

**10.4** Local Funding is the most crucial subfactor associated with revenue generation. The most rational method for utilizing local funding is the issuance of debt obligation bonds. These bonds should be backed by sources other than local property taxes. In doing so, the debt limitation is lifted and taxpayer risk is minimized. The state entity may provide for the issuance of General Airport Revenue Bonds (GARB) for purposes of financing an airport within the state. The state may issue GARB obligation in connection with self-liquidating airport facilities or airport facilities without regard to maximum interest rate requirements. A "self-liquidating airport facilities" means airport facilities for which a lease or leases have been executed for providing payment sufficient to pay the interest and principal on such bonds. The airport authority may issue revenue bonds for purposes of obtaining money to pay for the cost of property acquisition, redevelopment, or the financing of State GARB obligations. The interest rates for each are included under cost subfactors in table 5.2. The issuance of bonds are inevitable to accomplish capital improvements of any significance.

**10.5** Landing Fees are a common method for generating revenue for airport operations. Landing fees are assessed according to net weight of cargo. Mather Airport, previously the Mather AFB, established landing fees of \$1.40 per 1,000 pounds of cargo. The landing fees at Mather were calculated after all other revenues. The net landing fee requirement is that amount necessary to accommodate operational and maintenance costs after all other revenue sources have been exhausted. The net landing fee requirement is then divided by the projected landing weight of enplaned cargo.<sup>1</sup> Rates for landing fees are the preferred method of acquiring revenue because rates can be easily changed. Terminal usage and cargo demurrage fees may also be assessed on air cargo. Terminal usage fee is a charge assessed against air carriers or forwarders on cargo discharged or loaded for the utilization of terminal facilities to receive or deliver cargo. Cargo demurrage fee is assessed against cargo remaining in storage at airport facilities beyond a specified "free time". All such fees are listed on the official bill of lading. The FAA requires that airport fees, rates, and taxes be reasonable for the operation of the airport facilities.

**10.6** Airport Taxes generate revenue for the FAA as well as the local airport authority. Air cargo tax is imposed at 6.25% of cargo value.<sup>2</sup> The revenue from this tax is placed in the Airway Trust Fund. The local airport authority may assess airport taxes above and beyond federal rates. The FAA, however, has the authority to regulate these fees.

**10.7** Gas Taxes generate revenue for the FAA Airway Trust Fund. The local airport authority may impose gasoline taxes or generate revenue in the resale of aircraft fuel. Such charges are also regulated by the FAA. Revenues from these fees must be reasonable and necessary for the operation of the airport facility. Mather Airport (formerly Mather AFB) has plans for the establishment of fuel flowage charges.<sup>3</sup> Such charges can be estimated by multiplying the average amount of fuel purchased per operation by the number of operations projected at the Airport.

**10.8** A County Economic Development Income Tax [CEDIT] may provide a steady stream of revenue that is targeted for capital improvements. The individual state's Department of State Revenue collects and disperses CEDIT revenue to the taxing unit. The taxing unit may use CEDIT revenue only for economic development

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<sup>1</sup> Leigh Fisher Associates. Financial Operation of a Portion of Mather Air Force Base as Mather Airport. May 1994. p. 7.

<sup>2</sup> United States. House Ways and Means Committee. Explanation of Committee Amendment to H.R. 4691. p. 3.

<sup>3</sup> Leigh Fisher Associates. Financial Operation of a Portion of Mather Air Force Base as Mather Airport. May 1994. p. 14.

projects. The taxing unit may issue bonds payable from the CEDIT distribution. CEDIT distribution may also be applied to bonds issued under statute to finance a capital project. These revenues should be included as a potential revenue source for the redevelopment of a realigned military base.

**10.9** A County Option Income Tax [COIT] and County Adjusted Gross Income Tax [CAGIT] are two other revenue sources that a county may have available for such redevelopment. The county taxing unit may impose COIT or CAGIT, but not both.<sup>1</sup> The individual state's Department of Revenue collects and distributes COIT and/or CAGIT revenue to the taxing unit. The taxing unit may use COIT or CAGIT revenue as additional revenues for purposes of fixing a unit's budget. The uses of COIT or CAGIT, therefore, are varied and virtually unrestricted. New employment stemming from redevelopment will generate additional COIT revenue.

**10.10** Property Tax Revenue is an important subfactor to consider in base reuse planning. Property tax obligations are restored for property that is conveyed to a private interest. The airport authority, however, is usually not liable to state or local property tax. No property tax obligation will be restored if the airport authority receives the conveyance of all eligible property. Property made available for public bid or negotiated sale will have its tax obligation restored. The property tax revenue generation may affect the revenue stream for redevelopment.

**10.11** Sales Tax revenue does not directly benefit the airport authority. Such revenue is available to the individual state's Department of Revenue. The increased proceeds associated with job creation at the air cargo facility will serve as an incentive for state investment in the redevelopment of the base. Sales tax revenue generation, therefore, is a potential indirect benefit to the airport authority. TAMS Consultants utilize this subfactor and approach in the airport site selection methodology.

**10.12** Lease Revenue is a primary revenue subfactor that directly benefits the airport authority. Cargo firms typically prefer lease arrangements because of liquidity. The airport authority may also prefer lease arrangements because of higher returns on investment, maintenance, and land use control. Lease revenue should be assessed with the goal that such revenue be sufficient to meet the opportunity cost of the facility, maintenance, and administration. Lease revenue is estimated by establishing a comparable per square foot charge for hangar and facility space. Leigh Fisher Associates uses a vacant ground lease rate of \$.24 per square foot per year; an alert parking apron lease rate of \$.06 per square yard per year; an office lease rate of \$6.92 per square foot per year; a hangar space lease rate of \$1.77 per square foot per year; and a shop space lease rate of \$2.84 per square foot per year.<sup>2</sup> The market rates for leases vary depending upon the geographic market area. However, the condition, size, and character of the Mather facilities are comparable to those at other base. If no adjustments are necessary for the character of the facilities, then the application of lease rates at the air cargo facility requires a simple adjustment based on cost of living indices.

Lease rates need only to accommodate operating, maintenance, and minimal debt service from new or expansion development. Lease rates can be comparatively lower than competitor airports in the region. Competitor airports must structure lease rates based on larger bond issues for capital improvements. The airport authority should exploit this comparative advantage and develop low margin lease rates. Given the importance of this

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<sup>1</sup> Baker and Daniels. Local Government Funding Sources. August 30, 1993. p. 8.

<sup>2</sup> Leigh Fisher Associates. Financial Operation of a Portion of Mather Air Force Base as Mather Airport. May 1994. p. 14.

subfactor, several sources should be utilized in converting lease rates for the air cargo facility.

**10.13** Utility revenue is a subfactor that does not directly benefit the airport authority but plays indirect role in subsidizing investment. Most utility systems at military installations experienced usage reductions of over 50% as a result of realignment. Supporting utilities, therefore, have a significant interest in the redevelopment of the base. Utility revenue can be estimated based on historic revenues per type of user and the projected rate of development. Natural gas and electric service providers stand the most to gain given historic utility data for maintenance and storage hangars. Utility corporations do not have development risks of any significance given the amount and capacity of existing infrastructure. These conditions suggest that utility companies would be willing partners in sharing the marketing functions. Further, service providers are more able to invest in infrastructure improvements. For these reasons, the inclusion of this subfactor is necessary.

### **Subproblem #3: Economic Development (table 5.4)**

**11.0** The first set of subfactors is associated with the economic benefits to both the local area and the regional linkages. Economic development is defined as per capita income growth for a region due to increased employment opportunities and industry transactions. The term "region" is the crux of this study. Two important regions exist, the employment region and the service region. Air cargo provides direct benefits to the employment region by offering high quality employment opportunities and increasing the tax base. Similarly, air cargo benefits areas within a larger region where the consumers and producers for air cargo exist. The effects of air cargo *must* be determined for both regions. The potential economic development resulting from air cargo is estimated by analyzing seven (7) subfactors. Three subfactors are associated with the potential for the reintegration of the displaced work force in the local employment region. Two subfactors are associated with immediate and future job growth potential in the service region. The remaining two (2) subfactors are associated with increased transactions among industries without regard to its spatial context in the economy.

**11.1** Matching of Supply Linkages, as described by Edward Blakely, is an important first step towards economic development. Blakely states that the goal is to determine how air cargo would enhance the regional strengths while keeping the previous labor pool and reinforcing the established economic linkages.<sup>1</sup> In doing so, we examine the matches between the inputs and outputs of air cargo and those of the particular Air Force base. One component of inputs is the service provided to maintain the use. Since both uses are virtually aviation exclusive, we can anticipate a large number of matching services. This subfactor is associated with the first step in economic development, economic stabilization. *Economic stabilization is the primary goal which is common to nearly all base reuse planning documents.* (emphasis added)

**11.2** Absorption of Displaced Labor is another such linkage subfactor derived from the writings of Edward Blakely. The goal of occupational matching is to determine how well the air cargo reuse absorbs the displaced labor. In doing so, we identify the occupational structure associated with air cargo and that of the military base. We then identify the occupational matches between the two. A greater number of matches is an indication that a greater potential for reemployment exists. This subfactor is also associated with the economic stabilization of the employment region by providing employment to the displaced work force.

**11.3** Job Creation/Retention is a subfactor derived from the Urban Land Institute. The Urban Land Institute estimates that 800 square feet of aviation facilities (including hangars) requires the employment of one (1)

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<sup>1</sup> Blakely, Edward and Subhrajit Guhathakurta. From Military Bases to New Industries and Stronger Regional Economics. Presented to the Association of Collegiate Schools of Planning Conference. Tempe, AZ. November 4-6, 1994.

person. The ULI standard is nearly identical to that found in Reuse Planning and the Environmental Impact Analysis Process for Closure Bases prepared by the Air Force Center for Environmental Excellence at Brooks Air Force Base, Texas. RKG uses the ULI estimation in projecting the number of new jobs that could be generated through the redevelopment of the "preferred reuse". The RKG projections are based on reutilization of existing facilities as well as development of the remaining vacant land. In doing so, RKG assumes an average floor space development of 10% per acre. The ULI estimation has been readily accepted; the RKG method for projecting job replacement, however, is questionable.

Job replacement/retention should be calculated based on true projections for air carrier enplanements. Aviation support facilities and hangar space are functions of the number and type of enplanements. After obtaining flight projections, we calculate the required aviation space and hangar facilities. We then multiply the required aviation space by the ULI estimation for employees (1/800).

**11.4 - 11.5** Increased Transactions is an important subfactor for estimating the impact that the development of an air cargo facility has on the economy. The regional economy is collection of interdependent industry sectors. The relationships among the sectors are caused by linkages; that is, each sector is both a producer and a consumer for other sectors. Changes in one sector of a regional economy will affect other sectors because of such linkages.

Wassily Leontief of Harvard University won the Nobel Prize in 1973 for his development of the input-output (I-O) economics. As a result of Leontief's work, a number of detailed I-O models have been prepared. The regional economy must first be divided into sectors. The Standard Industrial Code (SIC) is the most efficient means to accomplish this. The SIC divisions must cover the entire range of codes. The I-O model is more detailed as more SIC divisions are used. For example, dividing the economy based on a 2-digit SIC may yield results with a high degree of aggregation, there by losing useful information. The I-O model is based on the concept that each sector is both a producer and consumer. The relationships among sectors can be described by industry transactions, that is sales and purchases, with other sectors of the regional economy. The transactions are actual dollar flows among industry sectors. The flows are usually displayed in a matrix (as shown is table 5.5) with the producers in the rows headings and the consumers in the column headings of the table. The rows of table 5.5 reveal the sales distribution of each of the sectors, while the columns reveal the purchase patterns.

Producers (row headings) make two types of sale transactions, intermediate and final. Intermediate sales are defined as sales of product which will undergo further processing within the region. The purchasers of such product could be any number of the other SIC divisions. Final sales are defined as sales of product which will *not* undergo further processing. Such products are either consumed (C), purchased by government (G), invested (I), or exported (E).

Consumers (column heading) make two types of purchase transactions, produced and primary. Produced purchases are defined as the purchase, at a price equal to the cost of the raw material, of products from all other sectors *including* imports. Primary purchases are defined as the purchase of the value added, that is to say, the price above the raw material cost. Value added is comprised principally of wages, rents, profits, and interest. The total output (sales) is equal to total input (purchases) because of the following fundamental principal:

## Industry Transactions Table

		Consumers								
		Intermediate			Final					
		Agriculture	Manufacturing	Service	Consumption	Investment	Government	Exports	Total	
Producers	Produced	Agriculture	10	5	5	10	5	10	25	70
		Manufacturing	20	30	25	5	5	5	10	100
		Service	5	10	10	35	5	10	5	80
		Imports	5	15	5					
	Primary	Value Added	30	40	35					
		Total	70	100	80					

Source: Davis, H.C. Regional Economic Impact Analysis and Project Evaluation.

Table 5.5

**total sales revenue = total costs + profit**

The transactions table presents a snapshot of the structure of the regional economy. Although this model adds to the knowledge of the workings of the economy, the usefulness of the I-O model extends considerably beyond this contribution.

The Input-Output model is useful in projecting how a change in one sector generates changes to other sectors in the economy. Because the sectors are held together in an intricate web of transactions, a purchase from a particular sector by a particular firm or by a final consumer initiates a chain reaction. The I-O model helps trace the resulting maze of economic reverberations.

To illustrate how the I-O model is useful in this regard, we return to the hypothetical model. As a first step, we convert the dollar units to coefficients. The term "coefficient" is defined as the percentage of total contribution of each input in producing one unit of output. Each column of coefficients is determined by dividing the elements in a corresponding column of transactions by the total input figure for that column. These calculations have been performed in table 5.6. The column totals of table 5.6 are 100%. Once the coefficients have been determined we can perform a system analysis which will reveal the accumulated effect on each sector.

## Calculated Coefficients Table

		Consumers		
		Agriculture	Manufacturing	Service
Producers	Agriculture	0.14	0.05	0.06
	Manufacturing	0.29	0.30	0.31
	Service	0.07	0.10	0.12
	Imports	0.07	0.15	0.63
	Value Added	0.43	0.40	0.44
	Total	100%	100%	100%

Source: Davis, H.C. Regional Economic Impact Analysis and Project Evaluation. *Table 5.6*

The second step involves the first in a series of calculations. For illustrative purposes, let's assume that purchases of the output of the manufacturing sector increase by \$10,000. Table 5.7 reveals that in order to expand its production by \$10,000, the manufacturing sector will have to purchase \$500 from agriculture, \$3,000 from the manufacturing sector, and \$1,000 of services. In turn, each of these three sectors will have to purchase inputs in order to deliver the production to the manufacturing sector. Table 5.7 illustrates the purchases that must be made to support such production. Note that the column row totals do not equal the total purchases made by the respective consumer sector. The "excess" transactions result from either the purchase of imports or the value added to the produced good. Table 5.7 is the first round in charting the purchase effects throughout the economy. Note that even after charting the effects of a purchase in the manufacturing sector, we still have spending occurring for all sectors. Since spending transactions still exists, we must apply the new figures for a second application of the effect table.

### Purchase Effect Table - Round 1

		Consumers:(amount purchased)			
		Agriculture: \$500	Manufacturing: \$3,000	Service: \$1,000	Total
Producers	Agriculture	$500(.14) = \$70$	$3,000(.05) = \$150$	$1,000(.06) = \$60$	\$280
	Manufacturing	$500(.29) = \$145$	$3,000(.30) = \$900$	$1,000(.31) = \$310$	\$1,355
	Service	$500(.07) = \$35$	$3,000(.10) = \$300$	$1,000(.12) = \$120$	\$455

Source: Davis, H.C. Regional Economic Impact Analysis and Project Evaluation.

