission

DRAFT GUIDANCE

See Handout

**PROPOSED DATA STRUCTURE
(Listing of Data Fields)**

Identification Data:

1. *Sort Code*: Code available to the user for user defined sorts.
2. *UIC*: The unit identification code for the installation.
3. *IRC*: Internal record code. A number assigned to each installation/action.
4. *BRAC Year*: The year of the BRAC action e.g. 88, 91, etc.
5. *State Code*: The FIPS numeric code for the state in which the installation is located.
6. *State*: The state that the installation is located in.
7. *SVCCD*: The code for identifying which service has responsibility for the installation.
8. *Category Code*: The code for the type of BRAC action e.g. realignment, closure, etc.
9. *Installation Name*: The name of the installation.
10. *City*: The nearest city to the installation.
11. *ZIP*: The zip code for the installation.
12. *Economic Area*: The region of influence for the installation.
13. *FIPS #*: The federal identification number for the installation.

Input Data:

14 thru 18. *Current Base Personnel*: The current base population for officers, enlisted, civilians, contractors, and military in training status.

19 thru 26. *Military Personnel (Out) Relocated*: Military job losses which are relocated by year 1994 thru 2001.

27 thru 34. *Military Personnel (Out) Disestablished*: Military job losses which are disestablished by year 1994 thru 2001.

35 thru 42. *Civilian Personnel (Out) Relocated*: Civilian job losses which are relocated by year 1994 thru 2001.

43 thru 50. *Civilian Personnel (Out) Disestablished*: Civilian job losses which are disestablished by year 1994 thru 2001.

51 thru 58. *Contractor Personnel (Out)*: Contractor job losses by year 1994 thru 2001.

59 thru 66. *Military Training Status (Out)*: Military training job losses by year 1994 thru 2001.

66 thru 73. *Military Personnel (In)*: Military job increases by year 1994 thru 2001.

74 thru 81. *Civilian Personnel (In)*: Federal civilian job increases by year 1994 thru 2001.

82 thru 90. *Contractor Personnel (In)*: Contractor job increases by year 1994 thru 2001.

91 thru 98. *Military Training Status (In)*: Military training job increase by year 1994 thru 2001.

Summary and Calculated Information:

99. *Net Direct Job Change - Military*: The net change in direct military jobs for the period 1994 thru 2001.

100. *Net Direct Job Change - Civilian*: The net change in direct federal civilian jobs for the period 1994 thru 2001.

101. *Net Direct Job Change - Contractor*: The net change in direct contractor jobs for the period 1994 thru 2001.

102. *Net Direct Job Change - Military (Training)*: The net change in direct military (Training) jobs for the period 1994 thru 2001.

103. *Total Direct Job Change*: The net total change in direct jobs for the period 1994 thru 2001.

104. *Military Indirect Job Multiplier*: The appropriate indirect job multiplier for military personnel.

105. *Civilian/Contractor Indirect Job Multiplier*: The appropriate indirect job multiplier for federal civilians and contractor personnel.

106. *Military (Training) Indirect Job Multiplier*: The appropriate indirect job multiplier for military (Training) personnel.

107. *Total Indirect Jobs*: The total of all indirect jobs 1994 thru 2001 for the BRAC action at that location.

108. *Total Potential Job Change*: The total direct and indirect job changes 1994 thru 2001 for the BRAC action at that location (103 plus 107).

109. *Economic Impact - Potential*: The total job change for 1994 thru 2001 (108) for that BRAC action at that location as a percentage of the July 94 employment for the economic area.

110. *Economic Impact - Potential Cumulative:* The total job change for 1994 thru 2001 (108) for all BRAC actions (all services, all years) within the economic area as a percentage of the July 94 employment for the economic area.

Supporting Information:

111 thru 117. *Net Direct DoD Job Change by Year:* The net direct DoD job change by year for the period 1994 thru 2001 for the location.

118. *Area Average Annual Change in Civilian Employment:* The average annual change in civilian employment as determined from a regression analysis of the 1984 thru 1993 employment data from the Bureau of Labor Statistics for the economic area.

119 thru 129. *Economic Area Employment:* The employment for economic area by year for the period 1984 thru 1993 from the Bureau of Labor Statistics with the unadjusted July 94 employment total.

130 thru 138. *Economic Area Personal Income:* The per capital personal income by year for the period 1984 thru 1992 from the Bureau of Economic Analysis for the economic area.

139. *Area Average Annual Change in Personal Income:* The average annual change in per capita personal income as determined from a regression analysis of the 1984 thru 1992 personal income data for the economic area.

140 thru 141. *Unemployment Rate:* The July 93 and July 94 unadjusted unemployment rates for the economic area.

IMPACT ON OTHER FEDERAL PROGRAMS

22 March 994

LMI

A CHANGE IN CIVILIAN UNEMPLOYMENT CAUSES AN INCREASE IN TRANSFER PAYMENTS

- The literature suggests that a statistical relationship exists between increases in unemployment and increases in need based transfer payments (AFDC, Food Stamps, Medicaid)
- An analysis of pooled data for MI, CA, PA, and FL confirmed this finding
- A case study analysis of an isolated, highly impacted DoD location (Wurtsmith AFB) demonstrated that, in that case, a strong statistical relationship exists between increases in unemployment and increases in transfer payments

A DECREASE IN CIVILIAN EMPLOYMENT CAUSES AN INCREASE IN TRANSFER PAYMENTS

- An analysis of pooled data for MI, CA, PA, and FL indicated that a statistical relationship exists between employment rate decreases and increases in transfer payments
- A case study analysis of an isolated, highly impacted DoD location (Wurtsmith AFB) confirmed this finding

A DECREASE IN DoD EMPLOYMENT DOES NOT NECESSARILY RESULT IN A DECREASE IN TOTAL ECONOMIC AREA EMPLOYMENT

- At 50% of the 17 most advanced closings the direction of economic area employment is in the opposite direction of the DoD change e.g. DoD jobs are decreasing while economic area employment is increasing
- The decline in military personnel at Wurtsmith resulted in no measurable change in civilian employment

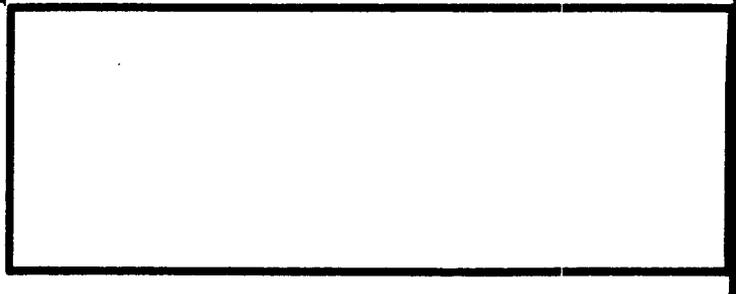
MILITARY IMPACT ON UNEMPLOYMENT

- When a military job is lost, the service member typically leaves the area
- 60% of the service members are married with 60% of the spouses working
- Most spouses work in the service sector
- Therefore, .36 of a service sector employee leaves with each military job (labor supply)
- The indirect effects multiplier is approximately .40 for each military job (labor demand)
- On average, one would expect the impact of losing a military job on unemployment to be negligible (Consistent with Wurtzsmith observation)

RELATIONSHIP BETWEEN MEASURE OF MERIT AND AN INCREASE IN TRANSFER PAYMENTS

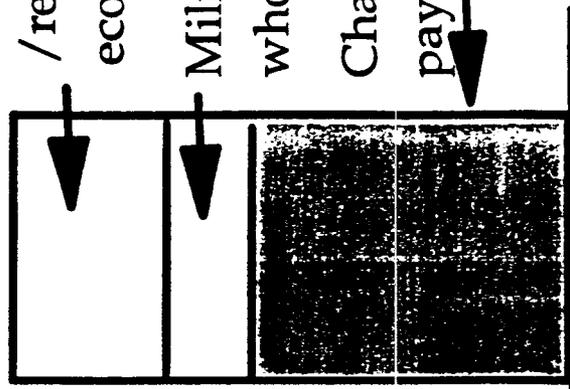
Maximum Potential

Change in Employment as a % of Area Employment



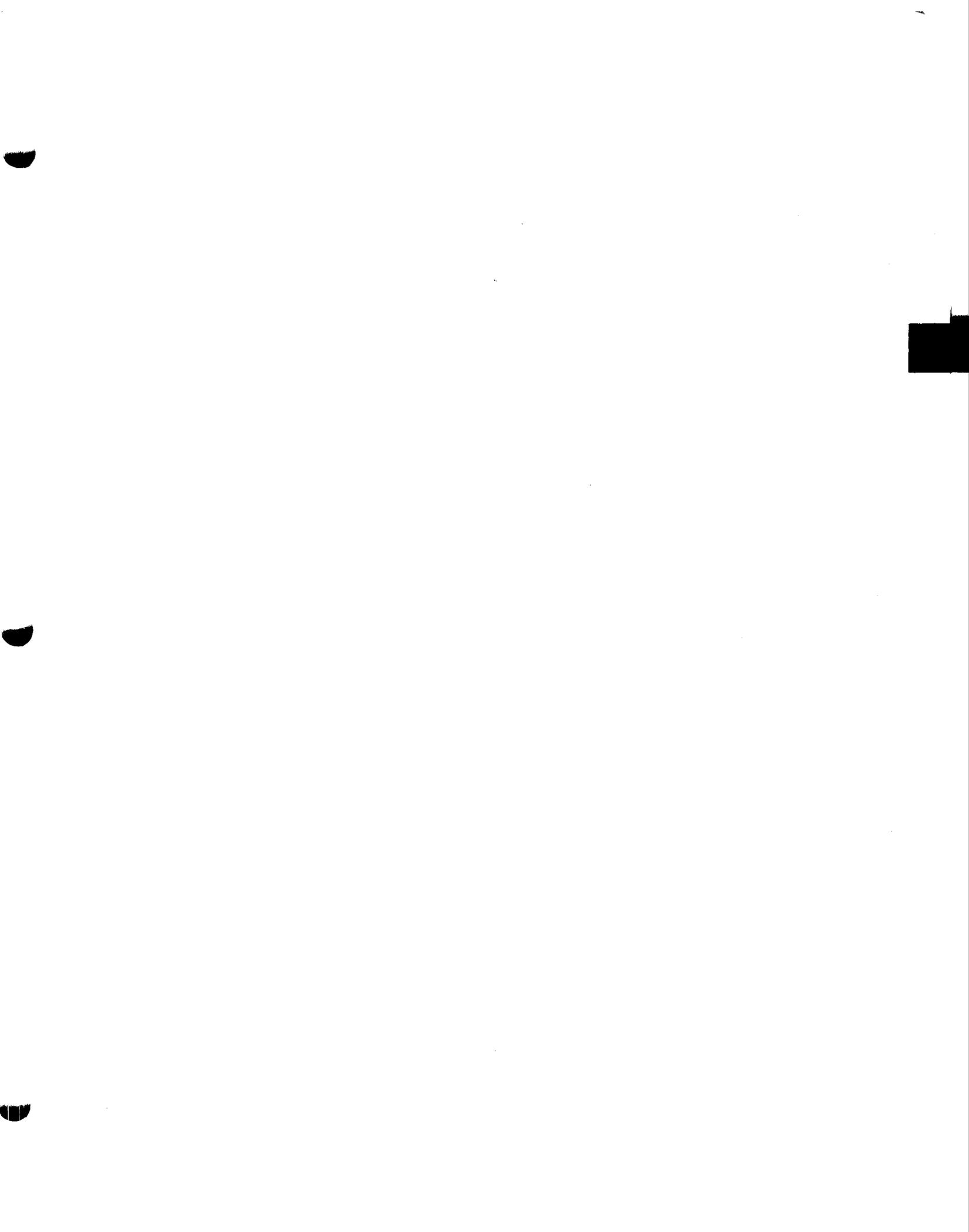
Increases in Transfer Payments as a % of Original Payments

New job generation / reuse and other economic factors
Military and civilians who leave
Change in transfer payments



PRELIMINARY CONCLUSIONS

- There is a relationship between employment rate decreases and an increase in transfer payments which is less than 1 to 1
- Change in DoD employment does not necessarily imply an increase in unemployment
- Any change in transfer payments will likely be of lesser magnitude than the measure of merit



BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

April 5, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(ER&BRAC), at 1600 hours on April 5, 1994, in Room 3E813, the Pentagon. The list of attendees is attached.

Mr. Bayer began with administrative comments and stated that the purpose of the meeting was to provide information on the recent Steering and Review Group meetings. He pointed out that DepSecDef had asked the Joint Cross-Service Group on Economic Impact to attempt to conduct an independent review of the proposed tools for economic impact analysis with particular regard to impact on regions. He also noted that the Group's product on guidance to the DoD Components had been signed.

Mr. Bayer opined that the Group must determine what might be appropriate disinterested bodies to contact for the evaluation. Group discussion raised concerns on timeliness of response by such entities and potential impacts of lead times on the BRAC analysis process if additional data gathering, analysis tool development, awarding contract(s) for services, and funding were determined to be needed. The Group discussed the need to properly bound the task for the entity, since there is no time for a lengthy "six-month" study which only makes recommendations and does not result in a useable product for the customer. A timely evaluation is necessary in order to make adjustments or change direction, if required. Also, concerns of finding entities that do not have a stake in the outcome or a conflict of interest with the BRAC process were aired. The Group discussed potential agencies in and out of government for initial contact to help find a competent, disinterested party which could provide near-term feedback. As a result, Mr. Bayer tasked the subgroup to make contact with organizations such as the Bureau of Labor Statistics, Bureau of Economic Analysis, Federal Reserve, Urban Institute, and Institute for Defense Analyses and to report the findings of the initial contacts to the Group soon.

The Group again briefly discussed the potential use of additional supporting data outside the guidance and measures issued by the Group to help validate the process, as suggested by the Navy. Mr. Bayer stated that the Group would review possible additional supporting data and determine potential value added to the process, and, if benefits from using some or all of the data were found, all DoD Components would apply the validation process uniformly. Group consensus was that this matter be deferred pending review of the analytic tools by an independent entity as requested by DepSecDef, since the results could impact the scope and necessity of more action on this subject.

There being no further matters to discuss, the meeting was adjourned at 1657 hours.


Approved: Robert Bayer
Chairman

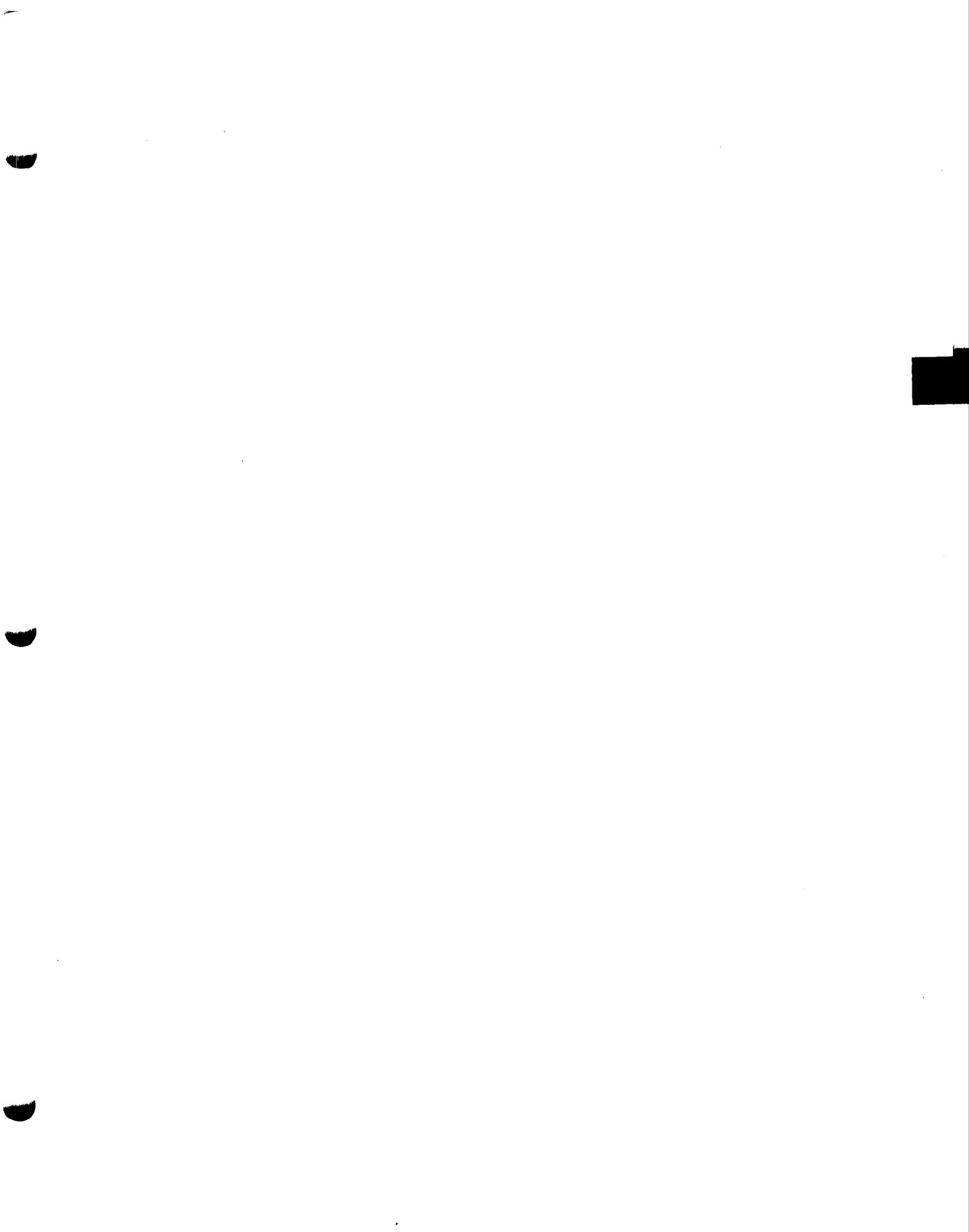
BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

April 5, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Economic Reinvestment and BRAC)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Mr. Joe Cartwright, OSD (Office of Economic Adjustment)
Ms. Maureen Wylie, Army
Mr. Joe Vallone, Army
MAJ Jeff Dorko, Army
Mr. Dave Wennergren, Navy
Mr. Ken Reinertson, Air Force
Mr. Tom Harter, Air Force
Ms. Deanie Ross-Singleton, OSD (Comptroller)
Col Paul Thompson, OSD (Base Closure)
Mr. Bob Hutchinson, LMI (Technical Assistance)
Mr. Tom Muller, LMI (Technical Assistance)



BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

May 2, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(ER&BRAC), at 1000 hours on May 2, 1994, in Room 3E813, the Pentagon. The list of attendees and agenda are attached.

Mr. Berger presented an overview of the draft proposal (attached) for an independent review of the proposed tools for economic impact analysis. The Group discussion on the proposal included whether the potential focus of the review would be on the tools and methods of economic impact analysis or on BRAC decision making. Mr. Berger opined that the review should focus on the tools and methods, however, they must be understood in the context of the decision making process. Mr. Bayer pointed out that it was important for the review participants to recommend specific improvements if they identify any weaknesses. Mr. Berger then led discussion on recommended review participants. Following its review, the Group recommended substituting Mr. John Petersen of Legg Mason for Mr. David Graham of the Institute for Defense Analyses (IDA) to enhance the review's independence, since IDA performs work for the Department of Defense. The Group accepted all other recommendations. The Group also took the position that it would be important for the private sector reviewers to agree in writing that they would not consult for communities during the BRAC 95 process.

The Group next discussed the role of representatives from the Military departments in the review. The Group agreed that only one representative from each Department would attend and act as observer and information resource, but would not be an active participant in the review discussions. The Group also reviewed the proposed focus question and recommended changes that would highlight that the methods and tools would be used to support BRAC decision making and would not be used in isolation. The Group endorsed the draft proposal as modified.

Mr. Bayer directed that Mr. Berger draft a memorandum for the Deputy Secretary of Defense outlining the Group's plans once the final date and participants have been selected. The Group discussed the importance of read-ahead materials for the review participants, and Mr. Berger agreed to oversee the effort.

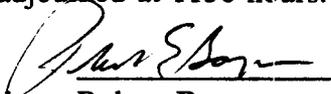
Mr. Wennergren passed out draft proposed data base output report formats (attached). Discussion was deferred to a future meeting after Mr. Berger opined, and the Group agreed, that the subgroup needs more time to review the proposal before final review by the Group.

The Group then considered whether to include military positions in the employment trend analysis. Discussion included concern, when considering reservist positions, about potential for double counting on one hand and the possibility of missing some positions on the other. The Group agreed to include military positions in the employment trend analysis with emphasis on the 1988-1993 period.

The Group decided to defer discussion on the subject of current base personnel (as defined in the Group's guidance memorandum of April 4, 1994) until the subgroup conducts further review. The Group recognized the need to have this information available at the earliest possible date and to have adequate procedures to control versions of the data base tool.

Mr. Bayer said that a report is due to Congress on costs to other agencies. Mr. Berger stated that the target for the report's preparation and coordination was mid-May.

There being no further matters to discuss, the meeting was adjourned at 1130 hours.

Approved: 
Robert Bayer
Chairman

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

May 2, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Economic Reinvestment and BRAC)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Dr. Bryan Jack, OSD (Program Analysis and Evaluation)
Mr. Joe Cartwright, OSD (Office of Economic Adjustment)
MG John H. Little, Army
Ms. Maureen Wylie, Army
Mr. Dave Wennergren, Navy
Mr. Lee Schoenecker, Air Force
Ms. Deanie Ross-Singleton, OSD (Comptroller)
Col Paul Thompson, OSD (Base Closure)
Mr. Bill Moore, LMI (Technical Assistance)
Mr. Tom Muller, LMI (Technical Assistance)

Joint Cross-Service Group on Economic Impact

May 2, 1994

AGENDA

Opening Remarks

Draft Proposal for An Independent Review

Report Formats

Ensuring Coverage of 1994 and 1995

Timing of Data Entries for 2000 and 2001

Other Business

DRAFT

PROPOSAL FOR AN INDEPENDENT REVIEW OF ECONOMIC IMPACT ANALYSIS FOR BRAC 95

Proposed Vehicle: One-Day Review

A group of experts would gather for one day to discuss and review the proposed methods and tools to measure economic impact and cumulative economic impact for use during the BRAC 95 process. The group would be briefed on the role of economic impact in the BRAC decision making processes and the proposed methods and tools. The group would then discuss and assess the adequacy of the methods and tools proposed by the Joint Cross-Service Group on Economic Impact for BRAC 95 decision making processes.

To help ensure the independence and objectivity of the review process, DoD participation would be limited to moderating the seminar, briefing the role of economic impact in decision making processes and the proposed methods and tools, and being available to answer questions. DoD personnel would not be active participants in the discussions and assessments of the proposed methods and tools.

Proposed Record: Minutes (Not-for-Attribution Basis)

The deliberations and assessments of the independent review would be reflected in minutes taken during the discussion. Using minutes for this purpose will make the results of the review available immediately. In contrast, commissioning a written report would be more expensive and time consuming. Minutes would be taken on a not-for-attribution basis to encourage participants to speak freely and candidly. The minutes would be reviewed by group members to ensure accuracy and completeness.

Key Focus Questions

The discussion and assessment would be focused on the following questions:

"In the context of the decision making processes for BRAC 95, do the methods and tools proposed--especially the measures and economic areas--provide a reasonable, adequate, fair, and consistent means of measuring the economic impact and cumulative economic impact of base closures and realignments?"

"If not, what changes would you recommend?"

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Proposed Participants

Role	Recommendation
DoD Briefer on Role of Economic Analysis in BRAC Decision Making Processes	
DoD Briefer on Proposed Methods and Tool for BRAC 95	
DoD Moderator	
Reviewers	
Bureau of Economic Analysis, Department of Commerce	John Kort
Economic and Statistics Administration, Department of Commerce	Bob Grant or David Henry
Bureau of Labor Statistics	Ron Kutcher
Institute for Defense Analyses	David Graham
Academic	Prof. Michael Knetter, Dartmouth College
LMI Personnel	
	Bill Moore
	Tom Muller
Minute Taker	

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Proposed Agenda

0800-0830 Registration and Greeting
0830-0900 Provide Focus Questions and DoD Briefing on Role of Economic Impact in BRAC 95 Processes
0900-0930 DoD Briefing on Proposed Methods and Tools for BRAC 95
0930-0945 Break
0945-1100 Set Agenda for Remainder of Seminar and Discuss and Assess Methodology and Tools
1100 -1115 Break
1100-1200 Discuss and Assess Methodology and Tools
1200-1300 Lunch
1300-1430 Discuss and Assess Methodology and Tools
1430-1530 Wrap-Up Discussion and Assessment of Methodology and Tools
1530-1545 Break and Distribute Draft Minutes
1545-1630 Review Draft Minutes for Accuracy and Completeness
1630-1700 Approve Minutes and Concluding Remarks

Proposed Date

On or about May 11

Proposed Location

Logistics Management Institute

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BRAC-95 Economic Impact Analysis
Proposed Data Base Output Report Formats

22 April 1994

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BRAC-95 Economic Impact Reports

I. Standard Output Report Format

Report is printed for a single installation, outlining the impact of a proposed BRAC-95 action on the economic area (region of influence) surrounding the installation. Information shown includes net change in employment, historical trend data and other BRAC actions affecting the economic area.

II. Summary Reports

A. Economic Area Summary

1. Net Direct Job Change By Fiscal Year
2. Net Direct Job Change By Installation
3. Total Effect (Direct + Indirect)

B. State Summary

1. Net Direct Job Change By Fiscal Year
2. Net Direct Job Change By Installation
3. Total Effect (Direct + Indirect)

C. Regional Summary

1. Net Direct Job Change By Fiscal Year
2. Net Direct Job Change By State
3. Total Effect (Direct + Indirect)

D. National Summary/Relative Impacts/Graphic Displays

1. Net Direct Job Change By Region
2. Net Direct Job Change By Fiscal Year
3. Relative Impact: Pre BRAC-95/Post BRAC-95 Net Change By State
4. Relative Impact: Pre BRAC-95/Post BRAC-95 Net Change By Region
5. Graphic Display: Direct Job Change By Region (Map)
6. Graphic Display: Pre BRAC-95/Post BRAC-95 Net Change By Region (Pie Chart)

Note: Two versions of each report should be available. The first version would include only those actions (and totals) relating to a single Military Department/Defense Agency. The second version would include all DoD actions.

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I. Standard Output Report Format

Impact associated with a BRAC-95 proposed closure or realignment action at a "user entered" installation. Shows impact of proposed BRAC-95 action and historic data for the economic area (trend data, other BRAC impacts, etc.)

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ECONOMIC IMPACT DATA

Activity: NAS Anywhere

Economic Area: SomeCity Metropolitan Statistical Area

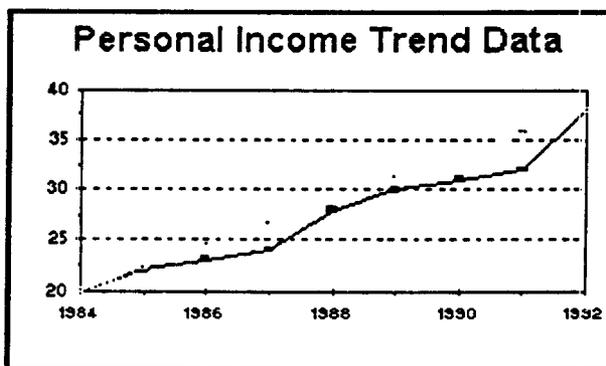
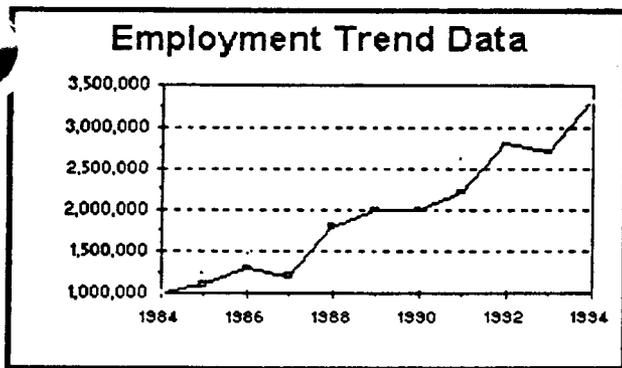
Impact of Proposed BRAC-95 Action at NAS Anywhere:*

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Relocated Jobs:	MIL	0	0	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	CIV	0	0	0	0	0	-500	-500	0	-1,000
Eliminated Jobs:	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	-500	-500	0	-1,000
Other Pending BRAC Actions at NAS Anywhere Prev. Rounds):	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Total Direct Job Change at NAS Anywhere:	MIL	0	0	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	CIV	0	0	0	0	0	-1,000	-1,000	0	-2,000
	TOT	0	0	0	-2,000	-2,000	-3,000	-3,000	0	-10,000

Total Indirect Job Change: -12,000
Total Direct/Indirect Job Change: -22,000

Total Employment of SomeCity Metropolitan Statistical Area (1994): 2,700,000
Potential Total Job Change Over Closure Period (as a % of 1993 Employment): - 0.8%

SomeCity Metropolitan Statistical Area Profile:



Annualized Change in Employment

Jobs: 230,000
Percentage: 7.0%

U.S. Average Change: X.X%

Annualized Change in Personal Income

Dollars: 2,000
Percentage: 5.3%

U.S. Average Change: X.X%

Unemployment Rate for SomeCity Metropolitan Statistical Area (1993): X.X%

Unemployment Rate for SomeCity Metropolitan Statistical Area (1994): X.X%

U.S. Unemployment Rate: X.X%

* Negative numbers reflect jobs out of an activity.

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ECONOMIC IMPACT DATA

Activity: NAS Anywhere

Economic Area: SomeCity Metropolitan Statistical Area

Other BRAC Impacts Affecting SomeCity Metropolitan Statistical Area:

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Other Proposed BRAC-95 Actions in Economic Area:										
Army	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Navy	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	-5,000	0	0	0	0	-5,000
Air Force	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Other	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Total	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	-5,000	0	0	0	0	-5,000

Other Pending Prior BRAC Actions in Economic Area:

Army	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Navy	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	17,000	0	0	0	0	0	17,000
Air Force	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Other	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	0	0	0	0	0	0	0
Total	MIL	0	0	0	0	0	0	0	0	0
	CIV	0	0	17,000	0	0	0	0	0	17,000

Total Direct Job Change in SomeCity Metropolitan Statistical Area (Including NAS Anywhere):

MIL	0	0	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
CIV	0	0	17,000	-5,000	0	-1,000	-1,000	0	10,000
TOT	0	0	17,000	-7,000	-2,000	-3,000	-3,000	0	2,000

Total Indirect Job Change: 2,400
Total Direct/Indirect Job Change: 4,400

Total Employment of SomeCity Metropolitan Statistical Area (1994): 2,700,000

Potential Cumulative Net Change in Jobs

within the SomeCity Metropolitan Statistical Area: + 0.2%

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2. Summary Reports

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2. Summary Reports

a. Economic Area Summary

- 1. Net Direct Job Change By Fiscal Year**
- 2. Net Direct Job Change By Installation**
- 3. Total Effect (Direct + Indirect)**

Summary output reports on impact for a "user identified" economic area. User should have the option of selecting either a single economic area, several economic areas or all economic areas where job changes have taken place. The optimal solution is a menu that allows you to "X" the economic areas that you want to include in the report, or those areas with a change in jobs, or all areas.

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**BRAC-95 Economic Impact
Net Direct Job Change By Fiscal Year**

New York, NY PMSA

		<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:								
Relocated Jobs:	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-500	-500	0	-1,000
Eliminated Jobs:	Military	0	0	0	0	0	0	0
	Civilian	0	0	0	-500	-500	0	-1,000
Total:	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-1,000	-1,000	0	-2,000
	Total	0	-2,000	-2,000	-3,000	-3,000	0	-10,000
Jobs In:								
	Military	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0
Net Job Change:								
	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-1,000	-1,000	0	-2,000
	Total	0	-2,000	-2,000	-3,000	-3,000	0	-10,000

**BRAC-95 Economic Impact
Net Direct Job Change By Installation**

New York, NY PMSA

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out:					
Naval Air Station Anywhere	2,000	0	3,000	0	5,000
Naval Station Somewhere	1,000	0	5,000	0	6,000
Total Jobs Out:	3,000	0	8,000	0	11,000
Jobs In:					
SUBASE Nowhere	1,000	0	3,000	0	4,000
Total Jobs In:	1,000	0	3,000	0	4,000
Net Job Change:	-2,000	0	-5,000	0	-7,000

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BRAC-95 Economic Impact
Total Net Job Change By Installation

New York, NY PMSA

<u>Activity</u>	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>	<u>% of Economic Area Jobs</u>
Jobs Out:				
Naval Air Station Anywhere	5,000	10,000	15,000	- 1.2%
Naval Station Somewhere	6,000	12,000	18,000	- 1.3%
Total Jobs Out:	11,000	22,000	33,000	- 2.5%
Jobs In:				
SUBASE Nowhere	4,000	8,000	12,000	+ 1.1%
Total Jobs In:	4,000	8,000	12,000	+ 1.1%
Net Job Change:	-7,000	-14,000	-21,000	- 1.4%

2. Summary Reports

B. State Summary

1. Net Direct Job Change By Fiscal Year
2. Net Direct Job Change By Installation
3. Total Effect (Direct + Indirect)

Summary output reports on impact for a "user identified" state. User should be able to pick a single state, group of states or all states. The optimal solution is a menu that allows you to "X" the states that you want to include in the report or to include all states.

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**BRAC-95 Economic Impact
Net Direct Job Change By Fiscal Year**

New York

		<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:								
Relocated Jobs:	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-500	-500	0	-1,000
Eliminated Jobs:	Military	0	0	0	0	0	0	0
	Civilian	0	0	0	-500	-500	0	-1,000
Total:	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-1,000	-1,000	0	-2,000
	Total	0	-2,000	-2,000	-3,000	-3,000	0	-10,000
Jobs In:								
	Military	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0
Net Job Change:								
	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-1,000	-1,000	0	-2,000
	Total	0	-2,000	-2,000	-3,000	-3,000	0	-10,000

**BRAC-95 Economic Impact
Net Direct Job Change By Installation**

New York

<u>Activity</u>	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>
Jobs Out:			
Naval Air Station Anywhere	5,000	10,000	15,000
Naval Station Somewhere	6,000	12,000	18,000
	<hr/>	<hr/>	<hr/>
Total Jobs Out:	11,000	22,000	33,000
Jobs In:			
SUBASE Nowhere	4,000	8,000	12,000
	<hr/>	<hr/>	<hr/>
Total Jobs In:	4,000	8,000	12,000
Net Job Change:	-7,000	-14,000	-21,000

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**BRAC-95 Economic Impact
Total Net Job Change By Installation**

New York

<u>Activity</u>	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>
Jobs Out:			
Naval Air Station Anywhere	5,000	10,000	15,000
Naval Station Somewhere	6,000	12,000	18,000
	<hr/>	<hr/>	<hr/>
Total Jobs Out:	11,000	22,000	33,000
Jobs In:			
SUBASE Nowhere	4,000	8,000	12,000
	<hr/>	<hr/>	<hr/>
Total Jobs In:	4,000	8,000	12,000
Net Job Change:	-7,000	-14,000	-21,000

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2. Summary Reports

C. Regional Summary

1. Net Direct Job Change By Fiscal Year
2. Net Direct Job Change By State
3. Total Effect (Direct + Indirect)

Summary output reports on impact for a "user identified" region of the country.