*Table 5.7*

Table 5.8 represents a second application of the effect table. Note that even after charting the effects for a second time, we still have spending transactions occurring for all sectors. We must continually reapply the effects table, using the new spending levels for each time, until the resulting spending is near zero for all sectors. The resulting consumption levels after every application is diminished. The diminishing spending levels are due mostly to profit and dividends.

### Purchase Effect Table - Round 2

		Consumers:(amount purchased)			
		Agriculture: \$280	Manufacturing: \$1,355	Service: \$455	Total
Producers	Agriculture	280(.14)=\$39.20	1,355(.05)=\$67.75	455(.06)=\$27.30	\$134.25
	Manufacturing	280(.29)=\$81.20	1,355(.30)=\$406.50	455(.31)=\$141.05	\$628.75
	Service	280(.07)=\$19.60	1,355(.10)=\$135.50	455(.12)=\$54.60	\$209.70

Source: Davis, H.C. Regional Economic Impact Analysis and Project Evaluation.

Table 5.8

Table 5.9 represents a summary of the effects on all sectors of the economy from an original manufacturing product purchase increase of \$10,000. The "accumulated effect" is defined as the total spending increases for all sectors of the economy from an initial increase in purchases from one sector. The accumulated effect is useful in providing a economic impact analysis for direct as well as the myriad of indirect effects. H. Craig Davis prefers the I-O model because it "explicitly recognizes as sources of economic growth and decline not only exports but [also] personal consumption, capital formation, and government spending." (Davis p. 65)

### Accumulated Effect Table

	Initial Increase	Round 1	Round 2	Other Rounds	Total
Agriculture		\$500.00	\$280.00	\$134.25	<b>\$914.25</b>
Manufacturing	\$10,000.00	\$3,000.00	\$1,355.00	\$628.75	<b>\$14,983.75</b>
Service		\$1,000.00	\$455.00	\$209.70	<b>\$1,664.70</b>

Source: Davis, H.C. Regional Economic Impact Analysis and Project Evaluation.

Table 5.9

### Multipliers for Output

Sector	Multiplier
Agriculture	0.09
Manufacturing	1.50
Service	0.17

Table 5.10

The final stage of the analysis involves the calculation of output multipliers. Output multipliers reflect the accumulated effects which result from a change in final demand of a consumption industry. We calculate the multipliers by dividing the accumulated effect of each sector by the initial change in demand. In the illustrated example, the multiplier for the agriculture industry is found by the following: \$914.25 (accumulated effect)/\$10,000 (initial change in demand)=.09. We interpret the multiplier to mean the expected change in demand for agriculture products as a result of a change in manufacturing products. The multiplier is useful when we want to test the output effects from several different demand changes in the manufacturing sector.

One limitation of the model is the cost of data collection. Typically the data necessary to analyze a specific region is derived from a survey of all companies within the area. The cost for such a survey is prohibitive. Fortunately, the I-O model can be modified for a given region using existing national data.<sup>1</sup> First, all four-digit S.I.C. inputs identified by *County Business Patterns* as being produced within the region are enumerated. Second, the location quotient was applied to "regionalize" the data. The formula to be used is as follows:

$$ar = an * LQ_i \text{ where } LQ_i < 1.0$$

*where ar and an are the matrices of the direct input coefficients  
of the regional and national I-O models respectively.*

The three primary sectors associated with air cargo are air carriers, forwarders/brokers, and land transportation companies. We can anticipate that the I-O model will yield higher transaction increases for those sectors most closely associated with air cargo. Sectors which both support and consume air cargo services will also benefit through indirect increases in transactions. A consumption sector of air cargo service which has a high indirect benefit can be considered a "target industry". A target industry is defined as a sector of the regional economy which benefits significantly from an increase in a produced input because of the sector's dependence on the produced good (e.g. air cargo service). Target industries are discussed further in the subfactor set 12.0.

**11.6** The economic stimuli provided by an increase in a given sector can create job growth in other sectors of the regional economy. The Input-Output model provides evidence supporting the potential for job growth. Increased purchases places excess demands on existing labor, thus, generating a need for job growth. Job growth can be estimated in much the same manner as output effects. The I-O model for employment is similar to output in that industries are listed in a tabular format with consumers as column headings and input producers as row headings. The entries in the table, however, do not represent dollar transactions; rather, each entry represents the number of jobs engaged in producing inputs for the column industry. Accumulated effects and employment multipliers are derived in much the same way as output multipliers. Collectively, these multipliers are unparalleled in their effectiveness in regional impact analysis.

Regional job growth is not often included in base reuse planning studies. The importance of this subfactor, however, is far too great to ignore. The I-O model supports the hypothesis of regional economic development and job growth. The base reuse planner must expose this concept to state agencies, municipalities, and corporations. The exposure of this line of reasoning helps reuse planners broaden the consortium of financial contributors for base redevelopment.

**11.7** Created Regional Locational Advantages is an important subfactor that is usually excluded in base reuse

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<sup>1</sup> Davis, H.C. Regional Economic Impact Analysis and Project Evaluation. University of British Columbia Press. 1990. p. 68.

planning documents. As discussed previously, military installations can be leaders in providing low cost facilities for air cargo transportation. The air cargo corporations, in turn, can offer an extremely competitive rate structure. Firms which are transportation cost sensitive and utilize air cargo as a means to import and export may find locational advantages in the region surrounding the base facility. Firms which use air cargo as a primary mode of transport and are currently spending a significant amount towards transportation will realize the greatest locational advantage to locating near the base facility. The increased locational advantage can create firm relocation or expansion into the base's region. The effects of such development are not included in the initial I-O analysis for air cargo; however, planners may use the I-O model on an "as needed" basis to estimate the aggregate effects for the regional economy.

**12.0** The second set of subfactors is associated with the microeconomic benefits a target industry receives from the air cargo development. A target industry, as defined in subfactor 11.5, is denoted by a four-digit SIC classification. The intent of target industry analysis is to give one example of an industry that benefits significantly from the air cargo development. Six subfactors are associated with illustrating these effects on the target industry. Edward Blakely and Subhrajit Guhathakurta utilize target industry analysis in a similar effort to show possible reuse industries for the Alameda Naval Base in California.<sup>1</sup> Blakely and Guhathakurta's use of target industry analysis, however, is one-step behind that which is applied in this study. The target industry analysis described herein is not associated with searching for a potential reuse; rather, this analysis is associated with illustrating the support industries (the consumers) for the given reuse, air cargo.

**12.1** New Linkage Potential is a necessary subfactor that should be considered first in the process of target industry analysis. This subfactor is the potential for the target industry to establish an economic linkage with the newly-introduced air cargo facility. The limiting factors associated with this subfactor are distance, political climate, and legal requirements. If the potential for linkage development is not substantially limited by any of the factors, then we may proceed on to other steps in the target industry analysis. If the limiting factors are such that no linkage potential exists at *any* cost, then the industry analysis may be terminated at this point.

**12.2** Land Transportation Cost Differential is one of three differential subfactors to consider in target industry analysis. This subfactor is a measure of the difference in land transportation cost for a given company between its current gateway and the potential gateway at the realigned military facility. The traveling distance requirement and the time spent in transport are the two primary components of this differential. The level of service and capacity on land transportation routes are other such elements affecting this differential. The size of the differential will affect the individual firm's decision to change the gateway(s) for exports and imports. A high differential that favors the base location may be reason enough for a firm to relocate its gateway. For the most part, however, this differential must be added to other differentials before a decision to change gateways can be made.

**12.3** Rate Differential is perhaps the most important subfactor to consider in target industry analysis. This subfactor is a measure of the difference in air cargo service rates between the base gateway and the gateway(s) currently used by each firm. Air cargo companies will fashion rates based on their production cost functions. Lease rates on facilities is one such component of the air cargo company cost function. As discussed in subfactor 4.3, Air Force base facilities have the advantage of being able to offer lower lease rates on facilities. The air cargo company, therefore, is in a position to offer a low rates and, thus, a favorable rate differential. In

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<sup>1</sup> Blakely, Edward and Subhrajit Guhathakurta. From Military Bases to New Industries and Stronger Regional Economics. Presented to the Association of Collegiate Schools of Planning Conference. Tempe, AZ. November 4-6, 1994. The authors chose biotech industries as target industries for occupying the realigned Alameda Naval Base.

fact, the rate differential will, more often than not, be greater than any of the other differentials in the target industry analysis. Rates on air freight transport are based on weight.<sup>1</sup> Therefore, those firms which ship heavy or high bulk cargo stand the most to gain from a large rate differential.

**12.4 Tax/Fees Differential** is the third and final differential subfactor to consider in calculating total advantage. Airport taxes are assessed by ad valorem (value of good).<sup>2</sup> The U.S. Customs Service collects an ad valorem duty on all imports. Fees, however, are usually assessed according to weight. Higher tax differentials in favor of the base facility, therefore, translate into a greater benefit for firms which ship high value goods. Collectively the three differential subproblems constitute the total advantage, expressed as a single cost differential. The total advantage is the impetus that will attract companies to use air service at the base facility. The market area for air cargo firms, therefore, is a function of total advantage.

**12.5 Routing Capacity** is a subfactor to consider in target industry analysis. Routing capacity is the ability of the target industry to send products to and receive products from the air cargo facility over a given distance of existing transportation facilities. This subfactor includes the routing capacity of both the air cargo service and the land transportation service.

We must assume that the company does not wish to reduce the market served by transferring gateway activities. The target industry may transfer part or all gateway activity depending upon the type of service offered by the alternative gateway. If the alternative gateway has air cargo service that covers the same geographic region with equal or greater efficiency, then the company has the incentive to transfer all gateway activities to the alternative gateway. If the alternative gateway has air cargo service that covers a smaller region or with less efficiency, then the company does not have such an incentive and may decide to transfer *only a portion* of all gateway activities to the alternative site.

Air cargo companies which own the land transportation equipment must bear the cost of rerouting the movement of products. Companies which do not own the land transportation equipment must assess the capacity of the land transportation industry in supporting the new route. Routing capacity can create or eliminate cost barriers. Therefore, the inclusion of this subfactor is important to the target industry analysis.

**12.6 Total Savings** represents the summation of the subfactors within this set. The total savings is expressed in quantitative terms as cost savings per unit weight and in qualitative terms as assets less liabilities. The total savings calculation is not linear; rather, the cost savings increase proportionately as more output is moved to the lower cost gateway. Target industries, which have determined a high marginal cost savings in the base facility, are likely to transfer nearly all of the existing gateway activity.

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<sup>1</sup> *Logistics Cost Database. Traffic Management.* July 1993. p. 13.

<sup>2</sup> Cavinato, Joeseeph. Editor. *Transportation Logistics Dictionary.* 3rd edition. 1989.

## **Calculation Method**

Now that we have justified the variables in the problem, we must offer a method for calculating the end result. We are not faced with any easy solution. The sets of subfactors have economic, social, and political dimensions. Our calculation method must be able to encompass all of these dimensions and yield a result which satisfies our problem.

Multiple Criteria Decision Analysis (MCDA) is one of the most effective means to approach a multivariate, multi-objective problem. J.R. Charnetski, Fumiko Seo, and Masatoshi Sakawa extol the versatility of MCDA in solving a range of complex problems. Though a complex MCDA model involves differential calculus and mathematical modeling, we may borrow the basic structure of the model in forming the calculation method. Our application does not detract from the effectiveness of the analysis, rather, demonstrates the versatility of MCDA.

We use the Multiple Criteria Decision Analysis with the satisficing principle, replacing the classical optimality principle. The classical optimality principle is based on the extreme solution obtained by marginal analysis or differential calculus. Alternatively, the satisficing principle only requires the result to lie within some range of tolerance.<sup>1</sup>

Multiple Criteria Decision Analysis assumes the existence of a decision-maker that will use the result in forming a policy. MCDA allows the decision maker to be involved without destroying the objectivity of the results. MCDA accounts for the human preference of the decision maker.

The first step in developing our model is the definition of a data scale. The data scale has a range from -10 to 10. We calibrate the data scale in 40 increments. Each increment represents a level of desirability. The maximum, 10 represents to optimum result for a particular variable. The minimum, -10 represents the least admissible result. Zero (0) is the point of indeterminance and separates the undesirable (negative) data range and the desirable (positive) data range.

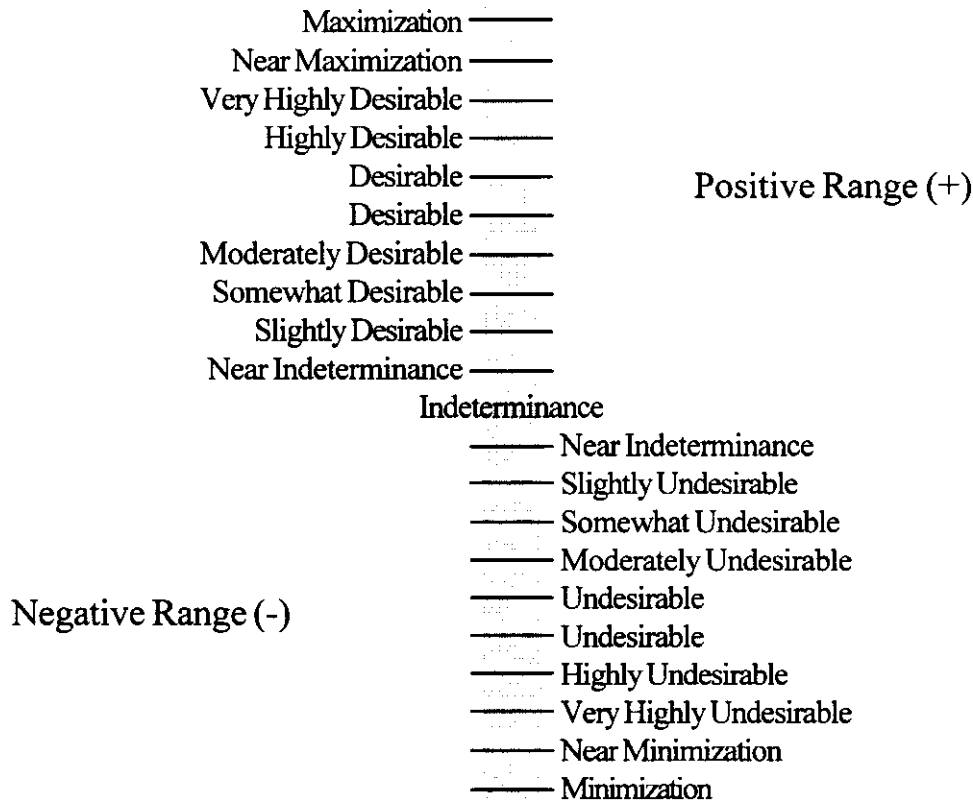
We define the 20 major increments of the scale and consider the minimal increments to lie at the midpoint between major ticks. The top three (3) data values on the positive scale are most desirable, yet difficult to achieve. The point of Maximization is where the analysis is complete and no better result could be obtained. The point of Near Maximization lies at point (9) on the data scale. This point *suggests* that no better result could be obtained, though small portions of the analysis may be incomplete or the value is not clear in superiority. The point of Very Highly Desirable lies at point (8) on the data scale and represents a result that has minimal deficiency.

The middle four data values on the positive scale are desirable and achieved more easily. The Highly Desirable point (7) signifies that the result exceeds expectation. This data value is well above average despite some deficiency that has been overcome. Two (2) data points are classified as Desirable (5-6). These points represent a sliding scale of desirability. Many subfactors which are desirable in light of several deficiencies will lie within this range. The Moderate Desirability point (4) represents a positive result despite several undesirable consequences.