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**BRAC-95 Economic Impact
Net Direct Job Change By Fiscal Year**

Northeast Region

		<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:								
Connecticut	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-500	-500	0	-1,000
Massachusetts:	Military	0	0	0	0	0	0	0
	Civilian	0	0	0	-500	-500	0	-1,000
Total:	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-1,000	-1,000	0	-2,000
	Total	0	-2,000	-2,000	-3,000	-3,000	0	-10,000
Jobs In:								
	Military	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0
	Total	0	0	0	0	0	0	0
Net Job Change:								
	Military	0	-2,000	-2,000	-2,000	-2,000	0	-8,000
	Civilian	0	0	0	-1,000	-1,000	0	-2,000
	Total	0	-2,000	-2,000	-3,000	-3,000	0	-10,000

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**BRAC-95 Economic Impact
Net Direct Job Change By State**

Northeast Region

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out:					
Connecticut	8,000	0	1,000	0	9,000
Massachusetts	0	0	1,000	0	1,000
	_____	_____	_____	_____	_____
Total Jobs Out:	8,000	0	2,000	0	10,000
Jobs In:					
Rhode Island	5,000	0	0	0	5,000
	_____	_____	_____	_____	_____
Total Jobs In:	5,000	0	0	0	5,000
Net Job Change:	-3,000	0	-2,000	0	-5,000

**BRAC-95 Economic Impact
Total Net Job Change By Installation**

Northeast Region

<u>State</u>	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>
Jobs Out:			
Connecticut	9,000	18,000	27,000
Massachusetts	1,000	2,000	3,000
	<hr/>	<hr/>	<hr/>
Total Jobs Out:	10,000	20,000	30,000
Jobs In:			
Rhode Island	5,000	10,000	15,000
	<hr/>	<hr/>	<hr/>
Total Jobs In:	5,000	10,000	15,000
Net Job Change:	-5,000	-10,000	-15,000

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2. Summary Reports

D. National Summary/Relative Impacts/Graphic Displays

1. Net Direct Job Change By Region
2. Net Direct Job Change By Fiscal Year
3. Relative Impact: Pre BRAC-95/Post BRAC-95 Net Change By State
4. Relative Impact: Pre BRAC-95/Post BRAC-95 Net Change By Region
5. Graphic Display: Direct Job Change By Region (Map)
6. Graphic Display: Pre BRAC-95/Post BRAC-95 Net Change By Region (Pie Chart)

The following reports show National summary-level data and relative levels of impact (pre-BRAC-95 vs. post-BRAC-95 presence). As with all summary reports, user should have option to run the report for a single Military Department/Defense Agency or for the entire Department of Defense. In order to create the "relative" reports, the system must compare net changes in employment with "current base population". The algorithm for a single Military Department's version of the report should total "current base population" for that Military Department's installations only. The version that shows all DoD should total "current base population" for all military installations.

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**BRAC-95 Economic Impact
Net Direct Job Change**

National Summary By Region

<u>Region</u>	<u>Jobs Out</u>		<u>Jobs In</u>		<u>Net Job Change</u>
	<u>Number</u>	<u>% of Total</u>	<u>Number</u>	<u>% of Total</u>	
New England	7,672	5.1	4,949	5.0	-2,723
Middle Atlantic	6,070	4.1	3,007	3.0	-3,063
East North Central	2,849	1.9	9,151	9.2	6,302
West North Central	87	0.1	246	0.3	159
South Atlantic	59,837	39.9	41,612	42.0	-18,225
East South Central	13,135	8.8	2,871	2.9	-10,264
West South Central	205	0.1	1,263	1.3	1,058
Mountain	52	0.0	234	0.2	182
Pacific	<u>59,977</u>	<u>40.0</u>	<u>35,683</u>	<u>36.0</u>	<u>-24,294</u>
Total	149,884	100.0	99,016	100.0	-50,868

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**BRAC-95 Economic Impact
Net Direct Job Change By Fiscal Year**

National Summary

	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Direct Job Change:							
Military	0	-20,000	-20,000	-20,000	-20,000	0	-80,000
Students	0	0	0	0	0	0	0
Civilians	0	0	0	-50,000	-50,000	0	-100,000
Contractors	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-5,000</u>	<u>-5,000</u>
Total	0	-20,000	-20,000	-70,000	-70,000	-5,000	-185,000

Indirect Job Change:

-370,000

Total Job Change:

-555,000

Total Job Change as a % of National Employment: -1.2%

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BRAC-95 Economic Impact Pre and Post BRAC-95 Direct Employment By State

<u>State</u>	Pre BRAC-95 Direct Jobs		Post BRAC-95 Direct Jobs	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Alabama	5,000	1.1%	4,000	1.0%
...				
Wyoming	<u>28,900</u>	<u>4.2%</u>	<u>27,000</u>	<u>4.2%</u>
Total	698,643	100.0%	647,775	100.0%

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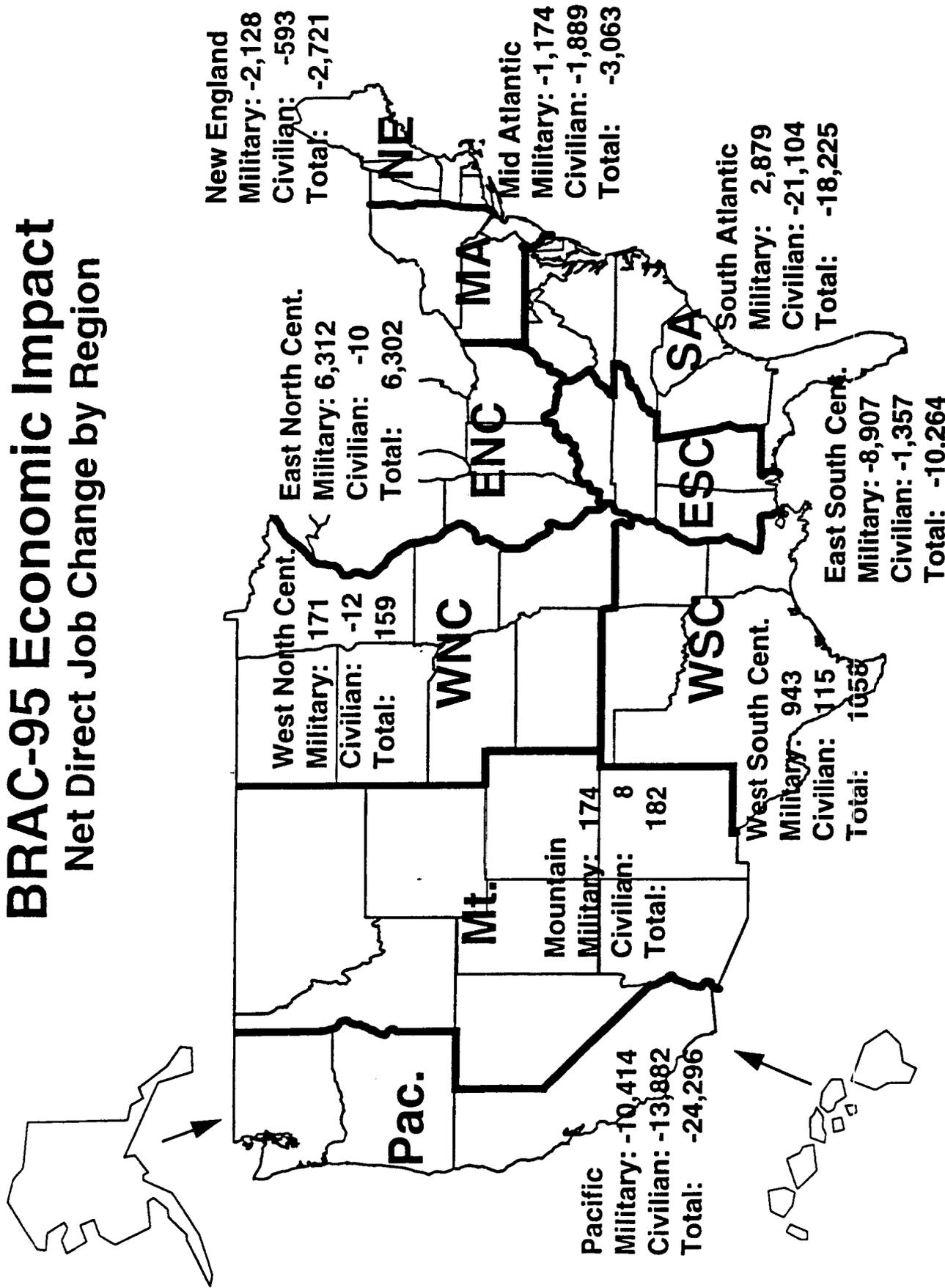
**BRAC-95 Economic Impact
Pre and Post BRAC-95 Direct Employment
By Region**

<u>State</u>	Pre BRAC-95 Direct Jobs		Post BRAC-95 Direct Jobs	
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
New England	29,077	4.2%	26,354	4.1%
Middle Atlantic	37,539	5.4%	34,476	5.3%
East North Central	32,559	4.7%	38,861	6.0%
West North Central	2,692	0.4%	2,851	0.4%
South Atlantic	304,745	43.6%	286,520	44.2%
East South Central	19,558	2.8%	9,294	1.4%
West South Central	13,184	1.9%	14,242	2.2%
Mountain	10,257	1.5%	10,439	1.6%
Pacific	<u>249,032</u>	<u>35.6%</u>	<u>224,738</u>	<u>34.7%</u>
Total	698,643	100.0%	647,775	100.0%

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BRAC-95 Economic Impact

Net Direct Job Change by Region

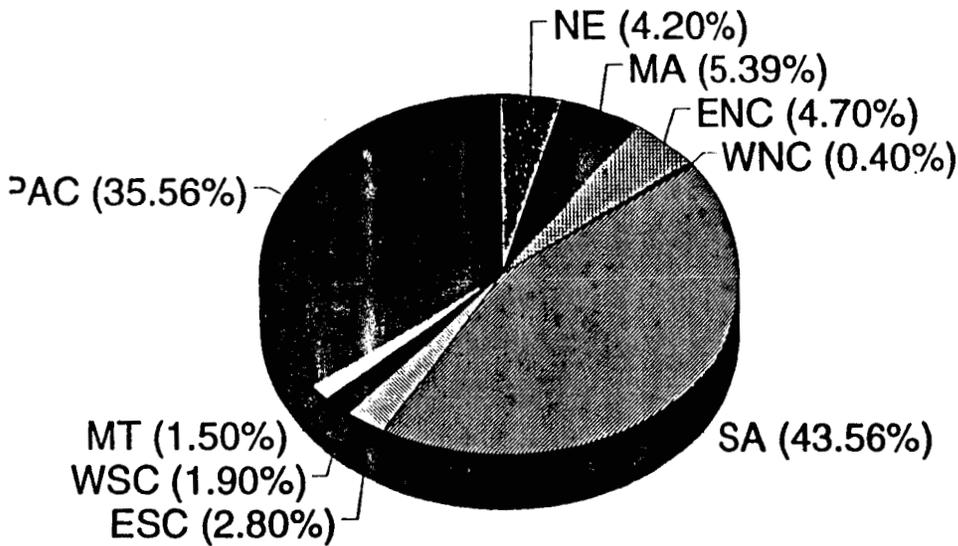


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BRAC-95 Economic Impact

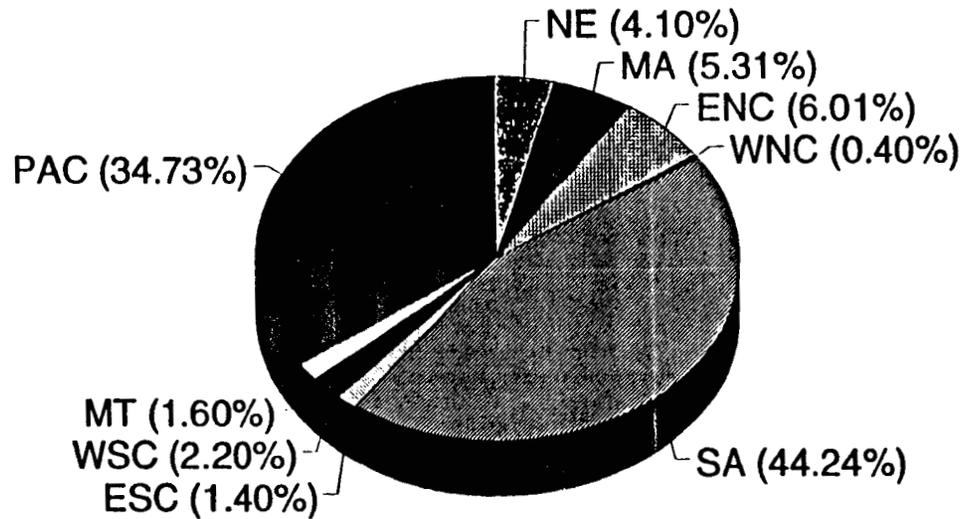
Pre and Post BRAC-95 Direct Employment by Region

BASE PERSONNEL PRE BRAC-95
Percentages by Region



TOTAL PERSONNEL: 698,643

BASE PERSONNEL POST BRAC-95
Percentages by Region



TOTAL PERSONNEL: 647,775

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BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

May 27, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(ER&BRAC), at 1100 hours on May 27, 1994, in Room 3E813, the Pentagon. The list of attendees and agenda are attached.

Mr. Bayer began with comments on the upcoming Steering Group meeting. Then, Mr. Berger gave an overview of the minutes (attached) of the independent review of proposed BRAC 95 economic impact analysis which was accomplished May 17, 1994. He also led the Group discussion on the subgroup's draft recommendations on the comments of the independent review panel (attached).

Discussion included the selection of economic areas. Mr. Bayer opined that practice and perception must both reflect uniformity and consistency with regard to selection of economic areas. This should include documentation of the approach, how to apply the approach, and any application of judgement in the selection of economic areas.

The Group discussed the independent reviewers' suggestion to consider property values surrounding installations as an indicator of economic recovery potential. The Group agreed that it is not clear that property value is a good indicator of economic recovery potential, and that it would be virtually impossible to obtain reliable, consistent property value indicators for each installation.

Next, the Group briefly discussed the use of state and/or regional roll-ups. The Group pointed out that while the Department will retain the past capability of displaying BRAC information by state and region, the economic areas considered in BRAC 95 will continue to be metropolitan areas, non-metropolitan counties, and multi-county areas as stated in the Group's April 4, 1994, guidance memorandum. The Group also questioned, and then confirmed, that BRAC economic areas do cross state boundaries when it is appropriate.

The Group moved on to a discussion of the effects of DoD spending cuts not related to BRAC, and concurred with the subgroup's recommendation (see attachment).

Mr. Berger then called the Group's attention to the independent reviewers' concern that BRAC economic impact analysis tends to overstate the economic impact of BRAC actions. Mr. Berger stated that this concern appeared to be the driving force behind a number of the reviewers' recommendations, such as the proposals to include direct jobs only in the measure of cumulative economic impact and to present historic economic information. The Group decided to continue to use total potential job change (absolute and as a percent of economic area employment) as the key measure of economic impact, but, noting the reviewers' concern about overstating economic impact, agreed to consider how economic information could be presented to verify the "worst case" character of the economic impact measure.

As a result of this meeting's discussions, the Group accepted the subgroup's recommendations with regard to the independent review panel's comments, and tasked the subgroup to begin developing a proposed presentation for the Chairman's use at the next Steering Group meeting.

Next, Mr. Berger pointed out that he will need comments on a draft report about base closures and their relationships to non-DoD Federal costs which was produced by the Logistics Management Institute (LMI) in support of the Group. Mr. Berger will distribute the draft report as soon as it is available. Additionally, he noted that the subgroup is beginning to draft a report to Congress on this subject per Section 2925 of the Defense Authorization Act for Fiscal Year 1994.

Since the subgroup had recommended that the independent review comments on consideration of employment and providing a measure or measures of the diversity of local economies by industry and occupation merited further discussion, the Group took up the subject. As the dialogue continued, the Group noted that much information was available outside DoD and raised questions about the usefulness and value of such information. The Group agreed to address this subject again at a future meeting.

There being no further matters to discuss, the meeting was adjourned at 1230 hours.


Approved: Robert Bayer
Chairman

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

May 27, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Economic Reinvestment and BRAC)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment and BRAC)
Dr. Bryan Jack, OSD (Program Analysis and Evaluation)
Mr. Joe Cartwright, OSD (Office of Economic Adjustment)
Ms. Maureen Wylie, Army
Mr. Dave Wennergren, Navy
CAPT Kevin Ferguson, Navy
Mr. Ken Reinertson, Air Force
Mr. Tom Harter, Air Force
Ms. Deanie Ross-Singleton, OSD (Comptroller)
Col Paul Thompson, OSD (Base Closure)
Mr. John Delaware, DoDIG
Mr. Bill Moore, LMI (Technical Assistance)
Mr. Tom Muller, LMI (Technical Assistance)

Joint Cross-Service Group on Economic Impact

May 27, 1994

AGENDA

Opening Remarks

Discussion of Independent Review Conducted on May 17, 1994

Draft Letter and Report on Non-DoD Costs

Other Business

INDEPENDENT REVIEW PANEL COMMENTS ON PROPOSED BRAC-95 ECONOMIC IMPACT ANALYSIS

17 MAY 1994

INTRODUCTION AND BACKGROUND

An overview of the BRAC process from 1988 to the present was given by Mr. Bayer. The overview covered the Department of Defense's objectives and the importance of the BRAC process to the Department's future plans. It also covered the eight criteria used for the selection of installations for closure. Mr. Berger then described the proposed methodology for estimating the economic impact in some detail. Included in his description were economic area selection, development of indirect and induced multipliers, and cumulative economic impacts.

DISCUSSION

Economic Areas

Job loss as a percent of economic area employment appears to be a valid measure of economic impact. The selection of economic areas should reflect labor markets and expenditure patterns. Decision rules for selecting these economic areas should be documented and written rationales should be provided for exceptions. A discussion of the economic area selection thought process should be included with the recommendations to the Base Closure Commission. State level roll ups could be valuable for considerations beyond the decision of whether to close an installation or not.

Unemployment Information

Unemployment history should be shown for a period of time rather than just July 93 and July 94. A monthly trend for a two year period may be appropriate.

Recovery Potential

Consider including a statement of the real property aspect of a base's reuse potential. This statement would consist of a rough estimate of the estimated property value reflecting potential reuses. The higher the property value the greater the recovery potential.

Static Vs. Dynamic Analysis

Multipliers for indirect and induced impacts should be only applied to net direct job changes. Consider using only direct jobs as the numerator of the cumulative economic impact measure. A set of other descriptive economic information should be shown for multiple years as a means of providing some economic context to the results of the static analysis. Include historic

examples in the report to the Base Closure Commission as a means of verifying the worse case scenario methodology.

Equity and Sharing the Burden

State and/or regional roll ups should be made available for considerations beyond the decision making process such as examining equity/burden sharing among states and/or regions in relation to their military presence.

Defense Spending Cuts Not Related to Base Closures

Describe historic and current gross DoD spending at the state level to include procurement and non-wage payments. This information could be used to provide context for comparisons of bases with like military value.

Updating Multipliers and The Use of a Continuous Multiplier Function

Information to update multipliers will not be available until December 1994 and although not available at this time it may be appropriate to update these multipliers in the future. Additionally, consider using a continuous function for estimating the indirect and induced multiplier instead of a step function. This approach would eliminate the discontinuities that occur over size ranges within functional multiplier groups.

Presentation Issues

Provide historical context to the worse case scenario that provides an insight to how a most likely outcome might appear to include a discussion of recent case studies. Consider developing a range of potential impacts based upon an analysis of recent history or other information.

Composition of Employment

Consider providing a measure or measures of the diversity of the economy by industry and occupation. Ensure that consistent definitions of employment are used for economic impact calculations.

REVIEWERS

Mr. Robert Grant, Economics and Statistics Administration, Department of Commerce

Mr. David Henry, Economics and Statistics Administration, Department of Commerce

Mr. Michael Knetter, Economics Department, Dartmouth College

Mr. John Kort, Bureau of Economic Analysis, Department of Commerce

Mr. Ronald Kutscher, Bureau of Labor Statistics, Department of Labor

Mr. John Petersen, Government Finance Group, Inc.

BRIEFERS

Mr. Robert Bayer, Deputy Assistant Secretary of Defense (Economic Reinvestment and Base Realignment and Closure)

Mr. Michael Berger, Office of the Deputy Assistant Secretary of Defense (Economic Reinvestment and Base Realignment and Closure)

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**Recommendations from Subgroup on Economic Methodologies to
Joint Cross-Service Group on Economic Impact**

Independent Review of Proposed Economic Impact Analysis for BRAC 1995

Economic Areas

- Review Comment:** Job loss as a percent of economic area employment appears to be a valid measure of economic impact.
- Recommendation:** Concur. The proposed methods and tools for BRAC 1995, like those used in previous BRAC rounds, would use job loss (i.e., total potential job change) in absolute numbers and as a percentage of economic area employment as key measures of economic impact.
- Review Comment:** The selection of economic areas should reflect labor markets and expenditure patterns.
- Recommendation:** Concur. The proposed method would assign each installation to an economic area. In general, the economic areas approximate, but are not identical to, areas defined by labor markets and expenditure patterns. Generally, the economic area is defined as the county where the installation is located; if the county is part of a metropolitan statistical area (MSA), as defined by the Bureau of the Census, then the economic area is the MSA. In some cases, the economic area is defined as a multi-county, non-MSA area. This definition of economic area takes into account the area where most of the installation's employees live and most of the labor-market impacts and economic adjustment will occur.
- Review Comment:** Decision rules for selecting these economic areas should be documented and written rationales should be provided for the exceptions.
- Recommendation:** Concur. Decision rules have been used to assign installations to economic areas and are being documented.
- Review Comment:** A discussion of the economic area selection thought process should be included with the recommendations to the Base Closure Commission.
- Recommendation:** Concur. Such a discussion should be included in the Report from the Secretary of Defense to the Commission.

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Review Comment: State level roll ups could be valuable for consideration beyond the decision of whether to close and installation or not.

Recommendation: Concur. The selection of individual installations for closure must be based on the force structure plan and final selection criteria. However, we will ensure that the Department has the ability to display information from the BRAC process on a state-by-state basis, as has been done in the past.

Unemployment Information

Review Comment: Unemployment history should be shown for a period of time rather than just July 93 and July 94.

Recommendation: Concur. Recommend revising database to include unemployment rates for each economic area from 1984 through the most recent available annual rates.

Review Comment: A monthly trend for a two year period may be appropriate.

Recommendation: Nonconcur. The Subgroup believes that annual unemployment trend data will be sufficient for BRAC decision making.

Recovery Potential

Review Comment: Consider including a statement of the real property aspect of a base's reuse potential. This statement would consist of a rough estimate of the estimated property value reflecting potential reuses. The higher the property value the greater the recovery potential.

Recommendation: Non-concur. Local variations in land use, zoning, tax policies, and other factors make it difficult, if not impossible, to derive consistent estimates for property values surrounding every installation in the United States. In theory, estimates of property value could be made, but in practice they would be too unreliable and too uncertain to be useful as a decision making factor in the base closure decision making process. Finally, it is not certain that higher property values are indeed a good predictor of recovery potential.

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Static Vs. Dynamic Analysis

Review Comment: Multipliers for indirect and induced impacts should be only applied to net direct job changes.

Recommendation: Concur. The proposed method would apply multipliers only to net direct job changes.

Review Comment: Consider using only direct jobs as the numerator of the cumulative economic impact measure.

Recommendation: Non-concur. Reviewers said that the static multipliers for indirect and induced employment changes tend to overstate economic impacts because they do not capture the compensating economic activity that occurs over time. As a result, they recommended considering using direct jobs only.

The Subgroup on Economic Methodologies recognizes the merit of reviewers' recommendation, but recommends using direct, indirect, and induced jobs, as proposed. The Department included indirect and induced jobs in the measures of economic impact in BRAC 1993, and, irrespective of the merits or the intensity of arguments the Department might put forth, removing these jobs from the economic impact calculations could convey the impression that DoD is "low balling" estimates of economic impact.

Review Comment: A set of descriptive economic information should be shown for multiple years as a means of providing some economic context to the results of the static analysis.

Recommendation: Concur. The proposed database tool will include historic information on employment, personal income, population, and unemployment rates.

Review Comment: Include historic examples in the report to the Base Closure Commission as a means of verifying the worst case scenario methodology.

Recommendation: Concur. The Subgroup is confident that the proposed methodology presents a "worst case" scenario for economic impact. The report to the Commission should include information on economic areas where bases closed from BRAC 1988 and BRAC 1991 to verify the worst-case nature of the proposed methodology.

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Equity and Sharing the Burden

Review Comment: State and/or regional roll ups should be made available for consideration beyond the decision making process such as examining equity/burden sharing among states and/or regions in relation to their military presence.

Recommendation: Concur. The selection of individual installations for closure must be based on the force structure plan and final selection criteria. However, we will ensure that the Department has the ability to display information from the BRAC process on a state-by-state and regional basis, as has been done in the past.

Defense Spending Cuts Not Related to Base Closures

Review Comment: Describe historic and current gross DoD spending at the state level to include procurement and non-wage payments. This information could be used to provide context for comparisons of bases with like military value.

Recommendation: Non-concur. The Subgroup recommends a course of action that conforms to the general intent of the Reviewers' recommendation. The Subgroup notes that it is not changes in other categories of defense spending, in isolation, that are important, but rather the impact that these changes have on economic areas. Impacts that have already occurred would be included implicitly in the historic economic information for each economic area that is as part of the proposed database tool: trends in employment, unemployment rates, personal income, and population. Impacts that are yet to occur are contingent on a variety of factors that can not be estimated with accuracy, such as subcontracting activity at the local level, future exports of military systems, and congressional decision making.

The Subgroup also notes that military bases with like military value would have to be evaluated against all four of the remaining final selection criteria, not just economic impact.

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Updating Multipliers and the Use of a Continuous Multiplier Function

Review Comment: Information to update multipliers will not be available until December 1994, and although not available at this time, it may be appropriate to update these multipliers in the future.

Recommendation: Concur in part. The multipliers for indirect and induced employment effects proposed for use in BRAC 1995 have been calculated based on the most recent information that will be available in time to support BRAC 1995 decision making.

The multipliers used in the BRAC process are based on work performed at the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce. Updated multipliers would have to be produced in a three-step process. First, BEA would have to obtain new information. This is the information referred to above as being available in December 1994. Second, BEA would have to incorporate this data into the Regional Input-Output Modeling System (RIMS II) and conduct RIMS II analyses of many (more than 50) economic areas. This process would take several months more. Third, DoD would have to work with the RIMS II output to calculate BRAC multipliers, which would also take several months.

In sum, new multipliers based on the December 1994 information would not be available until mid-1995 at the earliest, which is too late for BRAC 1995 decision making processes. (Recommendations from the Military Departments to the Secretary of Defense are due in January 1995.)

Review Comment: Additionally, consider using a continuous function for estimating the indirect and induced multiplier instead of a step function. This approach would eliminate the discontinuities that occur over size ranges within functional multiplier groups.

Recommendation: Concur. Reviewers stated their concern with the relatively large jumps in multiplier values (within military functional areas) between the three sizes of economic areas proposed (those with fewer than 50,000 employees; those with between 51,000 and 250,000 employees, and those with more than 250,000 employees). Reviewers noted that multiplier values should increase incrementally with economic area employment over a derived (log-log) curve, rather than jump based on only three sizes of economic areas. The Subgroup concurs and recommends the compilation of a table that would list more multiplier values for each military function as area employment increases.

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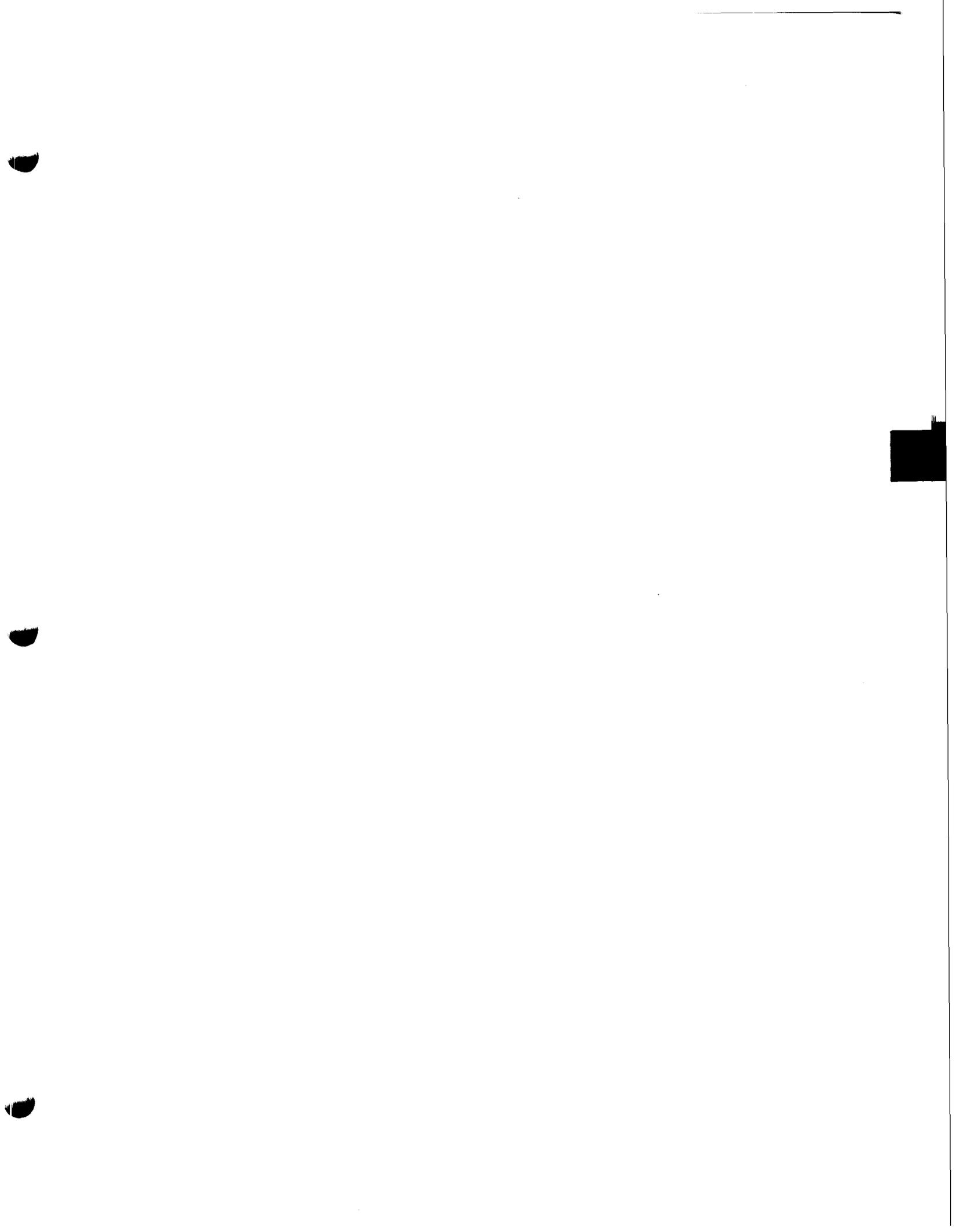
Presentation Issues

- Review Comment:** Provide historical context to the worst case scenario that provides an insight to how a most likely outcome might appear to include a discussion of recent case studies.
- Recommendation:** Concur. Information on economic areas with actual closures should be included in the Secretary of Defense's report to the Commission to put economic impact analysis in context.
- Review Comment:** Consider developing a range of potential impacts based on an analysis of recent history of other information.
- Recommendation:** Concur in part. The Subgroup recommends including information on economic areas with actual closures to put economic impact analysis in context. However, it does not recommend developing a range of potential impacts because of the difficulty of developing a consistent range of estimates for each installation in the United States and because consideration of a range of economic impacts would vastly complicate BRAC decision making processes.

Consideration of Employment

- Review Comment:** Consider providing a measure or measures of the diversity of the economy by industry and occupation.
- Recommendation:** The Subgroup believes that this recommendation merits further discussion.
- Review Comment:** Ensure that consistent definitions of employment are used for economic impact calculations.
- Recommendation:** Concur. In particular, the inclusion or exclusion of military personnel in employment deserves careful attention.

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TAB 11

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

November 10, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(I), at 0900 hours on November 10, 1994, in Room 3E813, the Pentagon. The list of attendees and agenda are attached.

Mr. Bayer gave opening remarks about the on-going base closure and realignment process and the Group's role described in the April 4, 1994, guidance memorandum. He continued with other business, including projected timelines for the BRAC process. Mr. Bayer directed the subgroup to develop analysis plans for the January through March 1995 time period and ensure that these plans were consistent with internal controls for handling information received from the Military Departments. He also noted that the Department recently sent to the Congress reports on economic impact and the treatment of non-DoD, Federal costs in the BRAC process (attached).

Next, Mr. Berger led discussion of the subgroup's proposals (slides attached) on the methodology for deriving multipliers for indirect (indirect and induced) employment, the assignment of installations to economic areas, and use of the economic impact database.

With regard to multipliers, Mr. Berger emphasized that multiplier values were derived from rigorous statistical analyses and that multiplier values tend to overstate economic impact, a finding that was also emphasized at the May 1994 Independent Review. To compare the new multiplier values with those used in prior BRAC rounds, the Group directed the subgroup to calculate selected indirect employment impacts from BRAC 93 using the new multiplier values. The Group approved the multiplier methodology as presented.

Concerning economic impact areas, Mr. Berger highlighted the proposed rules for assigning installations to economic areas (slides attached). Group consensus was that a concise written explanation of the rules would facilitate understanding of the guiding principle behind them: they were established to err on the side of overestimating, rather than underestimating, economic impact. The Group approved the rules for assigning installations to economic areas as presented.

Regarding use of the economic impact database by the DoD Components, Mr. Berger pointed out the DoD Inspector General's (DoDIG) in-progress audit of the database. He noted that some corrections and updates could be required as the BRAC process continued, and, if so, internal controls would be followed. The Group approved use of the economic impact database for developing recommendations to the Secretary of Defense, pending the outcome of the DoDIG review.

There being no further matters to discuss, the meeting was adjourned at 0950 hours.


Approved: Robert Bayer
Chairman

CLOSE HOLD

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

November 10, 1994

Key Attendees

Mr. Robert Bayer, chairman, OSD (Installations)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment)
Mr. Robert Meyer, OSD (Base Closure)
Mr. Joe Cartwright, OSD (Office of Economic Adjustment)
MGEN John Little, Army
COL Denny Cochrane, Army
Mr. Joe Vallone, Army
LTC Jeff Dorko, Army
Mr. Dave Wennergren, Navy
CAPT Kevin Ferguson, Navy
Mr. Ken Reinertson, Air Force
Mr. Lee Schoenecker, Air Force
Col Paul Thompson, OSD (Base Closure)
Mr. John Delaware, DoDIG
Mr. Bill Moore, LMI (Technical Assistance)
Mr. Tom Muller, LMI (Technical Assistance)

CLOSE HOLD

Joint Cross-Service Group on Economic Impact

November 10, 1994

AGENDA

Opening Remarks

Methodology for Multipliers

Assignment of Installations to Economic Areas

Economic Impact Database

Next Steps

Other Business

Extract of JCSG on EI memo, Guidance for Applying the Economic Impact Criterion in the 1995 BRAC Process, 4 Apr 1994

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

Cumulative Economic Impact: Multiple BRAC 95 Recommendations

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

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

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

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

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

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

Economic Impact Analysis for BRAC 95

This brief paper provides an overview of how the Department of Defense (DoD) will analyze economic impact, including cumulative economic impact, for the 1995 round of base realignments and closures (BRAC 95).

ECONOMIC IMPACT AND OTHER SELECTION CRITERIA

DoD is now developing recommendations for BRAC 95. The BRAC 95 process is being carried out in accordance with Public Law 101-510, as amended by Public Laws 102-190 and 103-160. The BRAC 95 process applies only to military bases in the United States; U.S. bases located overseas are being closed outside of the BRAC process. BRAC 95 follows BRAC rounds in 1988, 1991, and 1993. No further BRAC rounds are authorized under current legislation.

Under the law, the Department must develop its recommendations based on consistent application of final selection criteria and a force structure plan, which projects the size of the military in the coming years. DoD will use eight final selection criteria to identify bases for closure and realignment. The first four criteria pertain to military value and are accorded priority consideration. "The economic impact on communities" is the sixth criterion.

Cumulative economic impact will be considered as part of the economic impact criterion, which in turn will be considered together with the other seven criteria. In response to concerns raised by the Defense Base Closure Commission and the General Accounting Office during BRAC 93, DoD will consider economic impact and cumulative economic impact as relative measures when comparing alternatives. No threshold values will be established above which, for example, bases in a particular economic area would have to be removed from consideration.

ECONOMIC IMPACT AND CUMULATIVE ECONOMIC IMPACT

To apply the economic impact criterion, DoD seeks to answer the following three key questions:

- What is the economic impact of the recommendation?
- What is the economic impact of the recommendation in light of previous BRAC actions in the same economic area?
- What is the economic impact of the recommendation in light of other BRAC 95 recommendations in the same economic area?

In the terminology of the BRAC process, the first question is aimed at assessing "economic impact." The last two questions refer to "cumulative economic impact." Economic impact, cumulative economic impact, and the identification of "economic areas" are discussed below.

ECONOMIC IMPACT

DoD will measure the economic impact by analyzing (1) the total potential job change in the economic area and (2) total potential job change as a percent of total employment in the economic area. These measures highlight the potential impact on economic areas and also take into account the size of each economic area. Total potential job change means the sum of direct and indirect job changes estimated to result from each BRAC 95 action.

Direct job changes are the sum of the estimated net addition or loss of jobs for military personnel, DoD civilian employees, and on-base contractors that work in support of the installation's military missions. Only job changes directly associated with base closures and realignments will be included as direct job changes. Indirect job changes are the estimated net addition or loss of jobs in each affected economic area that could potentially occur as a result of the estimated direct job changes.

Indirect job changes reflect the impact that a BRAC action could have on the surrounding community. The Office of the Deputy Assistant Secretary of Defense for Economic Reinvestment and Base Realignment and Closure will provide factors (multipliers) that, when multiplied by the direct job changes, will provide estimates for indirect job changes. Multipliers will vary by the principal activity performed at each installation and the size of its economic area. Because the goal of estimating indirect job changes is to examine a "worst-case" potential outcome, multiplier values will be selected to represent the high end of a reasonable range of potential indirect impacts.

DoD will rely on data from the Bureau of Labor Statistics of the Department of Labor to estimate employment in economic areas.

CUMULATIVE ECONOMIC IMPACTS FROM PRIOR BRAC ROUNDS

The Military Departments and Defense Agencies will take into account the cumulative economic impact of prior BRAC rounds as they develop recommendations for BRAC 95. They will do so through analyzing two different timeframes: (1) 1994 through 2001 and (2) from before the BRAC process began through 1993.

With respect to impacts from 1994 through 2001, DoD Components will sum the total potential job change arising from BRAC 95 actions and the job changes from prior BRAC rounds that are estimated to occur in the same economic area from 1994 to 2001. Together, job changes from all rounds will be considered in absolute terms and as a percent of employment in the affected economic area.

With respect to impacts through 1993, DoD Components will examine historic economic information (1984 through 1993) for economic areas. This information will include the level and rate of growth of employment, the level and rate of growth of personal income per capita, and unemployment rates. This information will put the impacts from 1994 through 2001 in context, describe recent economic conditions in each economic area, and capture the economic effects, through 1993, of prior-round BRAC actions and other factors that have affected those economies.

CUMULATIVE ECONOMIC IMPACTS FROM MULTIPLE BRAC 95 ACTIONS

After the Secretaries of the Military Departments and the Directors of the Defense Agencies submit their recommendations to the Secretary of Defense in January 1995, DoD will identify economic areas with multiple proposed BRAC 95 recommendations. The Military Departments, Defense Agencies, and the Joint Cross-Service Group on Economic Impact will reassess these recommendations by taking into account the cumulative economic impact of multiple BRAC 95 recommendations. DoD will ensure that the measures for economic impact (the total potential job change in the economic area, absolute and as a percent of total economic area employment) include the cumulative economic impact of multiple BRAC 95 recommendations, as well as the cumulative economic impact of prior BRAC rounds.

ECONOMIC AREAS

As in prior BRAC rounds, installations will be assigned to economic areas based on estimated expenditure patterns and labor markets. The goal is to have the economic areas reflect the locations where those affected by BRAC actions live and work. Installations located in non-metropolitan areas will be placed in a single county economic area based on the location of the headquarters of the base. Installations located in metropolitan areas will be placed in the economic area of the metropolitan area. Installations will be assigned to multi-county economic areas where that is more appropriate based on estimates of labor market areas or expenditure patterns. By defining economic areas in relatively small geographic units, this approach tends to overstate, rather than understate, the economic impact on communities.

INDEPENDENT REVIEW

At the direction of the Deputy Secretary of Defense, an independent review of the Department's plans for BRAC 95 economic analysis was conducted in May 1994. Six experts from government, academia, and the private sector participated in the review. The reviewers agreed that the proposed measures of economic impact (total potential job change in absolute terms and as a percent of economic area employment) are reasonable. They also supported DoD's approach to defining economic areas (based on estimates of local labor markets and expenditure patterns). In addition, reviewers stated that DoD's estimates of economic impact were "worst case," and that the Department should stress this in its presentations to the Congress, the Defense Base Closure and Realignment Commission, and the public.

CONCLUSION

The Department of Defense seeks to ensure that analyses of economic impact during BRAC 95 will be conducted in a reasonable, fair, and consistent manner that complies with statutory and regulatory requirements. DoD believes that the process described in this paper will meet this challenge and contribute to a successful and effective BRAC 95 process.

THE RELATIONSHIP BETWEEN BASE CLOSURES/REALIGNMENTS AND NON-DoD FEDERAL COSTS



September 19

The Relationship Between
Base Closures/Realignments and
Non-DoD Federal Costs

September 1994

Executive Summary

This summary and the attached report respond to Congressional direction that the Department of Defense (DoD) consider whether the costs of base realignment and closure (BRAC) actions to other Federal departments and agencies should be included in the final selection criteria for the 1995 BRAC process.

Section 2925 of the National Defense Authorization Act for Fiscal Year 1994 states that:

- ◆ It is the sense of Congress that the Secretary of Defense consider, in developing in accordance with section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510; 10 U.S.C. 2687 note) amended criteria, whether such criteria should include the direct costs of such closures and realignments to other Federal departments and agencies.
- ◆ The Secretary shall submit to the Committees on Armed Services of the Senate and House of Representatives a report on any amended criteria developed by the Secretary under Section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990 after the date of the enactment of this Act. Such a report shall include a discussion of the amended criteria and include a justification for any decision not to propose a criterion regarding the direct costs of base closures and realignments to other Federal agencies and departments.
- ◆ The Secretary shall submit the report upon publication of the amended criteria in accordance with section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990.

In response to Section 2925 of the National Defense Authorization Act for Fiscal Year 1994, the DoD conducted a thorough review of its policies regarding the treatment of the costs of BRAC actions to other agencies. The review was conducted by the Joint Cross-Service Group on Economic Impact (Joint Group, hereafter), which was established by the Deputy Secretary of Defense as part of the BRAC process for 1995. The Joint Group, which is chaired by the Deputy Assistant Secretary of Defense for Economic Reinvestment and Base Realignment and Closure, includes representatives from the Military Departments and several organizations within the Office of the Secretary of Defense. The Joint Group conducted its review of non-DoD BRAC costs from the ground up.

Based on the Joint Group's review, the Department's position on the treatment of the costs of BRAC actions to other Federal department and agencies is as follows:

- ◆ The Department does not propose a criterion regarding the direct costs of base closures and realignments to other Federal agencies and departments.

The Joint Group found that a trade-off exists between estimating costs to other Federal departments and agencies accurately and the cost and time of obtaining the estimates. In general, reasonable estimates can be obtained only at high cost, such as through surveys of DoD personnel and highly-detailed, sophisticated forecasts of local economic conditions, and even then would be subject to a large degree of uncertainty. Because the BRAC process must treat each installation equally, it would be unfair to rely on such estimates for some base closure recommendations, but not for others. Estimates would therefore have to be obtained for each economic area that contains one of the 400-plus installations in the United States. This would be a daunting, prohibitively expensive, and time consuming undertaking.

Less reliable estimates could be obtained at lower cost. However, such estimates typically would apply national averages or "best-guess" assumptions to local conditions. The key problem with these estimates is that while they can be produced at lower cost, their margin of error is so large that they probably would be misleading indicators of local conditions, and therefore inappropriate as a basis for BRAC decision-making.

Pages A-2 through A-5 and Annex 1 to Appendix A of the attached report provide a thorough discussion of these issues.

POTENTIAL JOB CHANGE AS A PERCENT OF EMPLOYMENT IS AN ACCEPTABLE PROXY

Although costs to other Federal departments and agencies can be difficult if not impossible to estimate directly, the Joint Group found that the economic impact measures used in the BRAC process can serve as a generally reliable indicator of such costs. (See "Cost of Federal Programs and the Base Realignment and Closure Review Process" on page 11 of the accompanying report.)

Specifically, the Joint Group found that potential job change as a percent of employment in the surrounding economic area, which has been a primary measure of economic impact used in the BRAC decision-making process, is an acceptable indicator of changes in costs to other Federal departments and agencies. The Joint Group determined that relative differences in the potential job change as a percent of economic area employment should, in general, reflect relative differences in the probable costs to other Federal departments and agencies. That is, a recommended base closure where the total potential job change as a percent of economic area employment is higher is likely to have a larger effect on the costs to other Federal departments and agencies than a closure alternative where this percentage is lower. When considering the economic impact on communities, therefore, the Department implicitly considers some costs, albeit unquantified, to other Federal, state and local government agencies.

It is important to keep in mind, however, that regardless of whether costs to other Federal departments and agencies are relatively high or low, it is

This finding is based on a statistical analysis of six counties that had bases closed prior to December 1993 as a result of BRAC-88 and BRAC-91. The six counties were selected from a larger set of all BRAC-88 and BRAC-91 closures on the basis of their geographic diversity, labor force size, metropolitan or non-metropolitan character, and the magnitude of DoD employment reductions relative to the size of the total civilian employment base. A description of the selection process and the counties can be found on pages 3 through 6 of the attached report.

The statistical analysis focused on how changes in employment and unemployment in counties with base closures affect Medicaid, Food Stamps, and Aid to Families with Dependent Children (AFDC). These three programs were selected because they account for more than one-half of all outlays for cash and non-cash benefits to low-income individuals, and they are the most expensive non-DoD programs that could be influenced by BRAC actions.

The statistical analysis is described on pages 7 and 8 and in Appendix B of the report. A key conclusion of the analysis is that, on average, each time the level of county civilian employment is reduced by 1,000, the number of Food Stamp and AFDC cases increases by 46.

Three key points help put this finding into context:

- ◆ First, as explained on pages 8 through 11, "job losses" associated with base closures do not necessarily mean reductions in the level of county civilian employment. Indeed, civilian employment actually increased in five of the six counties, despite local base closures.
- ◆ Second, the results of the statistical analysis demonstrate that other economic factors, particularly in larger communities and at the state level, are more important than employment changes in explaining rising need-based Federal program costs. (See page 11 and Appendix B.)
- ◆ Third, the employment-linked incremental cost of need-based programs is small compared with savings associated with base closures. The statistical analysis suggests that under worst-case assumptions — i.e., that all BRAC-93 job losses would result in civilian employee reductions on a one-for-one basis (an assumption that clearly runs counter to the finding that civilian employment actually increased in five of the six counties studied)—the increased annual cost of these expensive programs would represent less than 2 percent of recurring BRAC-93 annual savings. (See page 12)

GENERAL ACCOUNTING OFFICE POSITION

To facilitate its review, the Joint Group requested that the General Accounting Office (GAO) clarify its position on the inclusion of government-wide costs

Contents

Overview	1
Identification of Non-DoD Federal Benefits Programs that Could be Impacted by Base Closures	1
Identification of an Explanatory Factor Accounting for Increased Federal Benefits Program Costs	2
Alternative Approaches for Validating the Relationship Between Employment and the Demand for Federal Benefits Programs	2
Statistical Results of National Demand Analysis	3
Results of Case Studies of Base Closure Communities	3
Communities Selected for Review	3
Employment Changes in Selected Communities	5
Changes in Demand for Selected Benefit Programs at the Local and State Levels	5
Results of the Statistical Analysis of the Monthly/Quarterly Data Exploring the Relationship Between Employment Changes and the Demand for Selected Federal Programs	7
Base Closures and Employment Changes	8
Military DoD Personnel Profile	9
Civilian DoD Personnel Profile	10
Net Employment Impact of Base Closures	10
Cost of Federal Programs and the Base Realignment and Closure Review Process	11
Conclusions	11

Military Base Closures and Their Relationships to Non-DoD Federal Program Costs

OVERVIEW

The objectives of this analysis are (1) to examine the relationship(s) between base closure and realignment actions and any potential cost impacts on non-DoD Federal programs, and (2) to determine the feasibility of estimating the impacts if such relationships do exist. To fulfill these objectives we

- ◆ identified selected Federal government “need-based” benefits programs potentially affected by base closures,
- ◆ identified explanatory factors that could relate changes associated with base closures with potential cost impacts on other Federal programs,
- ◆ compared the reliability and cost of alternative methodologies for estimating those cost impacts, and
- ◆ demonstrated the statistical relationship between an explanatory factor and the cost of selected Federal programs at the national level and in communities experiencing recent base closures.

IDENTIFICATION OF NON-DO D FEDERAL BENEFITS PROGRAMS THAT COULD BE IMPACTED BY BASE CLOSURES

Fifty-one Federal organizations administer 1,308 assistance programs. Of particular interest in this analysis are programs that account for the majority of Federal payments in the form of cash and noncash benefits to persons with limited income.¹

One anticipated effect of base closures is the reduction, at least in the short run, of the earnings of some former base employees. Those individuals could become recipients of one or more need-based government assistance programs if their incomes decline to a level where they become eligible for assistance.

¹For a discussion of certain Federal programs potentially impacted by base closure, see Appendix A. Appendix A also describes various approaches for estimating the relationship between Federal program costs and base closure – and the costs of using each approach.

Taking into account the availability of data and cost factors, we selected a combination of national-level analysis (i.e., the second approach) and analysis in communities experiencing recent base closures (i.e., the third approach) as the most reliable, cost-effective, and timely methodology for assessing the relationship between employment levels and the costs of selected need-based Federal programs. (A more detailed discussion of the alternative approaches reviewed can be found in Appendix A.)

STATISTICAL RESULTS OF NATIONAL DEMAND ANALYSIS

A statistical analysis of Federal government payments to individuals (other than retirement and disability payments) for the 1988 to 1992 period (for all counties in the United States) shows a very strong, statistically significant relationship between outlays for Federal need-based benefits programs and changes in employment. (See Appendix B for a technical description of the methodology, approach, and results of the analysis.) As one would expect, when employment is reduced Federal outlays for transfer payments rise.

Employment variation alone, however, does not explain all the variance in outlays for Federal assistance programs. This is true because numerous programs to assist individuals are not directly linked to changes in employment. These include programs for housing assistance, student loans and grants, school lunch programs, and Medicaid funds. Many of these programs require recipients to be at the poverty level, and a change in employment status, which for most workers will be temporary, does not imply that all impacted individuals will fall to the poverty level.

RESULT OF CASE STUDIES OF BASE CLOSURE COMMUNITIES

Communities Selected for Review

The national demand analysis, which included all counties, shows that there is a statistically significant relationship between a decline in employment and higher outlays for Federal payments to individuals. The objective of the case studies is to determine if this relationship, or a stronger one, can be found in counties experiencing recent base closures.

A group of six counties in five states experiencing base closures mandated by base realignment and closure (BRAC) decisions in 1988 and 1991 and completed by December 1993 were selected from a larger set of all BRAC-88 and BRAC-91 closures on the basis of their geographic diversity, labor force size, metropolitan or nonmetropolitan status, and the magnitude of DoD employment reductions relative to the size of the total civilian employment base. Characteristics of the selected county sites are shown in Tables 1A and 1B. The

Employment Changes in Selected Communities

As shown in Table 1A, BRAC-91 affected four of the six counties. In the other two counties, facilities were closed in response to BRAC-88. Civilian employment levels prior to base closure in the selected counties ranged from 10,300 (Iosco County, Mich.) to 475,000 (Sacramento County, Calif.). DoD civilian and military personnel reductions as a percentage of county civilian employment varied from 0.5 percent in Sacramento County, to 36.2 percent in Iosco County.

Direct DoD job losses in the six counties totaled more than 30,000. Between 1988 and 1993, five of the six impacted counties gained civilian jobs despite the closure action. The exception to this pattern was Iosco County, which showed a decline in civilian jobs. This finding suggests that economic factors other than the base closure action had a more dominant influence on the economy of the region in which the installation was located.

Changes in Demand for Selected Benefit Programs at the Local and State Levels

Changes in the number of Medicaid, Food Stamps, and AFDC cases (i.e., recipients or beneficiaries) between October 1988 and December 1993 in the six communities are shown in Table 2A. In each of the six areas, changes in local cases were compared to the state average as a means for taking into account some of the variation in demand for these programs attributable to regional economic conditions. As shown in Table 2A, the rate of increase in the number of AFDC cases during the 1988 to 1993 period was *greater* at the state level than in counties experiencing base closures. The only exception to this pattern was Champaign County. The rise in demand for food stamps at the state level also exceeded the rise in the base closure-impacted counties in three of the five counties where comparable data were examined, indicating that other economic factors had a larger negative impact on the state as a whole than the closure of the base had on the county in which it is located.

Table 2B.
Percentage Change in Unemployment Rates
(1988 - 1993)

County/State	Unemployment rate (percent)		Percentage change 1988 - 1993
	1988 ^b	1993 ^b	
Iosco County	8.4	11.1	32.1
Michigan	7.6	8.8	15.8
Mississippi County	13.4	11	(17.9)
Arkansas	7.7	6.2	(19.5)
Monterey County	8.4	12.3	46.2 ^a
California	5.3	9.2	73.6
Sacramento County	5.4	8.3	53.7 ^a
California	5.3	9.2	73.6
Champaign County	4.2	5.4	28.6
Illinois	6.8	7.4	8.8
Rockingham	2.7	6.4	137
New Hampshire	2.4	5.3	120.8
United States	5.5	6.8	23.6

^a Change at the state level exceeds county rate of change.

^b Average annual rate.

Results of the Statistical Analysis of the Monthly/Quarterly Data Exploring the Relationship Between Employment Changes and the Demand for Selected Federal Programs

Statistical analyses of five counties experiencing base closures shows that each time civilian employment levels in a county are reduced by 1,000, the number of food stamp and AFDC cases increases by 46 (i.e., 4.6 percent). (A detailed statistical analysis of this result is shown in Appendix B.) This relationship is an average, and considers observations for the combined cases in five counties (Mississippi County was excluded because of incomplete data.). The addition of the Medicaid program has little impact on the number of total cases because factors not related to employment are the dominant cause for rising Medicaid demand.

As one would expect, changes in unemployment have the opposite effect. Reducing unemployment by 1,000 leads to a decrease of 53 AFDC and food stamp program cases, a somewhat higher number than the reduction in employment.³

³ Appendix B shows the derivation of this relationship.

Several factors discussed in subsequent sections of this report explain why reductions in local employment levels are typically *less severe* than the job losses directly associated with base closures.

MILITARY DoD PERSONNEL PROFILE

Base closure causes many military personnel and their dependents to relocate to other military installations, usually in new counties (different from the base closure sites). This relocation has two immediate effects on the local labor force. First, both the labor force and employment levels decline by the same number as the reduction in military personnel at the site.⁴ Second, most spouses of military personnel employed in the local economy leave, causing a further decline in the labor force.

The potential for higher civilian unemployment attributable to the loss of military personnel in a local economy is offset, to a large extent, by a parallel reduction in the size of the local labor force. Typically, about 60 percent of all military personnel are married and 60 percent of spouses hold full-time or part-time jobs, mostly in the services and retail trades.⁵ Thus, for every military person leaving a community, 0.36 other people can be expected also to leave the local labor force. Studies have shown that spent earnings of military employee generates about 0.35 jobs in the civilian economy.⁶ Thus, civilian job losses attributable to the loss of military personnel and the associated economic impact may be offset, to a large extent, by fewer workers in the local labor force.

Assuming that military spouses in the civilian labor force have the same unemployment rates as other civilians, the departure of military personnel has little impact on the *rate* of civilian employment and unemployment. In the short run, both local employment levels and the local labor force are reduced and the local economy shrinks, but employment *rates* are essentially unaffected.

In theory, one would expect to observe a reduction in civilian employment following base closure as a result of reduced purchases in the local economy by former base employees and by the base itself. This would happen if the local economy was totally dependent on the military installation. In reality, even in communities with a large DoD presence, some segments of the local economy are only marginally affected by base closures. For example, many communities with military installations have a substantial number of retired military households as area residents. Pension payments to those households continue regardless of base closure. Similarly, manufacturing industries are usually not dependent on local base purchases. As non-DoD economic activity expands, initial reductions

⁴The decline is the same for the labor force and employment levels because none of the military personnel are unemployed. The labor force is defined as the number of persons employed and unemployed.

⁵Spouse employment levels in rural areas are usually below 60 percent due to limited job opportunities.

⁶The job multiplier varies by the size of the local economy. In rural areas, the multiplier may be lower, and in large metropolitan areas higher, than 0.35.

numerous other economic factors outside DoD's control. However, even in the worst case scenario, the added demand for need-based programs can be expected to be modest on the basis of experience in the six communities studied.

The statistical analysis described in Appendix B shows that the percentage change in the number of Federal program recipients in a community is less than the percentage change in the level of civilian employment. For example, if civilian employment is reduced by 5 percent in a community, the maximum potential impact on the cost of the three Federal programs examined for that community would be expected to be less than 5 percent. Other supporting data, such as the historical rate of growth of employment and income in a community can provide additional information on the extent to which employment effects associated with base closure will differ among communities.

Cost of Federal Programs and the Base Realignment and Closure Review Process

An economic impact measure used by DoD in prior BRAC rounds is employment change resulting from closure as a percentage of total community employment. Applying this measure, holding other economic factors constant, communities where BRAC closure would affect a large percentage of total area employment are considered to be more impacted than communities where BRAC changes would account for only a small percentage of area jobs. That is, BRAC closures where the potential job change as a percent of economic area employment is high are likely to have a larger effect on local civilian employment levels than where the potential job percentage change is low.

Differences in the potential job change as a percent of economic area employment should, in general, reflect differences in probable costs of need-based Federal programs. The statistical analyses in Appendix B suggest that these changes in civilian employment levels are correlated with changes in costs to need-based programs. Therefore, when considering the economic impact on communities, DoD implicitly considers some costs, albeit unquantified, to other Federal programs.

CONCLUSIONS

Our statistical analyses indicate that changes in employment *partially* explain changes in the costs of certain Federal programs. This relationship was established at both the national and county levels. However, the results of statistical analyses also demonstrate that other economic factors, particularly in larger communities and at the state level, are more important than employment changes in explaining rising need-based Federal program costs. For example, fund outlays for Medicaid, by far the costliest Federal need-based program, have been rising across the Nation as a result of accelerating per capita costs of medical care.

APPENDIX A

Impact of Base Closures and Realignment on Costs to Non-DoD Federal Agencies

OVERVIEW

This Appendix discusses the limitations of three alternative quantitative approaches we considered to examine the impact of base closures and realignments on non-DoD government benefits programs. The methodologies are compared for selected major benefits programs on the basis of accuracy and implementation cost in Annex 1 of this Appendix.

Alone, none of the approaches considered could be expected to provide reliable, cost-effective estimates of the linkage between base closure and the cost of need-based programs. Thus, the results support the decision to apply statistical techniques described in Appendix B to estimate the likely relationship among base closures, changes in employment, and the demand for need-based Federal programs.

BACKGROUND AND APPROACHES FOR ASSESSING THE RELATIONSHIP BETWEEN EMPLOYMENT LEVELS AND FEDERAL PROGRAM COSTS

Base realignments and closures may reduce economic activity in some communities and increase such activity in others. Base closures will, at least temporarily, cause a dislocation of some DoD civilian personnel previously employed at installations. Other off-base civilians and on-base contractors may lose their jobs. In general, military personnel will be reassigned to facilities at other locations.

The first part of this Appendix discusses general program evaluation issues. It also contains a rationale for the methodology that is applied for assessing the relationship between employment levels and the costs of selected need-based Federal programs. The second part, Annex A, focuses on BRAC-related changes in demand for specific government programs, data requirements to estimate impacts, and methodologies that could be used to project the effects of BRAC actions on specific programs. The Annex should be viewed as supporting material for conclusions drawn in the initial sections of this Appendix.

with earnings that are "B" percent below their base earnings and "C" percent at earnings similar to their base earnings, that "D" percent were unemployed, and that the balance moved from the area — those factors would be applied to civilians in nonmetropolitan communities being considered for closing. This approach can provide information on the reliability of the data within specified confidence limits.

Using National Data

Studies have shown that a substantial percentage of the unemployed population are recipients from programs such as Food Stamps and Medicaid.¹ This relationship exists because unemployed individuals typically have low incomes, qualifying these persons and their households for "transfer payments." Here, the approach is to examine data collected by Federal agencies about outlays from transfer programs and to relate these changes to changes in employment levels. A cross-sectional, time-series analysis of such data at the local or state level provides information on this relationship for the Nation as a whole. These relationships could then be applied to potentially affected populations to estimate expected impacts.

Examining Changes in Communities with earlier (BRAC-88 or BRAC-91) Base Closures

The third methodology also examines the relationship between changes in population characteristics and changes in the utilization rates for government programs. However, rather than depending on national studies, these relationships and factors are established on the basis of data collected from areas with completed BRAC-88 and BRAC-91 base closures. These relationships are likely to be more representative of communities with potential base closures than those developed from national data. Given sufficient data, statistical tests could be applied to determine the relationship between, for example, the rate of job creation and the rate of change in the number of individuals or households receiving assistance from specific programs, such as Food Stamps.

LIMITATIONS OF ALTERNATIVE APPROACHES

Survey Techniques

Among the limitations of the survey approach is the high cost of surveys, particularly if such surveys involve personal interviews. Hundreds of such interviews would have to be completed to obtain a sufficient sample that would provide reliability at the 95 percent confidence level. The second limitation is the uncertainty associated with locating households in areas experiencing BRAC

¹See for example, "Unemployment Among Welfare Recipients," U.S. Department of Labor, *Monthly Labor Review*, March, 1979.

demand. However, from a decision standpoint, the issue remains: to what extent is the impact on these programs affected by a decision to close base "A" as opposed to closing base "B"? To tabulate the difference, one would have to project the economic impact and subsequent recovery of a similar action, involving roughly similar numbers of military or civilian personnel, on specific programs, and then identify the difference in the demand for program funds.

A cursory examination of BRAC-88 and BRAC-91 closures completed by December 1993 suggests that no distinct patterns in recovery periods exist. In the majority of cases, communities (at the county level) adjusted quickly, with losses in DoD employment offset by gains elsewhere in the local economy. In other areas, DoD losses have not been offset. Given these differences, one would have to systematically identify key factors that lead to differences in the rate of economic recovery. Unfortunately, these factors include not only quantifiable variables such as measures of the regional economy, but also such factors as community leadership and the ability to attract new activities. An equally important concern is that factors relevant to BRAC-88 and BRAC-91 may not necessarily be good predictors of economic and social conditions in the late 1990s, when BRAC-95 actions will actually be implemented. Economic recovery rates in specific communities during the 1990s would, at best, be extremely difficult to predict.

PROPOSED METHODOLOGY

As shown in Annex 1 to this Appendix, examining non-DoD costs on a base closure-by-base closure basis is impractical because the quality of the data would be inadequate and the cost would be excessive. All the methodologies described have limitations. The most promising and cost-effective methodology is to examine, applying statistical techniques, changes in employment and in the demand for selected Federal programs at the national level and in communities with recent base closures. Although this proposed approach would not provide direct information about the use of Federal programs by former base employees in communities where those workers formed a substantial percentage of total employment, a relationship is implicit.

The proposed methodology has the advantage of making use of DoD's existing methodology and system for estimating employment impacts. Although it does not overcome the problem of a small sample size or of projecting a possible impact several years into the future, it can provide a reasonable scale of the maximum potential effects associated with base closures.

ANNEX 1 TO APPENDIX A

Specific Government Programs

This Annex briefly describes categories of government programs; highlights general issues concerning the precision, accuracy, and cost of different approaches to estimate the effects of BRAC actions on non-DoD benefits programs; and illustrates how these general issues are relevant for estimating the costs of a few specific programs. The purpose of this Annex is to provide detailed examples that will highlight issues raised in the discussion of the proposed methodology described in Appendix A.

Categories of Government Benefits Programs

Entitlement benefits programs commit the Federal (and where applicable state) government to funding specified services for all persons meeting the eligibility criteria. This means, for example, that if the Federal government agrees to pay for certain medical services under the Medicaid program, an increase in total demand due to base closures would result in a higher aggregate cost for the program. Therefore, at least in theory, specific base closures could result in higher or lower entitlement program costs.

Spending for discretionary programs such as the Economic Dislocation and Worker Adjustment Assistance Act (EDWAA), is usually set at a specific funding level. Although BRAC-related decisions could affect the distribution of discretionary program funds, it is very unlikely that BRAC actions would have an impact on total spending. In theory, Congress could, in response to a sharp rise or fall in demand, change funding levels. In reality, this is improbable given that alternative BRAC actions would be expected to have only a marginal impact on total demand for most discretionary programs. Therefore, only entitlement programs could reasonably be expected to have a measurable effect on total outlays, subject to the limitations discussed later in this report.

Several Federal programs, particularly entitlement programs, are joint Federal-state activities, including Medicaid and unemployment compensation. Therefore, a change in demand for such programs has an impact on both Federal and state funding.

Although they are not addressed directly in this Annex, state and local government finances can be affected by BRAC-related actions. School districts can also be directly affected by base closures because "school impact" assistance would eventually be withdrawn when DoD-dependent students leave the school system. Local and state governments also face reduced revenue from most tax sources if earnings of residents are reduced. To the extent that households leave

MEDICAID

Program Description

Medicaid is a medical assistance program jointly funded by states and the Federal government. Medicaid covers health care expenses for all recipients of Aid to Families with Dependent Children (AFDC). At the option of the state, other low income individuals also qualify. The cost of Medicaid in FY92 was \$59.9 billion.¹

Likely Impact of Base Closure

Under certain conditions, the demand for Medicaid could rise from claims made by two groups:

- ◆ former DoD civilian workers who remain in the state following base closure and who cannot find work for an extended time period (if their household income falls below a threshold level, they could be eligible for Medicaid); and
- ◆ non-DoD worker households that have sharply reduced earnings (these households include workers who lost higher paying jobs as an indirect result of base closure).

Unit of Measure and Approach

The appropriate unit of measure is a household.²

The approach would be to first determine the number of households that are expected to be *potentially* eligible. The second step would be to determine, on the basis of such factors as the local unemployment rate, the likelihood that the workers could not find another job paying above the minimum wage. The third step would be to estimate the number of workers who lost their jobs and would leave the area. These estimates, in turn, would be the basis for a crude projection of the level of added demand for Medicaid.

Demand can be expressed as

(number of households with members who lost jobs) x (percent of households expected to have income fall to the program eligibility level) x (percent eligible who will use the program) x (cost per household to the Federal government)

¹ Because Medicaid is a joint Federal-state program, higher demand for Medicaid results in increased state expenditures.

² A household consists of a single individual or a family.

FOOD STAMPS AND OTHER FOOD AND NUTRITION ASSISTANCE

Program Description

The Food Stamp program, run by the U.S. Department of Agriculture, provides food coupons through state and local welfare agencies. The aim of this and related programs is to increase the purchasing power of needy persons. The Federal government considers food stamps to be an unemployment-sensitive program. That is, one can predict the demand for food stamps by projecting unemployment rates. The food and nutrition programs received \$27.1 billion in Federal funds in FY92.

Unit of Measure and Approach

Because need-based benefits programs are typically based on household income, the best unit of measure is the number of households.

Projecting the added cost to this program caused by base closure would require estimating the change in unemployment resulting from base closure. This, in turn, would be dependent on the condition of the local economy and its ability to absorb workers who lost their jobs as a result of base closure. The increased cost of the program would depend on factors such as household size.

Demand can be expressed as

(number of households with members who lost jobs) x (percent of household expected to have income fall to the food stamp eligibility level) x (percentage of eligible households that will use the program) x (cost per household to the Federal government)

Potential Methodologies to Derive Estimates

- ◆ surveys of food stamp recipients in areas with closed installations (methodology 1);
- ◆ change in demand for food stamps in communities following base closures, holding other factors (such as local economy) constant (methodology 2); and
- ◆ national or regional data showing the relationships between the change in earnings (or unemployment) and the change in food stamp program application; this assumes that the relationship between unemployment and food stamp demand at the national level holds at the local level (methodology 3).

population either as a result of migration or permanent income losses, a direct linkage to changes in demand for these programs would be extremely difficult, if not impossible, to quantify.

These comments are not intended to suggest that base closures, particularly in areas where a military installation comprises a significant share of the local economy, will not have long-term effects. In some communities, there may be social and economic repercussions that could affect numerous Federal (and state) programs. But to quantify those effects and to quantify the *net* impact of those effects on Federal outlays would be a monumental task that would yield highly uncertain estimates.

SUMMARY

The preceding pages considered the precision, accuracy, and cost of the BRAC-related actions for a few specific Federal programs. These specific programs were included in this Annex because they form the basis of the statistical analyses presented in this report. Although the results are not reported in detail here, we considered other Federal, state, and local programs under a similar framework. We found that, in general, estimating the costs for those programs entails the same trade-offs among precision, accuracy, and cost of estimation as those demonstrated in the specific Federal programs analyzed above.

APPENDIX B

Demand for Federal Transfer Payments – an Econometric Analysis

INTRODUCTION

This Appendix presents the econometric underpinnings to quantitatively explain changes in Federal non-pension transfer payments at the county level. Of particular interest is the effect of employment changes on transfer payments, although other variables are introduced as necessary to ensure sound model specifications. These econometric analyses produced statistically significant transfer payment-employment (or transfer payment-unemployment) relationships using the econometric technique of pooled cross-section, time-series analysis. This Appendix addresses the main transfer payment-employment results.

Two different data bases were used for establishing these transfer payment-employment relationships. The first data base was Federal annual (1988 through 1992) transfer payment data for Food Stamps, Aid to Families with Dependent Children (AFDC), other programs, and Medicaid (but excluding pensions) for 3,000 counties from the *Consolidated Federal Funds Report*, Bureau of the Census. The Census transfer payment data are expressed in current dollars, which were adjusted for inflation to derive real transfer payments. The second data base was unpublished monthly (or quarterly) data, from the 1988 through 1993 period, from five counties – Champaign, Ill.; Iosco, Mich.; Monterey, Calif.; Sacramento, Calif.; and Rockingham, N.H. These unpublished transfer payment data reflect Food Stamp and AFDC payments, and they are expressed in terms of the number of “cases” (i.e., recipient beneficiaries). This second set of data excluded Mississippi County, Ark. because of incomplete data.

Two major statistical conditions need to be satisfied for obtaining sound statistical results. First, problems of positive autocorrelation in the time series residuals of regression equations can lead to underestimation of equation errors and overestimation of the significance of model parameters, unless corrected. Positive autocorrelation means that the residuals of the equation are positively related to one another over time, instead of being uncorrelated with one another – an assumption that ordinary least squares requires for obtaining sound results. According to the test statistic for uncovering positive autocorrelation, the Durbin-Watson statistic, there was very high positive autocorrelation in the regression residuals. This problem was corrected by expressing the transfer payment data and its explanatory factors in difference form, which is the appropriate correction procedure in this case. Second, heteroscedasticity in the cross-section variances can lead to biased model coefficients. Heteroscedasticity refers to the variances varying from one cross-section unit to another, instead of being

effects between state dummy variables and the employment variable were tested for and not found. The variables are defined in the same way as they were for Equation B-1.

$$\Delta \tau_{\text{ran}}(i) = 196.66 * \text{Champaign} + 3.15 * \text{Iosco} + 688.14 * \text{Monterey} \quad [\text{Eq. B-2}]$$

$$+ 39.93 * \text{Rockingham} + 1678.53 * \text{Sacramento} - 0.046 \text{ dEMP}(i)$$

$$\quad \quad \quad (-10.99)$$

Number of observations=197

$R^2=0.79$

F statistic for county = dummy effect is significant at the 1 percent point of the F-distribution

Equation B-2 indicates that Food Stamp and AFDC program cases in these counties decrease by 4.6 cases for every 100 individuals added to the employment rolls, holding labor force constant. However, the county dummy variables indicate that other factors are present. For example, Sacramento tends to have an increase of 1,678 cases beyond the effects of employment changes, while Iosco – a much smaller county – has very little nonemployment influences on its transfer payments. More generally, these results show that transfer payment-employment effects are stronger for smaller counties than for larger counties, perhaps because cyclical and other employment changes tend to have greater relative effects on smaller counties than on larger counties.

Both the employment and county dummy variables are highly statistically significant. The employment variable is significant at the 99 percent confidence level of the t-distribution, while the county effect is significant at the 1 percent point of the F-distribution. Again, positive autocorrelation was corrected for by expressing county transfer payment cases in difference form, and no heteroscedasticity in cross-section variances was found. The R^2 of 0.79 is considered very good for a data base with 197 cross-section and time-series observations.