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<sup>1</sup> Seo, Fumiko and Masatoshi Sakawa. Multiple Criteria Decision Analysis in Regional Planning. 1988. p. 10.

## Data Scale for Preferred Method



*Figure 5.1*

The bottom three data values on the positive scale represent only slight desirability. Somewhat Desirability (3) is at a point where enough evidence points towards a positive outcome despite some rebuke. The Slight Desirability point (2) indicates that the result is relatively positive in light of numerous limiting factors. The Near Indeterminance point lies at (1). The positive value signifies that the evidence suggests a positive result despite limited research or the abundance of limiting factors. The point of Indeterminance (0) represents neither a positive nor negative outcome.

The bottom portion of the scale contains the negative data range representing the range of undesirable outcomes. Near Indeterminance (-1) signifies that the evidence suggests a negative outcome despite limited research or several competing positives regarding the subfactor. The Slight Undesirability point (-2) signifies that the result is relatively negative in light of numerous positive arguments. Somewhat Undesirable (-3) lies at a point where sufficient evidence indicates a negative outcome despite some rebuke.

The Moderate Undesirability point (-4) represents a negative result despite several, more desirable consequences. Two (2) data points are classified as Undesirable (-5,-6). Much like the positive side of the scale, these points represent a sliding scale of undesirability. The Highly Undesirable point (-7) signifies that the result is far below expectation.

The bottom three (3) data values on the positive scale are least desirable, yet difficult to achieve. The point of Minimization (-10) is where the analysis is complete and no worse result could be obtained. The point of Near Minimization lies at point (-9) on the data scale. This point *suggests* that no worse result could be obtained, though small portions of the analysis may be incomplete or the value is not clearly the minimum. The point of Very Highly Undesirable lies at point (-8) on the data scale and represents a result that has significant negative results with very little positive argument. Figure 5.1 represents a summary of the data value range.

Now that the data scale has been established, we must assign weights to each of the subfactors. Charnetski describes the weighting process as an interaction between the decision-maker and the theoretical model.<sup>1</sup> The result of the interaction is a customized set of weights that is specific to the problem at hand. The fundamental understanding is as follows: each weight represents the significance of one subfactor, in terms of percentage of the total (100%), in answering the ultimate question of feasibility. Each of the subfactors listed in tables 5.1 thru 5.4 have some level of significance in determining the feasibility of air cargo. Collectively the significance is 1 or 100%. To determine how the significance is distributed, we must consult those who are most affected by the reuse of the base. Since the distributional effects transcend local boundaries we must include representation of a larger political body (e.g. a state official).

To expedite the process of assigning weights we must analyze smaller groups of subfactors, rather than the whole list at one time. First we estimate the significance of each of the three subproblems. Each significance is expressed as a percentage with the sum being 1. Next, we may estimate the significance of each set of subfactors in answering its related subproblem. Finally, we estimate the significance of each subfactor in addressing the particular set of subproblems. When the three levels of significance are multiplied for any given subfactor, the product represents the actual significance.

Take the following example: a reuse planning unit determines that regional need is 30% of the feasibility problem. The unit determines that the set of subfactors known as Market Potential is 45% of the regional need. Finally, the planning unit determines that competition is 60% of market potential. The actual weight is determined by multiplying the three significances ( $.30 \cdot .45 \cdot .6 = .081$ ).

The weight is multiplied with the data value to achieve a scaled value. The scaled values may be summed across the entire range of subfactors. The sum represents the expected value of the feasibility. We may measure this value on the data scale. We are especially concerned with the degree to which the result is positive (feasible) or negative (unfeasible).

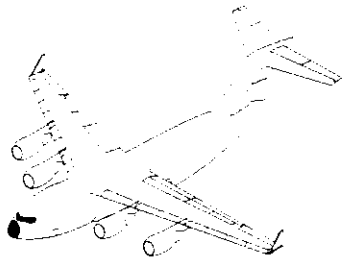
The model does not make an interpretation of the result, nor does it provide a guide for action beyond this point. The resulting value is the best indicator for decision makers in developing action. The decision maker should also investigate key variables which have generated the result. Such investigation helps the decision maker grasp a better understanding of the model and the variables contained therein.

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<sup>1</sup> Charnetski, J.R. *Multiple Criteria Decision Making with Partial Information*. Space Location and Regional Development. Edited by Manas Chatterji. 1976. p. 52.

# Chapter 6

## Applying the Preferred Method



- Approach
- Assigning Weights
- Regional Need
- Feasibility
- Economic Development
- Conclusions

## Approach

Now that we have identified a preferred method for making a feasibility assessment, we can begin to make an application to Grissom Air Force Base. The application of the preferred method has two major components. First, we must assign weights to the subfactors. Weights, as discussed previously, represent the significance of any given subfactor in answering the ultimate question of feasibility. The weights give us an indication of the most important subfactors within the model. Second, we must assign data values to the subfactors. Data values are quantitative measurements based on written analysis. Each data value is assigned using the data scale presented in Chapter 5. Once these components are complete, we can calculate the expected value of the feasibility of air cargo.

This section is based on the Multiple Criteria Decision Analysis (MCDA) model. A full MCDA model requires the complete response to *all* subfactors. Given the time and monetary constraints of our study, we are not able to fully respond to all subfactors. We may, however, answer those subfactors which have significant weight to the feasibility assessment. In doing so, we shed some light on the final expected value of feasibility. This approach is appropriate for any study which faces similar constraints.

The prediction of the final expected value is more accurate as we respond to a larger portion of the MCDA model. We may assume that full responses to a minimum of 50% of the weighted subfactors of the MCDA is sufficient to shed light on the final expected value. We label the range between 50% and 100% of the weighted subfactors as the *range of acceptability* for estimating the final expected value. Answering less than 50% of the weighted subfactors may not provide enough evidence to support a prediction of the final expected value. We respond to the sets of subfactors in order of importance (in terms of weight) until we are within this range of acceptability. This approach makes certain that the key subfactors are addressed.

Our approach requires that we first assign weights to the subfactors. After assigning the weights, we may respond to those sets of subfactors which have relatively larger weights.

## **Assigning Weights**

The first step in applying the preferred method is the assignment of weights to the subfactors. The MCDA model allows for the inclusion of human preference without detracting from the objectivity of the results. The Grissom Redevelopment Authority (GRA) represents the decision-maker for the redevelopment of Grissom Air Force Base. The GRA best represents the opinions and desires of those most affected by base redevelopment.

We began by holding an interactive meeting with the Grissom Redevelopment Authority. We used workbooks to assist in assigning of weights. The first section of the workbook contains a master summary of the subfactors (as shown in chapter 5). This section also includes a tree diagram showing the relationship between subproblem and subfactor. The second section of the workbook includes worksheets for assigning weights to the subproblems, subfactor sets, and subfactors. Each worksheet contains "average weights" for subproblems and subfactors. The average weight is the weight of a particular subproblem or subfactor should all subproblems or subfactors be weighted equally within the respective set. The average weight concept served as a guide for the GRA in assigning weights. The workbook was used as a guide throughout the meeting. We maintained a computer in the meeting to assist us with quick calculations. Further, we entered the completed worksheets in the computer and generated a summary of the weights.

We first explained the ultimate question of feasibility and outlined the three main subproblems. We then explained the subfactors and their arrangement in the MCDA tables. We described the subfactors as components to the ultimate question of feasibility.

We followed the same method outlined in the preferred method (Chapter 5). A first level of detail involves the assignment of weights to the three subproblems. We used the workbook tree diagram to show the ultimate question of feasibility and its relation to the three subproblems. We then asked the GRA to assign a weight (in terms of a percent) for the three subproblems. As each weight was assigned, the GRA member entered the value in its respective place in the subproblem weight worksheet.

A second level of detail involves the assigning of weights to sets of subfactors within each subproblem. We used the subfactor set worksheets. As each weight was assigned, the GRA member entered the value in its respective place in the subfactor sets weight worksheet.

A third level of detail involves the assigning of weights to the subfactors within each set. We again used the worksheets contained in the workbook. As each weight was assigned, the GRA member entered the value in its respective position on one of the four subfactor weight worksheets.

After all weights were assigned we collected the workbooks and entered the data in the computer. The computer contains a macro spreadsheet that is equipped to make summary calculations of all subfactor weights. The summary weights for both GRA staff members were averaged and displayed in a final macro spreadsheet. When all entries were completed, we illustrated a final summary of the weights. We presented a summary copy of the workbook, which includes summary weights. The presentation of final weights was important to the GRA in visualizing the results of the process. Numeric weights were sufficient in conveying the final subfactor weights.

The GRA is satisfied with the approach that has been employed. No similar method heretofore has been applied to reuse analysis at Grissom AFB. The weight assignments are useful in the MCDA and allow us to focus on the most important (in terms of weight) subfactors. A summary of the weights, as determined by the GRA, is illustrated in following tables.

# Table of Subfactor Weights

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## Subproblem #1: Regional Need

Total Subproblem weight: 0.35

Line	Subfactor	Weight
<b>1.0</b>	<b>Aviation Demand Forecasts</b>	<b>0.079</b>
1.1	Demand Forecasts for Primary Use Airports	0.027
1.2	Aviation Demand Forecasts for Joint Use Airports	0.052
<b>2.0</b>	<b>Market Potential</b>	<b>0.111</b>
2.1	Air Cargo Industry	0.035
2.2	Distance from major airport	0.024
2.3	Competition	0.008
2.4	Existing Company Relocation	0.018
2.5	New Company Location	0.027
<b>3.0</b>	<b>Employment Characteristics</b>	<b>0.055</b>
3.1	Commuting Shed	0.018
3.2	Labor Pool	0.025
3.3	Skill Level/Education	0.013
<b>4.0</b>	<b>Marketability</b>	<b>0.105</b>
4.1	Transportation Access-Highway	0.041
4.2	Transportation Access-Rail	0.014
4.3	Utility Charge and Credits	0.019
4.4	Tax Rates and Abatements	0.024
4.5	Protection Services	0.008

Table 6.1

# Table of Subfactor Weights

page 2 of 4

\*rounded figures

## Subproblem #2: Feasibility

Total Subproblem weight:

0.35

Line	Subfactor	Weight
<b>5.0</b>	<b>Airspace and Traffic Control</b>	<b>0.061</b>
5.1	Aircraft Arrival Delay	0.009
5.2	Aircraft Departure Delay	0.009
5.3	Conflicting ATC Uses	0.004
5.4	Change to ATC Systems	0.007
5.5	Movement of Other Air Traffic	0.007
5.6	International Certificates/U.S. Customs	0.012
5.7	Foreign Trade Zone (FTZ)	0.012
<b>6.0</b>	<b>Legal Requirements and Responsibilities</b>	<b>0.040</b>
6.1	Recipient Owner Technical Capacity	0.004
6.2	Technical Capacity of Agencies (other than recipient)	0.003
6.3	FAA Requirements and Standards	0.005
6.3	Noise Requirements	0.006
6.4	EPA General Requirements	0.004
6.5	Hazardous Substance Requirements	0.003
6.6	NEPA Requirements	0.003
6.7	CERCLA Requirements	0.002
6.8	Conveyance Method	0.005
6.9	Conveyance Requirements	0.005
<b>7.0</b>	<b>Airport Facilities</b>	<b>0.063</b>
7.1	Runway Capacity	0.008
7.2	Runway Availability	0.008
7.3	Taxiway Capacity	0.003
7.4	Surface Aircraft Parking Availability	0.006
7.5	Hangar Availability	0.006
7.6	Radar Approach Control Capacity	0.007
7.7	Land Use Compatibility	0.003
7.8	Internal Circulation	0.004
7.9	Infrastructure Circulation	0.004
7.10	Infrastructure Capacity	0.002
7.10a	Water	
7.10b	Sewerage	
7.10c	Electric	
7.10d	Gas	
7.11	Employee Parking	0.004
7.12	Truck Parking	0.006
7.13	Public Parking	0.003
<b>8.0</b>	<b>Costs</b>	<b>0.087</b>
8.1	Facility Modification	0.013
8.2	New Construction	0.010
8.3	Structure Demolition	0.001
8.4	Tower Improvements	0.001

Table 6.2

# Table of Subfactor Weights

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## Subproblem #2: Feasibility (continued)

Line	Subfactor	Weight
	<b>Costs (cont.)</b>	
8.5	Utility Improvements	0.008
8.5a	Water	
8.5b	Sewerage	
8.5c	Electric	
8.5d	Gas	
8.6	Utility Demolition	0.001
8.6a	Water	
8.6b	Sewerage	
8.6c	Electric	
8.6d	Gas	
8.7	Utility Relocation	0.008
8.7a	Water	
8.7b	Sewerage	
8.7c	Electric	
8.7d	Gas	
8.8	Capital Equipment	0.005
8.9	Environmental Remediation	0.001
8.10	Site Preparation	0.008
8.11	Operational Delay	0.008
8.12	New Airport Facilities	0.008
8.13	Debt Issued	0.007
8.14	GARB Interest Rate	0.004
8.15	Revenue Bond Interest Rate	0.004
<b>9.0</b>	<b>Operating costs</b>	<b>0.053</b>
9.1	Management	0.014
9.2	Maintenance	0.023
9.3	Marketing	0.006
9.4	Administrative	0.009
<b>10.0</b>	<b>Revenues</b>	<b>0.050</b>
10.1	FAA Operational Funding	0.006
10.2	AIP Funding Potential	0.006
10.3	State Funding	0.007
10.4	Local Funding	0.004
10.5	Landing Fees	0.005
10.6	Airport Tax	0.004
10.7	Gas Tax	0.003
10.8	CEDIT Revenue	0.003
10.9	COIT Revenue	0.002
10.10	Property Tax Revenue	0.002
10.11	Sales Tax Revenue	0.003
10.12	Lease Revenue	0.005
10.13	Utility Revenue	0.001
10.14a	Water	
10.14b	Sewerage	
10.14c	Electric	
10.14d	Gas	

Table 6.3

# Table of Subfactor Weights

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\*rounded figures

## Subproblem #3: Economic Development

**Total Subproblem weight:**

0.3

Line	Subfactor	Weight
<b>11.0</b>	<b>Economic</b>	<b>0.135</b>
11.1	Matching of Supply Linkages	0.029
11.2	Absorption of Displaced Labor Force	0.005
11.3	Job Creation/Retention - local	0.015
11.4	Increased Transactions - as a producer	0.029
11.4a	Land Transportation	
11.4b	Forwarder/Broker	
11.4c	Air Carrier	
11.5	Increased transactions - as a consumer	0.020
11.5a	Land Transportation	
11.5b	Forwarder/Broker	
11.5c	Air Carrier	
11.6	Job Creation/Retention - regional (indirect)	0.021
11.7	Created Regional Locational Advantages	0.018
<b>12.0</b>	<b>Target Industry</b>	<b>0.165</b>
12.1	New Linkage Potential	0.016
12.2	Transportation Cost Differential	0.038
12.2a	Gallonage	
12.2b	Time/wages	
12.2c	Depreciation of equipment	
12.3	Tax/fees Differential	0.018
12.4	Routing Capacity	0.023
12.5	Potential Revenue	0.038
12.6	Freight (in dollars)	0.032

Table 6.4

Upon reviewing the results of the weighting exercise, we make several major observations. The weighting of the three subproblems are relatively equal. Regional Need and Feasibility both have weights of .35 and Economic Development has a weight of .3. Noteworthy is the weight of Economic Development in the ultimate feasibility question. Regional economic development, as discussed in chapter 1, is often overlooked in base reuse planning. According to the weights, we must not overlook such subfactors; for in doing so, we would eliminate 30% of the response to the question of feasibility.