The way in which Food Stamp and AFDC program cases are affected by unemployment has also been addressed. Equation B-3 indicates that these transfer programs increase by 5.3 cases for every 100 individuals who become unemployed, holding the size of the labor force constant. However, as in the case of the employment effect, Sacramento tends to have a relatively large increase of cases (1,498) beyond the effects of unemployment changes. The other counties have considerably smaller extra-unemployment effects. Finally, the statistical properties of the transfer-unemployment formulation also are quite good: R^2 is 0.70; the unemployment variable is statistically significant at the 99 percent confidence limit of the t-distribution; and the county effect is significant at the 1 percent distribution of the F-distribution.

Appendix C

GAO Letter



United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

The Honorable Robert E. Bayer
Deputy Assistant Secretary of Defense
Economic Reinvestment and BRAC

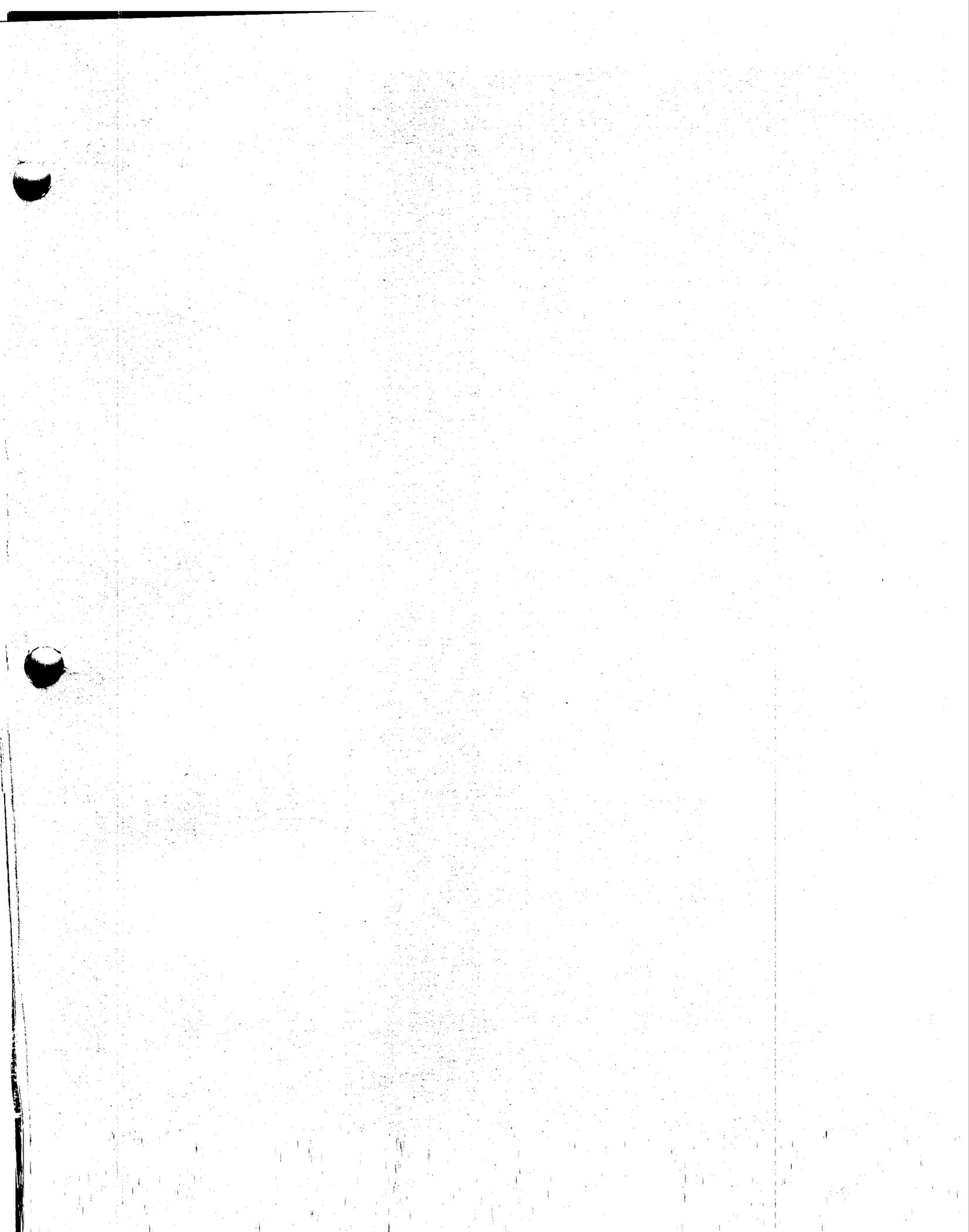
Dear Mr. Bayer:

In discussions with your staff we were asked for clarification of our position on inclusion of government-wide costs in DOD's Base Closure Analysis.

The decision to close and realign military bases is based on many factors, including the costs and savings associated with different options. Identifying the relevant costs and savings has been a challenge to DOD and the Base Closure Commission, and the estimating process has been improved with successive rounds of the base closure process.

Given that the closing and realigning military bases can involve costs to the government (and possibly savings) that do not accrue directly to DOD, there is an issue of how those costs or savings should be factored into DOD's recommendations regarding which bases to close, and the final decisions made. For example, when a military hospital is closed, DOD can realize savings, but those may be offset government-wide as military retirees from the affected region enroll in Medicare. Similarly, if the National Park Service acquires a closed base, it will incur costs to operate it as a public facility. Moreover, there could be costs to the federal government if usage of federal entitlement or welfare programs increases in communities negatively impacted by the loss of a base, or conversely, there could be savings for communities whose bases are expanded. Quantification of many of these costs is difficult if not impossible, and is speculative. Other costs are quantifiable and are subject to reasonable estimation.

As we have recommended in the past, we believe substantial and quantifiable government-wide cost and savings should be included in the COBRA cost analysis. In areas where DOD savings could result in significant and quantifiable costs to other agencies, such as in the case of Champus costs transferring to Medicare, or continuing GSA lease costs, DOD should indicate that fact to the Commission and



Joint Cross-Service Group on Economic Impact

November 10, 1994

Methodology for Multipliers

- **Joint Cross-Service Group Previously Approved Plans to Update and Refine Multipliers to Estimate Indirect (Non-direct and Induced) Employment Effects**
- **Revised Multipliers Developed**
- **Request Approval of Multiplier Methodology**

Multiplier Methodology

- **Statistical Basis for Two Approaches**
 - Specialized Functions
 - General Functions
- **Both Based on Rigorous Statistical Analysis**
- **More Detailed than BRAC 91 and 93**
 - Higher in Some Cases, Lower in Others

Multiplier Methodology, Con't.

- **All Multipliers Vary by Size of Economic Area**
- **Separate Multipliers for Civilians at Installations with Specialized Functions**
 - **Depots and RDT&E**
 - » **Statistical Basis for One Value for Both Categories**
 - **Ammunition**
 - **General Multiplier Used for Civilians at All Other Activities**
 - **Multiplier Use Based on Majority of Workload at Installation**

Multiplier Methodology, Con't.

- **Separate Multipliers for Military Personnel and Trainees**
- **Methodology Guards Against Understating Potential Effects**
- **Continuous Function Eliminates Threshold Issue for Multiplier Values for Specialized Installations**
- **Methodology Overstates Economic Impacts**

Assignment of Installations to Economic Areas

- **Subgroup Developed Proposed Rules for
Assigning Installations to Economic Areas
(Handout)**
- **Request Approval of Rules**

DETERMINATION OF ECONOMIC AREAS (ROI)

In response to OMB changes in metropolitan area definitions related to the 1990 Census and a review of earlier BRAC ROI definitions, the Economic Impact Joint Services Task Force has established the following rules to define the geographic boundaries or ROIs for BRAC 95:

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

Economic Impact Database

- **Distributed to Military Departments**
- **Provides Information Required by Guidance Memo (April 4, 1994)**
- **Review by DoDIG Ongoing**
- **Request Approval for Military Departments to Use Economic Impact Database to Develop Recommendations to the Secretary of Defense**
 - **Allowing for Changes Stemming from DoDIG Review and Minor Corrections**



TAB 12

BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

December 19, 1994

Minutes

The Joint Cross-Service Group on Economic Impact meeting was convened by Mr. Bayer, DASD(I), at 0930 hours on December 19, 1994, in Room 3E813, the Pentagon. The list of attendees are attached.

Mr. Bayer stated that the purpose of the meeting was to review the results of the Department of Defense Inspector General (DoDIG) audit of the Economic Impact Database.

Mr. Delaware, of the DoDIG, talked about audit objectives and procedures used for reviewing data in the Economic Impact Database. He stated that their methodology for the audit, a statistical analysis, established a two percent threshold rate for errors. Mr. Delaware stated that the error rate was well below the two percent threshold, and that the minor errors that were found did not affect the most important calculations or functions in the database.

Mr. Delaware also pointed out that the documentation of the database and internal controls should be strengthened. The Group concurred and directed that the documentation be expanded and clarified accordingly.

CAPT Ferguson noted that the DoDIG validated the data in the database, but had not yet validated the computer programs that generate the main two-page report for each installation. The Group asked the DoDIG to validate the information presented on the two-page report, Mr. Delaware agreed, and stated that he would report back to the Chairman as soon as possible. The Group approved continued use of the database pending the DoDIG's review.

Mr. Berger then noted a technical issue in the database that arises when personnel are relocated within the same economic area. The Group agreed that for BRAC 95 purposes, there is no economic impact associated with relocating personnel from one installation to another in the same economic area.

The Group then discussed employment trend data in the database for the year 1984 to 1993. CAPT Ferguson stated that the Department of the Navy recommended the Group use trend data from the Bureau of Economic Analysis of the Department of Commerce which included military and civilian jobs. Mr. Berger stated that the Bureau of Labor Statistics of the Department of Labor is the source of the employment trend data that has been in the database since May 1994, and that this source counted civilian employment only. Mr. Berger stated that the Group had agreed in May 1994 to consider trend data for military and civilian jobs, but that it was unable to obtain consistent, reliable data for military jobs by economic area for the entire 1984-to-1993 period. In particular, Mr. Berger said the most recent official data available from the Bureau of Economic Analysis of the Department of Commerce covered 1992 only, and that 1993 data would not be available until May 1995. The Army and Air Force representatives and the Study Team Leader endorsed continued use of the trend

data from the Bureau of Labor Statistics. After a lengthy discussion, the Chairman directed the Group to continue to use the civilian employment trend data from the Bureau of Labor Statistics in the Economic Impact Database. The Chairman asked CAPT Ferguson if, in addition to the data in the database, the Department of the Navy wished to review historic data from the Bureau of Economic Analysis on military jobs in economic areas affected by prior BRAC rounds. CAPT Ferguson stated that the Navy would consider this proposal and report back.

There being no further matters to discuss, the meeting was adjourned at 1140 hours.


Approved: Robert Bayer
Chairman

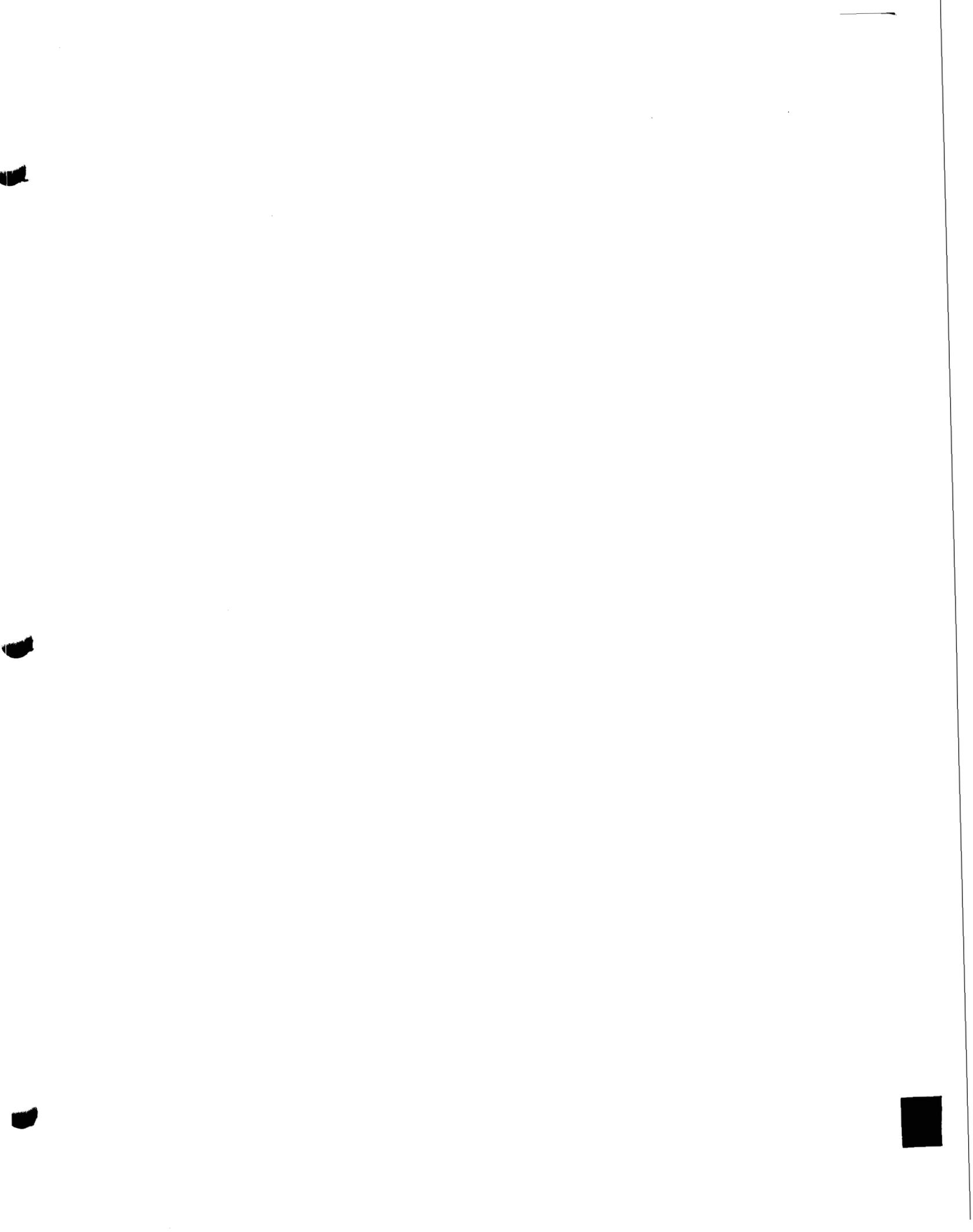
BRAC 95

Joint Cross-Service Group on Economic Impact Meeting

December 19, 1994

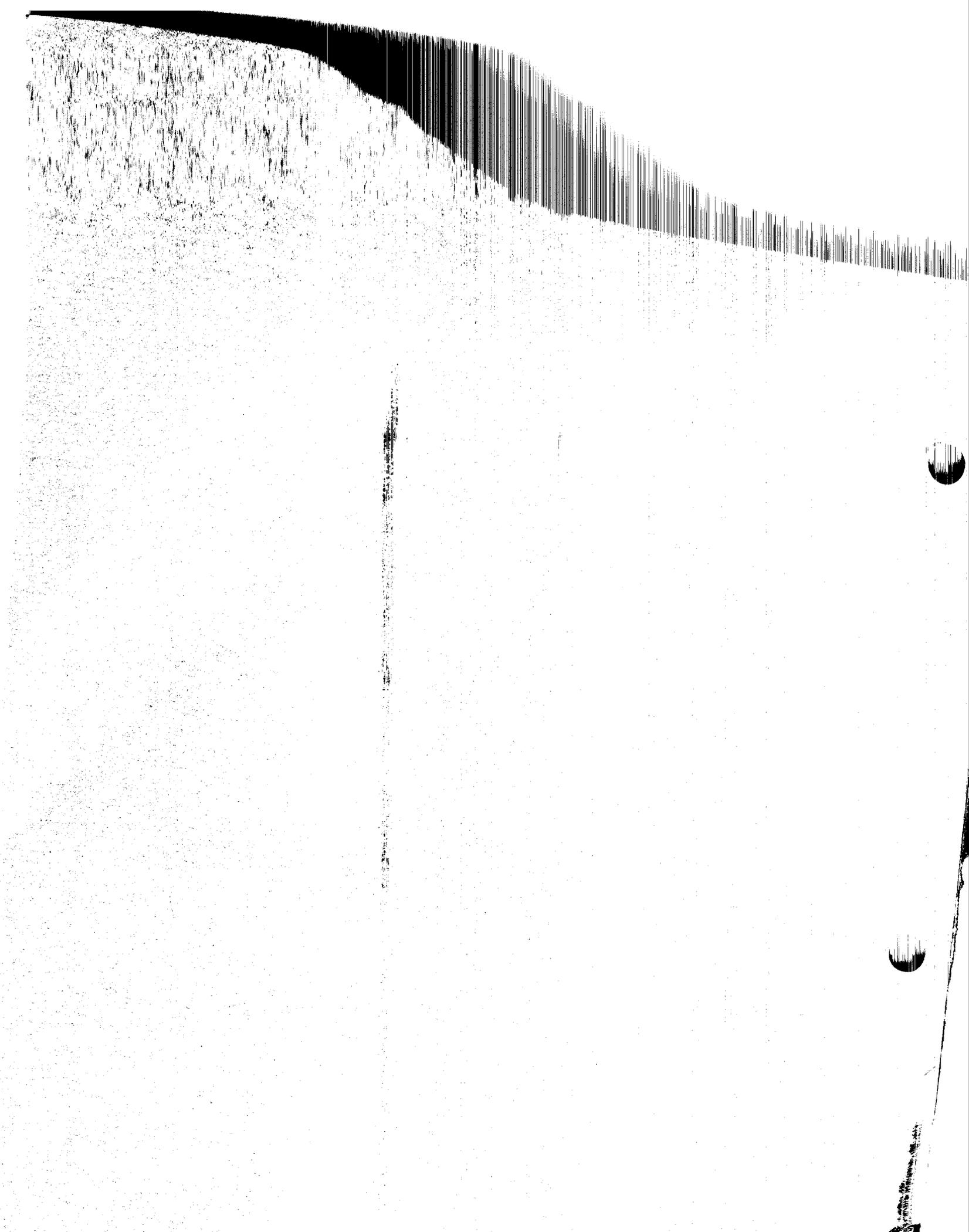
Key Attendees

Mr. Robert Bayer, chairman, OSD (Installations)
Mr. Mike Berger, study team leader, OSD (Economic Reinvestment)
Mr. Joe Vallone, Army
CAPT Kevin Ferguson, Navy
Mr. Ken Reinertson, Air Force
Mr. Lee Schoenecker, Air Force
Col Paul Thompson, OSD (Base Closure)
Mr. John Delaware, DoDIG
Mr. Bill Moore, LMI (Technical Assistance)
Mr. Tom Muller, LMI (Technical Assistance)



THE RELATIONSHIP BETWEEN
BASE CLOSURES/REALIGNMENTS AND
NON-DoD FEDERAL COSTS





The Relationship Between
Base Closures/Realignments and
Non-DoD Federal Costs

September 1994



Executive Summary

This summary and the attached report respond to Congressional direction that the Department of Defense (DoD) consider whether the costs of base realignment and closure (BRAC) actions to other Federal departments and agencies should be included in the final selection criteria for the 1995 BRAC process.

Section 2925 of the National Defense Authorization Act for Fiscal Year 1994 states that:

- ◆ It is the sense of Congress that the Secretary of Defense consider, in developing in accordance with section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510; 10 U.S.C. 2687 note) amended criteria, whether such criteria should include the direct costs of such closures and realignments to other Federal departments and agencies.
- ◆ The Secretary shall submit to the Committees on Armed Services of the Senate and House of Representatives a report on any amended criteria developed by the Secretary under Section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990 after the date of the enactment of this Act. Such a report shall include a discussion of the amended criteria and include a justification for any decision not to propose a criterion regarding the direct costs of base closures and realignments to other Federal agencies and departments.
- ◆ The Secretary shall submit the report upon publication of the amended criteria in accordance with section 2903(b)(2)(B) of the Defense Base Closure and Realignment Act of 1990.

In response to Section 2925 of the National Defense Authorization Act for Fiscal Year 1994, the DoD conducted a thorough review of its policies regarding the treatment of the costs of BRAC actions to other agencies. The review was conducted by the Joint Cross-Service Group on Economic Impact (Joint Group, hereafter), which was established by the Deputy Secretary of Defense as part of the BRAC process for 1995. The Joint Group, which is chaired by the Deputy Assistant Secretary of Defense for Economic Reinvestment and Base Realignment and Closure, includes representatives from the Military Departments and several organizations within the Office of the Secretary of Defense. The Joint Group conducted its review of non-DoD BRAC costs from the ground up.

Based on the Joint Group's review, the Department's position on the treatment of the costs of BRAC actions to other Federal department and agencies is as follows:

- ◆ The Department does not propose a criterion regarding the direct costs of base closures and realignments to other Federal agencies and departments.

- ◆ When calculating the costs and savings of BRAC recommendations, however, DoD will include costs to other Federal agencies when they are measurable, identifiable costs that DoD would incur as a direct result of BRAC-related actions
- ◆ When calculating the costs and savings of BRAC recommendations, DoD will not consider the costs of BRAC actions on other Federal departments and agencies when such costs (1) would not be borne by DoD, (2) would result only indirectly from BRAC actions, or (3) result from base reuse activities, which cannot be known during BRAC decision-making processes.

There are three key reasons why DoD does not propose a new criterion and will not consider some types of non-DoD costs:

- ◆ First, the Joint Group found that it would be impossible to obtain accurate estimates for costs to other Federal programs within the framework of the BRAC process. In general, reasonably accurate estimates can be obtained only at prohibitive cost and within a time frame that is far too long for the time-sensitive process of developing base closure and realignment recommendations. Less reliable estimates could be obtained more quickly and at lower cost, but typically would apply national averages or "best-guess" assumptions to local conditions. The key problem with such estimates is that their margin of error is so large that they probably would be misleading indicators of local economic conditions, and therefore would be inappropriate as a basis for BRAC-95 decision-making.
- ◆ Second, the Department has no basis for forecasting other Federal costs associated with base reuse activities. When the Department is developing BRAC recommendations, DoD cannot know how bases might ultimately be reused. Base reuse decisions generally are made long after the BRAC process is completed.
- ◆ Third, the Joint Group found that even where BRAC actions could result in cost increases to other Federal departments and agencies, these costs would amount to a small fraction of BRAC savings (less than 2 percent), even under worst-case assumptions. The increased costs to other departments and agencies would not be large enough to influence individual base closure decisions or to significantly change calculations of BRAC costs and savings.

The remainder of this summary elaborates on these three points. The attached report provides the analytical foundation for the Department's position.

FORECASTING COSTS TO OTHER AGENCIES

The Joint Group considered how the Department might forecast the cost of BRAC actions to other Federal agencies, on a recommendation-by-recommendation basis, during the BRAC-95 process. The Joint Group found that relying on such forecasts would be ill-advised.

The Joint Group found that a trade-off exists between estimating costs to other Federal departments and agencies accurately and the cost and time of obtaining the estimates. In general, reasonable estimates can be obtained only at high cost, such as through surveys of DoD personnel and highly-detailed, sophisticated forecasts of local economic conditions, and even then would be subject to a large degree of uncertainty. Because the BRAC process must treat each installation equally, it would be unfair to rely on such estimates for some base closure recommendations, but not for others. Estimates would therefore have to be obtained for each economic area that contains one of the 400-plus installations in the United States. This would be a daunting, prohibitively expensive, and time consuming undertaking.

Less reliable estimates could be obtained at lower cost. However, such estimates typically would apply national averages or "best-guess" assumptions to local conditions. The key problem with these estimates is that while they can be produced at lower cost, their margin of error is so large that they probably would be misleading indicators of local conditions, and therefore inappropriate as a basis for BRAC decision-making.

Pages A-2 through A-5 and Annex 1 to Appendix A of the attached report provide a thorough discussion of these issues.

POTENTIAL JOB CHANGE AS A PERCENT OF EMPLOYMENT IS AN ACCEPTABLE PROXY

Although costs to other Federal departments and agencies can be difficult if not impossible to estimate directly, the Joint Group found that the economic impact measures used in the BRAC process can serve as a generally reliable indicator of such costs. (See "Cost of Federal Programs and the Base Realignment and Closure Review Process" on page 11 of the accompanying report.)

Specifically, the Joint Group found that potential job change as a percent of employment in the surrounding economic area, which has been a primary measure of economic impact used in the BRAC decision-making process, is an acceptable indicator of changes in costs to other Federal departments and agencies. The Joint Group determined that relative differences in the potential job change as a percent of economic area employment should, in general, reflect relative differences in the probable costs to other Federal departments and agencies. That is, a recommended base closure where the total potential job change as a percent of economic area employment is higher is likely to have a larger effect on the costs to other Federal departments and agencies than a closure alternative where this percentage is lower. When considering the economic impact on communities, therefore, the Department implicitly considers some costs, albeit unquantified, to other Federal, state and local government agencies.

It is important to keep in mind, however, that regardless of whether costs to other Federal departments and agencies are relatively high or low, it is

impractical to analyze the absolute size of these costs. Further, as discussed below, these costs would constitute a small fraction of BRAC savings, even under worst case assumptions, and therefore would have little influence on the ultimate closure recommendations.

DoD IS UNABLE TO CONSIDER OTHER AGENCY COSTS ASSOCIATED WITH BASE REUSE

Other Federal departments and agencies are provided the opportunity to receive real and personal property at closing military bases as a routine part of the property disposal process. When they do request a former base property, other Federal departments and agencies would be expected to incur costs for operating, maintaining, or modifying the property. In addition, some base reuse activities could require new efforts by other Federal departments and agencies. For example, a new regional airport opened at a closed Air Force base could increase the workload of the Federal Aviation Administration. On the other hand, surplus military property is often transferred at little or no cost to other Federal agencies, thus providing a capital subsidy that could offset higher operating costs.

DoD is unable to consider these types of costs or savings in its calculations of BRAC costs and savings because it cannot know how bases might ultimately be reused when it is developing BRAC recommendations. The process for determining how base property is to be reused takes place long after the BRAC decision-making process has been completed. When the Department is developing BRAC recommendations, it does not have any way of knowing or forecasting how bases would be reused if they were to be closed. Therefore, the Department is not able to predict whether particular agencies might eventually take over particular installations, and, if they do, what the associated costs would be. Similarly, the Department cannot predict the new costs that reuse activities might impose on other Federal agencies. In any case, if other governmental activities choose to reuse surplus military installations to modernize or expand their programs, these costs do not appear to be relevant to DoD closure or realignment deliberations.

COSTS TO OTHER FEDERAL DEPARTMENTS AND AGENCIES ARE SMALL COMPARED TO BRAC SAVINGS

Despite the barriers to estimating costs to other Federal agencies on a recommendation-by-recommendation basis, the Joint Group nevertheless analyzed how large these costs are likely to be. The Joint Group found that the costs of BRAC actions to other Federal Departments and agencies are small compared with BRAC savings.

This finding is based on a statistical analysis of six counties that had bases closed prior to December 1993 as a result of BRAC-88 and BRAC-91. The six counties were selected from a larger set of all BRAC-88 and BRAC-91 closures on the basis of their geographic diversity, labor force size, metropolitan or non-metropolitan character, and the magnitude of DoD employment reductions relative to the size of the total civilian employment base. A description of the selection process and the counties can be found on pages 3 through 6 of the attached report.

The statistical analysis focused on how changes in employment and unemployment in counties with base closures affect Medicaid, Food Stamps, and Aid to Families with Dependent Children (AFDC). These three programs were selected because they account for more than one-half of all outlays for cash and non-cash benefits to low-income individuals, and they are the most expensive non-DoD programs that could be influenced by BRAC actions.

The statistical analysis is described on pages 7 and 8 and in Appendix B of the report. A key conclusion of the analysis is that, on average, each time the level of county civilian employment is reduced by 1,000, the number of Food Stamp and AFDC cases increases by 46.

Three key points help put this finding into context:

- ◆ First, as explained on pages 8 through 11, “job losses” associated with base closures do not necessarily mean reductions in the level of county civilian employment. Indeed, civilian employment actually increased in five of the six counties, despite local base closures.
- ◆ Second, the results of the statistical analysis demonstrate that other economic factors, particularly in larger communities and at the state level, are more important than employment changes in explaining rising need-based Federal program costs. (See page 11 and Appendix B.)
- ◆ Third, the employment-linked incremental cost of need-based programs is small compared with savings associated with base closures. The statistical analysis suggests that under worst-case assumptions – i.e., that all BRAC-93 job losses would result in civilian employee reductions on a one-for-one basis (an assumption that clearly runs counter to the finding that civilian employment actually increased in five of the six counties studied) – the increased annual cost of these expensive programs would represent less than 2 percent of recurring BRAC-93 annual savings. (See page 12)

GENERAL ACCOUNTING OFFICE POSITION

To facilitate its review, the Joint Group requested that the General Accounting Office (GAO) clarify its position on the inclusion of government-wide costs

in BRAC analysis. A letter from GAO clarifying their position follows the attached report as Appendix C.

CONCLUSION

The Department takes seriously Congressional concern about the costs that the base closure process could impose on other Federal departments and agencies. The approach that we will take in BRAC-95 will consider many BRAC-related costs to other Federal agencies. There are, however, costs that could, in theory, arise from BRAC actions that the Department cannot estimate with an acceptable level of accuracy. Fortunately, we are confident that the costs we cannot estimate directly are only a small percentage of BRAC savings and that most of these are considered implicitly in BRAC measures of the economic impact on communities.

Contents

Overview	1
Identification of Non-DoD Federal Benefits Programs that Could be Impacted by Base Closures	1
Identification of an Explanatory Factor Accounting for Increased Federal Benefits Program Costs	2
Alternative Approaches for Validating the Relationship Between Employment and the Demand for Federal Benefits Programs	2
Statistical Results of National Demand Analysis	3
Results of Case Studies of Base Closure Communities	3
Communities Selected for Review	3
Employment Changes in Selected Communities	5
Changes in Demand for Selected Benefit Programs at the Local and State Levels	5
Results of the Statistical Analysis of the Monthly/Quarterly Data Exploring the Relationship Between Employment Changes and the Demand for Selected Federal Programs	7
Base Closures and Employment Changes	8
Military DoD Personnel Profile	9
Civilian DoD Personnel Profile	10
Net Employment Impact of Base Closures	10
Cost of Federal Programs and the Base Realignment and Closure Review Process	11
Conclusions	11

Contents (Continued)

Appendix A. Impact of Base Closures and Realignment on Costs
to Non-DoD Federal Agencies

Annex 1. Specific Government Programs

Appendix B. Demand for Federal Transfer Payments – An
Econometric Analysis

Appendix C. GAO Letter

Military Base Closures and Their Relationships to Non-DoD Federal Program Costs

OVERVIEW

The objectives of this analysis are (1) to examine the relationship(s) between base closure and realignment actions and any potential cost impacts on non-DoD Federal programs, and (2) to determine the feasibility of estimating the impacts if such relationships do exist. To fulfill these objectives we

- ◆ identified selected Federal government “need-based” benefits programs potentially affected by base closures,
- ◆ identified explanatory factors that could relate changes associated with base closures with potential cost impacts on other Federal programs,
- ◆ compared the reliability and cost of alternative methodologies for estimating those cost impacts, and
- ◆ demonstrated the statistical relationship between an explanatory factor and the cost of selected Federal programs at the national level and in communities experiencing recent base closures.

IDENTIFICATION OF NON-DoD FEDERAL BENEFITS PROGRAMS THAT COULD BE IMPACTED BY BASE CLOSURES

Fifty-one Federal organizations administer 1,308 assistance programs. Of particular interest in this analysis are programs that account for the majority of Federal payments in the form of cash and noncash benefits to persons with limited income.¹

One anticipated effect of base closures is the reduction, at least in the short run, of the earnings of some former base employees. Those individuals could become recipients of one or more need-based government assistance programs if their incomes decline to a level where they become eligible for assistance.

¹For a discussion of certain Federal programs potentially impacted by base closure, see Appendix A. Appendix A also describes various approaches for estimating the relationship between Federal program costs and base closure – and the costs of using each approach.

At the national level, statistics regarding Federal fund outlays for need-based assistance programs (other than social security and other pension payments) are aggregated by the Bureau of the Census at the county level.² Three programs account for more than one-half of all outlays for cash and noncash benefits to low-income individuals: Medicaid, Food Stamps, and Aid to Families with Dependent Children (AFDC). Changes in the demand for these three programs at the county level form the basis for our case study analysis of impacted communities.

IDENTIFICATION OF AN EXPLANATORY FACTOR ACCOUNTING FOR INCREASED FEDERAL BENEFITS PROGRAM COSTS

A relationship can be hypothesized from an inspection of the budgets of need-based programs and employment conditions. In periods of employment growth, outlays for those programs stabilize. When unemployment is rising, the cost of need-based programs climbs rapidly. This relationship is expected, because low income is a primary criterion for need-based program eligibility. A substantial number of all persons receiving transfer payments (and all receiving unemployment compensation) are unemployed. As these people find jobs, expenditures for programs such as Food Stamps can be expected to decrease.

Based on these preliminary observations, employment and unemployment status can be expected to be a statistically measurable factor in explaining changes in the demand for need-based programs. Because monthly labor force data at the county level are maintained across the Nation, employment data are available in all communities with military facilities.

ALTERNATIVE APPROACHES FOR VALIDATING THE RELATIONSHIP BETWEEN EMPLOYMENT AND THE DEMAND FOR FEDERAL BENEFITS PROGRAMS

Three quantitative approaches were considered to test the relationship between employment levels and the costs of selected need-based Federal programs at the national and local levels. The first possibility would involve population surveys in communities experiencing base closures to estimate the share of program recipients that became eligible as a result of base closures. The second approach would involve data about the number of recipients of need-based programs from counties across the Nation and examine how the number of recipients varied with changes in the national economy. The third would focus on a small number of counties experiencing recent base closures.

²*Consolidated Federal Funds Report*, Bureau of the Census, U.S. Department of Commerce.

Taking into account the availability of data and cost factors, we selected a combination of national-level analysis (i.e., the second approach) and analysis in communities experiencing recent base closures (i.e., the third approach) as the most reliable, cost-effective, and timely methodology for assessing the relationship between employment levels and the costs of selected need-based Federal programs. (A more detailed discussion of the alternative approaches reviewed can be found in Appendix A.)

STATISTICAL RESULTS OF NATIONAL DEMAND ANALYSIS

A statistical analysis of Federal government payments to individuals (other than retirement and disability payments) for the 1988 to 1992 period (for all counties in the United States) shows a very strong, statistically significant relationship between outlays for Federal need-based benefits programs and changes in employment. (See Appendix B for a technical description of the methodology, approach, and results of the analysis.) As one would expect, when employment is reduced Federal outlays for transfer payments rise.

Employment variation alone, however, does not explain all the variance in outlays for Federal assistance programs. This is true because numerous programs to assist individuals are not directly linked to changes in employment. These include programs for housing assistance, student loans and grants, school lunch programs, and Medicaid funds. Many of these programs require recipients to be at the poverty level, and a change in employment status, which for most workers will be temporary, does not imply that all impacted individuals will fall to the poverty level.

RESULT OF CASE STUDIES OF BASE CLOSURE COMMUNITIES

Communities Selected for Review

The national demand analysis, which included all counties, shows that there is a statistically significant relationship between a decline in employment and higher outlays for Federal payments to individuals. The objective of the case studies is to determine if this relationship, or a stronger one, can be found in counties experiencing recent base closures.

A group of six counties in five states experiencing base closures mandated by base realignment and closure (BRAC) decisions in 1988 and 1991 and completed by December 1993 were selected from a larger set of all BRAC-88 and BRAC-91 closures on the basis of their geographic diversity, labor force size, metropolitan or nonmetropolitan status, and the magnitude of DoD employment reductions relative to the size of the total civilian employment base. Characteristics of the selected county sites are shown in Tables 1A and 1B. The

analysis excludes BRAC-93 closures because no BRAC-93 installations were completely closed at the time this report was prepared.