Market Potential is the most important set of subfactors within the subproblem of Regional Need. Market Potential answers nearly 1/3 of the Regional Need subproblem and over 1/10 of the ultimate question of feasibility. Marketability is the second highest set with a weight of .105. Despite moderate importance we can not fully address marketability without addressing numerous other subfactors that otherwise are not as important to the study. Given the nature of the marketability subproblem, we need not consider it a priority in this situation. Employment Characteristics, with a total weight of only .055, is the lowest ranked set within this subproblem. Given the aggregate weight of the sets, we must begin to respond to the market potential subfactors. Employment characteristics and demand statistics are not nearly as important in addressing this subproblem.

Costs, both capital and operating, are the most important subfactors within the Feasibility subproblem. The aggregate weight of Capital Costs and Operating Costs is nearly .14. In comparing these sets to other sets, we find that costs are a significant component in answering the ultimate question of feasibility. Airport Facilities, Airspace and Air Traffic Control, and Revenues all have weights that are nearly equal. We must first respond to the issues associated with costs. Next, we may begin to respond to subfactors associated with airport facilities. We may then balance this analysis by addressing the subfactors associated with revenues.

Both Economic Impact and Target Industry are important subfactor sets. Target industry analysis has the highest weight among all sets of subfactors within the model, .165. Economic Impact has the second highest weight, .135. As mention previously, the aggregate weight of the Economic Development is significant to the model. We, therefore, must address both sets of subfactors.

We may summarize the weighting assignments by prioritizing the most significant sets of subfactors. We include some minor interjections (particularly in the weight of revenues) to derive a priority table (see table 6.5 below). Table 6.5 reveals that if we respond to the priority sets, then we will have answered over 65% of the ultimate question of feasibility. Even if we are unable to respond to all subfactors within each priority set, responding to a significant number of them would keep us well within the range of acceptability for estimating the final expected value.

## Priority Table

Subfactor Set	Subproblem	Aggregate Weight
Target Industry	Economic Development	0.165
Costs (Capital and Operating)	Feasibility	0.140
Economic Impact	Economic Development	0.135
Market Potential	Regional Need	0.111
Airport Facilities	Feasibility	0.063
Revenue	Feasibility	0.050
<b>Total</b>		<b>0.663</b>

*Table 6.5*

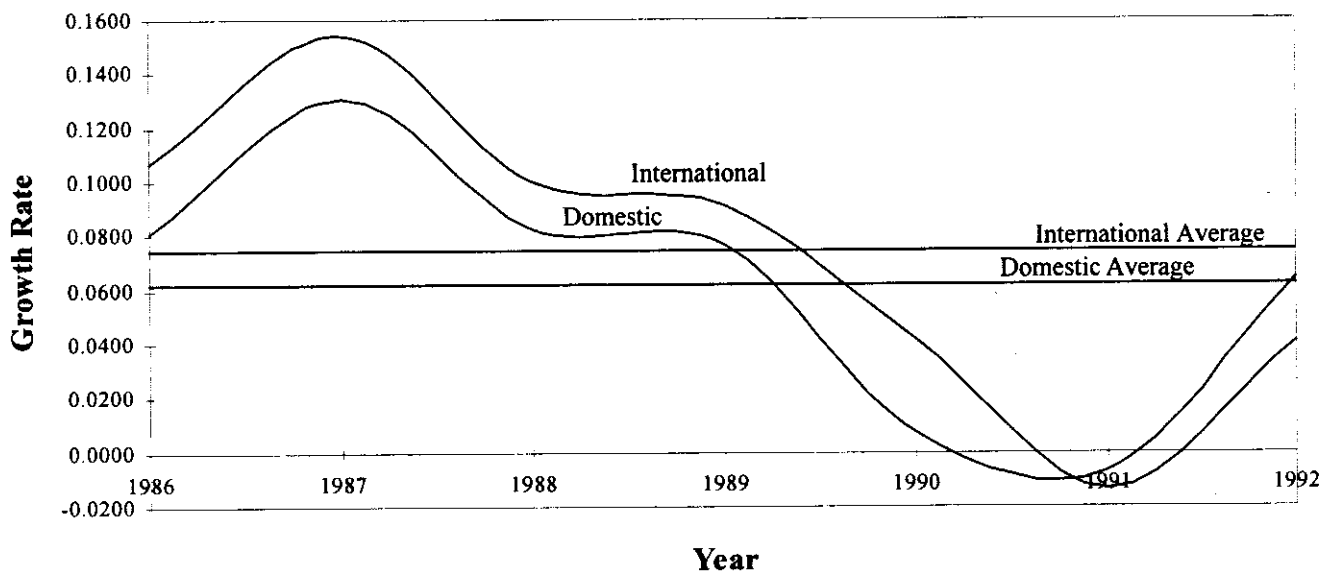
**Regional Need**

Growth in the air cargo industry is an indicator for regional need. Air cargo is characterized by dual markets: the domestic and international markets. Both markets have experienced significant growth. The international market, however, stands above the domestic market in terms of growth. The international growth is attributed primarily to the introduction of new service to Europe. Domestic growth relies on increased volume to currently served areas.

We need not unveil a full market analysis; rather, some major trends will serve as an adequate indication of market growth. The Cargo Marketing Group provides adequate analysis of the air cargo industry in the air cargo feasibility study for Grissom. In constructing our analysis, we build upon these efforts.

International air cargo growth has outpaced domestic growth. Figure 6.1 illustrates that between the years 1986-1992 the average growth rate for international air cargo was 7.4%. This growth also exceeds worldwide passenger air carrier growth. Domestic air cargo has experienced modest growth as a result of increased demand in areas of established service. Figure 6.1 shows that between the years 1985-1992 the average growth rate for domestic air cargo was 6.3%. The growth trends are similar for both international and domestic air cargo. Both markets experienced a peak growth rate in 1987, while dipping to a negative growth rate during the recession of 1991.

**Air Cargo Industry Growth**

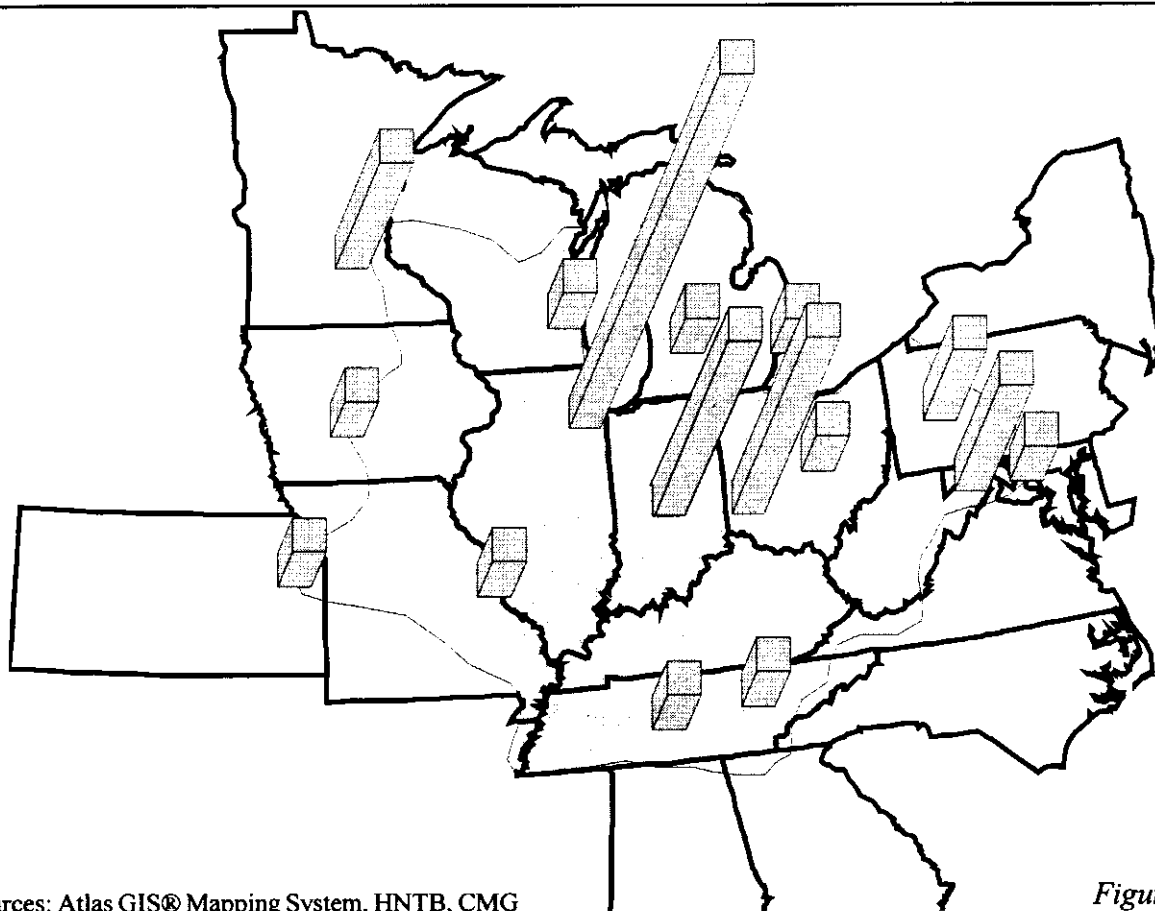


Source: Cargo Marketing Group, Boeing

*Figure 6.1*

The air cargo operations at Grissom AFB will compete with cargo operations at other major airports within the catchment area. In analyzing competition we take into account two major characteristics: the distance from the airport and the level of air cargo activity. We limit the number of airports to PR airports within the catchment area which process at a minimum of 20,000 tons of cargo annually. We find that sixteen major airports will compete with air cargo operations at Grissom AFB under the assumption that no competitor airports eliminate service. Figure 6.2 and table 6.6 illustrate the competitor airport, processed cargo tonnage (1993), and the distance from Grissom AFB.

### Major Competitor Airports in Air Cargo for Grissom AFB, Indiana



Sources: Atlas GIS® Mapping System, HNTB, CMG

Figure 6.2

### Competitor Airports

Airport	1993 Cargo Tonnage	Distance from Grissom (in airline miles)
Chicago - O'Hare	1,146,521	100
Indianapolis International	535,969	60
Dayton	529,174	110
Milwaukee	92,839	195
Columbus	49,710	185
Grand Rapids	28,758	110
Washington - Dulles	240,182	465
Minneapolis - St. Paul	320,893	475
Pittsburgh	145,965	325
Kansas City	115,162	470
St. Louis	110,044	260
Des Moines	93,600	400
Detroit *	64,186	190
Washington National	57,460	490
Nashville	55,419	320
Knoxville	35,902	350

\*domestic only

Table 6.6

A significant amount of service is currently being provided by competitor airports in the catchment region. Chicago- O'Hare is the most heavily used (for all purposes) airport in the nation. HNTB also calculates excess freight capacity at both Chicago and Indianapolis. Additionally, airports with high level of activity tend to process cargo more efficiently. Given all of this, we conclude that the potential for Grissom to establish service is near minimal. Air traffic diversion from other airports must be induced through lower rates and transshipment efficiency; Grissom does not appear to be a potential as a reliever airport.

Despite the seemingly negative tone given by the results of the market potential subfactors, Grissom has the opportunity to induce existing company (those within the catchment area) relocation and new company (those outside the catchment area) location by offering lower fares and forwarder cost savings. We also see that the market for international cargo is expanding at a consistently greater rate than domestic cargo. We may analyze these points further by focusing on the major air cargo companies in the nation which serve international gateways within the catchment area and those which serve international gateways outside the catchment area. Table 6.7 provides a listing of the major cargo companies which serve international gateways within the catchment area, the gateway(s) served, and the types of service that each offers. Table 6.8 provides a similar listing for cargo companies which currently serve only international gateways outside the catchment area.

Also important to this analysis is the current rate structure for existing companies at competitor airports. We obtained rate schedules from the following seven companies: Emery, UPS, Federal Express, Burlington, Roadway, DHL, and Airborne Express. Displaying rate schedules is unnecessary. However, we use the rate schedules as part of making judgements regarding the potential for company relocation.

Several companies have the potential to establish fixed operations within the region. We see that several cargo companies currently do not serve an international gateway within the catchment area. We are particularly interested in express and integrated express air carriers, as the market for forwarders within the catchment area appears to be saturated. The potential to attract these companies to relocate or expand to Grissom appears difficult, however. Nearly all major, worldwide carriers provide service to an international gateway within the catchment area (Chicago in particular). Existing company relocation has a slightly better potential. As described previously, existing company relocation is more probable when the company is in a position to offer substantially lower rates or establish different service (i.e. Foreign Trade Zone designation).

# Major Cargo Companies Serving International Gateways Within Catchment Area

Name	Gateways Served				Type	Services													
	all	Chi	Ch	Chi		Consolidation	Customhouse Brokerage	Hazardous Materials	Heavy Cargo	International Forwarding	Overnight	Packing	Pickup and Delivery	Printed Matter	Same Day Delivery	2nd/3rd Day Delivery	Small Package	Warehousing and Distribution	Perishables
AAA Transportation	all				Forwarder and Air Express Carrier	x	x	x	x	x	x	x	x	x	x	x	x		
Ad Com Express	Min	Chi			Forwarder and Air Express Carrier	x	x	x	x	x	x	x	x	x	x	x	x		
Airborne Express	Ch				Forwarder and Air Express Carrier		x		x										
Air Compak International	Chi				Forwarder	x	x	x	x	x	x	x	x	x	x	x	x		
Air Freight Forwarding	Chi				Forwarder	x			x										
Airschott, Inc.	all				Forwarder	x	x	x	x	x	x	x	x	x	x	x	x		
AIT Freight Systems	Chi				Forwarder	x			x										
Associated Air Freight	Chi				Forwarder	x			x										
Alexander International	Chi				Forwarder	x	x	x	x	x	x	x	x	x	x	x	x		
Allied Van Lines	Chi				Forwarder				x										
American Dist. Systems	Chi				Forwarder	x			x										
Burlington Air Express	Chi				Integrated Air Express Carrier	x	x	x	x	x	x	x	x	x	x	x	x		
Byrnes Air	Mil				Forwarder		x		x										
Central Air Freight	Chi				Forwarder		x		x										
Data Air Courier	Chi				Forwarder														
DHL	Cin				Integrated Air Express Carrier	x	x	x	x	x	x	x	x	x	x	x	x		
Emery Worldwide	all				Integrated Air Express Carrier	x	x	x	x	x	x	x	x	x	x	x	x		
Federal Express	Chi	Cin			Integrated Air Express Carrier	x	x	x	x	x	x	x	x	x	x	x	x		
LandAir Transport	Chi				Air Express Carrier				x										
Lufthansa	Chi				Air Express Carrier				x										
North American Air Freight	all				Forwarder	x			x										
Quick Air Freight	Chi	Col	Cin	Day	Integrated Air Express Carrier	x			x										
United Parcel Service	all				Integrated Air Express Carrier		x		x										

Table 6.7

# Major Cargo Companies Serving International Gateways Outside Catchment Area

Table 6.8

Name	Gateways Served			Type	Services													
	NY	L.A	Mia		Consolidation	Customhouse Brokerage	Hazardous Matrlals	Heavy Cargo	International Forwarding	Overnight	Packing	Pickup and Delivery	Printed Matter	Same Day Delivery	2nd/3rd Day Delivery	Small Package	Warehousing and Distribution	Perishables
All-Nations Forwarding	NY			Forwarder	x	x	x	x	x	x	x	x	x	x	x	x		
Aramex International Courier	JFK			Air Express Carrier		x	x	x			x			x	x			
Berklay Air Services	NY			Integrated Air Express Carrier	x		x	x	x		x			x	x	x		x
Bestway Forwarding Inc.	NY		L.A	Integrated Air Express Carrier			x	x	x		x			x	x			
Challenge Air Cargo	Mia	L.A		Air Express Carrier			x	x	x		x			x	x			
L.E. Coppersmith	L.A	SF	Hou	Forwarder/Customs Broker	x		x	x	x		x			x	x			
Cottrell Air Freight	Buf			Forwarder							x			x	x			
Fast Air Carrier	Mia	NY	L.A	Integrated Air Express Carrier			x	x			x			x	x			
LTH International	L.A	NY	SF	Forwarder							x			x	x			
Pony Express Air Courier	Mia	Jac		Integrated Air Express Carrier							x			x	x			
Skynet Worldwide	NY	L.A	SF	Air Express Carrier										x	x			

## **Feasibility**

The most important feasibility subfactor sets are associated with the costs and revenues of developing an air cargo facility. Equally important is the capacity of the airport facilities. We begin with assessment of facility capacity, which is an important basis for cost and revenue analysis.