Table 1A.
Characteristics of Selected Base Closure Communities

Installation	County	State	Year of BRAC ^a announcement	County civilian DoD employment (October 1988)
Fort Ord/Presidio	Monterey	CA	1991	154,000
Sacramento Army Depot	Sacramento	CA	1991	475,600
Chanute AFB	Champaign	IL	1988	88,429
Wurtsmith AFB	Iosco	MI	1991	10,300
Pease AFB	Rockingham	NH	1988	122,800
Ira Eaker AFB	Mississippi	AR	1991	19,375

^aBRAC = Base Realignment and Closure.

Table 1B.
Characteristics of Selected Base Closure Communities

Installation	Military personnel change (1989 – 1993)	Civilian DoD-personnel change (1989 – 1993)	DoD personnel changes as a percentage of county civilian employment (1988)	Percentage change in county civilian employment (1988 – 1993) ^a
Fort Ord/Presidio	(12,965)	(991)	(9.1)%	0.8%
Sacramento Army Depot	(232)	(2,188)	(0.5)	11.1
Chanute AFB	(4,304)	(897)	(5.9)	3.9
Wurtsmith AFB	(3,207)	(451)	(36.2)	(11.2)
Pease AFB	(3,400)	(177)	(2.9)	5.4
Ira Eaker AFB	(2,965)	(330)	(17)	20.4
Average			(9.4)%	5.1%
Total	(27,073)	(5,034)		

^aThe change in civilian employment from 1988 to November 1993 in all U.S. counties was 4.9 percent.

Quarterly or monthly data in the selected communities were collected for three major need-based programs – Medicaid, Food Stamps, and AFDC. Data about employment and unemployment for corresponding time periods were also collected. Consistent program and labor force data were tabulated for the time period of October 1988 to December 1993.

Employment Changes in Selected Communities

As shown in Table 1A, BRAC-91 affected four of the six counties. In the other two counties, facilities were closed in response to BRAC-88. Civilian employment levels prior to base closure in the selected counties ranged from 10,300 (Iosco County, Mich.) to 475,000 (Sacramento County, Calif.). DoD civilian and military personnel reductions as a percentage of county civilian employment varied from 0.5 percent in Sacramento County, to 36.2 percent in Iosco County.

Direct DoD job losses in the six counties totaled more than 30,000. Between 1988 and 1993, five of the six impacted counties gained civilian jobs despite the closure action. The exception to this pattern was Iosco County, which showed a decline in civilian jobs. This finding suggests that economic factors other than the base closure action had a more dominant influence on the economy of the region in which the installation was located.

Changes in Demand for Selected Benefit Programs at the Local and State Levels

Changes in the number of Medicaid, Food Stamps, and AFDC cases (i.e., recipients or beneficiaries) between October 1988 and December 1993 in the six communities are shown in Table 2A. In each of the six areas, changes in local cases were compared to the state average as a means for taking into account some of the variation in demand for these programs attributable to regional economic conditions. As shown in Table 2A, the rate of increase in the number of AFDC cases during the 1988 to 1993 period was *greater* at the state level than in counties experiencing base closures. The only exception to this pattern was Champaign County. The rise in demand for food stamps at the state level also exceeded the rise in the base closure-impacted counties in three of the five counties where comparable data were examined, indicating that other economic factors had a larger negative impact on the state as a whole than the closure of the base had on the county in which it is located.

Table 2A.
*Percentage Change in the Number of AFDC, Food Stamps,
 and Medicaid Cases
 (1988 - 1993)*

County/State	AFDC (percentage)	Food Stamps (percentage)	Medicaid (percentage)
Iosco County	2.8	20.8	NA
Michigan	7.6 ^a	16.5	NA
Mississippi County	(4.7)	NA	20.4
Arkansas	10.7 ^a	NA	47.7 ^a
Monterey County	51.1	43.1	NA
California	51.2 ^a	100.4 ^a	NA
Sacramento County	43.1	81.5	NA
California	51.2 ^a	100.4 ^a	NA
Champaign County	23.1	31.6	54.6
Illinois	7.3	13.6	30.4
Rockingham	218.7	133.9	NA
New Hampshire	266.6 ^a	156.9 ^a	NA

Notes: At the county level, data was tabulated by local personnel. State data was obtained from various state documents. NA = not applicable

^aChange at the state level exceeds county rate of change.

As noted earlier, between 1988 and 1993, civilian employment increased in five of the six counties impacted by base closures. In three of those five counties that indicate a rise in civilian jobs, the growth rates *exceeded* the state averages.

From 1988 to 1993, local unemployment rates increased at a pace that exceeded state-level increases in only three of the six counties. (See Table 2B.) In two counties, state-level increases in unemployment exceeded those for base closure counties. In Arkansas, unemployment rates fell in the county and state.

The five-year trend data suggest no definitive relationship between base closures and changes in the number of transfer program cases (i.e., Federal benefits program beneficiaries). To statistically examine whether a relationship exists in the selected counties experiencing recent base closures, we must apply statistical techniques that examine employment and assistance changes on a monthly or quarterly basis. We discuss the results of that analysis in the next section.

Table 2B.
Percentage Change in Unemployment Rates
 (1988 - 1993)

County/State	Unemployment rate (percent)		Percentage change 1988 - 1993
	1988 ^b	1993 ^b	
Iosco County	8.4	11.1	32.1
Michigan	7.6	8.8	15.8
Mississippi County	13.4	11	(17.9)
Arkansas	7.7	6.2	(19.5)
Monterey County	8.4	12.3	46.2 ^a
California	5.3	9.2	73.6
Sacramento County	5.4	8.3	53.7 ^a
California	5.3	9.2	73.6
Champaign County	4.2	5.4	28.6
Illinois	6.8	7.4	8.8
Rockingham	2.7	6.4	137
New Hampshire	2.4	5.3	120.8
United States	5.5	6.8	23.6

^a Change at the state level exceeds county rate of change.

^b Average annual rate.

Results of the Statistical Analysis of the Monthly/Quarterly Data Exploring the Relationship Between Employment Changes and the Demand for Selected Federal Programs

Statistical analyses of five counties experiencing base closures shows that each time civilian employment levels in a county are reduced by 1,000, the number of food stamp and AFDC cases increases by 46 (i.e., 4.6 percent). (A detailed statistical analysis of this result is shown in Appendix B.) This relationship is an average, and considers observations for the combined cases in five counties (Mississippi County was excluded because of incomplete data.). The addition of the Medicaid program has little impact on the number of total cases because factors not related to employment are the dominant cause for rising Medicaid demand.

As one would expect, changes in unemployment have the opposite effect. Reducing unemployment by 1,000 leads to a decrease of 53 AFDC and food stamp program cases, a somewhat higher number than the reduction in employment.³

³ Appendix B shows the derivation of this relationship.

Employment changes, however, explain only part of the change in demand for the Federal program funds. Between 1988 and 1993, one observes an underlying rise in demand for those funds that is independent of employment changes. This is particularly evident in the Medicaid program. That is, even in the absence of changes in employment (or unemployment), the number of cases seeking Federal assistance rises.

In small, relatively isolated, semi-rural areas such as Iosco County, changes in demand for Federal need-based programs appear to be linked primarily to changes in employment. However, in larger urban areas, and particularly at the state level, factors independent of employment are the dominant cause of changes in demand for those Federal programs. At this level, the role of employment cannot be isolated from other causes.

These results imply that in small communities with limited employment opportunities and low job mobility, employment reductions attributable to base closure or other causes can lead to measurable, but numerically small, increases in participation in the Medicaid, Food Stamps, and AFDC programs. In larger more populated communities, however, the impact of changes in employment are less important than other regional economic factors.

Base Closures and Employment Changes

Although there is a strong relationship between changes in employment and the demand for need-based Federal programs, base closures should not be expected to result in reductions in the level of civilian employment equal to the loss of all jobs at the installation. Detailed employment data from the six case study sites demonstrate that the impact in those counties has been less severe than base job loss estimates would indicate.

As noted previously, in five of the six case-study counties, civilian employment actually *rose* between 1988 and 1993, and in several areas, more rapidly than at the state level. Although the number of DoD personnel declined in each of the five counties as a result of base closures, in most instances other job growth more than offset these base-related losses.

The impact of DoD base closures on employment and unemployment can be expected to differ by the size of the community and the share of total county employment attributable to former base employment. However, even in areas where DoD civilian employees comprised a substantial percentage of all local employees prior to base closure, the results differ by location. For example, the closure of Ira Eaker AFB in Mississippi County, Ark., resulted in a loss of 3,265 military and civilian DoD jobs between 1988 and 1993. However, during the same time period, the number of civilian jobs expanded by 3,650, or by nearly 20 percent. Iosco County, Mich., the site of Wurtsmith AFB, lost 3,658 military and civilian DoD jobs. This county had a reduction of 1,150 civilian employees during this same time period, a considerably lower number than the loss of DoD jobs.

Several factors discussed in subsequent sections of this report explain why reductions in local employment levels are typically *less severe* than the job losses directly associated with base closures.

MILITARY DoD PERSONNEL PROFILE

Base closure causes many military personnel and their dependents to relocate to other military installations, usually in new counties (different from the base closure sites). This relocation has two immediate effects on the local labor force. First, both the labor force and employment levels decline by the same number as the reduction in military personnel at the site.⁴ Second, most spouses of military personnel employed in the local economy leave, causing a further decline in the labor force.

The potential for higher civilian unemployment attributable to the loss of military personnel in a local economy is offset, to a large extent, by a parallel reduction in the size of the local labor force. Typically, about 60 percent of all military personnel are married and 60 percent of spouses hold full-time or part-time jobs, mostly in the services and retail trades.⁵ Thus, for every military person leaving a community, 0.36 other people can be expected also to leave the local labor force. Studies have shown that spent earnings of military employee generates about 0.35 jobs in the civilian economy.⁶ Thus, civilian job losses attributable to the loss of military personnel and the associated economic impact may be offset, to a large extent, by fewer workers in the local labor force.

Assuming that military spouses in the civilian labor force have the same unemployment rates as other civilians, the departure of military personnel has little impact on the *rate* of civilian employment and unemployment. In the short run, both local employment levels and the local labor force are reduced and the local economy shrinks, but employment *rates* are essentially unaffected.

In theory, one would expect to observe a reduction in civilian employment following base closure as a result of reduced purchases in the local economy by former base employees and by the base itself. This would happen if the local economy was totally dependent on the military installation. In reality, even in communities with a large DoD presence, some segments of the local economy are only marginally affected by base closures. For example, many communities with military installations have a substantial number of retired military households as area residents. Pension payments to those households continue regardless of base closure. Similarly, manufacturing industries are usually not dependent on local base purchases. As non-DoD economic activity expands, initial reductions

⁴The decline is the same for the labor force and employment levels because none of the military personnel are unemployed. The labor force is defined as the number of persons employed and unemployed.

⁵Spouse employment levels in rural areas are usually below 60 percent due to limited job opportunities.

⁶The job multiplier varies by the size of the local economy. In rural areas, the multiplier may be lower, and in large metropolitan areas higher, than 0.35.

in base-related civilian employment are offset by gains in other sectors. However, retail and personal service businesses near the closed installation may be adversely affected by the loss of military personnel.

CIVILIAN DoD PERSONNEL PROFILE

Unlike military personnel, many DoD civilians losing on-base jobs tend to remain in the community, at least in the short run. Nonetheless, one should not expect a one-to-one decrease in civilian employment levels, an increase in unemployment rates, or increases in the demand for need-based Federal programs as a result of DoD civilian job losses for several reasons:

- ◆ *Early retirement.* Some percentage of civilian DoD personnel may have the opportunity to opt for early retirement. As such, their incomes can be expected to remain above the poverty rate, even in the absence of other earnings. For example, 348 civilians at Fort Ord opted for early retirement between 1990 and 1993, representing about one-third of civilian jobs lost at the base due to its closure.⁷
- ◆ *Other income.* About one-half or more of all married personnel will have spouses employed in the community. In most cases, this employment may not be directly affected by base closures. Others may have additional sources of income, including savings, that would preclude their eligibility for transfer payments.
- ◆ *Relocation.* Some DoD employees can be expected to leave their localities because their function has been reassigned to another installation. These employees may be given the option to be assigned to the new location. Other DoD employees may relocate because they found Federal civil service positions elsewhere in the Nation. Finally, DoD employees could move to accept positions in the private sector in another location. Relocation is most likely for more senior, higher-grade persons with extensive skills or specialized experience in occupations for which there is a high demand. Another former DoD-employed group likely to relocate are young persons without children in local public schools or other deep ties to the community.
- ◆ *Other employment opportunities within the impacted community.* Depending upon local economic conditions, the size of the local economy, and the success of base reuse programs, former base workers are often likely to find new jobs in the community.

Net Employment Impact of Base Closures

The net employment and unemployment resulting from base closures cannot be predicted with any precision for individual sites. The range of impact, as the case studies illustrate, can vary from negligible to moderate depending on

⁷Source: Defense Manpower Data Center (DMDC).

numerous other economic factors outside DoD's control. However, even in the worst case scenario, the added demand for need-based programs can be expected to be modest on the basis of experience in the six communities studied.

The statistical analysis described in Appendix B shows that the percentage change in the number of Federal program recipients in a community is less than the percentage change in the level of civilian employment. For example, if civilian employment is reduced by 5 percent in a community, the maximum potential impact on the cost of the three Federal programs examined for that community would be expected to be less than 5 percent. Other supporting data, such as the historical rate of growth of employment and income in a community can provide additional information on the extent to which employment effects associated with base closure will differ among communities.

Cost of Federal Programs and the Base Realignment and Closure Review Process

An economic impact measure used by DoD in prior BRAC rounds is employment change resulting from closure as a percentage of total community employment. Applying this measure, holding other economic factors constant, communities where BRAC closure would affect a large percentage of total area employment are considered to be more impacted than communities where BRAC changes would account for only a small percentage of area jobs. That is, BRAC closures where the potential job change as a percent of economic area employment is high are likely to have a larger effect on local civilian employment levels than where the potential job percentage change is low.

Differences in the potential job change as a percent of economic area employment should, in general, reflect differences in probable costs of need-based Federal programs. The statistical analyses in Appendix B suggest that these changes in civilian employment levels are correlated with changes in costs to need-based programs. Therefore, when considering the economic impact on communities, DoD implicitly considers some costs, albeit unquantified, to other Federal programs.

CONCLUSIONS

Our statistical analyses indicate that changes in employment *partially* explain changes in the costs of certain Federal programs. This relationship was established at both the national and county levels. However, the results of statistical analyses also demonstrate that other economic factors, particularly in larger communities and at the state level, are more important than employment changes in explaining rising need-based Federal program costs. For example, fund outlays for Medicaid, by far the costliest Federal need-based program, have been rising across the Nation as a result of accelerating per capita costs of medical care.

Our analyses, as evidenced in Appendix B, show that if local employment levels declines by 1,000, the number of AFDC and food stamp program cases rise by 46. The annual cost of these two programs per household is estimated at about \$7,200. This means that the added cost of these programs for each person no longer employed at a base would be about \$331, or less than 2 percent of earnings for the typical civilian base employee. When a county gains employment as an increase of a BRAC action, a rise of 1,000 jobs would reduce the demand for AFDC and food stamps by 46 households.

A worst-case estimate of the magnitude of the increased costs for Food Stamps, AFDC, and Medicaid, three programs that account for the majority of all need-based Federal outlays, is provided at Figure 1. The results in Figure 1 are "worst case" because they assume that each direct DoD civilian and military job

Figure 1.
Estimated "Worst Case" Cost of Other Federal Programs Compared to BRAC Savings

<i>Estimated cost of major need-based programs per household</i>	<i>\$12,000</i>
<i>No. of job losses for each need-based program addition (1,000 ÷ 46)</i>	<i>21.7</i>
<i>Program cost associated with each job loss (12,000 ÷ 21.7)</i>	<i>\$ 553</i>
<i>Number of direct military and civilian jobs lost as a result of BRAC-93</i>	<i>66,427</i>
<i>"Worst Case" cost of BRAC-93 – related job losses (66,427 X \$553)</i>	<i>\$36.7M</i>
<i>Total BRAC-93 annual savings (after implementation)</i>	<i>\$2,144M</i>
<i>"Worst Case" cost as a percentage of annual savings (\$36.7M/\$2,144M)</i>	<i>1.71%</i>

Notes: Programs include AFDC, Food Assistance (including Food Stamps) and Medicaid. The Federal share of the three programs in FY 93 is estimated at \$125 billion. It is assumed that a household is eligible for all three programs. The number of households receiving assistance is estimated from agency data.

lost resulted in a decline in employment levels on a one-for-one basis. The analysis of the six counties examined in this study suggest, however, that this assumption greatly overestimates decline in local civilian employment levels. The analysis indicated that civilian employment levels actually rose in five of the six counties examined, despite the base closure. Even under the worst-case assumption that job losses due to base closures reduce county employment levels on a one-for-one basis, however, the costs to other Federal agencies for these programs would total less than 2 percent of base closure-related savings.

APPENDIX A

Impact of Base Closures and Realignment on Costs to Non-DoD Federal Agencies

OVERVIEW

This Appendix discusses the limitations of three alternative quantitative approaches we considered to examine the impact of base closures and realignments on non-DoD government benefits programs. The methodologies are compared for selected major benefits programs on the basis of accuracy and implementation cost in Annex 1 of this Appendix.

Alone, none of the approaches considered could be expected to provide reliable, cost-effective estimates of the linkage between base closure and the cost of need-based programs. Thus, the results support the decision to apply statistical techniques described in Appendix B to estimate the likely relationship among base closures, changes in employment, and the demand for need-based Federal programs.

BACKGROUND AND APPROACHES FOR ASSESSING THE RELATIONSHIP BETWEEN EMPLOYMENT LEVELS AND FEDERAL PROGRAM COSTS

Base realignments and closures may reduce economic activity in some communities and increase such activity in others. Base closures will, at least temporarily, cause a dislocation of some DoD civilian personnel previously employed at installations. Other off-base civilians and on-base contractors may lose their jobs. In general, military personnel will be reassigned to facilities at other locations.

The first part of this Appendix discusses general program evaluation issues. It also contains a rationale for the methodology that is applied for assessing the relationship between employment levels and the costs of selected need-based Federal programs. The second part, Annex A, focuses on BRAC-related changes in demand for specific government programs, data requirements to estimate impacts, and methodologies that could be used to project the effects of BRAC actions on specific programs. The Annex should be viewed as supporting material for conclusions drawn in the initial sections of this Appendix.

APPROACHES AND DATA REQUIREMENTS FOR ESTIMATING THE BASE REALIGNMENT AND CLOSURE IMPACT ON NON-DoD GOVERNMENT BENEFITS PROGRAMS

In theory, three approaches could be used for estimating the impact of BRAC actions on non-DoD government benefits program costs. The three methodologies rely on historical data to relate changes in the well-being of households with changes in the use of government services. The sections below specify the general data required to estimate impacts and they describe the three methodologies.

General Data Required to Estimate the Impact of Base Closures on Non-DoD Government Activities

The data needed to develop estimates of potential base closure impacts summarize the personnel and economic factors that describe military bases. Some of these data are readily available while others are much more difficult to determine. The data required is

- ◆ the number of military personnel expected to remain in an area following base closure (such as early retirees),
- ◆ the number of civilian DoD workers likely to transfer from impacted areas to take other Federal jobs or otherwise leave the area,
- ◆ the number of civilian DoD workers remaining in an area who are likely to find employment without substantially diminished earnings,
- ◆ the number of civilian DoD workers likely to elect early retirement, and
- ◆ military and DoD civilian earnings prior to base closure.

Using Population Surveys

Using a survey technique would require that we interview people directly affected by base closures. The individuals, selected using statistical sampling procedures, would be asked a series of questions regarding their participation in specified government programs. The impact of base closures on their household earnings, new jobs (if any), and related data would be among the items included in the survey. This information would be tabulated and be the basis for determining factors that would be applied to communities potentially experiencing base closures. For example, if surveys found that in nonmetropolitan counties, "A" percent of all civilians found employment within one year following closure

with earnings that are "B" percent below their base earnings and "C" percent at earnings similar to their base earnings, that "D" percent were unemployed, and that the balance moved from the area — those factors would be applied to civilians in nonmetropolitan communities being considered for closing. This approach can provide information on the reliability of the data within specified confidence limits.

Using National Data

Studies have shown that a substantial percentage of the unemployed population are recipients from programs such as Food Stamps and Medicaid.¹ This relationship exists because unemployed individuals typically have low incomes, qualifying these persons and their households for "transfer payments." Here, the approach is to examine data collected by Federal agencies about outlays from transfer programs and to relate these changes to changes in employment levels. A cross-sectional, time-series analysis of such data at the local or state level provides information on this relationship for the Nation as a whole. These relationships could then be applied to potentially affected populations to estimate expected impacts.

Examining Changes in Communities with earlier (BRAC-88 or BRAC-91) Base Closures

The third methodology also examines the relationship between changes in population characteristics and changes in the utilization rates for government programs. However, rather than depending on national studies, these relationships and factors are established on the basis of data collected from areas with completed BRAC-88 and BRAC-91 base closures. These relationships are likely to be more representative of communities with potential base closures than those developed from national data. Given sufficient data, statistical tests could be applied to determine the relationship between, for example, the rate of job creation and the rate of change in the number of individuals or households receiving assistance from specific programs, such as Food Stamps.

LIMITATIONS OF ALTERNATIVE APPROACHES

Survey Techniques

Among the limitations of the survey approach is the high cost of surveys, particularly if such surveys involve personal interviews. Hundreds of such interviews would have to be completed to obtain a sufficient sample that would provide reliability at the 95 percent confidence level. The second limitation is the uncertainty associated with locating households in areas experiencing BRAC

¹See for example, "Unemployment Among Welfare Recipients," U.S. Department of Labor, *Monthly Labor Review*, March, 1979.

actions one or more years after a base is closed. On the basis of DoD's experience with identifying the location of military households for the purposes of analyzing housing requirements, it would be extremely difficult to determine where military personnel or Federal civilians live.

The survey approach is also limited because only a small number of previous BRAC closures have been completed. Therefore, survey results would be limited to a few areas that may not be representative of all areas with base closures.

Application of National Data Base Service Demand Studies

We have no assurance that studies based on national or regional data will be applicable to BRAC-related communities. Although a relationship between transfer payments and employment levels exists, our analysis shows that there is a wide variance between locations due to the divergence in economies and other characteristics among jurisdictions. Therefore, quantitative, nationally developed measures of change may not necessarily be representative of communities with military installations that could be closed, and therefore could produce misleading results. For this reason, this approach by itself would not be useful.

Examining Changes in Communities with earlier (BRAC-88 or BRAC-91) Base Closures

This approach would examine changes in employment, unemployment, and the number of need-based program recipients prior to and following base closure. Assuming that data could be collected, the approach would provide valuable historical data. One concern is that the time required to collect and analyze the data would be considerable. An additional constraint, as in the survey approach, is that the sample number of bases fully closed is very small. Finally, given differences among BRAC communities, it would be difficult to project changes in service demand in particular communities with reasonable reliability. Nonetheless, this is the most promising approach because communities experiencing BRAC would form the basis for the relationship between employment reductions and the rise in the demand for need-based programs.

BRAC-RELATED CHANGES IN THE DEMAND FOR BENEFITS PROGRAMS AND THE RELATIONSHIP TO UNCERTAINTY IN THE COMMUNITY ADJUSTMENT PROCESS

Collectively, there is little doubt that BRAC actions will increase the demand for some government programs since declines in the economy, in part, drive this

demand. However, from a decision standpoint, the issue remains: to what extent is the impact on these programs affected by a decision to close base "A" as opposed to closing base "B"? To tabulate the difference, one would have to project the economic impact and subsequent recovery of a similar action, involving roughly similar numbers of military or civilian personnel, on specific programs, and then identify the difference in the demand for program funds.

A cursory examination of BRAC-88 and BRAC-91 closures completed by December 1993 suggests that no distinct patterns in recovery periods exist. In the majority of cases, communities (at the county level) adjusted quickly, with losses in DoD employment offset by gains elsewhere in the local economy. In other areas, DoD losses have not been offset. Given these differences, one would have to systematically identify key factors that lead to differences in the rate of economic recovery. Unfortunately, these factors include not only quantifiable variables such as measures of the regional economy, but also such factors as community leadership and the ability to attract new activities. An equally important concern is that factors relevant to BRAC-88 and BRAC-91 may not necessarily be good predictors of economic and social conditions in the late 1990s, when BRAC-95 actions will actually be implemented. Economic recovery rates in specific communities during the 1990s would, at best, be extremely difficult to predict.

PROPOSED METHODOLOGY

As shown in Annex 1 to this Appendix, examining non-DoD costs on a base closure-by-base closure basis is impractical because the quality of the data would be inadequate and the cost would be excessive. All the methodologies described have limitations. The most promising and cost-effective methodology is to examine, applying statistical techniques, changes in employment and in the demand for selected Federal programs at the national level and in communities with recent base closures. Although this proposed approach would not provide direct information about the use of Federal programs by former base employees in communities where those workers formed a substantial percentage of total employment, a relationship is implicit.

The proposed methodology has the advantage of making use of DoD's existing methodology and system for estimating employment impacts. Although it does not overcome the problem of a small sample size or of projecting a possible impact several years into the future, it can provide a reasonable scale of the maximum potential effects associated with base closures.



ANNEX 1 TO APPENDIX A

Specific Government Programs

This Annex briefly describes categories of government programs; highlights general issues concerning the precision, accuracy, and cost of different approaches to estimate the effects of BRAC actions on non-DoD benefits programs; and illustrates how these general issues are relevant for estimating the costs of a few specific programs. The purpose of this Annex is to provide detailed examples that will highlight issues raised in the discussion of the proposed methodology described in Appendix A.

Categories of Government Benefits Programs

Entitlement benefits programs commit the Federal (and where applicable state) government to funding specified services for all persons meeting the eligibility criteria. This means, for example, that if the Federal government agrees to pay for certain medical services under the Medicaid program, an increase in total demand due to base closures would result in a higher aggregate cost for the program. Therefore, at least in theory, specific base closures could result in higher or lower entitlement program costs.

Spending for discretionary programs such as the Economic Dislocation and Worker Adjustment Assistance Act (EDWAA), is usually set at a specific funding level. Although BRAC-related decisions could affect the distribution of discretionary program funds, it is very unlikely that BRAC actions would have an impact on total spending. In theory, Congress could, in response to a sharp rise or fall in demand, change funding levels. In reality, this is improbable given that alternative BRAC actions would be expected to have only a marginal impact on total demand for most discretionary programs. Therefore, only entitlement programs could reasonably be expected to have a measurable effect on total outlays, subject to the limitations discussed later in this report.

Several Federal programs, particularly entitlement programs, are joint Federal-state activities, including Medicaid and unemployment compensation. Therefore, a change in demand for such programs has an impact on both Federal and state funding.

Although they are not addressed directly in this Annex, state and local government finances can be affected by BRAC-related actions. School districts can also be directly affected by base closures because "school impact" assistance would eventually be withdrawn when DoD-dependent students leave the school system. Local and state governments also face reduced revenue from most tax sources if earnings of residents are reduced. To the extent that households leave

an area following base closure, the demand and outlays for some services also declines.

Precision, Accuracy, and Cost of Approaches that Could be used to Estimate the Impact on Non-DoD Benefits Programs

As noted earlier in this Appendix, the reliability of cost estimates using various methodologies can vary. For the purposes of this Annex, each methodology will be assigned one of the following three scaled confidence levels for each identified program:

- ◆ *High confidence* means that program costs can be estimated with accuracy.
- ◆ *Medium confidence* means that program costs can be estimated with some uncertainty.
- ◆ *Low confidence* means that program costs can only be estimated with substantial uncertainty.

Frequently, in order to obtain increased confidence in cost estimates, more expense is required. The cost of estimating program impacts will also be given one of the following three cost measures for each identified program:

- ◆ *Low cost* means that the cost of analysis is within reasonable limits of the current BRAC process.
- ◆ *Medium cost* means that the cost of analysis exceeds that expected for the current BRAC process.
- ◆ *High cost* means that the cost of analysis is well outside that expected for the current BRAC process.

Selected Benefits Programs

This section briefly describes selected major Federal programs that might be affected by base closures.

In some instances, two potential base closures could have a different impact on the use of certain government programs. For example, a base closure in an area with few private sector employment opportunities would be more likely to reduce the income of some households to below the poverty level, and therefore make them eligible for Federal benefits programs, compared to an area where the economy is expanding.

MEDICAID

Program Description

Medicaid is a medical assistance program jointly funded by states and the Federal government. Medicaid covers health care expenses for all recipients of Aid to Families with Dependent Children (AFDC). At the option of the state, other low income individuals also qualify. The cost of Medicaid in FY92 was \$59.9 billion.¹

Likely Impact of Base Closure

Under certain conditions, the demand for Medicaid could rise from claims made by two groups:

- ◆ former DoD civilian workers who remain in the state following base closure and who cannot find work for an extended time period (if their household income falls below a threshold level, they could be eligible for Medicaid); and
- ◆ non-DoD worker households that have sharply reduced earnings (these households include workers who lost higher paying jobs as an indirect result of base closure).

Unit of Measure and Approach

The appropriate unit of measure is a household.²

The approach would be to first determine the number of households that are expected to be *potentially* eligible. The second step would be to determine, on the basis of such factors as the local unemployment rate, the likelihood that the workers could not find another job paying above the minimum wage. The third step would be to estimate the number of workers who lost their jobs and would leave the area. These estimates, in turn, would be the basis for a crude projection of the level of added demand for Medicaid.

Demand can be expressed as

(number of households with members who lost jobs) x (percent of households expected to have income fall to the program eligibility level) x (percent eligible who will use the program) x (cost per household to the Federal government)

¹ Because Medicaid is a joint Federal-state program, higher demand for Medicaid results in increased state expenditures.

² A household consists of a single individual or a family.

Potential Methodologies that can be used to Derive Estimates

- ◆ surveys of recipients in areas with closed DoD installations (methodology 1);
- ◆ change in demand for Medicaid following base closures, holding other factors (such as local economy) constant based on review of relevant data from communities with base closures completed (methodology 2); and
- ◆ national or regional data showing the relationship between the change in earnings or unemployment and the change in the number of Medicaid applicants (methodology 3).

Necessary Assumptions to Make

Assumptions involve

- ◆ the percentage of households expected to have income fall below the eligibility level, and
- ◆ the percentage of eligibles who will use the program.

Accuracy of Results

Depending on the methodology selected, the anticipated accuracy varies from low to medium:

- ◆ using methodology 1 – medium confidence,
- ◆ using methodology 2 – medium confidence, and
- ◆ using methodology 3 – low confidence.

Cost of Analysis

The cost of implementing the analysis ranges from low to high:

- ◆ using methodology 1 – high cost,
- ◆ using methodology 2 – medium cost, and
- ◆ using methodology 3 – low cost.

FOOD STAMPS AND OTHER FOOD AND NUTRITION ASSISTANCE

Program Description

The Food Stamp program, run by the U.S. Department of Agriculture, provides food coupons through state and local welfare agencies. The aim of this and related programs is to increase the purchasing power of needy persons. The Federal government considers food stamps to be an unemployment-sensitive program. That is, one can predict the demand for food stamps by projecting unemployment rates. The food and nutrition programs received \$27.1 billion in Federal funds in FY92.

Unit of Measure and Approach

Because need-based benefits programs are typically based on household income, the best unit of measure is the number of households.

Projecting the added cost to this program caused by base closure would require estimating the change in unemployment resulting from base closure. This, in turn, would be dependent on the condition of the local economy and its ability to absorb workers who lost their jobs as a result of base closure. The increased cost of the program would depend on factors such as household size.

Demand can be expressed as

(number of households with members who lost jobs) x (percent of household expected to have income fall to the food stamp eligibility level) x (percentage of eligible households that will use the program) x (cost per household to the Federal government)

Potential Methodologies to Derive Estimates

- ◆ surveys of food stamp recipients in areas with closed installations (methodology 1);
- ◆ change in demand for food stamps in communities following base closures, holding other factors (such as local economy) constant (methodology 2); and
- ◆ national or regional data showing the relationships between the change in earnings (or unemployment) and the change in food stamp program application; this assumes that the relationship between unemployment and food stamp demand at the national level holds at the local level (methodology 3).

Accuracy of Results

The expected accuracy of the results ranges from low to medium:

- ◆ using methodology 1 – medium confidence,
- ◆ using methodology 2 – medium confidence, and
- ◆ using methodology 3 – low confidence.

Cost of Analysis

Depending on the methodology selected, the anticipated implementation cost can be low, moderate, or high:

- ◆ using methodology 1 – high cost,
- ◆ using methodology 2 – medium cost, and
- ◆ using methodology 3 – low cost.

OTHER NEED-BASED PROGRAMS

In addition to Medicaid and Food Assistance programs (including Food Stamps), there are two other large Federal need-based programs: AFDC (Aid to Families with Dependent Children) and SSI (Supplemental Security Income). The demand for AFDC is related to both economic and behavioral variables. One cannot fully explain the growth of the AFDC program simply by analyzing economic conditions. Although it would be extremely difficult to link the demand for AFDC to base closures, this program has been included (with Medicaid and Food Stamps) as one that could be linked to employment (see Appendix B). The SSI program, however, was excluded from this group because virtually all persons qualifying for this program are either blind, disabled, or elderly. Therefore, no association could be established between employment levels and the SSI program.

Aid to Families with Dependent Children, Medicare, SSI, and Food Stamps account for the majority of all Federal outlays for cash and non-cash benefits aimed at persons with limited income. Other categories of assistance include medical aid for needy veterans, housing programs, education aid (such as the Head Start program and college loans) and job training for disadvantaged persons. None of these programs can be linked directly (or, in most instances, indirectly) to BRAC actions.

Participation rates in many need-based programs vary because of differences in state standards, regulations, enforcement, and other factors. Unless a base closure results in a permanent change in the characteristics of the non-DoD

population either as a result of migration or permanent income losses, a direct linkage to changes in demand for these programs would be extremely difficult, if not impossible, to quantify.

These comments are not intended to suggest that base closures, particularly in areas where a military installation comprises a significant share of the local economy, will not have long-term effects. In some communities, there may be social and economic repercussions that could affect numerous Federal (and state) programs. But to quantify those effects and to quantify the *net* impact of those effects on Federal outlays would be a monumental task that would yield highly uncertain estimates.

SUMMARY

The preceding pages considered the precision, accuracy, and cost of the BRAC-related actions for a few specific Federal programs. These specific programs were included in this Annex because they form the basis of the statistical analyses presented in this report. Although the results are not reported in detail here, we considered other Federal, state, and local programs under a similar framework. We found that, in general, estimating the costs for those programs entails the same trade-offs among precision, accuracy, and cost of estimation as those demonstrated in the specific Federal programs analyzed above.



APPENDIX B

Demand for Federal Transfer Payments – an Econometric Analysis

INTRODUCTION

This Appendix presents the econometric underpinnings to quantitatively explain changes in Federal non-pension transfer payments at the county level. Of particular interest is the effect of employment changes on transfer payments, although other variables are introduced as necessary to ensure sound model specifications. These econometric analyses produced statistically significant transfer payment-employment (or transfer payment-unemployment) relationships using the econometric technique of pooled cross-section, time-series analysis. This Appendix addresses the main transfer payment-employment results.

Two different data bases were used for establishing these transfer payment-employment relationships. The first data base was Federal annual (1988 through 1992) transfer payment data for Food Stamps, Aid to Families with Dependent Children (AFDC), other programs, and Medicaid (but excluding pensions) for 3,000 counties from the *Consolidated Federal Funds Report*, Bureau of the Census. The Census transfer payment data are expressed in current dollars, which were adjusted for inflation to derive real transfer payments. The second data base was unpublished monthly (or quarterly) data, from the 1988 through 1993 period, from five counties – Champaign, Ill.; Iosco, Mich.; Monterey, Calif.; Sacramento, Calif.; and Rockingham, N.H. These unpublished transfer payment data reflect Food Stamp and AFDC payments, and they are expressed in terms of the number of “cases” (i.e., recipient beneficiaries). This second set of data excluded Mississippi County, Ark. because of incomplete data.