### **Airport Facilities**

Runway capacity requirements are based upon FAA airport design standards. The FAA allows flexibility in the application of such standards to maintain safety while permitting the most efficient use of the airport.<sup>1</sup> The calculation of runway capacity is expressed as the maximum number of aircraft that a runway configuration can accommodate and is described in terms of hourly and annual capacity. The hourly capacity of the runway system is the number of aircraft departures and arrivals that can be physically accommodated in one hour. Annual capacity is expressed as an Annual Service Volume (ASV). HNTB analysis shows that Grissom AFB has an ASV of approximately 210,000 operations. In addition, Grissom's capacity is between 53 and 55 operations per hour.<sup>2</sup>

Taxiway capacity and surface aircraft parking capacity are most often expressed in terms of taxi lanes and hardstand areas. Taxi lanes are the marked paths by which a aircraft moves between the different zones of an airport facility. Hardstand areas are those paved areas which accommodate the aircraft parking. The standard taxi lane-to-taxi lane separation in hardstand areas is 240 feet. The standard taxiway-to-fixed or moveable objects clearance is 160 feet.<sup>3</sup> We can compare these capacities to projected facility requirements.

We compute runway, surface aircraft parking, and taxiway requirements using, as a basis, the forecast of air cargo tonnage. Using the industry average cargo densities for the Boeing 727 (cargo volume of 5,100 cubic feet), the forecast of enplaned cargo, and average load factor of 70%, HNTB projects two weekly domestic operations for Grissom. Using similar analysis with the Boeing 747 (cargo volume of 21,530 cubic feet), HNTB projects three international operations per week for Grissom. Surface aircraft parking requirements are based on the projected operations. In this case, the aircraft parking areas must be capable of handling at least two 727 and three 747 aircraft.<sup>4</sup>

Based on HNTB projections, the facility requirements associated with the airfield are far below the capacity. The runway length and width are sufficient to accommodate any air cargo aircraft of any maximum weight. Further, taxiway capacity and parking availability are far above requirements. Several recommendations, however, are proposed regarding aircraft parking and taxiway efficiency. First, the main apron area (outside the cantonment area) has just enough capacity to hold all of the aircraft described in the projections. The alert apron may have to be utilized to some extent given any expansion. The alert apron, however, is physically separated from the main apron and some distance from the available hangar and potential cargo storage area. The full utilization of the Alert Apron for air cargo use may require the construction of a new, parallel taxiway on the south side of the runway. The new taxiway would allow cargo planes to access the apron without obstructing airfield operations. Additionally, maneuverability is disadvantaged because of the positioning of the cantonment area. Access to hangar 200 is impaired because of the cantonment parking. Full access from both east and west sides of the hangar requires the elimination of one parking space in the cantonment area. Further, the north taxiway may need to be extended to allow for cargo planes to maneuver to the hardstand areas without traversing cantonment area parking. These suggested improvements are shown in figure 6.2.

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<sup>1</sup> United States. Department of Transportation. Federal Aviation Administration. Airport Design. FAA Advisory Circular. AC 150/5300-13.

<sup>2</sup> HNTB. Grissom Air Force Base Feasibility Study. p. 5-4.

<sup>3</sup> *ibid.* p. 5-14.

<sup>4</sup> *ibid.* p. 5-4.

### Grissom Air Force Base

Suggested airport facility improvements for Air Cargo use

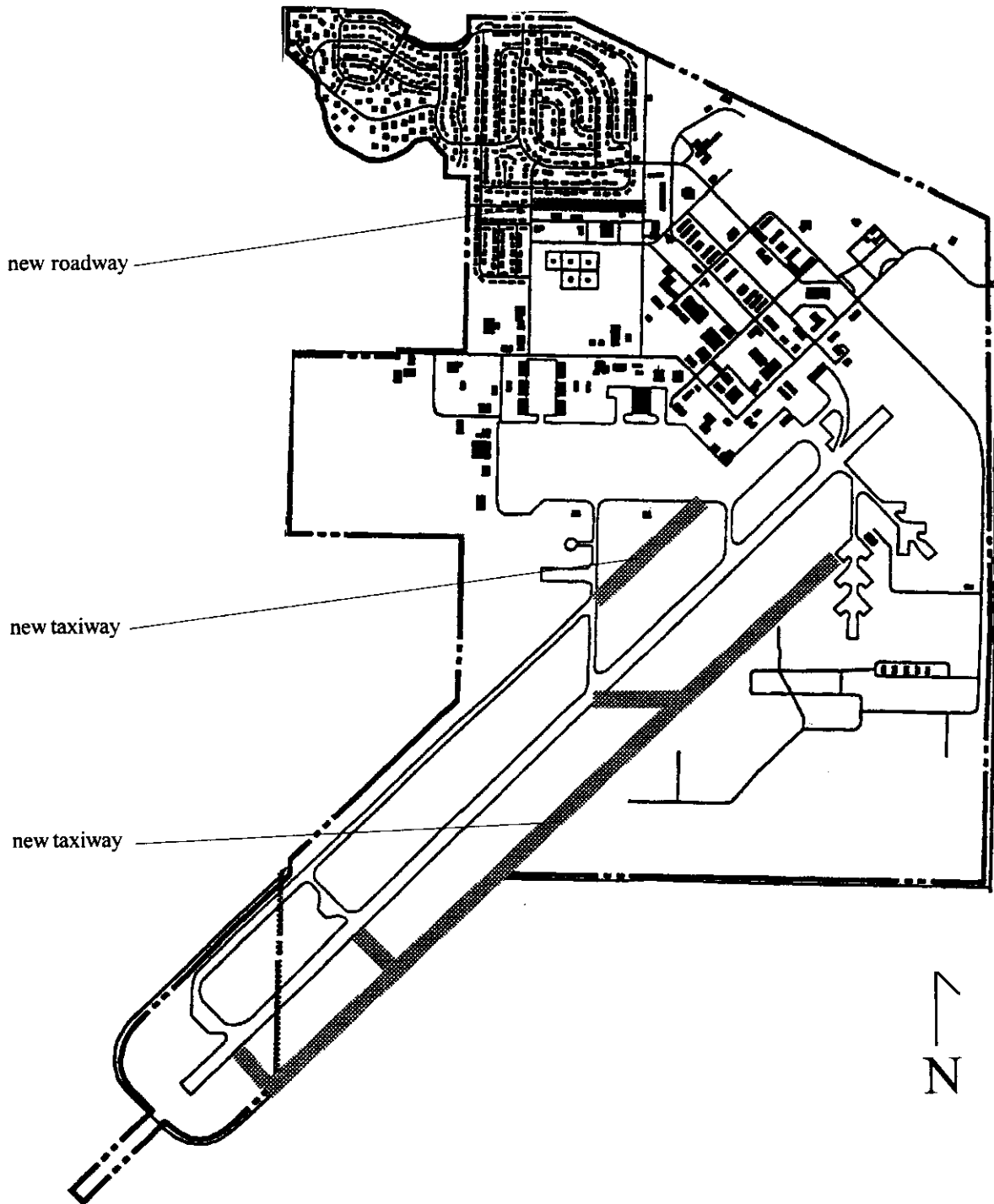


Figure 6.2

Source: United States Air Force, HNTB, RKG

Hangar availability is based on the excess hangar space which lies outside the cantonment area. This space may be used for cargo storage, aircraft storage, or maintenance. Six hangars, totalling over 175,000 square feet, lie outside the cantonment area. Building 200 (129,000 square feet) is the most equipped hangar facility which is capable of accommodating 727 aircraft. The other five hangars do not have sufficient space to accommodate the wide-body cargo aircraft. Additionally, no space designated as warehousing lies outside the cantonment area. Therefore, some of the hangar space must be utilized for the warehousing of cargo.

We compare cargo structure requirements through the use of utilization rates. A utilization rate is the ratio of air cargo structure (in square feet) to air cargo tonnage. Based on an HNTB study of 75 airports in the United States, the average building utilization rate for the 75 airports was 1.5 square feet per ton in 1993.<sup>1</sup> HNTB also concludes that adequacy standards for a primary airport would likely fall within a range of 1.0 to 2.6 square feet per ton. Using this average, the facility requirements for Grissom range from 5,700 square feet (domestic only) to nearly 45,000 square feet (domestic and international) depending upon the level of service. Based on the existing supply of hangar space, Grissom more than meets the structure requirements.

Radar approach control capacity is based on lighting and navigational aids (NAVAIDS). Airport lighting allows aircraft to land safely at night while NAVAIDS are an integral part to landing aircraft accurately and safely. The airport lighting at Grissom AFB includes both runway and taxiway edge lights. RKG determined that these lights are in conformance with FAA standards set forth in AC 150/5340-24 (Runway and Taxiway Edge Lighting Systems).<sup>2</sup>

NAVAIDS consist of signs, the Instrument Landing System (ILS), radio beacons, radar, and weather observation instruments. The runway is equipped with "Runway Distance Remaining" signs located on each side of the runway. These signs meet FAA standards despite the need for repair. The only other signs are pre-departure information signs. Civil airport authorities usually provide a more complete system of signage to assist pilots to taxiways, aprons, and runway takeoff areas. The current signage system does not meet the FAA requirements as specified in FAA AC 150/5340-18C (Standards for Airport Sign System).<sup>3</sup> Upgrades to the signage system on the base are necessary to support air cargo operations.

The current ILS system is certified as a category-I (CAT-I) classification, despite having been maintained at above CAT-II. A higher CAT translates to more potential to attract air cargo companies without modifications to the ILS. Air cargo companies typically demand a CAT-II or better ILS classification.

The radio beacons include a rotating light beacon and the VORTAC, a combination of a Very High Frequency Omnidirectional Range (VOR) and Tactical Air Navigation (TACAN). The Airport Surveillance Radar (ASR) is an approach radar used to direct and display an aircraft's positioning. The ASR may be used within a 60 mile coverage area. Most of the NAVAIDS are new and in excellent condition. Some of the transmitting frequencies for the equipment, however, may need to be changed from military to civilian ranges.

Land Use Compatibility is not a major concern of the GRA. Land use compatibility is more probable given the air cargo reuse. Aviation-related construction and building reuse is compatible with the support functions that the base currently offers. The land use compatibility was a considerably more important issue under the pre-

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<sup>1</sup> HNTB. Grissom Air Force Base Feasibility Study. p. 5-4.

<sup>2</sup> RKG. Grissom Air Force Base Reuse Plan. p. IV-6.

<sup>3</sup> *ibid.*

ferred reuse, heavy and light industry, set forth by the United States Air Force. The high level of compatibility of air cargo with the existing land uses eliminates a significant amount of conflicting uses.

RKG in a transportation study focused attention on the changes to the internal circulation of traffic as a result of the imposition of the cantonment area. We may extract only the preliminary traffic analysis because RKG based the recommendations on the heavy and light manufacturing reuse alternative. The only serious detriment to vehicular circulation is the closure of Thunderbolt avenue to public access. East-West travel needs could be met through the construction of a new roadway which would run north and parallel to Thunderbolt. The construction of this roadway is necessary in order to access several major structures which lie just outside the cantonment area. (see figure 6.3)

Grissom AFB is in a fortunate position in which the utility circulation system runs parallel to roadway segments. The establishment of easements in areas outside the cantonment area will be eased by the current utility circulation configuration.

RKG and HNTB make several conclusions regarding utility capacity for future development. The water treatment and supply systems are more than adequate to meet additional commercial and domestic demand. Air cargo demand for water is dominated by the washing of aircraft. Wastewater then is dominated by wash water and waste oil separation. Stormwater runoff is facilitated through a natural drainage system. Neither the supply of water nor the ability to treat wastewater will be hindered by additional development.

The electric distribution system will require modifications with additional development. RKG concludes that the electric distribution load has reached the system's full capacity.<sup>1</sup> An upgrade of the current system would be required should air cargo operations occupy previously vacant facilities (such as the vacant tower). Overhead utility wiring currently runs independent of any roadway to serve the alert apron area (see figure 6.3). This wiring will need to be relocated should new air cargo facilities be constructed in this area. Such wiring may also be buried to allow for the maneuverability of larger aircraft.

Parking conditions will change dramatically as a result of cargo development. HNTB provides an analysis of parking requirements in the Grissom AFB Feasibility Study. Air cargo facilities represent a transshipment point between land and air modes of transport. The ease of converting between modes is enhanced by auto parking, motor carrier access, and public parking. Motor carrier access is by far the most crucial in generating efficient operations. Motor carriers must be capable of a full range of movements with little or no obstruction.

Truck dock requirements are based upon a planning factor of .3 truck docks per 1,000 square feet of warehouse space. Based on this factor, 13 truck docks would be required for sufficient operation of the facility. Auto parking at air cargo facilities is provided for both customers and employees. While the auto parking area may be combined for both purposes; these areas should be completely separate from truck access points. Typically, one parking space should be provided for every 1,000 square feet of cargo space. Based on this criteria, an additionally 44 auto parking spaces are needed.<sup>2</sup> The locations of these improvements are shown in figure 6.3 on the following page.

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<sup>1</sup> RKG. Grissom Air Force Base Reuse Plan. p. III-2.

<sup>2</sup> HNTB. Grissom Air Force Base Feasibility Study. p. 5-5.