Two major statistical conditions need to be satisfied for obtaining sound statistical results. First, problems of positive autocorrelation in the time series residuals of regression equations can lead to underestimation of equation errors and overestimation of the significance of model parameters, unless corrected. Positive autocorrelation means that the residuals of the equation are positively related to one another over time, instead of being uncorrelated with one another – an assumption that ordinary least squares requires for obtaining sound results. According to the test statistic for uncovering positive autocorrelation, the Durbin-Watson statistic, there was very high positive autocorrelation in the regression residuals. This problem was corrected by expressing the transfer payment data and its explanatory factors in difference form, which is the appropriate correction procedure in this case. Second, heteroscedasticity in the cross-section variances can lead to biased model coefficients. Heteroscedasticity refers to the variances varying from one cross-section unit to another, instead of being

relatively constant – another assumption that ordinary least squares requires for obtaining sound results. No evidence of heteroscedasticity was found in the cross-section variances of the regression equations.

CENSUS DATA RESULTS

Equation B-1 demonstrates that changes in county-level transfer payments, $[(\Delta\text{tran}(i))]$, are affected by changes in county employment, $[(\Delta\text{emp}(i))]$ across more than 3000 counties ($i=\text{counties}$). Differences in county size, as measured by base year labor force levels, $[(\text{lbf}(t-1))]$, are also important. Neither state dummy variables nor metropolitan/nonmetropolitan county dummy variables controlled for differences in county size were as significant as the lagged labor force variable; interaction effects between the location dummy variables and the employment/ labor force variables were not found.

$$\Delta\text{tran}(i) = -1,086,270 - 11,615 * \Delta\text{emp}(i) + 2,026 * \text{lbf}(t-1) \quad [\text{Eq. B-1}]$$

(-5.1)
(-18.6)
(+130)

Number of observations = 12,528

R^2 (adjusted for degrees of freedom) = 0.58

Equation B-1 indicates that all nonpension transfer payments collectively tend to increase by about \$2,000 for each employee in the labor force but decrease by more than \$11,000 for each individual added to the employment rolls (holding labor force constant). Thus, the net effect of the labor force and employment change variables on transfer payments is (\$9,000). According to Equation B-1, a particular county's total transfer payments would change in relation to its total labor force level and total change in employment.

Both the labor force and employment variables are statistically significant at the 99 percent confidence level of the t-distribution. Moreover, there is little intercorrelation between the labor force and employment variables (R^2 is less than 0.01), which adds to the precision in Equation B-1 coefficients. As indicated in the introduction, positive autocorrelation is present and corrected for by expressing county transfer payments in difference form; no evidence of heteroscedasticity in cross-section variances is found. The R^2 of 0.58 is considered good for a data base with more than 12,000 cross-section and time-series observations.

UNPUBLISHED COUNTY RESULTS

Equation B-2 also demonstrates that there are statistically significant employment-change effects on changes in the number of AFDC and Food Stamp cases in five selected counties. County dummy variables were also significant and control for nonemployment influences on transfer payments. Interaction

The transfer-unemployment formulation is as follows:

$$\Delta \text{trans}(i) = 1498 * \text{Sacramento} + 3.23 * \text{Iosco} + 617 * \text{Monterey} + 38.32 * \text{Rockingham} \\ + 0.053 * \Delta \text{unemp} \quad \text{[Eq. B-3]} \\ (4.92)$$

Number of observations = 191

$R^2 = 0.70$

F statistic for county = dummy effect is significant at the 1 percent point of the F-distribution

CONCLUSIONS

These econometric results indicate that changes in nonpension transfer payments are related to changes in employment (and unemployment). Employment decreases tend to raise transfer payments, while employment increases tend to lower transfer payments. However, these results also show that changes in transfer payments are relatively more important for smaller counties than they are for larger counties.

This econometric evidence is strong for the following reasons: First, the employment-transfer payment result is the same regardless of how broad or narrow is the definition of nonpension transfer payments used. Second, the evidence is the same regardless of whether the transfer payment variable is expressed in dollar or in case number terms. Third, the result is the same regardless of the number of counties included in the analysis.

Appendix C

GAO Letter





United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

The Honorable Robert E. Bayer
Deputy Assistant Secretary of Defense
Economic Reinvestment and BRAC

Dear Mr. Bayer:

In discussions with your staff we were asked for clarification of our position on inclusion of government-wide costs in DOD's Base Closure Analysis.

The decision to close and realign military bases is based on many factors, including the costs and savings associated with different options. Identifying the relevant costs and savings has been a challenge to DOD and the Base Closure Commission, and the estimating process has been improved with successive rounds of the base closure process.

Given that the closing and realigning military bases can involve costs to the government (and possibly savings) that do not accrue directly to DOD, there is an issue of how those costs or savings should be factored into DOD's recommendations regarding which bases to close, and the final decisions made. For example, when a military hospital is closed, DOD can realize savings, but those may be offset government-wide as military retirees from the affected region enroll in Medicare. Similarly, if the National Park Service acquires a closed base, it will incur costs to operate it as a public facility. Moreover, there could be costs to the federal government if usage of federal entitlement or welfare programs increases in communities negatively impacted by the loss of a base, or conversely, there could be savings for communities whose bases are expanded. Quantification of many of these costs is difficult if not impossible, and is speculative. Other costs are quantifiable and are subject to reasonable estimation.

As we have recommended in the past, we believe substantial and quantifiable government-wide cost and savings should be included in the COBRA cost analysis. In areas where DOD savings could result in significant and quantifiable costs to other agencies, such as in the case of Champus costs transferring to Medicare, or continuing GSA lease costs, DOD should indicate that fact to the Commission and

those costs to other Federal agencies. In possible cases of substantial shifting of costs from one Federal agency to another, being unaware of such shifts hinders the Base Closure Commissions overall evaluation of the DOD process and related recommendations.

If you have any questions, please call Bob Meyer, (202) 512-8431, or myself, (202) 512-8412.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Donna Heivilin".

Donna M. Heivilin, Director
Defense Management and NASA Issues



Office of the Deputy Under Secretary of Defense

Installations

BRAC Knowledge Base

BRAC 1995

**Joint Cross-Service Group for
Economic Impact**

Volume IV of IV

National Impact Survey Economic Impact Database

**BRAC Knowledge Base
Room 3E1069, The Pentagon
Point of Contact: Mike McAndrew (703) 614-5356**

BRAC Knowledge Base No. H9509a

BRAC 1995

ECONOMIC IMPACT DATABASE

***DEFENSE BASE CLOSURE AND
REALIGNMENT COMMISSION***

NATIONAL IMPACT SUMMARY

Book 7 of 9

Book 1 of 1

Final Comm Recommendation

State Economic Impact Summary

29-Jun-95

State	BRAC 95			Previous Rounds			Total All Rounds	Total Jobs As % of State Employment		
	Direct	Indirect	Total	Direct	Indirect	Total		BRAC 95	Previous	All Round
AK	(1,083)	(365)	(1,448)	2	1	3	(1,445)	(0.4%)	0.0%	(0.4%)
AL	(6,372)	(1,169)	(7,541)	(390)	(311)	(701)	(8,242)	(0.4%)	0.0%	(0.4%)
AR	(290)	(119)	(409)	(84)	(35)	(119)	(528)	0.0%	0.0%	0.0%
AZ	312	126	438	1,798	509	2,307	2,745	0.0%	0.1%	0.1%
CA	(19,372)	(22,898)	(42,271)	(49,713)	(30,935)	(80,648)	(122,919)	(0.3%)	(0.5%)	(0.7%)
CO	(2,607)	(1,464)	(4,071)	(2,006)	(1,555)	(3,561)	(7,632)	(0.2%)	(0.2%)	(0.4%)
CT	(2,203)	(3,238)	(5,441)	1,553	(1,491)	62	(5,379)	(0.3%)	0.0%	(0.3%)
DC	(123)	(89)	(211)	(909)	(497)	(1,406)	(1,617)	0.0%	(0.2%)	(0.2%)
DE	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
FL	2,998	1,330	4,328	(9,775)	(5,742)	(15,517)	(11,189)	0.1%	(0.2%)	(0.2%)
GA	487	440	927	326	122	448	1,375	0.0%	0.0%	0.0%
GU	(3,600)	(1,680)	(5,280)	(140)	(60)	(200)	(5,480)	(7.9%)	(0.3%)	(8.2%)
HI	1,768	1,108	2,876	(3,263)	(1,374)	(4,637)	(1,761)	0.4%	(0.7%)	(0.3%)
IA	0	0	0	2	1	3	3	0.0%	0.0%	0.0%
ID	126	37	163	0	0	0	163	0.0%	0.0%	0.0%
IL	(1,367)	(625)	(1,991)	9,230	1,435	10,665	8,674	0.0%	0.2%	0.1%
IN	(547)	(2,177)	(2,724)	(9,221)	(4,518)	(13,739)	(16,463)	(0.1%)	(0.4%)	(0.5%)

Percentage Uses BEA 1992 State Employment figures

<u>State</u>	<u>BRAC 95</u>			<u>Previous Rounds</u>			<u>Total All Rounds</u>	<u>Total Jobs As % of State Employment</u>		
	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>	<u>Direct</u>	<u>Indirect</u>	<u>Total</u>		<u>BRAC 95</u>	<u>Previous</u>	<u>All Round</u>
KS	(14)	(8)	(22)	195	75	270	248	0.0%	0.0%	0.0%
KY	(13)	(2,093)	(2,106)	(1,341)	(751)	(2,092)	(4,198)	(0.1%)	(0.1%)	(0.2%)
LA	(139)	(119)	(258)	(12,833)	(3,792)	(16,625)	(16,883)	0.0%	(0.8%)	(0.8%)
MA	(525)	340	(185)	(4,651)	(3,127)	(7,778)	(7,963)	0.0%	(0.2%)	(0.2%)
MD	(1,802)	(1,482)	(3,284)	14,572	8,526	23,098	19,814	(0.1%)	0.9%	0.7%
ME	220	77	297	(3,345)	(1,053)	(4,398)	(4,101)	0.0%	(0.6%)	(0.6%)
MI	147	70	217	(3,354)	(1,029)	(4,383)	(4,166)	0.0%	(0.1%)	(0.1%)
MN	(54)	(27)	(81)	26	12	38	(43)	0.0%	0.0%	0.0%
MO	(2,806)	(2,297)	(5,103)	(350)	(292)	(642)	(5,745)	(0.2%)	0.0%	(0.2%)
MS	114	57	171	531	157	688	859	0.0%	0.1%	0.1%
MT	(740)	(223)	(963)	(12)	(4)	(16)	(979)	(0.2%)	0.0%	(0.2%)
MW	0	0	0	0	0	0	0	#Error	#Error	#Error
NC	(2,709)	(853)	(3,562)	5,276	2,078	7,354	3,792	(0.1%)	0.2%	0.1%
ND	(837)	(248)	(1,085)	1	0	1	(1,084)	(0.3%)	0.0%	(0.3%)
NE	356	150	506	0	0	0	506	0.1%	0.0%	0.1%
NH	0	0	0	(25)	(34)	(59)	(59)	0.0%	0.0%	0.0%
NJ	(2,303)	(1,209)	(3,512)	4,693	2,338	7,031	3,519	(0.1%)	0.2%	0.1%
NM	670	936	1,606	(120)	(107)	(227)	1,379	0.2%	0.0%	0.2%
NV	25	10	35	2,151	314	2,465	2,500	0.0%	0.3%	0.3%

Percentage Uses BEA 1992 State Employment figures

State	BRAC 95			Previous Rounds			Total All Rounds	Total Jobs As % of State Employment		
	Direct	Indirect	Total	Direct	Indirect	Total		BRAC 95	Previous	All Round
NY	(227)	(93)	(320)	(9,371)	(3,677)	(13,048)	(13,368)	0.0%	(0.1%)	(0.1%)
OH	(253)	(854)	(1,107)	(1,947)	(941)	(2,888)	(3,995)	0.0%	0.0%	(0.1%)
OK	4,081	3,391	7,472	679	197	876	8,348	0.4%	0.1%	0.5%
OR	0	0	0	(132)	(57)	(189)	(189)	0.0%	0.0%	0.0%
PA	(3,093)	(3,736)	(6,829)	(10,586)	(18,466)	(29,052)	(35,881)	(0.1%)	(0.5%)	(0.6%)
PR	(161)	(96)	(257)	13	2	15	(242)	0.0%	0.0%	0.0%
RI	572	492	1,064	1,643	2,003	3,646	4,710	0.2%	0.7%	0.9%
SC	4,161	847	5,008	(13,560)	(9,842)	(23,402)	(18,394)	0.3%	(1.2%)	(1.0%)
SD	0	0	0	206	58	264	264	0.0%	0.1%	0.1%
TN	(854)	(1,807)	(2,661)	(5,147)	(1,348)	(6,495)	(9,156)	(0.1%)	(0.2%)	(0.3%)
TX	(13,381)	(19,476)	(32,857)	14,410	5,708	20,118	(12,739)	(0.3%)	0.2%	(0.1%)
UT	4,929	7,477	12,406	(698)	(724)	(1,422)	10,984	1.3%	(0.1%)	1.1%
VA	1,928	1,460	3,389	(3,595)	(7,301)	(10,896)	(7,507)	0.1%	(0.3%)	(0.2%)
VT	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
WA	852	279	1,131	15,399	6,016	21,415	22,546	0.0%	0.7%	0.8%
WI	(6)	(2)	(8)	68	28	96	88	0.0%	0.0%	0.0%
WV	(7)	(3)	(10)	(6)	(2)	(8)	(18)	0.0%	0.0%	0.0%
WY	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
Total	(43,742)	(49,823)	(93,563)	(73,800)	(69,485)	(143,285)	(236,848)	0.0%	(0.1%)	(0.1%)

Percentage Uses BEA 1992 State Employment figures

State Economic Impact Summary

DOD ORIGINAL

29-Jun-95

State	BRAC 95			Previous Rounds			Total All Rounds	Total Jobs As % of State Employment		
	Direct	Indirect	Total	Direct	Indirect	Total		BRAC 95	Previous	All Round
CA	(8,213)	(8,892)	(17,105)	(49,713)	(30,935)	(80,648)	(97,753)	(0.1%)	(0.5%)	(0.6%)
TX	(6,981)	(7,283)	(14,264)	14,410	5,708	20,118	5,854	(0.1%)	0.2%	0.1%
NM	(5,138)	(4,522)	(9,660)	(120)	(107)	(227)	(9,887)	(1.2%)	0.0%	(1.2%)
PA	(3,600)	(3,934)	(7,534)	(10,586)	(18,466)	(29,052)	(36,586)	(0.1%)	(0.5%)	(0.6%)
GU	(4,769)	(2,132)	(6,901)	(140)	(60)	(200)	(7,101)	(10.3%)	(0.3%)	(10.6%)
UT	(2,649)	(2,780)	(5,429)	(698)	(724)	(1,422)	(6,851)	(0.5%)	(0.1%)	(0.7%)
MO	(2,938)	(2,411)	(5,349)	(350)	(292)	(642)	(5,991)	(0.2%)	0.0%	(0.2%)
NJ	(2,624)	(2,719)	(5,343)	4,693	2,338	7,031	1,688	(0.1%)	0.2%	0.0%
AL	(4,946)	(126)	(5,072)	(390)	(311)	(701)	(5,773)	(0.2%)	0.0%	(0.3%)
NC	(3,611)	(1,118)	(4,729)	5,276	2,078	7,354	2,625	(0.1%)	0.2%	0.1%
CT	(3,376)	(1,246)	(4,622)	1,553	(1,491)	62	(4,560)	(0.2%)	0.0%	(0.2%)
IN	(1,050)	(3,118)	(4,168)	(9,221)	(4,518)	(13,739)	(17,907)	(0.1%)	(0.4%)	(0.6%)
CO	(2,161)	(1,249)	(3,410)	(2,006)	(1,555)	(3,561)	(6,971)	(0.2%)	(0.2%)	(0.3%)
MD	(1,724)	(1,197)	(2,921)	14,572	8,526	23,098	20,177	(0.1%)	0.9%	0.8%
NY	(1,456)	(1,454)	(2,910)	(9,371)	(3,677)	(13,048)	(15,958)	0.0%	(0.1%)	(0.2%)
TN	(774)	(1,748)	(2,522)	(5,147)	(1,348)	(6,495)	(9,017)	(0.1%)	(0.2%)	(0.3%)
ND	(1,625)	(488)	(2,113)	1	0	1	(2,112)	(0.5%)	0.0%	(0.5%)

Percentage Uses BEA 1992 State Employment figures

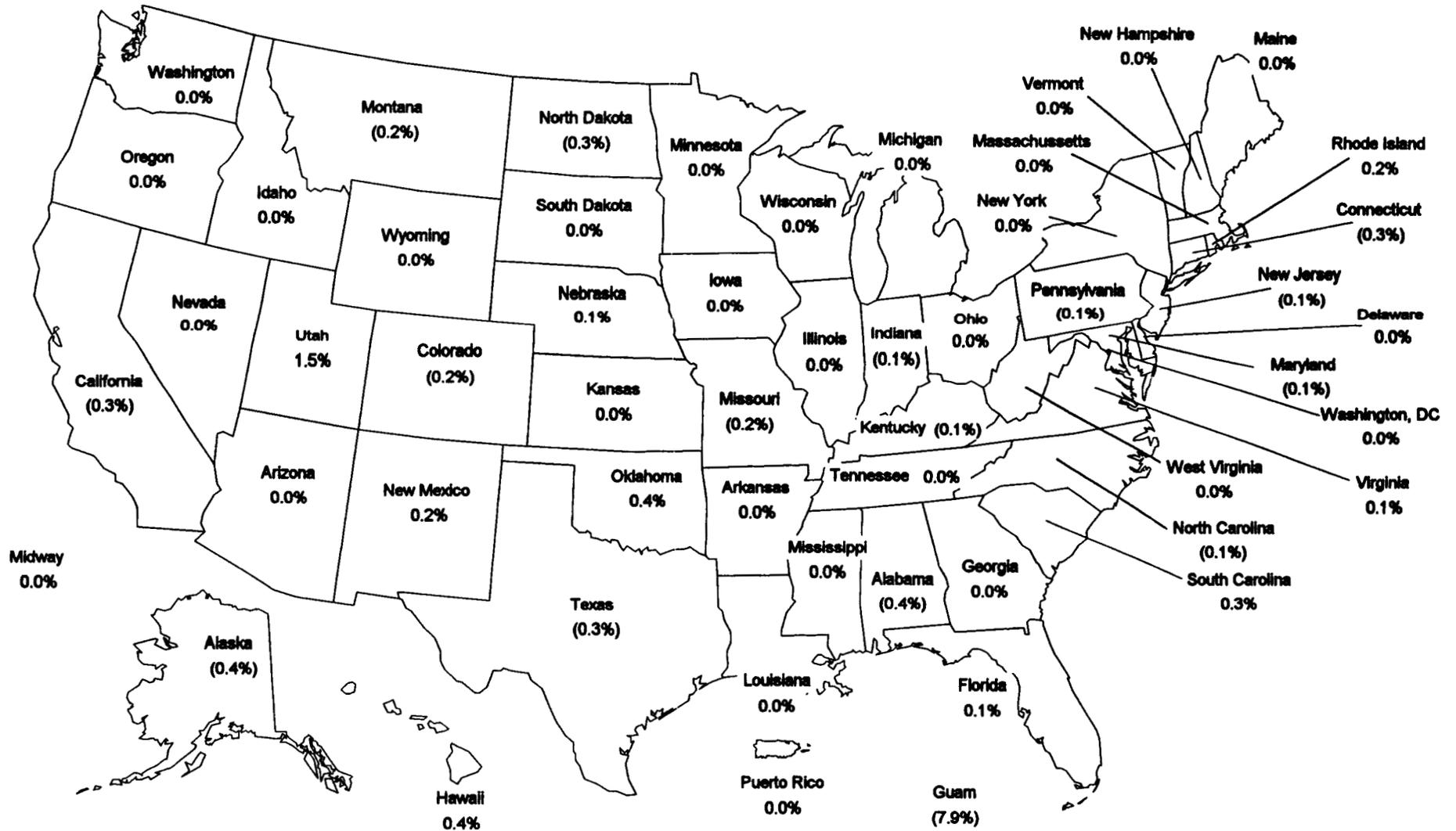
State	BRAC 95			Previous Rounds			Total All Rounds	Total Jobs As % of State Employment		
	Direct	Indirect	Total	Direct	Indirect	Total		BRAC 95	Previous	All Round
KY	6	(2,088)	(2,082)	(1,341)	(751)	(2,092)	(4,174)	(0.1%)	(0.1%)	(0.2%)
IL	(1,230)	(519)	(1,749)	9,230	1,435	10,665	8,916	0.0%	0.2%	0.1%
AK	(1,141)	(383)	(1,524)	2	1	3	(1,521)	(0.4%)	0.0%	(0.4%)
MT	(779)	(234)	(1,013)	(12)	(4)	(16)	(1,029)	(0.2%)	0.0%	(0.2%)
GA	(225)	(500)	(725)	326	122	448	(277)	0.0%	0.0%	0.0%
MI	(280)	(194)	(474)	(3,354)	(1,029)	(4,383)	(4,857)	0.0%	(0.1%)	(0.1%)
AR	(247)	(105)	(352)	(84)	(35)	(119)	(471)	0.0%	0.0%	0.0%
PR	(182)	(107)	(289)	13	2	15	(274)	0.0%	0.0%	0.0%
LA	(99)	(97)	(196)	(12,833)	(3,792)	(16,625)	(16,821)	0.0%	(0.8%)	(0.8%)
MN	(54)	(27)	(81)	26	12	38	(43)	0.0%	0.0%	0.0%
KS	(14)	(8)	(22)	195	75	270	248	0.0%	0.0%	0.0%
WV	(7)	(3)	(10)	(6)	(2)	(8)	(18)	0.0%	0.0%	0.0%
WI	(6)	(2)	(8)	68	28	96	88	0.0%	0.0%	0.0%
WY	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
IA	0	0	0	2	1	3	3	0.0%	0.0%	0.0%
NE	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
DE	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
VT	0	0	0	0	0	0	0	0.0%	0.0%	0.0%
OR	0	0	0	(132)	(57)	(189)	(189)	0.0%	0.0%	0.0%

Percentage Uses BEA 1992 State Employment figures

State	BRAC 95			Previous Rounds			Total All Rounds	Total Jobs As % of State Employment		
	Direct	Indirect	Total	Direct	Indirect	Total		BRAC 95	Previous	All Round
SD	0	0	0	206	58	264	264	0.0%	0.1%	0.1%
MW	0	0	0	0	0	0	0	#Error	#Error	#Error
NH	0	0	0	(25)	(34)	(59)	(59)	0.0%	0.0%	0.0%
ID	126	37	163	0	0	0	163	0.0%	0.0%	0.0%
NV	172	82	254	2,151	314	2,465	2,719	0.0%	0.3%	0.3%
ME	220	77	297	(3,345)	(1,053)	(4,398)	(4,101)	0.0%	(0.6%)	(0.6%)
DC	225	112	338	(909)	(497)	(1,406)	(1,068)	0.0%	(0.2%)	(0.1%)
MS	352	154	506	531	157	688	1,194	0.0%	0.1%	0.1%
AZ	369	154	523	1,798	509	2,307	2,830	0.0%	0.1%	0.1%
MA	(175)	1,071	896	(4,651)	(3,127)	(7,778)	(6,882)	0.0%	(0.2%)	(0.2%)
OK	1,491	(591)	900	679	197	876	1,776	0.1%	0.1%	0.1%
WA	780	243	1,023	15,399	6,016	21,415	22,438	0.0%	0.7%	0.8%
RI	1,094	575	1,669	1,643	2,003	3,646	5,315	0.3%	0.7%	1.0%
HI	1,768	1,108	2,876	(3,263)	(1,374)	(4,637)	(1,761)	0.4%	(0.7%)	(0.3%)
OH	1,825	1,147	2,972	(1,947)	(941)	(2,888)	84	0.1%	0.0%	0.0%
VA	1,922	1,447	3,370	(3,595)	(7,301)	(10,896)	(7,526)	0.1%	(0.3%)	(0.2%)
SC	4,274	867	5,141	(13,560)	(9,842)	(23,402)	(18,261)	0.3%	(1.2%)	(1.0%)
FL	4,202	1,944	6,146	(9,775)	(5,742)	(15,517)	(9,371)	0.1%	(0.2%)	(0.1%)
Total	(43,248)	(42,257)	(85,503)	(73,800)	(69,485)	(143,285)	(228,788)	0.0%	(0.1%)	(0.1%)

Percentage Uses BEA 1992 State Employment figures

Total Job Change, by State, as a Percentage of State Employment, All Services



**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Alabama

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	(314)	(5,476)	0	0	0	(5,790)
	Civilian	0	0	0	(990)	(394)	0	0	0	(1,384)
Other Jobs:	Military	0	0	(11)	0	(237)	0	0	0	(248)
	Civilian	0	0	(8)	0	(1,687)	0	0	0	(1,695)
Total:	Military	0	0	(11)	(314)	(5,713)	0	0	0	(6,038)
	Civilian	0	0	(8)	(990)	(2,081)	0	0	0	(3,079)
	Total:	0	0	(19)	(1,304)	(7,794)	0	0	0	(9,117)
Jobs In:										
	Military	0	0	0	0	172	0	0	0	172
	Civilian	0	0	0	0	2,383	95	95	0	2,573
	Total:	0	0	0	0	2,555	95	95	0	2,745
Net Jobs Change:										
	Military	0	0	(11)	(314)	(5,541)	0	0	0	(5,866)
	Civilian	0	0	(8)	(990)	302	95	95	0	(506)
	Total:	0	0	(19)	(1,304)	(5,239)	95	95	0	(6,372)

As of: 01:21 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Alabama**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FORT MCCLELLAN	(2,045)	(3,947)	(926)	(1,230)	(8,148)
HQ, SDC	(35)	0	(915)	0	(950)
NRC HUNTSVILLE	(11)	0	0	(8)	(19)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(2,091)	(3,947)	(1,841)	(1,238)	(9,117)
Jobs In :					
DEFENSE DISTRIBUTION DEPOT	0	0	190	0	190
REDSTONE ARSENAL	172	0	2,383	0	2,555
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	172	0	2,573	0	2,745
Net Job Change :	(1,919)	(3,947)	732	(1,238)	(6,372)

**BRAC-95 Economic Impact
Total Job Change By Installation
Alabama**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FORT MCCLELLAN	(8,148)	(0.4%)
NRC HUNTSVILLE	(19)	0.0%
HQ, SDC	(950)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(9,117)	(0.4%)
 Jobs In :		
DEFENSE DISTRIBUTION DEPOT ANNIS	190	0.0%
REDSTONE ARSENAL	2,555	0.1%
	<hr/>	<hr/>
Total Jobs In :	2,745	0.1%
 Net Job Change :	 (6,372)	 (0.3%)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Alaska

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(245)	0	0	0	(245)
	Civilian	0	0	0	0	(73)	0	0	0	(73)
Other Jobs:	Military	0	0	0	(540)	(135)	0	0	0	(675)
	Civilian	0	0	0	(138)	(218)	0	0	0	(356)
Total:	Military	0	0	0	(540)	(380)	0	0	0	(920)
	Civilian	0	0	0	(138)	(291)	0	0	0	(429)
	Total:	0	0	0	(678)	(671)	0	0	0	(1,349)
Jobs In:										
	Military	0	0	0	0	198	0	0	0	198
	Civilian	0	0	0	0	68	0	0	0	68
	Total:	0	0	0	0	266	0	0	0	266
Net Jobs Change:										
	Military	0	0	0	(540)	(182)	0	0	0	(722)
	Civilian	0	0	0	(138)	(223)	0	0	0	(361)
	Total:	0	0	0	(678)	(405)	0	0	0	(1,083)

As of: 01:39 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Alaska**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FORT GREELY BIG DELTA ARCTI	(345)	(35)	(187)	(104)	(671)
NAF ADAK	(540)	0	(61)	(77)	(678)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(885)	(35)	(248)	(181)	(1,349)
Jobs In :					
FORT WAINWRIGHT	163	35	68	0	266
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	163	35	68	0	266
Net Job Change :	(722)	0	(180)	(181)	(1,083)

**BRAC-95 Economic Impact
Total Job Change By Installation
Alaska**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FORT GREELY BIG DELTA ARCTIC TRA	(671)	(0.2%)
NAF ADAK	(678)	(0.2%)
	<hr/>	<hr/>
Total Jobs Out :	(1,349)	(0.4%)
Jobs In :		
FORT WAINWRIGHT	266	0.1%
	<hr/>	<hr/>
Total Jobs In :	266	0.1%
Net Job Change :	(1,083)	(0.3%)

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Arizona

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	0	111	0	0	0	111
	Civilian	0	0	0	38	163	0	0	0	201
	Total:	0	0	0	38	274	0	0	0	312
Net Jobs Change:										
	Military	0	0	0	0	111	0	0	0	111
	Civilian	0	0	0	38	163	0	0	0	201
	Total:	0	0	0	38	274	0	0	0	312

As of: 01:39 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Arizona**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
FORT HUACHUCA	111	0	163	0	274
WILLIAMS AFB	0	0	38	0	38
Total Jobs In :	111	0	201	0	312
Net Job Change :	111	0	201	0	312

**BRAC-95 Economic Impact
Total Job Change By Installation
Arizona**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
	<hr/>	<hr/>
Total Jobs Out :	0	0.0%
 Jobs In :		
FORT HUACHUCA	274	0.0%
WILLIAMS AFB	38	0.0%
	<hr/>	<hr/>
Total Jobs In :	312	0.0%
 Net Job Change :	312	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Arkansas

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(90)	0	0	0	(90)
	Civilian	0	0	0	0	(7)	0	0	0	(7)
Other Jobs:	Military	0	0	0	0	(2)	0	0	0	(2)
	Civilian	0	0	0	0	(191)	0	0	0	(191)
Total:	Military	0	0	0	0	(92)	0	0	0	(92)
	Civilian	0	0	0	0	(198)	0	0	0	(198)
	Total:	0	0	0	0	(290)	0	0	0	(290)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	0	0	(92)	0	0	0	(92)
	Civilian	0	0	0	0	(198)	0	0	0	(198)
	Total:	0	0	0	0	(290)	0	0	0	(290)

As of: 01:39 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Arkansas**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FORT CHAFFEE	(92)	0	(198)	0	(290)
Total Jobs Out :	(92)	0	(198)	0	(290)
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	(92)	0	(198)	0	(290)

As of: 01:39 29 June 1995

State Report 1

**BRAC-95 Economic Impact
Total Job Change By Installation
Arkansas**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FORT CHAFFEE	(290)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(290)	0.0%
Jobs In :		
	<hr/>	<hr/>
Total Jobs In :	0	0.0%
Net Job Change :	(290)	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
California

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	(1,462)	(3,598)	(1,666)	(314)	(283)	(17)	(7,340)
	Civilian	0	0	(16)	(1,957)	(2,650)	(1,689)	(1,737)	(34)	(8,083)
Other Jobs:	Military	0	0	(30)	(483)	(457)	(260)	(399)	(36)	(1,665)
	Civilian	0	0	(177)	(4,021)	(1,579)	(561)	(710)	(150)	(7,198)
Total:	Military	0	0	(1,492)	(4,081)	(2,123)	(574)	(682)	(53)	(9,005)
	Civilian	0	0	(193)	(5,978)	(4,229)	(2,250)	(2,447)	(184)	(15,281)
	Total:	0	0	(1,685)	(10,059)	(6,352)	(2,824)	(3,129)	(237)	(24,286)
Jobs In:										
	Military	0	0	310	1,780	542	18	0	0	2,650
	Civilian	0	0	8	696	981	507	72	0	2,264
	Total:	0	0	318	2,476	1,523	525	72	0	4,914
Net Jobs Change:										
	Military	0	0	(1,182)	(2,301)	(1,581)	(556)	(682)	(53)	(6,355)
	Civilian	0	0	(185)	(5,282)	(3,248)	(1,743)	(2,375)	(184)	(13,017)
	Total:	0	0	(1,367)	(7,583)	(4,829)	(2,299)	(3,057)	(237)	(19,372)

As of: 01:21 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
California**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
EAST FT BAKER	(74)	0	(70)	0	(144)
FISC OAKLAND	(140)	0	(157)	(119)	(416)
FORT HUNTER LIGGETT	(473)	0	(79)	0	(552)
MCCLELLAN AFB	(2,757)	0	(8,828)	0	(11,585)
NAS LEMOORE	(3,025)	(374)	(174)	0	(3,573)
NAS MIRAMAR	(552)	(279)	0	0	(831)
NAS NORTH ISLAND	(423)	0	0	0	(423)
NAVCOMMSTA STOCKTON	(7)	0	0	0	(7)
NAVPERSR&OCEN SAN DIEGO	(17)	0	(154)	0	(171)
NCCOSC RDT&E SAN DIEGO	0	0	(58)	(118)	(176)
NISE WEST SAN DIEGO	0	0	(58)	0	(58)
NRC POMONA	(7)	0	0	(3)	(10)
NRC SANTA ANA	(12)	0	0	(2)	(14)
NSY LONG BEACH	(263)	0	(1,896)	(333)	(2,492)
OAKLAND ARMY BASE	(52)	0	(673)	(1,138)	(1,863)
ONIZUKA AFB	(485)	0	(83)	(956)	(1,524)
ONTARIO AGS	(1)	0	0	0	(1)
SIERRA ARMY DEPOT	(53)	0	(232)	(142)	(427)
SUPSHIP LONG BEACH	(11)	0	(8)	0	(19)
Total Jobs Out :	(8,352)	(653)	(12,470)	(2,811)	(24,286)

As of: 01:21 29 June 1995

BRAC-95 Economic Impact Direct Job Change By Installation

Jobs In :

CBC PORT HUENEME	0	0	2	0	2
DEFENSE CONTRACT MANAGEM	2	0	20	0	22
DEFENSE DISTRIBUTION REGIO	2	0	283	0	285
EDWARDS AFB	29	0	25	0	54
FISC SAN DIEGO	0	0	18	0	18
MARCH AFB	9	0	167	0	176
MOFFETT FIELD AGS	190	0	0	0	190
NADEP NORTH ISLAND	6	0	213	0	219
NAS NORTH ISLAND	1,409	120	54	0	1,583
NAVMEDCEN SAN DIEGO	102	0	35	0	137
NAVSTA SAN DIEGO	92	127	22	0	241
NAWC CHINA LAKE	18	0	102	0	120
NCCOSC RDT&E SAN DIEGO	154	0	504	0	658
NSWC PORT HUENEME	0	0	107	0	107
OAKLAND ARMY BASE	74	0	62	0	136
SHARPE FACILITY	0	0	213	0	213
TRACY FACILITY	0	0	213	0	213
TRAVIS AFB	265	0	98	0	363
WPNSTA SEAL BEACH	51	0	126	0	177

Total Jobs In :	2,403	247	2,264	0	4,914
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Net Job Change : (5,949) (406) (10,206) (2,811) (19,372)

**BRAC-95 Economic Impact
Total Job Change By Installation
California**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FISC OAKLAND	(416)	0.0%
FORT HUNTER LIGGETT	(552)	0.0%
NSY LONG BEACH	(2,492)	0.0%
MCCLELLAN AFB	(11,585)	(0.1%)
NAS LEMOORE	(3,573)	0.0%
NAS MIRAMAR	(831)	0.0%
NAS NORTH ISLAND	(423)	0.0%
NCCOSC RDT&E SAN DIEGO	(176)	0.0%
NISE WEST SAN DIEGO	(58)	0.0%
NRC POMONA	(10)	0.0%
NRC SANTA ANA	(14)	0.0%
NAVCOMMSTA STOCKTON	(7)	0.0%
OAKLAND ARMY BASE	(1,863)	0.0%
ONIZUKA AFB	(1,524)	0.0%
SIERRA ARMY DEPOT	(427)	0.0%
SUPSHIP LONG BEACH	(19)	0.0%
NAVPERSR&OCEN SAN DIEGO	(171)	0.0%
EAST FT BAKER	(144)	0.0%
ONTARIO AGS	(1)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(24,286)	(0.1%)

**BRAC-95 Economic Impact
Total Job Change By Installation**

Jobs In :

CBC PORT HUENEME	2	0.0%
DEFENSE CONTRACT MANAGEMENT	22	0.0%
DEFENSE DISTRIBUTION REGION WES	285	0.0%
EDWARDS AFB	54	0.0%
FISC SAN DIEGO	18	0.0%
MARCH AFB	176	0.0%
NAS NORTH ISLAND	1,583	0.0%
NADEP NORTH ISLAND	219	0.0%
NAVMEDCEN SAN DIEGO	137	0.0%
NAVSTA SAN DIEGO	241	0.0%
WPNSTA SEAL BEACH	177	0.0%
NAWC CHINA LAKE	120	0.0%
NCCOSC RDT&E SAN DIEGO	658	0.0%
NSWC PORT HUENEME	107	0.0%
OAKLAND ARMY BASE	136	0.0%
SHARPE FACILITY	213	0.0%
TRACY FACILITY	213	0.0%
TRAVIS AFB	363	0.0%
MOFFETT FIELD AGS	190	0.0%
	<hr/>	<hr/>
Total Jobs In :	4,914	0.0%
 Net Job Change :	 (19,372)	 (0.1%)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Colorado

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	(3)	(136)	(424)	(644)	(94)	(90)	(1,391)
	Civilian	0	0	(4)	(51)	0	(27)	0	0	(82)
Other Jobs:	Military	0	0	(27)	(41)	0	0	0	0	(68)
	Civilian	0	0	0	(431)	(455)	(631)	(24)	0	(1,541)
Total:	Military	0	0	(30)	(177)	(424)	(644)	(94)	(90)	(1,459)
	Civilian	0	0	(4)	(482)	(455)	(658)	(24)	0	(1,623)
	Total:	0	0	(34)	(659)	(879)	(1,302)	(118)	(90)	(3,082)
Jobs In:										
	Military	0	0	3	7	97	231	14	0	352
	Civilian	0	0	4	59	52	0	8	0	123
	Total:	0	0	7	66	149	231	22	0	475
Net Jobs Change:										
	Military	0	0	(27)	(170)	(327)	(413)	(80)	(90)	(1,107)
	Civilian	0	0	0	(423)	(403)	(658)	(16)	0	(1,500)
	Total:	0	0	(27)	(593)	(730)	(1,071)	(96)	(90)	(2,607)

As of: 01:44 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Colorado**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FITZSIMONS ARMY MEDICAL CE	(1,121)	(260)	(1,381)	(231)	(2,993)
LOWRY AFB	(78)	0	(11)	0	(89)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(1,199)	(260)	(1,392)	(231)	(3,082)
Jobs In :					
FALCON AFB	111	0	60	0	171
FORT CARSON	231	0	0	0	231
PETERSON AFB	10	0	63	0	73
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	352	0	123	0	475
Net Job Change :	(847)	(260)	(1,269)	(231)	(2,607)

**BRAC-95 Economic Impact
Total Job Change By Installation
Colorado**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FITZSIMONS ARMY MEDICAL CENTER	(2,993)	(0.1%)
LOWRY AFB	(89)	0.0%
Total Jobs Out :	(3,082)	(0.1%)
Jobs In :		
FALCON AFB	171	0.0%
FORT CARSON	231	0.0%
PETERSON AFB	73	0.0%
Total Jobs In :	475	0.0%
Net Job Change :	(2,607)	(0.1%)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Connecticut

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	(420)	0	0	0	0	(420)
Other Jobs:	Military	0	0	0	(10)	0	0	0	0	(10)
	Civilian	0	0	0	(1,806)	0	0	0	0	(1,806)
Total:	Military	0	0	0	(10)	0	0	0	0	(10)
	Civilian	0	0	0	(2,226)	0	0	0	0	(2,226)
	Total:	0	0	0	(2,236)	0	0	0	0	(2,236)
Jobs In:										
	Military	0	0	0	0	0	20	0	0	20
	Civilian	0	0	0	0	0	13	0	0	13
	Total:	0	0	0	0	0	33	0	0	33
Net Jobs Change:										
	Military	0	0	0	(10)	0	20	0	0	10
	Civilian	0	0	0	(2,226)	0	13	0	0	(2,213)
	Total:	0	0	0	(2,236)	0	33	0	0	(2,203)

As of: 01:44 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Connecticut**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NUWC NEW LONDON	(5)	0	(478)	(144)	(627)
STRATFORD ARMY ENGINE PLA	(5)	0	(4)	(1,600)	(1,609)
Total Jobs Out :	(10)	0	(482)	(1,744)	(2,236)
Jobs In :					
SUBASE NEW LONDON	20	0	13	0	33
Total Jobs In :	20	0	13	0	33
Net Job Change :	10	0	(469)	(1,744)	(2,203)

**BRAC-95 Economic Impact
Total Job Change By Installation
Connecticut**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NUWC NEW LONDON	(627)	0.0%
STRATFORD ARMY ENGINE PLANT	(1,609)	(0.1%)
Total Jobs Out :	(2,236)	(0.1%)
Jobs In :		
SUBASE NEW LONDON	33	0.0%
Total Jobs In :	33	0.0%
Net Job Change :	(2,203)	(0.1%)

As of: 01:45 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Delaware**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	0	0	0	0	0

As of: 01:45 29 June 1995

State Report 1

**BRAC-95 Economic Impact
Total Job Change By Installation
Delaware**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
	<hr/>	<hr/>
Total Jobs Out :	0	0.0%
Jobs In :		
	<hr/>	<hr/>
Total Jobs In :	0	0.0%
Net Job Change :	0	0.0%

**BRAC-95 Economic Impact
Total Job Change By Installation
District of Columbia**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
INFORMATION SYS SOFTWARE CMD (I	(348)	0.0%
Total Jobs Out :	(348)	0.0%
Jobs In :		
NAVAL RESEARCH LABORATORY	32	0.0%
WALTER REED ARMY MEDICAL CENT	193	0.0%
Total Jobs In :	225	0.0%
Net Job Change :	(123)	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
District of Columbia

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(141)	0	0	0	(141)
	Civilian	0	0	0	0	(191)	0	0	0	(191)
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	(16)	0	0	0	(16)
Total:	Military	0	0	0	0	(141)	0	0	0	(141)
	Civilian	0	0	0	0	(207)	0	0	0	(207)
	Total:	0	0	0	0	(348)	0	0	0	(348)
Jobs In:										
	Military	0	0	32	0	193	0	0	0	225
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	32	0	193	0	0	0	225
Net Jobs Change:										
	Military	0	0	32	0	52	0	0	0	84
	Civilian	0	0	0	0	(207)	0	0	0	(207)
	Total:	0	0	32	0	(155)	0	0	0	(123)

As of: 01:45 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
District of Columbia**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
INFORMATION SYS SOFTWARE	(141)	0	(207)	0	(348)
Total Jobs Out :	(141)	0	(207)	0	(348)
Jobs In :					
NAVAL RESEARCH LABORATOR	32	0	0	0	32
WALTER REED ARMY MEDICAL	193	0	0	0	193
Total Jobs In :	225	0	0	0	225
Net Job Change :	84	0	(207)	0	(123)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Florida

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	(262)	(79)	(20)	(6)	0	0	(367)
	Civilian	0	0	(161)	(55)	(17)	0	0	0	(233)
Other Jobs:	Military	0	0	0	(19)	(1)	0	0	0	(20)
	Civilian	0	0	0	(279)	(1)	(4)	0	(38)	(322)
Total:	Military	0	0	(262)	(98)	(21)	(6)	0	0	(387)
	Civilian	0	0	(161)	(334)	(18)	(4)	0	(38)	(555)
	Total:	0	0	(423)	(432)	(39)	(10)	0	(38)	(942)
Jobs In:										
	Military	0	0	341	955	97	121	0	1,889	3,403
	Civilian	0	0	250	125	22	118	0	22	537
	Total:	0	0	591	1,080	119	239	0	1,911	3,940
Net Jobs Change:										
	Military	0	0	79	857	76	115	0	1,889	3,016
	Civilian	0	0	89	(209)	4	114	0	(16)	(18)
	Total:	0	0	168	648	80	229	0	1,873	2,998

As of: 01:55 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Florida**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
EGLIN AFB	(29)	0	(26)	0	(55)
HOMESTEAD ARS	(61)	0	(153)	0	(214)
NAS JACKSONVILLE	(85)	0	(220)	0	(305)
NAS KEY WEST	(19)	0	(1)	0	(20)
NAS PENSACOLA	(3)	(190)	0	0	(193)
NAWC TRNG SYS DIV ORLANDO	0	0	(38)	0	(38)
NRLUWSREFDET	0	0	(100)	(9)	(109)
PATRICK AFB	0	0	(8)	0	(8)
Total Jobs Out :	(197)	(190)	(546)	(9)	(942)
Jobs In :					
MACDILL AFB	667	0	17	41	725
NADEP JACKSONVILLE	1	0	89	0	90
NAS JACKSONVILLE	1,901	0	27	0	1,928
NAS PENSACOLA	166	233	94	0	493
NAS WHITING FIELD	96	231	5	0	332
NAWC TRNG SYS DIV ORLANDO	5	0	48	0	53
NMCRC JACKSONVILLE	0	0	5	0	5
NSWC PANAMA CITY	42	0	28	0	70
PATRICK AFB	61	0	153	0	214

As of: 01:55 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation**

TYNDALL AFB	0	0	0	30	30
Total Jobs In :	2,939	464	466	71	3,940
Net Job Change :	2,742	274	(80)	62	2,998

**BRAC-95 Economic Impact
Total Job Change By Installation
Florida**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
EGLIN AFB	(55)	0.0%
HOMESTEAD ARS	(214)	0.0%
NAS JACKSONVILLE	(305)	0.0%
NAS KEY WEST	(20)	0.0%
NAS PENSACOLA	(193)	0.0%
NAWC TRNG SYS DIV ORLANDO	(38)	0.0%
NRLUWSREFDET	(109)	0.0%
PATRICK AFB	(8)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(942)	0.0%
 Jobs In :		
MACDILL AFB	725	0.0%
NADEP JACKSONVILLE	90	0.0%
NAS JACKSONVILLE	1,928	0.0%
NAS PENSACOLA	493	0.0%
NAS WHITING FIELD	332	0.0%
NAWC TRNG SYS DIV ORLANDO	53	0.0%
NMCRC JACKSONVILLE	5	0.0%
NSWC PANAMA CITY	70	0.0%
PATRICK AFB	214	0.0%
TYNDALL AFB	30	0.0%
	<hr/>	<hr/>

As of: 01:55 29 June 1995

State Report 1

**BRAC-95 Economic Impact
Total Job Change By Installation**

Total Jobs In :	3,940	0.1%
Net Job Change :	2,998	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Georgia

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(3)	0	0	0	(3)
	Civilian	0	0	0	0	(40)	0	0	0	(40)
Other Jobs:	Military	0	0	0	0	(2)	0	0	0	(2)
	Civilian	0	0	0	0	(124)	0	0	0	(124)
Total:	Military	0	0	0	0	(5)	0	0	0	(5)
	Civilian	0	0	0	0	(164)	0	0	0	(164)
	Total:	0	0	0	0	(169)	0	0	0	(169)
Jobs In:										
	Military	0	0	0	139	141	0	0	0	280
	Civilian	0	0	0	52	324	0	0	0	376
	Total:	0	0	0	191	465	0	0	0	656
Net Jobs Change:										
	Military	0	0	0	139	136	0	0	0	275
	Civilian	0	0	0	52	160	0	0	0	212
	Total:	0	0	0	191	296	0	0	0	487

As of: 01:56 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Georgia**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
DEFENSE CONTRACT MANAGEM	(5)	0	(141)	(23)	(169)
Total Jobs Out :	(5)	0	(141)	(23)	(169)
Jobs In :					
DOBBINS ARB	139	0	52	0	191
FORT GORDON	94	0	0	0	94
ROBINS AFB	47	0	324	0	371
Total Jobs In :	280	0	376	0	656
Net Job Change :	275	0	235	(23)	487

**BRAC-95 Economic Impact
Total Job Change By Installation
Georgia**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
DEFENSE CONTRACT MANAGEMENT D	(169)	0.0%
Total Jobs Out :	(169)	0.0%
Jobs In :		
DOBBINS ARB	191	0.0%
FORT GORDON	94	0.0%
ROBINS AFB	371	0.0%
Total Jobs In :	656	0.0%
Net Job Change :	487	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Guam

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	(768)	(418)	0	0	0	0	(1,186)
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	(101)	(203)	(122)	(134)	0	0	(560)
	Civilian	0	0	(146)	(1,079)	(353)	(276)	0	0	(1,854)
Total:	Military	0	0	(869)	(621)	(122)	(134)	0	0	(1,746)
	Civilian	0	0	(146)	(1,079)	(353)	(276)	0	0	(1,854)
	Total:	0	0	(1,015)	(1,700)	(475)	(410)	0	0	(3,600)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	(869)	(621)	(122)	(134)	0	0	(1,746)
	Civilian	0	0	(146)	(1,079)	(353)	(276)	0	0	(1,854)
	Total:	0	0	(1,015)	(1,700)	(475)	(410)	0	0	(3,600)

As of: 01:51 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Guam**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
ANDERSON AFB	(1,272)	0	0	0	(1,272)
FISC GUAM	(62)	0	(281)	(31)	(374)
NAVSTA GUAM	(390)	0	(708)	(193)	(1,291)
SHPREPFAC GUAM	(22)	0	(629)	(12)	(663)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(1,746)	0	(1,618)	(236)	(3,600)
Jobs In :					
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	0	0	0	0	0
Net Job Change :	(1,746)	0	(1,618)	(236)	(3,600)

**BRAC-95 Economic Impact
Total Job Change By Installation
Guam**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NAVSTA GUAM	(1,291)	(1.9%)
FISC GUAM	(374)	(0.6%)
SHPREPFAC GUAM	(663)	(1.0%)
ANDERSON AFB	(1,272)	(1.9%)
Total Jobs Out :	(3,600)	(5.4%)
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	(3,600)	(5.4%)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Hawaii

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	261	486	141	107	0	0	995
	Civilian	0	0	370	150	253	0	0	0	773
	Total:	0	0	631	636	394	107	0	0	1,768
Net Jobs Change:										
	Military	0	0	261	486	141	107	0	0	995
	Civilian	0	0	370	150	253	0	0	0	773
	Total:	0	0	631	636	394	107	0	0	1,768

As of: 01:51 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Hawaii**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
FORT SHAFTER	102	0	0	0	102
MCB KANEOHE BAY	546	0	0	0	546
NAVMAG LUALUALEI	80	0	246	0	326
NAVSTA PEARL HARBOR	267	0	527	0	794
Total Jobs In :	995	0	773	0	1,768
Net Job Change :	995	0	773	0	1,768

**BRAC-95 Economic Impact
Total Job Change By Installation
Hawaii**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
FORT SHAFTER	102	0.0%
MCB KANEOHE BAY	546	0.1%
NAVMAG LUALUALEI	326	0.0%
NAVSTA PEARL HARBOR	794	0.1%
Total Jobs In :	1,768	0.3%
Net Job Change :	1,768	0.3%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Idaho

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	123	0	0	0	0	123
	Civilian	0	0	0	3	0	0	0	0	3
	Total:	0	0	0	126	0	0	0	0	126
Net Jobs Change:										
	Military	0	0	0	123	0	0	0	0	123
	Civilian	0	0	0	3	0	0	0	0	3
	Total:	0	0	0	126	0	0	0	0	126

As of: 01:58 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Idaho**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
MOUNTAIN HOME AFB	123	0	0	3	126
Total Jobs In :	123	0	0	3	126
Net Job Change :	123	0	0	3	126

**BRAC-95 Economic Impact
Total Job Change By Installation
Idaho**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
MOUNTAIN HOME AFB	126	0.0%
Total Jobs In :	126	0.0%
Net Job Change :	126	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Illinois

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	(348)	0	(92)	0	0	(440)
	Civilian	0	0	0	(504)	0	0	0	0	(504)
Other Jobs:	Military	0	0	0	0	0	0	0	(4)	(4)
	Civilian	0	0	0	(292)	(30)	(30)	(30)	(52)	(434)
Total:	Military	0	0	0	(348)	0	(92)	0	(4)	(444)
	Civilian	0	0	0	(796)	(30)	(30)	(30)	(52)	(938)
	Total:	0	0	0	(1,144)	(30)	(122)	(30)	(56)	(1,382)
Jobs In:										
	Military	0	0	0	0	0	0	10	0	10
	Civilian	0	0	0	0	0	0	5	0	5
	Total:	0	0	0	0	0	0	15	0	15
Net Jobs Change:										
	Military	0	0	0	(348)	0	(92)	10	(4)	(434)
	Civilian	0	0	0	(796)	(30)	(30)	(25)	(52)	(933)
	Total:	0	0	0	(1,144)	(30)	(122)	(15)	(56)	(1,367)

As of: 02:00 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Illinois**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NTC GREAT LAKES	(266)	(169)	(135)	0	(570)
O'HARE IAP ARS	0	0	(367)	0	(367)
SAVANNA ARMY DEPOT ACTIVI	(9)	0	(436)	0	(445)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(275)	(169)	(938)	0	(1,382)
 Jobs In :					
NTC GREAT LAKES	10	0	5	0	15
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	10	0	5	0	15
 Net Job Change :	(265)	(169)	(933)	0	(1,367)

**BRAC-95 Economic Impact
Total Job Change By Installation
Illinois**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NTC GREAT LAKES	(570)	0.0%
O'HARE IAP ARS	(367)	0.0%
SAVANNA ARMY DEPOT ACTIVITY	(445)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(1,382)	0.0%
Jobs In :		
NTC GREAT LAKES	15	0.0%
	<hr/>	<hr/>
Total Jobs In :	15	0.0%
Net Job Change :	(1,367)	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Indiana

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(1)	(19)	(10)	0	(30)
	Civilian	0	0	(1)	(57)	(639)	(727)	(160)	0	(1,584)
Other Jobs:	Military	0	0	0	0	0	0	(6)	0	(6)
	Civilian	0	0	0	0	0	(335)	(277)	0	(612)
Total:	Military	0	0	0	0	(1)	(19)	(16)	0	(36)
	Civilian	0	0	(1)	(57)	(639)	(1,062)	(437)	0	(2,196)
	Total:	0	0	(1)	(57)	(640)	(1,081)	(453)	0	(2,232)
Jobs In:										
	Military	0	0	0	0	3	1	9	0	13
	Civilian	0	0	1	70	642	716	243	0	1,672
	Total:	0	0	1	70	645	717	252	0	1,685
Net Jobs Change:										
	Military	0	0	0	0	2	(18)	(7)	0	(23)
	Civilian	0	0	0	13	3	(346)	(194)	0	(524)
	Total:	0	0	0	13	5	(364)	(201)	0	(547)

As of: 02:01 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Indiana**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NAWCAD INDIANAPOLIS	(36)	0	(2,011)	(185)	(2,232)
Total Jobs Out :	(36)	0	(2,011)	(185)	(2,232)
Jobs In :					
NSWC CRANE	13	0	1,672	0	1,685
Total Jobs In :	13	0	1,672	0	1,685
Net Job Change :	(23)	0	(339)	(185)	(547)

**BRAC-95 Economic Impact
Total Job Change By Installation
Indiana**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NAWCAD INDIANAPOLIS	(2,232)	(0.1%)
Total Jobs Out :	(2,232)	(0.1%)
Jobs In :		
NSWC CRANE	1,685	0.1%
Total Jobs In :	1,685	0.1%
Net Job Change :	(547)	0.0%

As of: 02:01 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Iowa**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	0	0	0	0	0

**BRAC-95 Economic Impact
Total Job Change By Installation
Iowa**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
	<hr/>	<hr/>
Total Jobs Out :	0	0.0%
Jobs In :		
	<hr/>	<hr/>
Total Jobs In :	0	0.0%
Net Job Change :	0	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Kansas

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	(10)	0	0	0	0	0	(10)
	Civilian	0	0	(4)	0	0	0	0	0	(4)
Total:	Military	0	0	(10)	0	0	0	0	0	(10)
	Civilian	0	0	(4)	0	0	0	0	0	(4)
	Total:	0	0	(14)	0	0	0	0	0	(14)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	(10)	0	0	0	0	0	(10)
	Civilian	0	0	(4)	0	0	0	0	0	(4)
	Total:	0	0	(14)	0	0	0	0	0	(14)

As of: 02:02 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Kansas**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
REDCOM OLATHE	(10)	0	(4)	0	(14)
Total Jobs Out :	(10)	0	(4)	0	(14)
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	(10)	0	(4)	0	(14)

**BRAC-95 Economic Impact
Total Job Change By Installation
Kansas**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
REDCOM OLATHE	(14)	0.0%
Total Jobs Out :	(14)	0.0%
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	(14)	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Kentucky

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(2)	0	(9)	0	(11)
	Civilian	0	0	0	(24)	(105)	(366)	(375)	0	(870)
Other Jobs:	Military	0	0	0	0	0	0	(4)	0	(4)
	Civilian	0	0	0	(46)	(66)	(125)	(343)	0	(580)
Total:	Military	0	0	0	0	(2)	0	(13)	0	(15)
	Civilian	0	0	0	(70)	(171)	(491)	(718)	0	(1,450)
	Total:	0	0	0	(70)	(173)	(491)	(731)	0	(1,465)
Jobs In:										
	Military	0	0	0	1,381	0	0	0	0	1,381
	Civilian	0	0	0	71	0	0	0	0	71
	Total:	0	0	0	1,452	0	0	0	0	1,452
Net Jobs Change:										
	Military	0	0	0	1,381	(2)	0	(13)	0	1,366
	Civilian	0	0	0	1	(171)	(491)	(718)	0	(1,379)
	Total:	0	0	0	1,382	(173)	(491)	(731)	0	(13)

As of: 01:18 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Kentucky**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NSWC LOUISVILLE	(15)	0	(1,307)	(143)	(1,465)
Total Jobs Out :	(15)	0	(1,307)	(143)	(1,465)
Jobs In :					
FORT KNOX	161	1,220	71	0	1,452
Total Jobs In :	161	1,220	71	0	1,452
Net Job Change :	146	1,220	(1,236)	(143)	(13)

As of: 01:18 29 June 1995

State Report 1

**BRAC-95 Economic Impact
Total Job Change By Installation
Kentucky**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NSWC LOUISVILLE	<u>(1,465)</u>	<u>(0.1%)</u>
Total Jobs Out :	(1,465)	(0.1%)
Jobs In :		
FORT KNOX	<u>1,452</u>	<u>0.1%</u>
Total Jobs In :	1,452	0.1%
Net Job Change :	(13)	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Louisiana

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	(2)	(1)	(4)	0	0	0	(7)
	Civilian	0	0	0	0	(10)	0	0	0	(10)
Other Jobs:	Military	0	0	(6)	(6)	(44)	0	0	0	(56)
	Civilian	0	0	(20)	(19)	(29)	0	0	0	(68)
Total:	Military	0	0	(8)	(7)	(48)	0	0	0	(63)
	Civilian	0	0	(20)	(19)	(39)	0	0	0	(78)
	Total:	0	0	(28)	(26)	(87)	0	0	0	(141)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	2	0	0	2
	Total:	0	0	0	0	0	2	0	0	2
Net Jobs Change:										
	Military	0	0	(8)	(7)	(48)	0	0	0	(63)
	Civilian	0	0	(20)	(19)	(39)	2	0	0	(76)
	Total:	0	0	(28)	(26)	(87)	2	0	0	(139)

As of: 02:03 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Louisiana**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NAVSUPACT NEW ORLEANS	(24)	0	(16)	(7)	(47)
NBIODYNLAB	(15)	0	(37)	(2)	(54)
NMCRC NEW ORLEANS	(24)	0	(16)	0	(40)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(63)	0	(69)	(9)	(141)
 Jobs In :					
NAS NEW ORLEANS	0	0	2	0	2
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	0	0	2	0	2
 Net Job Change :	(63)	0	(67)	(9)	(139)

**BRAC-95 Economic Impact
Total Job Change By Installation
Louisiana**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NAVSUPPACT NEW ORLEANS	(47)	0.0%
NBIODYNLAB	(54)	0.0%
NMCRC NEW ORLEANS	(40)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(141)	0.0%
Jobs In :		
NAS NEW ORLEANS	2	0.0%
	<hr/>	<hr/>
Total Jobs In :	2	0.0%
Net Job Change :	(139)	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Maine

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	0	3	212	0	0	215
	Civilian	0	0	0	0	0	5	0	0	5
	Total:	0	0	0	0	3	217	0	0	220
Net Jobs Change:										
	Military	0	0	0	0	3	212	0	0	215
	Civilian	0	0	0	0	0	5	0	0	5
	Total:	0	0	0	0	3	217	0	0	220

As of: 02:05 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Maine**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
NAS BRUNSWICK	215	0	5	0	220
Total Jobs In :	215	0	5	0	220
Net Job Change :	215	0	5	0	220

**BRAC-95 Economic Impact
Total Job Change By Installation
Maine**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
NAS BRUNSWICK	220	0.0%
Total Jobs In :	220	0.0%
Net Job Change :	220	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Maryland

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	(1)	(29)	(111)	(795)	0	0	(936)
	Civilian	0	0	(126)	(517)	(201)	(305)	0	0	(1,149)
Other Jobs:	Military	0	0	(56)	(142)	(2)	(98)	0	0	(298)
	Civilian	0	0	(366)	(438)	(36)	(509)	0	0	(1,349)
Total:	Military	0	0	(57)	(171)	(113)	(893)	0	0	(1,234)
	Civilian	0	0	(492)	(955)	(237)	(814)	0	0	(2,498)
	Total:	0	0	(549)	(1,126)	(350)	(1,707)	0	0	(3,732)
Jobs In:										
	Military	0	0	6	0	141	724	0	0	871
	Civilian	0	0	31	9	261	758	0	0	1,059
	Total:	0	0	37	9	402	1,482	0	0	1,930
Net Jobs Change:										
	Military	0	0	(51)	(171)	28	(169)	0	0	(363)
	Civilian	0	0	(461)	(946)	24	(56)	0	0	(1,439)
	Total:	0	0	(512)	(1,117)	52	(225)	0	0	(1,802)

As of: 02:06 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Maryland**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
BALTIMORE PUBS	(2)	0	(129)	0	(131)
FORT DETRICK	0	0	(9)	0	(9)
FORT MEADE	(55)	0	(74)	0	(129)
FORT RITCHIE	(991)	0	(918)	(455)	(2,364)
NATNAVMEDCEN BETHESDA	(91)	0	(55)	0	(146)
NAVAL SEA SYSTEMS COMMAN	(1)	0	(81)	0	(82)
NAVMEDRESINST BETHESDA	(91)	0	(56)	0	(147)
NSWC ANNAPOLIS	(2)	0	(418)	(102)	(522)
NSWC WHITE OAK	(1)	0	(90)	(111)	(202)
Total Jobs Out :	(1,234)	0	(1,830)	(668)	(3,732)
Jobs In :					
ABERDEEN PROVING GROUND	0	0	9	0	9
FORT DETRICK	711	0	248	0	959
FORT MEADE	141	0	191	0	332
NAWCAD PATUXENT RIVER	18	0	592	0	610
NSWC CARDEROCK	1	0	19	0	20
Total Jobs In :	871	0	1,059	0	1,930

As of: 02:06 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation**

Net Job Change :	(363)	0	(771)	(668)	(1,802)
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**BRAC-95 Economic Impact
Total Job Change By Installation
Maryland**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FORT DETRICK	(9)	0.0%
FORT MEADE	(129)	0.0%
FORT RITCHIE	(2,364)	(0.1%)
NATNAVMEDCEN BETHESDA	(146)	0.0%
NSWC ANNAPOLIS	(522)	0.0%
NSWC WHITE OAK	(202)	0.0%
NAVMEDRESINST BETHESDA	(147)	0.0%
NAVAL SEA SYSTEMS COMMAND (IN)	(82)	0.0%
BALTIMORE PUBS	(131)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(3,732)	(0.1%)
 Jobs In :		
ABERDEEN PROVING GROUND	9	0.0%
FORT DETRICK	959	0.0%
FORT MEADE	332	0.0%
NAWCAD PATUXENT RIVER	610	0.0%
NSWC CARDEROCK	20	0.0%
	<hr/>	<hr/>
Total Jobs In :	1,930	0.1%
 Net Job Change :	 (1,802)	 (0.1%)

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Massachussetts

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(3)	(254)	0	0	(257)
	Civilian	0	0	(10)	0	0	(20)	0	0	(30)
Other Jobs:	Military	0	0	0	0	(6)	(374)	0	0	(380)
	Civilian	0	0	0	(3)	0	(279)	0	0	(282)
Total:	Military	0	0	0	0	(9)	(628)	0	0	(637)
	Civilian	0	0	(10)	(3)	0	(299)	0	0	(312)
	Total:	0	0	(10)	(3)	(9)	(927)	0	0	(949)
Jobs In:										
	Military	0	0	0	0	5	0	0	0	5
	Civilian	0	0	0	79	340	0	0	0	419
	Total:	0	0	0	79	345	0	0	0	424
Net Jobs Change:										
	Military	0	0	0	0	(4)	(628)	0	0	(632)
	Civilian	0	0	(10)	76	340	(299)	0	0	107
	Total:	0	0	(10)	76	336	(927)	0	0	(525)

As of: 02:07 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Massachusetts**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NAS SOUTH WEYMOUTH	(637)	0	(209)	(90)	(936)
SUDBURY ANNEX	0	0	(10)	(3)	(13)
Total Jobs Out :	(637)	0	(219)	(93)	(949)
Jobs In :					
DEFENSE CONTRACT MANAGEM	1	0	20	0	21
HANSCOM AFB	0	0	0	79	79
NAVCLOTRFAC NATICK	2	0	160	0	162
USA NATICK RESEARCH & DEVE	2	0	160	0	162
Total Jobs In :	5	0	340	79	424
Net Job Change :	(632)	0	121	(14)	(525)

**BRAC-95 Economic Impact
Total Job Change By Installation
Massachussetts**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NAS SOUTH WEYMOUTH	(936)	0.0%
SUDBURY ANNEX	(13)	0.0%
Total Jobs Out :	(949)	0.0%
Jobs In :		
DEFENSE CONTRACT MANAGEMENT	21	0.0%
HANSCOM AFB	79	0.0%
NAVCLOTRFAC NATICK	162	0.0%
USA NATICK RESEARCH & DEVELOPM	162	0.0%
Total Jobs In :	424	0.0%
Net Job Change :	(525)	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Michigan

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	(8)	0	0	0	0	0	(8)
	Civilian	0	0	0	(150)	0	0	0	0	(150)
Total:	Military	0	0	(8)	0	0	0	0	0	(8)
	Civilian	0	0	0	(150)	0	0	0	0	(150)
	Total:	0	0	(8)	(150)	0	0	0	0	(158)
Jobs In:										
	Military	0	0	0	0	0	54	0	0	54
	Civilian	0	0	0	0	251	0	0	0	251
	Total:	0	0	0	0	251	54	0	0	305
Net Jobs Change:										
	Military	0	0	(8)	0	0	54	0	0	46
	Civilian	0	0	0	(150)	251	0	0	0	101
	Total:	0	0	(8)	(150)	251	54	0	0	147

As of: 02:08 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Michigan**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
DETROIT ARSENAL	0	0	0	(150)	(150)
NRC CADILLAC	(8)	0	0	0	(8)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(8)	0	0	(150)	(158)
 Jobs In :					
DEFENSE REUTILIZATION AND	0	0	97	0	97
DETROIT ARSENAL	0	0	154	0	154
SELFRIDGE AGB	54	0	0	0	54
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	54	0	251	0	305
 Net Job Change :	46	0	251	(150)	147

**BRAC-95 Economic Impact
Total Job Change By Installation
Michigan**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
DETROIT ARSENAL	(150)	0.0%
NRC CADILLAC	(8)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(158)	0.0%
Jobs In :		
DEFENSE REUTILIZATION AND MARK	97	0.0%
DETROIT ARSENAL	154	0.0%
SELFRIDGE AGB	54	0.0%
	<hr/>	<hr/>
Total Jobs In :	305	0.0%
Net Job Change :	147	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Minnesota

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	(54)	0	0	(54)
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	(54)	0	0	(54)
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	(54)	0	0	(54)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	0	0	0	(54)	0	0	(54)
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	(54)	0	0	(54)

As of: 02:09 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Minnesota**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NARCEN MINNEAPOLIS	(54)	0	0	0	(54)
Total Jobs Out :	(54)	0	0	0	(54)
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	(54)	0	0	0	(54)

**BRAC-95 Economic Impact
Total Job Change By Installation
Minnesota**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NARCEN MINNEAPOLIS	(54)	0.0%
Total Jobs Out :	(54)	0.0%
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	(54)	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Mississippi**

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	72	0	0	0	0	72
	Civilian	0	0	0	42	0	0	0	0	42
	Total:	0	0	0	114	0	0	0	0	114
Net Jobs Change:										
	Military	0	0	0	72	0	0	0	0	72
	Civilian	0	0	0	42	0	0	0	0	42
	Total:	0	0	0	114	0	0	0	0	114

As of: 02:10 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Mississippi**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
COLUMBUS AFB	35	37	6	0	78
NAVOCEANO	0	0	36	0	36
Total Jobs In :	35	37	42	0	114
Net Job Change :	35	37	42	0	114

**BRAC-95 Economic Impact
Total Job Change By Installation
Mississippi**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
	<hr/>	<hr/>
Total Jobs Out :	0	0.0%
 Jobs In :		
COLUMBUS AFB	78	0.0%
NAVOCEANO	36	0.0%
	<hr/>	<hr/>
Total Jobs In :	114	0.0%
 Net Job Change :	114	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Missouri

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	(4,139)	(174)	0	0	0	(4,313)
	Civilian	0	0	0	(90)	(2,895)	0	0	0	(2,985)
Other Jobs:	Military	0	0	0	0	(48)	0	0	0	(48)
	Civilian	0	0	0	0	(1,368)	0	0	0	(1,368)
Total:	Military	0	0	0	(4,139)	(222)	0	0	0	(4,361)
	Civilian	0	0	0	(90)	(4,263)	0	0	0	(4,353)
	Total:	0	0	0	(4,229)	(4,485)	0	0	0	(8,714)
Jobs In:										
	Military	0	0	0	0	5,476	0	0	0	5,476
	Civilian	0	0	0	38	394	0	0	0	432
	Total:	0	0	0	38	5,870	0	0	0	5,908
Net Jobs Change:										
	Military	0	0	0	(4,139)	5,254	0	0	0	1,115
	Civilian	0	0	0	(52)	(3,869)	0	0	0	(3,921)
	Total:	0	0	0	(4,191)	1,385	0	0	0	(2,806)

As of: 02:11 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Missouri**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
ATCOM	(222)	0	(3,681)	(582)	(4,485)
FORT LEONARD WOOD	(479)	(3,660)	(90)	0	(4,229)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(701)	(3,660)	(3,771)	(582)	(8,714)
Jobs In :					
FORT LEONARD WOOD	1,551	3,925	394	0	5,870
ST LOUIS PUBS	0	0	38	0	38
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	1,551	3,925	432	0	5,908
Net Job Change :	850	265	(3,339)	(582)	(2,806)

**BRAC-95 Economic Impact
Total Job Change By Installation
Missouri**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
ATCOM	(4,485)	(0.1%)
FORT LEONARD WOOD	(4,229)	(0.1%)
	<hr/>	<hr/>
Total Jobs Out :	(8,714)	(0.3%)
Jobs In :		
FORT LEONARD WOOD	5,870	0.2%
ST LOUIS PUBS	38	0.0%
	<hr/>	<hr/>
Total Jobs In :	5,908	0.2%
Net Job Change :	(2,806)	(0.1%)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Montana

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	(667)	0	0	0	0	(667)
	Civilian	0	0	0	(17)	0	0	0	0	(17)
Other Jobs:	Military	0	0	0	(15)	0	0	0	0	(15)
	Civilian	0	0	0	(41)	0	0	0	0	(41)
Total:	Military	0	0	0	(682)	0	0	0	0	(682)
	Civilian	0	0	0	(58)	0	0	0	0	(58)
	Total:	0	0	0	(740)	0	0	0	0	(740)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	0	(682)	0	0	0	0	(682)
	Civilian	0	0	0	(58)	0	0	0	0	(58)
	Total:	0	0	0	(740)	0	0	0	0	(740)

As of: 02:11 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Montana**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
MALMSTROM AFB	(682)	0	(17)	(41)	(740)
Total Jobs Out :	(682)	0	(17)	(41)	(740)
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	(682)	0	(17)	(41)	(740)

**BRAC-95 Economic Impact
Total Job Change By Installation
Montana**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
MALMSTROM AFB	(740)	(0.2%)
Total Jobs Out :	(740)	(0.2%)
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	(740)	(0.2%)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Nebraska

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	0	328	0	0	0	328
	Civilian	0	0	0	0	28	0	0	0	28
	Total:	0	0	0	0	356	0	0	0	356
Net Jobs Change:										
	Military	0	0	0	0	328	0	0	0	328
	Civilian	0	0	0	0	28	0	0	0	28
	Total:	0	0	0	0	356	0	0	0	356