# Grissom Air Force Base

## Suggested structure improvements for Air Cargo use

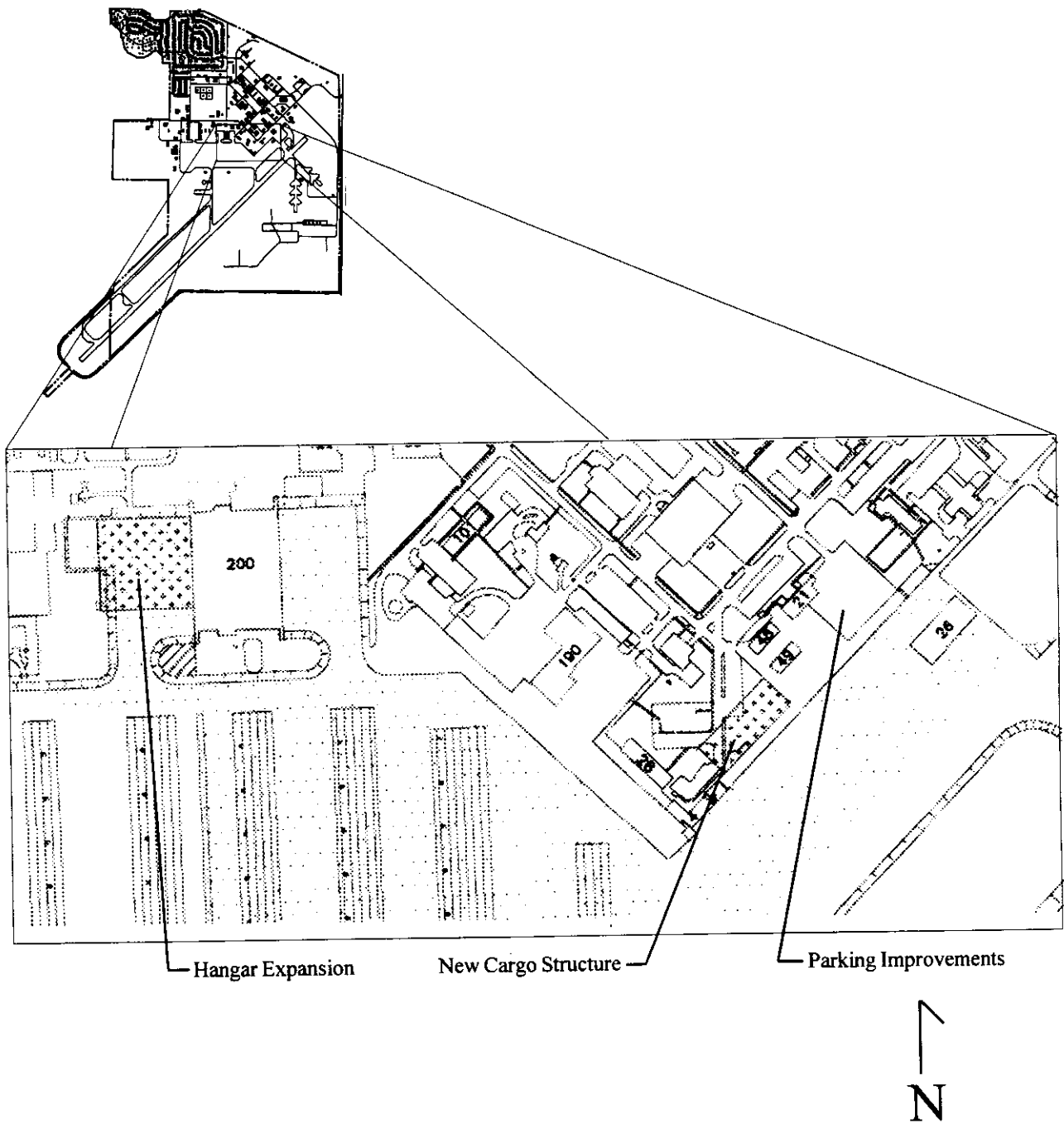


Figure 6.3

Source: United States Air Force, HNTB, RKG

## **Capital Costs**

The Capital Cost subfactor set has the highest weight of all sets within the feasibility subproblem. The Capital Cost set includes 15 subfactors.

The recent joint use feasibility studies conducted by HNTB and RKG for Grissom AFB shed light on projected costs. HNTB cost estimations are based on three scenarios. Scenario #1 assumes that the 434th reserve unit maintain the airfield with the redevelopment authority as a tenant. Scenario #2 assumes that the redevelopment authority control airfield operations with the reserves as a tenant. The third scenario (#3) assumes that the redevelopment authority control the airfield with the military reserves relocated to another base. Capital costs for all scenarios are incurred in phases and projected over a twenty-year period.

HNTB also considers two different approaches to the development of joint-use aviation. The conservative approach involves a slower development of the base with domestic operations only. The optimistic approach involves a more rapid, yet still realistic, development with both international and domestic operations.

Based on the preliminary results of these analyses and our conclusions in the regional need subfactor, we elect to follow scenario #1 with the optimistic approach; that is, we assume that the reserves will maintain airfield operations with the GRA as a tenant, and we assume a more rapid and aggressive development strategy including both domestic and international cargo operations. We then extract the HNTB cost estimates within these parameters.

The major expenditure items are related to the expansion of aircraft maintenance facilities, the construction of a new cargo structure, and additional fuel storage areas. The immediate capital costs are associated with facility modifications which are required to support minimum operations. For example, HNTB recommends the expansion of building 200 for the maintenance of the larger aircraft. HNTB recommends a new cargo structure to be located adjacent to the vacant tower.

No structure demolition is proposed. We do not recommend facility demolition in the early stages of development because of limited funds for capital expenditures. Future expansion may warrant demolition of dormitory structures. However, for purposes of establishing air cargo, no such demolition is needed at this time.

The Air Force Reserves will retain air traffic control tower operations. The GRA, as a tenant, would negotiate a contract under a Joint Use Agreement with the Air Force to provide ATC services. Such contracts typically involve a cash payments that are made to the Air Force based on the pounds of landed aircraft weight. Based on the projected cargo tonnage, HNTB estimates an annual cash payment of \$76,000 to the Air Force.<sup>1</sup> The cash payment is made in lieu of providing personnel and capital improvement monies. The reuse of the vacant control tower for fixed base operations will bear some capital development costs. However, the fixed based operator which would locate at this facility would most likely bear these costs as part of ownership. A separate fixed base operations area is a realistic opportunity and becomes more opportunistic as the facility develops.

A summary of capital costs for structures is provided as part of table 6.9 on the following page. The table is divided into development phases. The total cost for the twenty years and the average cost over the twenty years are displayed at right.

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<sup>1</sup> HNTB. Grissom Air Force Base Feasibility Study. working paper #4. p. 7-13.

Numerous improvements to airport support facilities require capital expenditures. The largest support facility costs are found in parking lot expansion, roadway, and fuel storage. These costs are incurred early in the development process in order to lure potential tenants to the cargo facility.

As discussed previously aggressive approach to development requires that areas be capable of handling truck turning movements. Further, warehouse facilities must be modified to accommodate the truck dock demands. Special consideration must be made to truck transfer areas to improve efficiency and minimize delay. The relocation of Thunderbird Street avenue is also considered in this analysis. This relocation will keep a vital link between transit routes that otherwise were separated by the imposition of the cantonment area.

The category "fuel storage" is aggregated for all types of fuel. The increased enplanements and locations of their parking areas requires improvements to the fuel storage facilities. Since the type of fuel being stored is enjoyed only by civilian aircraft, this cost burden is born by the GRA. These costs are included under airport support facilities in table 6.9 below.

As discussed in the airport facilities subsection, several other improvements are needed for airport support facilities. The costs of these, however, do not fall under the responsibility of the GRA. Improvements to the electric distribution system, for example, fall under the jurisdiction of PSI Energy. Taxiway signage and lighting represent costs to be borne by the USAF. These improvements are included in table 6.9 as an illustration of their importance as a capital improvement.

### Total Capital Development Costs faced by the GRA\*

All necessary improvements	Costs incurred by GRA				Average Annualized Capital Costs
	1996	1999	2004	2014	
<b>Structures</b>					
Hangar Expansion	\$0	\$0	\$10,660,000	\$0	\$2,665,000
Cargo Bldg - new construction	\$0	\$2,420,000	\$0	\$0	\$605,000
Tower improvements	\$0	\$0	\$0	\$0	\$0
<b>Airport Support Facilities</b>					
Runway stripping	\$0	\$0	\$0	\$0	\$0
Taxiway signage	\$0	\$0	\$0	\$0	\$0
Auto parking	\$35,000	\$0	\$0	\$0	\$8,750
Truck maneuvering area	\$168,000	\$0	\$0	\$0	\$42,000
Road relocation	\$39,000	\$0	\$0	\$0	\$9,750
Security fence	\$4,000	\$0	\$0	\$0	\$1,000
Electrical system upgrade	\$0	\$0	\$0	\$0	\$0
Utility connections to new structure	\$0	\$0	\$0	\$0	\$0
Fuel storage (all types)	\$600,000	\$0	\$400,000	\$0	\$250,000
<b>Total</b>	<b>\$846,000</b>	<b>\$2,420,000</b>	<b>\$11,060,000</b>	<b>\$0</b>	<b>\$3,581,500</b>

\*all categories which have capital costs are included despite some not being the responsibility of the GRA

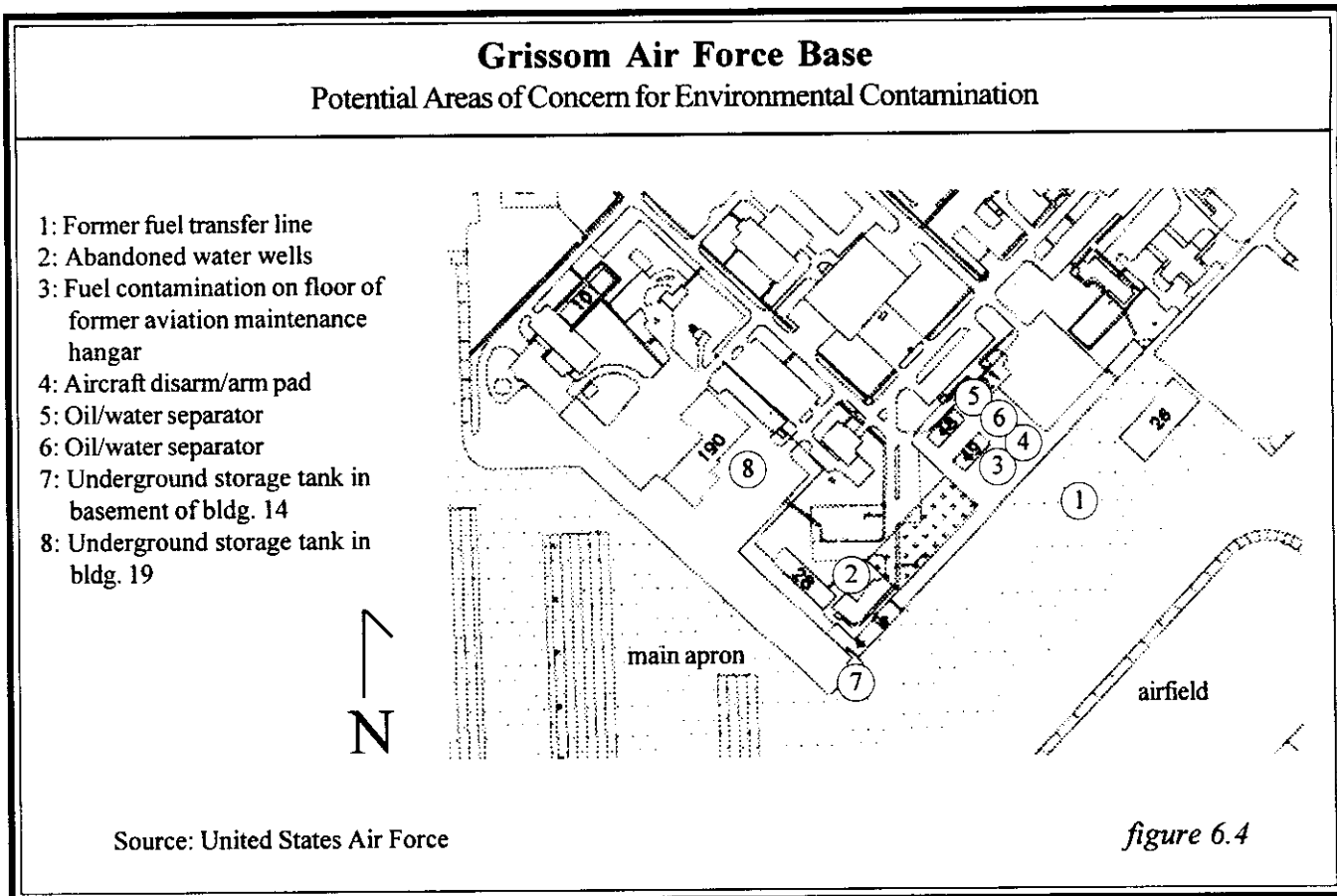
Source: HNTB

Table 6.9

Other, non-tangible, capital costs include environmental remediation (delay of use of land), operational delay, debt issued, and bond interest rate. These costs are less evident in the analysis; however, these costs can weigh heavily on the financial feasibility of the project.

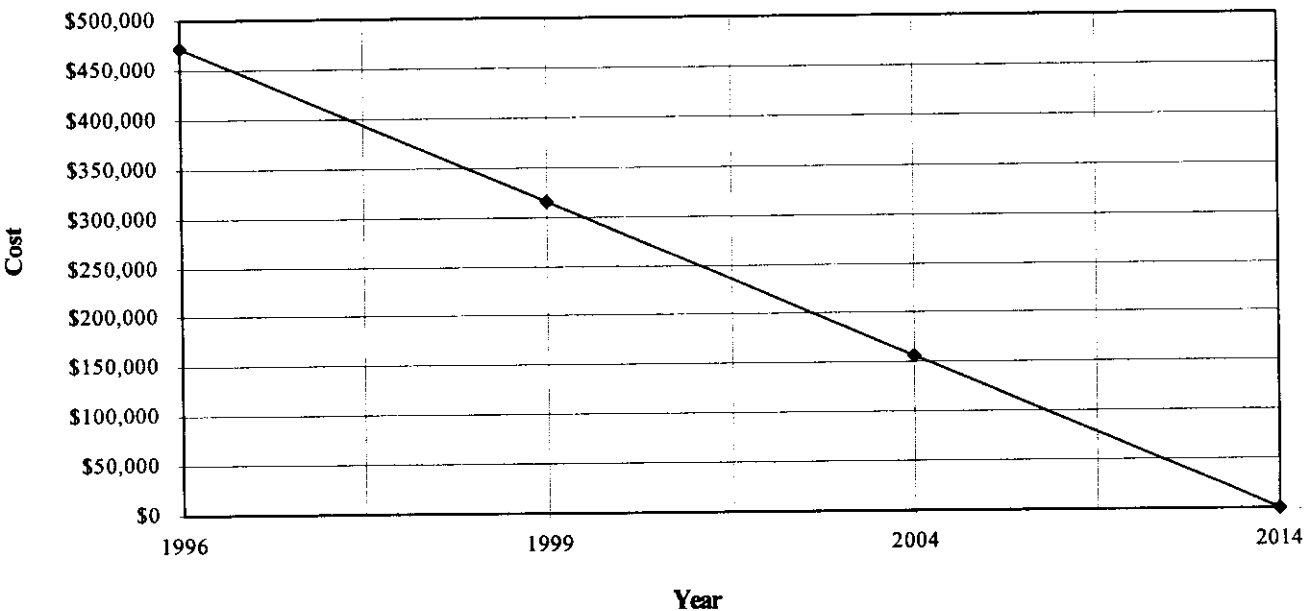
Environmental remediation costs are not explicitly borne by the GRA. The United States Air Force is responsible for any and all environmental remediation (refer to Chapter 2). This liability commitment is a tremendous cost savings for the GRA. The GRA, however, is faced with the opportunity cost of environmental cleanup sites. This cost can be computed in terms of foregone revenue. As stated in Chapter 3, the Air Force has completed the remedial design and risk assessment and is currently conducting remedial action. The remedial action phase is the last in the IRP process; however, it is the most time consuming phase. The Air Force began remedial action in October 1994, at the following nine sites: Fire Protection Training Area (1&2), Landfills (1-3), Waste Oil Storage Pad, Low Point Draining Pad, Abandoned Underground Storage Tanks, and the Drum Burial Site. The Air Force also began remedial action in April 1995, at the Fuel Sludge Weathering Site. None of the sites are within the area which would be used for air cargo facilities. Therefore, no opportunity costs accrue to the air cargo feasibility assessment.

In an attempt to identify potential future IRP sites the Air Force is in the process of investigating certain areas known as "potential areas of concern". Eight such sites have been identified within the area targeted for cargo development. No determination has been made regarding these sites as of the publishing of this study. If a site is found to be contaminated, then an IRP process will be instituted, possibly delaying cargo operations. The potential areas of concern that may affect cargo development are depicted in the map below:



Operational delay is also related to opportunity costs. In this case, the opportunity costs are based on the foregone revenue as a result of not having the proposed reuse operational. We may compute this cost by reviewing revenue projections for Grissom. HNTB projects a nearly twenty-year period of development in which air cargo operations are expanding. Full operation is achieved in 2014. Based on revenue differences between that of 2014 and the years prior we may compute opportunity cost (see figure 6.5). Note that the opportunity cost is not constant. Note that the opportunity cost is never the full amount of projected revenues at full operation. This implies that air cargo has no operational delay. Other proposed reuses in former studies indicate much greater operational delays. The opportunity cost, therefore, is considerably lower for the air cargo reuse.