As of: 02:13 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Nebraska**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
OFFUTT AFB	328	0	28	0	356
Total Jobs In :	328	0	28	0	356
Net Job Change :	328	0	28	0	356

**BRAC-95 Economic Impact
Total Job Change By Installation
Nebraska**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
OFFUTT AFB	356	0.0%
Total Jobs In :	356	0.0%
Net Job Change :	356	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Nevada

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	25	0	0	0	0	25
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	25	0	0	0	0	25
Net Jobs Change:										
	Military	0	0	0	25	0	0	0	0	25
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	25	0	0	0	0	25

As of: 02:14 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Nevada**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
NELLIS AFB	25	0	0	0	25
Total Jobs In :	25	0	0	0	25
Net Job Change :	25	0	0	0	25

**BRAC-95 Economic Impact
Total Job Change By Installation
Nevada**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
NELLIS AFB	25	0.0%
Total Jobs In :	25	0.0%
Net Job Change :	25	0.0%

As of: 02:15 29 June 1995

State Report 1

**BRAC-95 Economic Impact
Total Job Change By Installation
New Hampshire**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	0	0.0%

As of: 02:15 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
New Hampshire**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	0	0	0	0	0

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
New Jersey

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(289)	0	0	0	(289)
	Civilian	0	0	(164)	0	(1,428)	0	0	0	(1,592)
Other Jobs:	Military	0	0	0	(7)	(15)	0	0	0	(22)
	Civilian	0	0	0	(179)	(423)	0	0	0	(602)
Total:	Military	0	0	0	(7)	(304)	0	0	0	(311)
	Civilian	0	0	(164)	(179)	(1,851)	0	0	0	(2,194)
	Total:	0	0	(164)	(186)	(2,155)	0	0	0	(2,505)
Jobs In:										
	Military	0	0	0	0	1	0	0	0	1
	Civilian	0	0	0	167	9	25	0	0	201
	Total:	0	0	0	167	10	25	0	0	202
Net Jobs Change:										
	Military	0	0	0	(7)	(303)	0	0	0	(310)
	Civilian	0	0	(164)	(12)	(1,842)	25	0	0	(1,993)
	Total:	0	0	(164)	(19)	(2,145)	25	0	0	(2,303)

As of: 02:19 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
New Jersey**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FORT DIX	(150)	0	(179)	0	(329)
MIL OCEAN TERMINAL-BAYONN	(161)	0	(1,694)	(321)	(2,176)
Total Jobs Out :	(311)	0	(1,873)	(321)	(2,505)
Jobs In :					
FORT DIX	1	0	9	0	10
FORT MONMOUTH	0	0	167	0	167
WPNSTA EARLE	0	0	25	0	25
Total Jobs In :	1	0	201	0	202
Net Job Change :	(310)	0	(1,672)	(321)	(2,303)

**BRAC-95 Economic Impact
Total Job Change By Installation
New Jersey**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FORT DIX	(329)	0.0%
MIL OCEAN TERMINAL-BAYONNE	(2,176)	(0.1%)
Total Jobs Out :	(2,505)	(0.1%)
Jobs In :		
FORT DIX	10	0.0%
FORT MONMOUTH	167	0.0%
WPNSTA EARLE	25	0.0%
Total Jobs In :	202	0.0%
Net Job Change :	(2,303)	(0.1%)

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
New Mexico**

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	670	0	0	0	0	670
	Total:	0	0	0	670	0	0	0	0	670
Net Jobs Change:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	670	0	0	0	0	670
	Total:	0	0	0	670	0	0	0	0	670

As of: 02:21 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
New Mexico**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
KIRTLAND AFB	0	0	670	0	670
Total Jobs In :	0	0	670	0	670
Net Job Change :	0	0	670	0	670

**BRAC-95 Economic Impact
Total Job Change By Installation
New York**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FORT TOTTEN	(25)	0.0%
NAVAL STATION, STATEN ISLAND	(12)	0.0%
NRC FORT WADSWORTH	(12)	0.0%
SENECA ARMY DEPOT	(277)	0.0%
GRIFFISS AIR GUARD	(92)	0.0%
ROSLYN AGS	(42)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(460)	0.0%
 Jobs In :		
FORT DRUM	180	0.0%
STEWART IAP AGS	38	0.0%
WATERVLIET ARSENAL	15	0.0%
	<hr/>	<hr/>
Total Jobs In :	233	0.0%
 Net Job Change :	 (227)	 0.0%

As of: 02:23 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
New York**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FORT TOTTEN	(11)	0	(14)	0	(25)
GRIFFISS AIR GUARD	0	0	(92)	0	(92)
NAVAL STATION, STATEN ISLAN	(12)	0	0	0	(12)
NRC FORT WADSWORTH	(12)	0	0	0	(12)
ROSLYN AGS	(7)	0	(35)	0	(42)
SENECA ARMY DEPOT	(4)	0	(273)	0	(277)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(46)	0	(414)	0	(460)
Jobs In :					
FORT DRUM	0	0	180	0	180
STEWART IAP AGS	5	0	33	0	38
WATERVLIET ARSENAL	0	0	15	0	15
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	5	0	228	0	233
Net Job Change :	(41)	0	(186)	0	(227)

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

New York

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	(5)	(11)	0	0	0	(16)
	Civilian	0	0	0	(33)	(11)	0	0	(4)	(48)
Other Jobs:	Military	0	0	(24)	(2)	0	0	0	(4)	(30)
	Civilian	0	0	(77)	(52)	(65)	(50)	(50)	(72)	(366)
Total:	Military	0	0	(24)	(7)	(11)	0	0	(4)	(46)
	Civilian	0	0	(77)	(85)	(76)	(50)	(50)	(76)	(414)
	Total:	0	0	(101)	(92)	(87)	(50)	(50)	(80)	(460)
Jobs In:										
	Military	0	0	0	5	0	0	0	0	5
	Civilian	0	0	0	183	30	15	0	0	228
	Total:	0	0	0	188	30	15	0	0	233
Net Jobs Change:										
	Military	0	0	(24)	(2)	(11)	0	0	(4)	(41)
	Civilian	0	0	(77)	98	(46)	(35)	(50)	(76)	(186)
	Total:	0	0	(101)	96	(57)	(35)	(50)	(80)	(227)

**BRAC-95 Economic Impact
Total Job Change By Installation
New Mexico**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
	<hr/>	<hr/>
Total Jobs Out :	0	0.0%
Jobs In :		
KIRTLAND AFB	670	0.1%
	<hr/>	<hr/>
Total Jobs In :	670	0.1%
Net Job Change :	670	0.1%

As of: 02:25 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
North Carolina**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
MCAS CHERRY POINT	(3,714)	(193)	(332)	(75)	(4,314)
Total Jobs Out :	(3,714)	(193)	(332)	(75)	(4,314)
Jobs In :					
MCAS NEW RIVER	424	279	0	0	703
SEYMOUR JOHNSON AFB	877	0	25	0	902
Total Jobs In :	1,301	279	25	0	1,605
Net Job Change :	(2,413)	86	(307)	(75)	(2,709)

**BRAC-95 Economic Impact
Total Job Change By Installation
North Carolina**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
MCAS CHERRY POINT	(4,314)	(0.1%)
Total Jobs Out :	(4,314)	(0.1%)
Jobs In :		
MCAS NEW RIVER	703	0.0%
SEYMOUR JOHNSON AFB	902	0.0%
Total Jobs In :	1,605	0.0%
Net Job Change :	(2,709)	(0.1%)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
North Carolina

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(540)	0	(2,311)	(977)	(3,828)
	Civilian	0	0	0	0	(5)	0	(111)	0	(116)
Other Jobs:	Military	0	0	0	(79)	0	0	0	0	(79)
	Civilian	0	0	0	(216)	0	0	0	(75)	(291)
Total:	Military	0	0	0	(79)	(540)	0	(2,311)	(977)	(3,907)
	Civilian	0	0	0	(216)	(5)	0	(111)	(75)	(407)
	Total:	0	0	0	(295)	(545)	0	(2,422)	(1,052)	(4,314)
Jobs In:										
	Military	0	0	703	877	0	0	0	0	1,580
	Civilian	0	0	0	25	0	0	0	0	25
	Total:	0	0	703	902	0	0	0	0	1,605
Net Jobs Change:										
	Military	0	0	703	798	(540)	0	(2,311)	(977)	(2,327)
	Civilian	0	0	0	(191)	(5)	0	(111)	(75)	(382)
	Total:	0	0	703	607	(545)	0	(2,422)	(1,052)	(2,709)

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
North Dakota

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	(802)	0	0	0	(802)
	Civilian	0	0	0	0	(35)	0	0	0	(35)
Total:	Military	0	0	0	0	(802)	0	0	0	(802)
	Civilian	0	0	0	0	(35)	0	0	0	(35)
	Total:	0	0	0	0	(837)	0	0	0	(837)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	0	0	(802)	0	0	0	(802)
	Civilian	0	0	0	0	(35)	0	0	0	(35)
	Total:	0	0	0	0	(837)	0	0	0	(837)

As of: 02:28 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
North Dakota**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
GRAND FORKS AFB	(802)	0	(35)	0	(837)
Total Jobs Out :	(802)	0	(35)	0	(837)
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	(802)	0	(35)	0	(837)

**BRAC-95 Economic Impact
Total Job Change By Installation
North Dakota**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
GRAND FORKS AFB	(837)	(0.2%)
Total Jobs Out :	(837)	(0.2%)
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	(837)	(0.2%)

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Ohio

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(11)	0	0	0	(11)
	Civilian	0	0	(38)	(38)	(41)	0	0	0	(117)
Other Jobs:	Military	0	0	0	(2)	(5)	0	0	0	(7)
	Civilian	0	0	(143)	(144)	(28)	(358)	0	0	(673)
Total:	Military	0	0	0	(2)	(16)	0	0	0	(18)
	Civilian	0	0	(181)	(182)	(69)	(358)	0	0	(790)
	Total:	0	0	(181)	(184)	(85)	(358)	0	0	(808)
Jobs In:										
	Military	0	0	2	300	0	0	0	0	302
	Civilian	0	0	0	253	0	0	0	0	253
	Total:	0	0	2	553	0	0	0	0	555
Net Jobs Change:										
	Military	0	0	2	298	(16)	0	0	0	284
	Civilian	0	0	(181)	71	(69)	(358)	0	0	(537)
	Total:	0	0	(179)	369	(85)	(358)	0	0	(253)

As of: 02:27 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Ohio**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
DEFENSE CONSTRUCTION SUPP	0	0	(358)	0	(358)
DEFENSE CONTRACT MANAGEM	(16)	0	(69)	0	(85)
DEFENSE DISTRIBUTION DEPOT	(2)	0	(363)	0	(365)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(18)	0	(790)	0	(808)
 Jobs In :					
WRIGHT-PATTERSON AFB	2	300	0	253	555
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	2	300	0	253	555
 Net Job Change :	(16)	300	(790)	253	(253)

BRAC-95 Economic Impact
Total Job Change By Installation
Ohio

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
DEFENSE CONSTRUCTION SUPPLY CE	(358)	0.0%
DEFENSE CONTRACT MANAGEMENT C	(85)	0.0%
DEFENSE DISTRIBUTION DEPOT COLU	(365)	0.0%
Total Jobs Out :	(808)	0.0%
Jobs In :		
WRIGHT-PATTERSON AFB	555	0.0%
Total Jobs In :	555	0.0%
Net Job Change :	(253)	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Oklahoma

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	1,741	409	0	0	0	2,150
	Civilian	0	0	0	312	1,619	0	0	0	1,931
	Total:	0	0	0	2,053	2,028	0	0	0	4,081
Net Jobs Change:										
	Military	0	0	0	1,741	409	0	0	0	2,150
	Civilian	0	0	0	312	1,619	0	0	0	1,931
	Total:	0	0	0	2,053	2,028	0	0	0	4,081

As of: 02:31 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Oklahoma**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
FORT SILL	532	1,220	32	0	1,784
MCALESTER ARMY AMMUNITIO	0	0	263	0	263
TINKER AFB	232	0	1,619	0	1,851
VANCE AFB	70	96	17	0	183
Total Jobs In :	834	1,316	1,931	0	4,081
Net Job Change :	834	1,316	1,931	0	4,081

**BRAC-95 Economic Impact
Total Job Change By Installation
Oklahoma**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
FORT SILL	1,784	0.1%
MCALESTER ARMY AMMUNITION PLA	263	0.0%
TINKER AFB	1,851	0.1%
VANCE AFB	183	0.0%
Total Jobs In :	4,081	0.2%
Net Job Change :	4,081	0.2%

As of: 02:32 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Oregon**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	0	0	0	0	0

**BRAC-95 Economic Impact
Total Job Change By Installation
Oregon**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
	<hr/>	<hr/>
Total Jobs Out :	0	0.0%
Jobs In :		
	<hr/>	<hr/>
Total Jobs In :	0	0.0%
Net Job Change :	0	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Pennsylvania

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	(5)	(107)	(23)	(12)	0	0	(147)
	Civilian	0	0	(111)	(407)	(464)	(721)	(95)	0	(1,798)
Other Jobs:	Military	0	0	(11)	(55)	(16)	(14)	(2)	0	(98)
	Civilian	0	0	(32)	(1,611)	(503)	(459)	(113)	0	(2,718)
Total:	Military	0	0	(16)	(162)	(39)	(26)	(2)	0	(245)
	Civilian	0	0	(143)	(2,018)	(967)	(1,180)	(208)	0	(4,516)
	Total:	0	0	(159)	(2,180)	(1,006)	(1,206)	(210)	0	(4,761)
Jobs In:										
	Military	0	0	0	10	11	11	15	0	47
	Civilian	0	0	183	494	562	254	128	0	1,621
	Total:	0	0	183	504	573	265	143	0	1,668
Net Jobs Change:										
	Military	0	0	(16)	(152)	(28)	(15)	13	0	(198)
	Civilian	0	0	40	(1,524)	(405)	(926)	(80)	0	(2,895)
	Total:	0	0	24	(1,676)	(433)	(941)	(67)	0	(3,093)

As of: 02:33 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Pennsylvania**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
C. KELLY SUPPORT	0	0	(13)	0	(13)
DEFENSE DISTRIBUTION DEPOT	(4)	0	(374)	0	(378)
DEFENSE DISTRIBUTION DEPOT	(3)	0	(286)	0	(289)
DEFENSE INDUSTRIAL SUPPLY C	(16)	0	(369)	0	(385)
FORT INDIANTOWN GAP	(150)	0	(313)	0	(463)
LETTERKENNY ARMY DEPOT	(42)	0	(2,140)	(372)	(2,554)
NAESU PHILADELPHIA	(10)	0	(94)	0	(104)
NAVAL AIR TECHNICAL SERVIC	(4)	0	(223)	0	(227)
NAWCAD WARMINSTER	(16)	0	(294)	(38)	(348)
Total Jobs Out :	(245)	0	(4,106)	(410)	(4,761)
Jobs In :					
DEFENSE DISTRIBUTION REGIO	0	0	89	0	89
DEFENSE PERSONNEL SUPPORT	0	0	210	0	210
NEW CUMBERLAND FACILITY	0	0	297	0	297
NSWC PHILADELPHIA	0	0	261	0	261
TOBYHANNA ARMY DEPOT	47	0	764	0	811
Total Jobs In :	47	0	1,621	0	1,668

As of: 02:33 29 June 1995

BRAC-95 Economic Impact
Direct Job Change By Installation

Net Job Change :

(198)	0	(2,485)	(410)	(3,093)
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**BRAC-95 Economic Impact
Total Job Change By Installation
Pennsylvania**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
C. KELLY SUPPORT	(13)	0.0%
DEFENSE DISTRIBUTION DEPOT LETTE	(378)	0.0%
DEFENSE DISTRIBUTION DEPOT TOBY	(289)	0.0%
DEFENSE INDUSTRIAL SUPPLY CENTE	(385)	0.0%
FORT INDIANTOWN GAP	(463)	0.0%
LETTERKENNY ARMY DEPOT	(2,554)	0.0%
NAVAL AIR TECHNICAL SERVICES FAC	(227)	0.0%
NAWCAD WARMINSTER	(348)	0.0%
NAESU PHILADELPHIA	(104)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(4,761)	(0.1%)
 Jobs In :		
DEFENSE DISTRIBUTION REGION EAST	89	0.0%
DEFENSE PERSONNEL SUPPORT CENT	210	0.0%
NEW CUMBERLAND FACILITY	297	0.0%
NSWC PHILADELPHIA	261	0.0%
TOBYHANNA ARMY DEPOT	811	0.0%
	<hr/>	<hr/>
Total Jobs In :	1,668	0.0%
 Net Job Change :	 (3,093)	 0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Puerto Rico

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	(44)	0	0	0	(44)
	Civilian	0	0	0	0	(117)	0	0	0	(117)
Total:	Military	0	0	0	0	(44)	0	0	0	(44)
	Civilian	0	0	0	0	(117)	0	0	0	(117)
	Total:	0	0	0	0	(161)	0	0	0	(161)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	0	0	(44)	0	0	0	(44)
	Civilian	0	0	0	0	(117)	0	0	0	(117)
	Total:	0	0	0	0	(161)	0	0	0	(161)

As of: 02:34 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Puerto Rico**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FORT BUCHANAN	(44)	0	(117)	0	(161)
Total Jobs Out :	(44)	0	(117)	0	(161)
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	(44)	0	(117)	0	(161)

As of: 02:34 29 June 1995

State Report 1

**BRAC-95 Economic Impact
Total Job Change By Installation
Puerto Rico**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FORT BUCHANAN	(161)	0.0%
Total Jobs Out :	(161)	0.0%
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	(161)	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Rhode Island

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Jobs In:										
	Military	0	0	0	0	0	10	0	0	10
	Civilian	0	0	0	562	0	0	0	0	562
	Total:	0	0	0	562	0	10	0	0	572
Net Jobs Change:										
	Military	0	0	0	0	0	10	0	0	10
	Civilian	0	0	0	562	0	0	0	0	562
	Total:	0	0	0	562	0	10	0	0	572

As of: 02:34 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Rhode Island**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
NETC NEWPORT	10	0	0	0	10
NUWC NEWPORT	0	0	472	90	562
Total Jobs In :	10	0	472	90	572
Net Job Change :	10	0	472	90	572

**BRAC-95 Economic Impact
Total Job Change By Installation
Rhode Island**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
NETC NEWPORT	10	0.0%
NUWC NEWPORT	562	0.1%
Total Jobs In :	572	0.1%
Net Job Change :	572	0.1%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
South Carolina

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	(123)	0	(319)	0	0	(442)
	Civilian	0	0	(5)	0	0	(7)	0	0	(12)
Other Jobs:	Military	0	0	(30)	(2)	0	0	0	0	(32)
	Civilian	0	0	(11)	(9)	0	0	0	0	(20)
Total:	Military	0	0	(30)	(125)	0	(319)	0	0	(474)
	Civilian	0	0	(16)	(9)	0	(7)	0	0	(32)
	Total:	0	0	(46)	(134)	0	(326)	0	0	(506)
Jobs In:										
	Military	0	0	0	1,298	540	2,747	0	0	4,585
	Civilian	0	0	0	64	5	13	0	0	82
	Total:	0	0	0	1,362	545	2,760	0	0	4,667
Net Jobs Change:										
	Military	0	0	(30)	1,173	540	2,428	0	0	4,111
	Civilian	0	0	(16)	55	5	6	0	0	50
	Total:	0	0	(46)	1,228	545	2,434	0	0	4,161

As of: 02:35 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
South Carolina**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FISC CHARLESTON	(2)	0	0	(6)	(8)
MCAS BEAUFORT	(319)	0	(7)	0	(326)
NRRC CHARLESTON	(30)	0	(16)	0	(46)
SHAW AFB	(123)	0	0	(3)	(126)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(474)	0	(23)	(9)	(506)
Jobs In :					
FORT JACKSON	56	1,242	64	0	1,362
MCAS BEAUFORT	540	0	5	0	545
WPNSTA CHARLESTON	514	2,233	13	0	2,760
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	1,110	3,475	82	0	4,667
Net Job Change :	636	3,475	59	(9)	4,161

**BRAC-95 Economic Impact
Total Job Change By Installation
South Carolina**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FISC CHARLESTON	(8)	0.0%
MCAS BEAUFORT	(326)	0.0%
NRRC CHARLESTON	(46)	0.0%
SHAW AFB	(126)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(506)	0.0%
 Jobs In :		
FORT JACKSON	1,362	0.1%
MCAS BEAUFORT	545	0.0%
WPNSTA CHARLESTON	2,760	0.1%
	<hr/>	<hr/>
Total Jobs In :	4,667	0.2%
 Net Job Change :	 4,161	 0.2%

As of: 02:36 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
South Dakota**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	0	0	0	0	0

**BRAC-95 Economic Impact
Total Job Change By Installation
South Dakota**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
	_____	_____
Total Jobs Out :	0	0.0%
Jobs In :		
	_____	_____
Total Jobs In :	0	0.0%
Net Job Change :	0	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Tennessee

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	(200)	(545)	0	0	0	(745)
Other Jobs:	Military	0	0	(1)	(5)	(5)	0	0	0	(11)
	Civilian	0	0	(100)	(200)	(255)	0	0	0	(555)
Total:	Military	0	0	(1)	(5)	(5)	0	0	0	(11)
	Civilian	0	0	(100)	(400)	(800)	0	0	0	(1,300)
	Total:	0	0	(101)	(405)	(805)	0	0	0	(1,311)
Jobs In:										
	Military	0	0	0	216	0	4	1	0	221
	Civilian	0	0	0	135	0	51	50	0	236
	Total:	0	0	0	351	0	55	51	0	457
Net Jobs Change:										
	Military	0	0	(1)	211	(5)	4	1	0	210
	Civilian	0	0	(100)	(265)	(800)	51	50	0	(1,064)
	Total:	0	0	(101)	(54)	(805)	55	51	0	(854)

As of: 02:37 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Tennessee**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
DEFENSE DISTRIBUTION DEPOT	(11)	0	(1,245)	(55)	(1,311)
Total Jobs Out :	(11)	0	(1,245)	(55)	(1,311)
Jobs In :					
BUREAU OF PERSONNEL (IN)	221	0	236	0	457
Total Jobs In :	221	0	236	0	457
Net Job Change :	210	0	(1,009)	(55)	(854)

**BRAC-95 Economic Impact
Total Job Change By Installation
Tennessee**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
DEFENSE DISTRIBUTION DEPOT MEMP	(1,311)	0.0%
Total Jobs Out :	(1,311)	0.0%
 Jobs In :		
BUREAU OF PERSONNEL (IN)	457	0.0%
Total Jobs In :	457	0.0%
 Net Job Change :	(854)	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Texas

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	(276)	(1,089)	(268)	(164)	(181)	0	(1,978)
	Civilian	0	0	(77)	(2,348)	(2,093)	(2,068)	(2,123)	0	(8,709)
Other Jobs:	Military	0	0	(23)	(571)	(178)	(158)	(207)	0	(1,137)
	Civilian	0	0	(1)	(2,287)	(672)	(659)	(717)	0	(4,336)
Total:	Military	0	0	(299)	(1,660)	(446)	(322)	(388)	0	(3,115)
	Civilian	0	0	(78)	(4,635)	(2,765)	(2,727)	(2,840)	0	(13,045)
	Total:	0	0	(377)	(6,295)	(3,211)	(3,049)	(3,228)	0	(16,160)
Jobs In:										
	Military	0	0	197	1,082	355	311	94	0	2,039
	Civilian	0	0	7	511	195	27	0	0	740
	Total:	0	0	204	1,593	550	338	94	0	2,779
Net Jobs Change:										
	Military	0	0	(102)	(578)	(91)	(11)	(294)	0	(1,076)
	Civilian	0	0	(71)	(4,124)	(2,570)	(2,700)	(2,840)	0	(12,305)
	Total:	0	0	(173)	(4,702)	(2,661)	(2,711)	(3,134)	0	(13,381)

As of: 01:21 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Texas**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
BERGSTROM AFB	0	0	(366)	(18)	(384)
KELLY AFB	(1,297)	0	(10,912)	0	(12,209)
NAS CORPUS CHRISTI	(306)	(416)	(125)	0	(847)
NRF LAREDO	(6)	0	0	0	(6)
RED RIVER ARMY DEPOT	0	0	(386)	0	(386)
REESE AFB	(848)	(242)	(339)	(899)	(2,328)
Total Jobs Out :	(2,457)	(658)	(12,128)	(917)	(16,160)
Jobs In :					
BROOKS AFB	134	0	9	15	158
CARSWELL AFB	0	0	103	0	103
FORT BLISS	438	0	40	0	478
FORT SAM HOUSTON	154	260	27	0	441
JRB FT WORTH	2	0	5	0	7
LACKLAND AFB	218	190	55	0	463
LAUGHLIN AFB	90	109	123	0	322
LONE STAR ARMY AMMUNITION	0	0	350	0	350
NAS CORPUS CHRISTI	423	0	0	0	423
NAS KINGSVILLE	19	0	8	0	27
NMCRRC HOUSTON	2	0	5	0	7

As of: 01:21 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation**

Total Jobs In :	1,480	559	725	15	2,779
Net Job Change :	(977)	(99)	(11,403)	(902)	(13,381)

**BRAC-95 Economic Impact
Total Job Change By Installation
Texas**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
BERGSTROM AFB	(384)	0.0%
KELLY AFB	(12,209)	(0.1%)
NAS CORPUS CHRISTI	(847)	0.0%
NRF LAREDO	(6)	0.0%
RED RIVER ARMY DEPOT	(386)	0.0%
REESE AFB	(2,328)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(16,160)	(0.2%)
 Jobs In :		
BROOKS AFB	158	0.0%
CARSWELL AFB	103	0.0%
FORT BLISS	478	0.0%
FORT SAM HOUSTON	441	0.0%
LACKLAND AFB	463	0.0%
LAUGHLIN AFB	322	0.0%
LONE STAR ARMY AMMUNITION PLAN	350	0.0%
NAS CORPUS CHRISTI	423	0.0%
NAS KINGSVILLE	27	0.0%
NMCRRC HOUSTON	7	0.0%
JRB FT WORTH	7	0.0%
	<hr/>	<hr/>

As of: 01:22 29 June 1995

State Report 1

**BRAC-95 Economic Impact
Total Job Change By Installation**

Total Jobs In :	2,779	0.0%
Net Job Change :	(13,381)	(0.1%)

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year**

Utah

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	(2)	0	0	0	(2)
	Civilian	0	0	0	0	(296)	(320)	0	0	(616)
Other Jobs:	Military	0	0	(3)	(40)	(2)	(2)	0	0	(47)
	Civilian	0	0	0	(271)	(183)	(11)	0	0	(465)
Total:	Military	0	0	(3)	(40)	(4)	(2)	0	0	(49)
	Civilian	0	0	0	(271)	(479)	(331)	0	0	(1,081)
	Total:	0	0	(3)	(311)	(483)	(333)	0	0	(1,130)
Jobs In:										
	Military	0	0	0	64	649	0	0	0	713
	Civilian	0	0	0	815	4,531	0	0	0	5,346
	Total:	0	0	0	879	5,180	0	0	0	6,059
Net Jobs Change:										
	Military	0	0	(3)	24	645	(2)	0	0	664
	Civilian	0	0	0	544	4,052	(331)	0	0	4,265
	Total:	0	0	(3)	568	4,697	(333)	0	0	4,929

As of: 02:38 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Utah**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
DEFENSE DISTRIBUTION DEPOT	(8)	0	(1,001)	(11)	(1,020)
HILL AFB	(6)	0	0	0	(6)
UTAH TEST AND TRAINING RAN	(35)	0	(69)	0	(104)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(49)	0	(1,070)	(11)	(1,130)
 Jobs In :					
HILL AFB	713	0	5,346	0	6,059
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	713	0	5,346	0	6,059
 Net Job Change :	664	0	4,276	(11)	4,929

**BRAC-95 Economic Impact
Total Job Change By Installation
Utah**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
DEFENSE DISTRIBUTION DEPOT OGDE	(1,020)	(0.1%)
HILL AFB	(6)	0.0%
UTAH TEST AND TRAINING RANGE	(104)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(1,130)	(0.1%)
Jobs In :		
HILL AFB	6,059	0.6%
	<hr/>	<hr/>
Total Jobs In :	6,059	0.6%
Net Job Change :	4,929	0.5%

As of: 02:39 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Vermont**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
	_____	_____	_____	_____	_____
Total Jobs Out :	0	0	0	0	0
Jobs In :					
	_____	_____	_____	_____	_____
Total Jobs In :	0	0	0	0	0
Net Job Change :	0	0	0	0	0

**BRAC-95 Economic Impact
Total Job Change By Installation
Vermont**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
	<hr/>	<hr/>
Total Jobs Out :	0	0.0%
Jobs In :		
	<hr/>	<hr/>
Total Jobs In :	0	0.0%
Net Job Change :	0	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Virginia

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	(665)	(41)	0	0	(1,889)	(2,595)
	Civilian	0	0	0	(376)	(135)	0	0	(22)	(533)
Other Jobs:	Military	0	0	(99)	(41)	(32)	0	0	(6)	(178)
	Civilian	0	0	(141)	(215)	(440)	0	0	(29)	(825)
Total:	Military	0	0	(99)	(706)	(73)	0	0	(1,895)	(2,773)
	Civilian	0	0	(141)	(591)	(575)	0	0	(51)	(1,358)
	Total:	0	0	(240)	(1,297)	(648)	0	0	(1,946)	(4,131)
Jobs In:										
	Military	0	0	627	1,270	11	35	2,311	977	5,231
	Civilian	0	0	0	45	123	438	222	0	828
	Total:	0	0	627	1,315	134	473	2,533	977	6,059
Net Jobs Change:										
	Military	0	0	528	564	(62)	35	2,311	(918)	2,458
	Civilian	0	0	(141)	(546)	(452)	438	222	(51)	(530)
	Total:	0	0	387	18	(514)	473	2,533	(969)	1,928

As of: 02:40 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Virginia**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
FORT LEE	(99)	0	(106)	0	(205)
FORT PICKETT	(21)	0	(279)	0	(300)
NAS NORFOLK	(551)	0	0	0	(551)
NAS OCEANA	(1,895)	0	(26)	0	(1,921)
NAVMASSO	(6)	0	(15)	0	(21)
NDW WASHINGTON	(201)	0	(860)	(72)	(1,133)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(2,773)	0	(1,286)	(72)	(4,131)
Jobs In :					
CG MCCDC QUANTICO	12	0	0	0	12
DEFENSE FUEL SUPPLY CENTER	11	0	41	0	52
DEFENSE GENERAL SUPPLY CEN	12	0	347	0	359
FORT BELVOIR	11	0	41	0	52
NAS OCEANA	4,738	447	145	0	5,330
NSWC DAHLGREN	0	0	24	0	24
NSY NORFOLK	0	0	230	0	230
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	4,784	447	828	0	6,059
Net Job Change :	2,011	447	(458)	(72)	1,928

**BRAC-95 Economic Impact
Total Job Change By Installation
Virginia**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
FORT LEE	(205)	0.0%
FORT PICKETT	(300)	0.0%
NAS NORFOLK	(551)	0.0%
NAS OCEANA	(1,921)	(0.1%)
NAVMASSO	(21)	0.0%
NDW WASHINGTON	(1,133)	0.0%
	<hr/>	<hr/>
Total Jobs Out :	(4,131)	(0.1%)
 Jobs In :		
DEFENSE FUEL SUPPLY CENTER	52	0.0%
DEFENSE GENERAL SUPPLY CENTER	359	0.0%
FORT BELVOIR	52	0.0%
CG MCCDC QUANTICO	12	0.0%
NAS OCEANA	5,330	0.1%
NSY NORFOLK	230	0.0%
NSWC DAHLGREN	24	0.0%
	<hr/>	<hr/>
Total Jobs In :	6,059	0.2%
 Net Job Change :	 1,928	 0.1%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Washington**

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	(11)	(17)	0	0	0	0	(28)
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	(11)	(17)	0	0	0	0	(28)
	Total:	0	0	(11)	(17)	0	0	0	0	(28)
Jobs In:										
	Military	0	0	582	41	137	92	0	0	852
	Civilian	0	0	0	28	0	0	0	0	28
	Total:	0	0	582	69	137	92	0	0	880
Net Jobs Change:										
	Military	0	0	582	41	137	92	0	0	852
	Civilian	0	0	(11)	11	0	0	0	0	0
	Total:	0	0	571	52	137	92	0	0	852

As of: 02:40 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Washington**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NUWC KEYPORT	0	0	(28)	0	(28)
Total Jobs Out :	0	0	(28)	0	(28)
Jobs In :					
FORT LEWIS	137	0	0	0	137
NAS WHIDBEY ISLAND	510	0	0	0	510
NAVSTA EVERETT	72	0	0	0	72
NSY PUGET SOUND	41	0	28	0	69
NUWC KEYPORT	50	42	0	0	92
Total Jobs In :	810	42	28	0	880
Net Job Change :	810	42	0	0	852

**BRAC-95 Economic Impact
Total Job Change By Installation
Washington**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NUWC KEYPORT	(28)	0.0%
Total Jobs Out :	(28)	0.0%
Jobs In :		
FORT LEWIS	137	0.0%
NAS WHIDBEY ISLAND	510	0.0%
NAVSTA EVERETT	72	0.0%
NUWC KEYPORT	92	0.0%
NSY PUGET SOUND	69	0.0%
Total Jobs In :	880	0.0%
Net Job Change :	852	0.0%

BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
West Virginia

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	(7)	(7)
Other Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	(7)	(7)
	Total:	0	0	0	0	0	0	0	(7)	(7)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	(7)	(7)
	Total:	0	0	0	0	0	0	0	(7)	(7)

As of: 02:41 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
West Virginia**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
VALLEY GROVE AREA MAINT SU	0	0	(7)	0	(7)
Total Jobs Out :	0	0	(7)	0	(7)
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	0	0	(7)	0	(7)

**BRAC-95 Economic Impact
Total Job Change By Installation
West Virginia**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
VALLEY GROVE AREA MAINT SUP ACT	(7)	0.0%
Total Jobs Out :	(7)	0.0%
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	(7)	0.0%

**BRAC-95 Economic Impact
Direct Job Change By Fiscal Year
Wisconsin**

		<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>Total</u>
Jobs Out:										
Relocated Jobs:	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
Other Jobs:	Military	0	0	(6)	0	0	0	0	0	(6)
	Civilian	0	0	0	0	0	0	0	0	0
Total:	Military	0	0	(6)	0	0	0	0	0	(6)
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	(6)	0	0	0	0	0	(6)
Jobs In:										
	Military	0	0	0	0	0	0	0	0	0
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	0	0	0	0	0	0	0
Net Jobs Change:										
	Military	0	0	(6)	0	0	0	0	0	(6)
	Civilian	0	0	0	0	0	0	0	0	0
	Total:	0	0	(6)	0	0	0	0	0	(6)

As of: 02:42 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Wisconsin**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
NRC SHEBOYGAN	(6)	0	0	0	(6)
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs Out :	(6)	0	0	0	(6)
Jobs In :					
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
Total Jobs In :	0	0	0	0	0
Net Job Change :	(6)	0	0	0	(6)

**BRAC-95 Economic Impact
Total Job Change By Installation
Wisconsin**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
NRC SHEBOYGAN	<u>(6)</u>	<u>0.0%</u>
Total Jobs Out :	(6)	0.0%
 Jobs In :		
	<u>0</u>	<u>0.0%</u>
Total Jobs In :	0	0.0%
 Net Job Change :	(6)	0.0%

As of: 02:43 29 June 1995

**BRAC-95 Economic Impact
Direct Job Change By Installation
Wyoming**

<u>Activity</u>	<u>Military</u>	<u>Students</u>	<u>Civilian</u>	<u>Contractors</u>	<u>Total</u>
Jobs Out :					
Total Jobs Out :	0	0	0	0	0
Jobs In :					
Total Jobs In :	0	0	0	0	0
Net Job Change :	0	0	0	0	0

**BRAC-95 Economic Impact
Total Job Change By Installation
Wyoming**

<u>Activity</u>	<u>Direct</u>	<u>% of State Jobs</u>
Jobs Out :		
Total Jobs Out :	0	0.0%
Jobs In :		
Total Jobs In :	0	0.0%
Net Job Change :	0	0.0%