### Opportunity Cost of Less than Full Operation



Source: HNTB

Figure 6.5

Bond interest costs are an important component of capital costs. Bond interest depends upon the amount of debt service and the risk rate on issued bonds. HNTB provides an estimate of debt service (which includes the interest payment) based upon an interest rate of 8%.<sup>1</sup> Several questions have been raised as to the ability of the GRA in assuring the issuance of such bonds. The GRA should seek a State a guarantee on any debt issued, especially under a General Airport Revenue Bond (GARB). The State must recognize the secondary benefits of the development in making the decision of guarantee.

### Operating Costs

We consider operating costs as the variable component of costs, and therefore, consider it separately. Though concessions may be made in operational costs, doing so reduces the marketability of the site. We do not, therefore, recommend a minimum projection of operating cost. Operating Costs are categorized within four (4) subfactors. Operational cost are dependent upon the rate of development and level of service. We derive the base operational cost from the analysis contained in the HNTB study.

<sup>1</sup> HNTB. Grissom Air Force Base Feasibility Study. March 1995. p. 7-14.

Airport staffing requirements depend upon the level of service being provided at the facility. We consider the projected operations described previously to be the base level of service. HNTB provides staffing requirements to meet this base level. Any development beyond projected figures would require additional personnel. Table 6.10 includes a description of the staffing requirements.

Administrative costs are separate from personnel costs. Administrative costs include the cost of services external to the GRA. The major expense items are insurance, accounting, and legal fees. While insurance and accounting are considered as constant throughout the development period, the legal fees are higher during the beginning years. The major contributors to high legal fees are the contracts between the Air Force and the GRA, the transfer documentation, and organizational setup. These costs are included in table 6.10.

Marketing is another operational cost that should not be ignored. Marketing costs are most onerous at earlier stages during the redevelopment. The GRA will most likely spend a brunt of the marketing costs in attracting international air carriers. Marketing costs are illustrated in table 6.10 below.

## Operational Costs

at base level of service

### Personnel Costs

Quan.	Position	Total Salaries	Taxes and Benefits	Uniforms	Annual Cost
1	Airport Manager	\$50,000	\$17,500	\$250	\$67,750
1	Assit. Airport Manager	\$32,000	\$11,200	\$250	\$43,450
1	Secretary/Admin Assistant	\$14,000	\$4,900	\$250	\$19,150
1	Operations Supervisor	\$25,000	\$8,750	\$250	\$34,000
1	Maintenance Supervisor	\$25,000	\$8,750	\$250	\$34,000
5	Airport Maintenance Personnel	\$85,000	\$29,750	\$250	\$115,000
<b>10</b>	<b>Subtotal</b>				<b>\$313,350</b>

### Administrative Costs

Item #	Item	Annual Cost
1	Accounting support	\$30,000
2	Legal Fees	\$25,000
3	Insurance	\$50,000
4	Inspections, etc.	\$3,000
	<b>Subtotal</b>	<b>\$108,000</b>

### Marketing Costs

Item #	Item	Annual Cost
1	Marketing	\$50,000
	<b>Subtotal</b>	<b>\$50,000</b>

<b>Total Annualized Cost</b>	<b>\$471,350</b>
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*Table 6.10*

Source: HNTB

## **Revenues**

The Revenue subfactor set has importance within the feasibility subproblem. The Revenue set includes 13 subfactors representing the major sources of funding the redevelopment.

The recent joint use feasibility studies conducted by HNTB and RKG for Grissom AFB also shed light on projected revenues. Here again we use scenario #1 with the optimistic role; that is we assume that the Air Force is to maintain the airfield and we anticipate a more rapid development.

FAA funding, state funding, and local funding are all revenue sources that are not derived directly from air cargo operations. The FAA, however, uses as a criterion the amount of air enplanements in distributing Airport Trust Fund monies. The FAA has shown preference to capital investments at Joint Use facilities, especially those which shift or relieve other airports of congestion. Grissom fits this preference in that a significant portion of the proposed traffic is created from the diversion of traffic away from Chicago O'Hare.

State funding sources are scarce and diminishing. The main potential source comes from Community Development Block Grant money. Though CDBG funds are limited and are threatened by federal budget cuts, the State of Indiana maintains a current surplus of over \$1.6 million.<sup>1</sup> The state now offers a limited amount of capital development money from the Build Indiana Fund, which is replenished by state lottery revenue. The state may offer implicit funding by making financial guarantees on issued bonds. The guarantees effectively reduce interest rates on the GRA's bond indebtedness.

Local funding sources are derived from the CEDIT and COIT taxes discussed herein. These taxes can be applied to capital development at Grissom on a percent share of assessed tax value at the base. CEDIT revenue, which is designed to fund economic development, is the most likely source of assistance. Miami County uses COIT revenue for the provision of basic services. These funding sources are included in the revenue summary table (6.11).

Several airport taxes and fees can be imposed to meet operational and capital costs. Landing fees are imposed by the airport authority on the air carrier. The taxes are ad valorem; that is, the tax rate is quoted as a rate per value of the good (usually expressed in dollars per thousand pounds). HNTB recommends a \$.50 landing fee based on a survey of 60 non-hub airports.<sup>2</sup> This fee is far below most larger airports, thus adding to the marketability of Grissom.

Fuel flowage rates are implicit gas taxes imposed by the authority on the fixed base operator. The fixed base operator (FBO) pays the fee according to a per gallon fee. The FBO is responsible for the distribution of the fuel to the appropriate designations along the airfield. Using a survey of Indiana airports, HNTB projects an appropriate fuel flowage fee of \$.05 per gallon.<sup>3</sup>

Airport taxes are collected and enjoyed by the FAA. The revenue from such taxes are placed within the FAA Airway Trust Fund for use in capital development projects. The air cargo tax is imposed at 6.25% of cargo value.<sup>4</sup> The airport authority may option to impose airport taxes above and beyond the FAA rate. Doing so, however, is strictly scrutinized. Other methods of raising airport revenue are already available. The imposition

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<sup>1</sup> Reply letter from the office of Richard G. Lugar, U.S. Senator (IN).

<sup>2</sup> HNTB. Grissom Air Force Base Feasibility Study. March 1995. p 7-9.

<sup>3</sup> *ibid*.

<sup>4</sup> United States. House Ways and Means Committee. Explanation of Committee Amendment to H.R. 4691. p. 3.

of a separate tax adds to administrative costs, thus lowering the net revenue of the airport tax. We do not recommend an airport tax in this situation because of the already low fee and flowage rates.

Lease revenue is a major contributor to airport revenue. Leigh Fisher in making revenue projections for Mather AFB produced a sliding scale of lease rates dependent upon the use of each facility. HNTB provides an aggregate scale that is divided into two categories: (1) general aviation structures which includes hangars and warehouse facilities; and (2) airside facilities which include offices. Lease rates are in terms of an annual rate per square foot of structure. HNTB projects lease revenue at \$1.50 for general aviation facilities and \$2.00 for airside facilities.<sup>1</sup> This compares to \$2.30 and \$6.92 (aggregated) respectively at Mather Air Force Base.<sup>2</sup> The lease rates are applied to potential cargo structures as well as the proposed additions and new construction. These revenues are displayed within the revenue summary table 6.11.

Utility revenue is collected and enjoyed by each utility serving the base. Utility charges are to be paid by the tenant of the facility and are not included as part of the lease rate. Though utility revenue is not a direct benefit to the GRA, utility companies use such revenue in future utility expansion. Utility expansion increases the development value of property. Though we do not include utility revenue in the generation of the revenue summary, we must understand its relationship to future development.

COIT and CEDIT are revenue enjoyed by Miami County and shared with Grissom. CEDIT, in particular, is designed to promote future economic development activities. Miami County has a COIT rate of .6% and a CEDIT rate of .25%.<sup>3</sup> COIT is imposed on those residing within the county. CEDIT is imposed on those working within the county. HNTB blends the rates to produce estimations for COIT and CEDIT revenue. These are shown in table 6.12.

Property tax revenue is enjoyed by Miami County and is based upon a township rate. The tax rate for Pipe Creek Township, in which Grissom is located, is \$6.3178 per \$100 of assessed valuation.<sup>4</sup> We calculate tax revenue using this figure for existing cargo structures. In situations in which new facilities are to be constructed, HNTB provides an estimate of the true tax value based on the construction cost per facility. The relatively low rate of taxation provides minimal net revenue to the County. Conversely, the low rate adds to the marketability of the facility. Table 6.12 summarizes the projected property tax revenue to Miami County.

Sales tax revenue is collected and enjoyed by the state of Indiana. This revenue does not directly benefit the GRA. However, this revenue reinforces the need for the state to become involved in financing a portion of development costs. We do not explicitly state this revenue in table 6.12, but we must understand its indirect benefits.

Tables 6.11 and 6.12 on the following page provide a summary of all revenues (exceptions noted) within this subsection.

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<sup>1</sup> *ibid.* pp. 7-9 to 7-10.

<sup>2</sup> Leigh Fisher Associates. Financial Operation of a Portion of Mather Air Force Base as Mather Airport. May 1994. p. 14.

<sup>3</sup> Baker and Daniels. Local Government Funding Sources. August 30, 1993. p.8. personally verified.

<sup>4</sup> HNTB. Grissom Air Force Base Feasibility Study. March 1995. p. 7-9.

# Revenue Summary Table

page 1 of 2

## Redevelopment Authority Revenue

### Lease Revenue

Type	Projected Occupied Square Footage	Lease Rate	Lease Revenue				Annualized Average
			1996	1999	2004	2014	
Aviation	28,416	\$1.50	\$21,312	\$42,624	\$42,624	\$42,624	\$37,296
Cargo	33,032	\$2.00	\$66,064	\$133,842	\$133,842	\$133,842	\$116,898
Maintenance	154,500	\$2.00	\$309,000	\$309,000	\$407,786	\$407,786	\$358,393
<b>Totals</b>			<b>\$396,376</b>	<b>\$485,466</b>	<b>\$584,252</b>	<b>\$584,252</b>	<b>\$512,587</b>

### Landing Fees

Annual Landed Weight (000's pounds)

Type	Landing Weight				Annualized Average
	1996	1999	2004	2014	
Military	3,749,647	3,749,647	3,749,647	3,749,647	3,749,647
Aircraft Maintenance	91,476	99,631	126,821	190,996	127,231
Domestic Air Cargo	16,263	16,263	21,112	35,341	22,245
International Air Cargo	0	67,808	95,192	183,864	86,716
Other	6,000	7,000	7,000	7,000	6,750
<b>Totals</b>	<b>3,863,386</b>	<b>3,940,349</b>	<b>3,999,772</b>	<b>4,166,848</b>	<b>3,992,589</b>

### Landing Fees

Charges

Type	Rate	Landing Fee Revenue				Annualized Average
		1996	1999	2004	2014	
Military	\$0.00	\$0	\$0	\$0	\$0	\$0
Aircraft Maintenance	\$0.50	\$45,738	\$49,816	\$63,411	\$95,498	\$63,616
Domestic Air Cargo	\$0.50	\$8,132	\$8,132	\$10,556	\$17,671	\$11,123
International Air Cargo	\$0.50	\$0	\$33,904	\$47,596	\$91,932	\$43,358
Other	\$0.50	\$3,000	\$3,500	\$3,500	\$3,500	\$3,375
<b>Totals</b>		<b>\$56,870</b>	<b>\$95,352</b>	<b>\$125,063</b>	<b>\$208,601</b>	<b>\$121,472</b>

### Fuel Flowage

Flow in Gallons

Type	Flow in Gallons				Annualized Average
	1996	1999	2004	2014	
AvGas	28,300	29,300	30,400	30,400	3,749,647
Jet Fuel	2,250,000	2,825,000	3,436,000	4,900,000	3,352,750
<b>Totals</b>	<b>2,278,300</b>	<b>2,854,300</b>	<b>3,466,400</b>	<b>4,930,400</b>	<b>7,102,397</b>

### Fuel Flowage

Charges

Type	Rate	Fuel Flowage Fee Revenue				Annualized Average
		1996	1999	2004	2014	
AvGas	\$0.05	\$1,415	\$1,465	\$1,520	\$1,520	\$0
Jet Fuel	\$0.05	\$112,500	\$141,250	\$171,800	\$245,000	\$167,638
<b>Totals</b>		<b>\$113,915</b>	<b>\$142,715</b>	<b>\$173,320</b>	<b>\$246,520</b>	<b>\$167,638</b>

<b>Grand Totals</b>	<b>\$567,161</b>	<b>\$723,533</b>	<b>\$882,635</b>	<b>\$1,039,373</b>	<b>\$801,697</b>
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Table 6.11

# Revenue Summary Table

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## Miami County Revenue

### Property Taxes

Type	Taxable Valuation	Tax Rate	Property Taxes				Annualized Average
			1996	1999	2004	2014	
Aviation	\$66,238	6.3147	\$4,183	\$4,183	\$4,183	\$4,183	\$4,183
Aviation/Cargo	\$44,105	6.3147	\$2,785	\$2,785	\$2,785	\$2,785	\$2,785
Cargo	\$111,888	6.3147	\$7,065	\$42,719	\$42,719	\$42,719	\$33,806
Maintenance	\$360,500	6.3147	\$22,764	\$22,764	\$179,816	\$179,816	\$101,290
<b>Totals</b>	<b>\$582,731</b>	<b>6.3147</b>	<b>\$36,797</b>	<b>\$72,451</b>	<b>\$229,503</b>	<b>\$229,503</b>	<b>\$142,064</b>

### Income Taxes

Description	COIT/CEDIT Taxes				Annualized Average
	1996	1999	2004	2014	
Employees	204	397	448	529	394.5
COIT/CEDIT	\$31,875	\$62,031	\$70,000	\$82,656	\$61,641
<b>Totals</b>	<b>\$31,875</b>	<b>\$62,031</b>	<b>\$70,000</b>	<b>\$82,656</b>	<b>\$61,641</b>
<b>Grand Totals</b>	<b>\$68,672</b>	<b>\$134,482</b>	<b>\$299,503</b>	<b>\$312,159</b>	<b>\$203,704</b>

Table 6.12

## Economic Development

Now that we have addressed priority subfactors within the first two subproblems, we direct our attention to priority subfactors within the economic development subproblem. All of the economic development subfactors have significance importance (in terms of weight) to the MCDA model. Also, this section is somewhat unique to most base reuse planning documents. We, therefore, respond to two important issues in addressing these subfactors. First, we respond to economic development subfactors because of their important in the MCDA model. Secondly, we introduce new variables to the process of planning base reuse.

Edward Blakely and Subhrajit Guhathakurta in *From Military Bases to New Industries and Stronger Regional Economies* introduces a strategy for base conversion that seeks to expand the regional economy. The authors state that successful economic development strategies require proper identification of the emerging industries poised to drive the regional economy in the near future.

This study employs a similar strategy as that presented by Blakely and Guhathakurta. The differences in the approaches exist in the objectives. The Blakely and Guhathakurta strategy is aimed at replacing the *existing* supplier-client linkages at the base facilities. In doing so, the authors focus on emerging industries in the region which will employ displaced workers. The strategy contained herein accepts air cargo as the industry which will employ displaced workers, thus replacing the supplier-client linkages. This study is aimed at creating *new* supplier-client linkages between the air cargo industry and emerging industries in the region.

## **Economic Modeling**

The first step to forecasting the economic impacts is the matching of supplier linkages. We must establish the potential for enhancing the regional strengths while keeping the previous labor pool and reinforcing the established economic linkages. In doing so, we examine the matches between the primary inputs of air cargo and those of Grissom AFB.

First we must classify the producer industries, air cargo and defense (Grissom AFB), in terms of a standard industrial classification (SIC) code delineation. Table 6.13 provides the SIC codes for defense. These codes represent primary services that are produced by the defense sector at Grissom AFB. Table 6.14 provides the standard industrial classification codes for air cargo. These codes represent that which is produced by the air cargo sector. These codes help later in identifying principal suppliers to this sector.

The matching of supplier linkages occurs in two stages. First, we list the top twenty inputs to the air cargo and defense sectors. Tables 6.15 illustrates the top twenty inputs for the two sectors. We then match the common suppliers of the two sets of inputs. Table 6.15 also illustrates (using a shaded region) the significant matches. Fourteen of the twenty inputs are common to both the air cargo and defense sectors.

**Defense Sector by SIC Codes**

#	Description	SIC Code		
1	Air Transportation - nonscheduled	4522		
2	Airport Services	4581		
3	Transportation Services NEC	4789		
4	National Security	9711		
5	Aircraft Repair	3721	3724	3728

Table 6.13

**Air Cargo Sector by SIC Codes**

#	Description	SIC Codes	
1	Scheduled Air Courier Service	4512	4513
2	Airports, Flying Fields, and Services	4581	
3	Freight Transportation Arrangement	4731	4723
4	Packing and Crafting	4783	
5	Inspection and Fixed Facilities	4785	
6	Transportation Services NEC	4789	
7	General Warehousing and Storage	4225	4226

Table 6.14

## Matching Top-Twenty Air Cargo and Defense Sector Inputs

Defense Sector inputs at Grissom AFB				Air Cargo Sector inputs			
#	Description	BEA	SIC	#	Description	BEA	SIC
1	Petroleum	31.01	2910	1	Petroleum	31.01	2910
2	Warehousing	65.03	4200	2	Warehousing	65.03	4200
3	Guided Missiles	60.02	3761	3	Wholesale Trade	69.01	5100
4	Wholesale Trade	69.01	5100	4	Real Estate	71.02	6500
5	Transportation Equipment	60.04	3799	5	Air Transportation	65.05	4500
6	Transportation Services Nec	65.07	4789	6	Eating and Drinking Places	74	5800
7	Air Transportation	65.05	4500	7	Communications	66	4800
8	Communications	66	4800	8	Advertising	73.02	7310
9	Advertising	73.02	7310	9	Freight Forwarders	65.07	4710
10	Eating and Drinking Places	74	5800	10	Transportation Services Nec	65.07	4789
11	Real Estate	71.02	6500	11	Tire and Inner Tubes	32.01	3011
12	Aircraft Engines and Engine Parts	60.02	3724	12	Electric Services	68.01	4910
13	Concrete	36.12	3273	13	Automobile Repair Services	75	7539
14	Pipes and fittings	42.08	3498	14	Computer and Data Processing	73.01	4750
15	Automobile Services	75	7510	15	Legal Services	73.03	8110
16	Other Electronic Components	57.03	3675	16	Aircraft Engines and Engine Part	60.02	3724
17	Semiconductors	57.02	3674	17	Automobile Services	75	7500
18	Aircraft	60.01	3721	18	Retail Trade	69.02	5200
19	Computer and Data Processing	73.01	4750	19	Arrangement of Transportation	65.07	4722
20	Legal Services	73.03	8110	20	Aircraft	60.01	3721

Source of Data: Bureau of Economic Analysis.

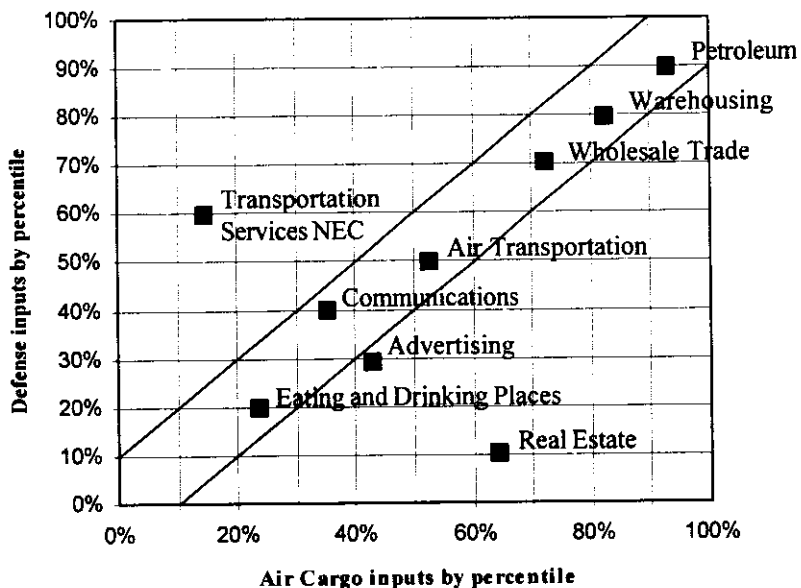
Table 6.15

The second stage of matching incorporates a measure of significance of each of the inputs to the two industries. We start by selecting all of the suppliers that provide at least .5% of the total inputs for both the air cargo and defense sectors. We then sort these inputs by the amount of transaction and derive two sets of figures showing the cumulative percentile for each input for air cargo and defense sectors. The cumulative percentile shows the importance of each input to the purchasing industries. We use a cumulative percentile as opposed to a straight percentage because the former is capable of showing a ranking of the inputs. A cumulative percentage shows the rank of a particular input relative to other inputs. For example, a 90% cumulative percentile score indicates that the specific input is larger than 90% of the largest inputs to the purchasing industry. A straight percentage shows the amount of contribution that one input has to the purchasing sector. For example a straight percentage score of 1% indicates that the specific input is 1% of the total inputs to the producing sector. We chart the cumulative percentile scores on a scatter-plot of percentiles (see figure 6.6). The X-axis shows the cumulative percentage for the air cargo sector. The Y-axis shows the cumulative percentage for the defense sector.

After the second stage we have two lists of matches between inputs to the air cargo and defense sectors. The first list pertains to those industries that are among the top twenty inputs for both sectors. The second list contains those matches within the top twenty suppliers that have similar cumulative percentile scores for inputs to air cargo and the defense sectors. With the help of these two lists, we may construct a zone of "best fit" over figure 6.6. Table 6.16 displays those suppliers which lie within this zone.

We aggregate the two stages by producing a composite score. We derive the composite score by using the

### Matching Defense and Air Cargo Inputs



Source of Data: Bureau of Economic Analysis.

Figure 6.6

### Matching Top-Twenty Air Cargo and Defense Sector Inputs Second Stage of Analysis

#	Description	SIC
1	Petroleum	2910
2	Warehousing	4200
3	Wholesale Trade	5100
4	Air Transportation	4500
5	Communications	4800
6	Advertising	7310
7	Eating and Drinking Places	7500

Source of Data: Bureau of Economic Analysis.

Table 6.16

formula:

$$S = (A + .9B + .8C) / 3$$

where:

S=composite score

A=percent match between B and C

B=percent match among the top twenty suppliers

C=percent match by cumulative percentile scores

The formula incorporates a weight scheme established by Blakely. The weights reflect the importance of the types of matching analysis. The composite score is the aggregate match between air cargo suppliers and suppliers to the defense sector. We substitute the values derived from tables 6.15 and 6.16 into the equation to receive the following computation of the composite score.

$$s = .5 + .9(14/20) + .8(7/10)/3$$

$$s = .57$$

The aggregate match between air cargo suppliers and defense suppliers to Grissom AFB is 57%. We see that the composite score is relatively high, indicating that an air cargo reuse will reestablish many of the linkages that otherwise have diminished as a result of the realignment of Grissom AFB.

Another important aspect of the economic effects of redevelopment is the reemployment of the displaced workforce. By reemploying the local labor force we counter some of the negative impacts of unemployment typically associated with base closure. Grissom AFB is the only major military employer in the employment region; displaced labor must either employ new skills, relocate to another area, or remain unemployed. A base reuse strategy that employs some of the same skills and occupations as those previously employed at Grissom will allow the local workforce to remain employed in their best or near-best alternative. Determining the match between the employment of the two sectors is not as arduous as input matching; however, the fundamental approach is very similar.

Examination of the occupational matches between air cargo and Air Force base workers requires a detailed list of job profiles by occupational categories. For purposes of analysis, we aggregate the occupational distributions into eight broad categories: managers; administrative/clerical; blue collar/craft and kindred; marketing and sales; operatives; services; and other. The occupational distribution for both sectors are expressed as a percent with the total equal to 100% of the labor. We can visually compare the distributions and draw some simple conclusions as to the matching of occupations. When employment for any occupational category in air cargo industries falls within a 5% spread compared to base jobs in the same category, we assign a weight equal to the proportion of base jobs in that occupational category. When employment for any occupational category in air cargo industries falls within a 5-10% spread compared to base jobs in the same category, we assign a weight equal to half the proportion of base jobs in that occupational category. We calculate the aggregate match in occupational profiles by summing the derived weights. The aggregate score suggests that the effectiveness of replacing base jobs with air cargo jobs is about 60%. Table 6.17 represents a summary of our approach.

### Occupational Matches: Air Cargo with Grissom Air Force Base

Occupations	Air Force*	Air Cargo**	Extent of Match	Weighted Score
Managers	7.8	6.34	Good	7.8
Administrative/Clerical	7.9	27.49	Poor	0
Blue Collar/Craft and Kindred	25.75	18.79	Fair	12.88
Professional/Technical	22.6	18.97	Good	22.6
Marketing/Sales	0	0.7	Good	0
Operatives	0.2	6.18	Good	0.2
Service	25.75	17.9	Fair	12.88
Other	10	3.63	Fair	5
Total	100	100		
Aggregate Score				61.36

\*Source of Data: Department of Defense, Blakely.

\*\*Source of Data: Bureau of Economic Analysis.

Table 6.17

We can begin to investigate the statistical method for modeling the regional impacts of the redevelopment. Input-Output analysis, as explained in Chapter 5, is the most effective means for modeling the job creation/retention and increased expenditures among industries. The United States Bureau of Economic Analysis (BEA) maintains national Input-Output tables for capital flows among industries and final uses. These tables completely account for commodity production and use for the entire economy. The major analytical use of the I-O tables is the measurement of both direct and indirect effects of changes in demand.

Manipulation of I-O tables is difficult without the use of a computer modelling system. In the mid-1970's, the BEA developed a method for estimating regional I-O multipliers known as the Regional Industrial Multiplier System (RIMS). More recently, the BEA completed an enhancement of RIMS known as the Regional Input-Output Modeling System (RIMS II). RIMS II is based on the accounting framework of the national Input-Output tables.

RIMS II can be applied to any region composed of one or more counties and for any industry listed in the I-O tables. As discussed in Chapter 5, we can regionalize the data by applying the locational quotients to the data. The RIMS II model contains regional industry multipliers for states based on location quotients.<sup>1</sup> The cost of regionalizing the data for a smaller region is prohibitive. Additionally, the multipliers generally do not vary significantly between state and county data. Therefore, the regional industry multipliers provided in the RIMS II model are sufficient. We use RIMS II to estimate the impacts of air cargo development on regional output, earnings, and employment.

The RIMS II model is unavailable for a reasonable cost for use in this study.<sup>2</sup> We may, however, illustrate the use of RIMS II as it applies to the reuse of Grissom AFB as an air cargo facility. Our illustrative case is much the same as that which is explained in Chapter 5. In this case, however, we analyze a cross section of the I-O model. The cross section contains the data that is most related to the air cargo development. Under a full I-O analysis using RIMS II, all industries are included.

First, we construct a cross sectional industry transaction table (see table 6.18). The air cargo sector is the intermediate consumer. We list the detailed industries which comprise the air cargo sector as column headings for intermediate consumers. Note that we aggregate all other intermediate consumption sectors in the column heading "all other industries". The final consumers are the same as those found in a full I-O table. The final consumers include: personal consumption, investment, government, and exports.

We list the produced inputs to the air cargo sector as row headings. For the cross-sectional model we list only the largest of the inputs to the air cargo sector. We aggregate all other produced inputs within the row heading "all other industries". Imports is another produced input to air cargo. The value added is the primary input to air cargo. The sum of the produced and primary inputs represent the total inputs to the air cargo sector.

Next, we convert the dollar units to coefficients. Each coefficient is the percentage of the total contribution of each input in producing one unit of output. Each column of coefficients is determined by dividing the elements in

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<sup>1</sup> United States. Department of Commerce. Bureau of Economic Analysis. Regional Multipliers: A User Handbook for the Regional Input-Output Modeling System. May 1986. pp. 3-10.

<sup>2</sup> For any region composed of one or more counties, RIMS II can provide two series of tables of I-O multipliers; series A-1 is for detailed industries, series A-2 is for industry aggregations. The Analysis Branch, Regional Economic Analysis Division, Bureau of Economic Analysis, Department of Commerce makes these tables available on a descending price scale that starts at \$1500 per region for the first region ordered.

## Industry Transactions Table

		Intermediate				Final					
		Air Transportation	Freight Transportation Arrangement	General Warehousing and Storage	All Other Industries	Personal Consumption	Investment	Government	Exports	Total	
Producers	Produced	Petroleum	10685.8	123.3	7403.8	71211.7	76873.1	0	14708.1	8601.5	189607
		Warehousing	190.2	23.6	11934.4	39205.6	13804.6	1630.8	3611.3	3919.5	74320
		Wholesale Trade	783.4	29.1	1428.4	157978	77678.4	27067.4	8336	21716.6	295018
		Real Estate	469.4	162.1	1127.8	117389	80838.7	9535	4538.4	673.4	214734
		Air Transportation	1396.2	199.5	118.1	14048.2	20573.8	443.2	1775.4	5691	44245.4
		Eating and Drinking Places	1041.3	158.2	409.7	35710	107045	0	0	184.3	144548
		Communications	701.9	137.3	1066.1	43078.7	39471.1	4705.1	5460.8	1490	96111
		Advertising	630.2	69.7	81.9	64421.3	253.2	0	435.8	175.9	66068
		Freight Forwarders	91.9	158.7	520	1648.9	0	0	0	201.5	2621
		Transportation Services NEC	2099	0.3	0.2	604.2	876.4	0	39.7	650.1	4269.9
		All Other Industries	4283.6	892.9	8609.5	n/a	n/a	n/a	n/a	n/a	n/a
		Imports	2920.1	11.5	2.1	n/a					
	Primary										
	Value Added	17090	2522.6	41488.4	n/a						
	Total	42383	4488.8	74190.4	n/a						

Source of Data: Bureau of Economic Analysis.

Table 6.18

a column by the corresponding column total. These calculations have been performed in table 6.19. Upon reviewing the resulting coefficients, we make several observations. Petroleum is a major input to all industries within the air cargo sector. Warehousing is a major input to the general warehousing industry in the air cargo sector. Air transportation is a significant input to both scheduled air transportation and freight transportation industries. Aside from these observations, we perform a system analysis, using these coefficients which reveals the accumulated effect on each sector.

## Calculated Coefficients

		Consumers		
		Sch. Air Transportation	Freight Transportation Arrangement	Gen. Warehousing and Storage
Producers	Petroleum	0.0252	0.0275	0.0998
	Warehousing	0.0044	0.0053	0.1609
	Wholesale Trade	0.0184	0.0065	0.0193
	Real Estate	0.0110	0.0361	0.0150
	Air Transportation	0.0329	0.0443	0.0016
	Eating and Drinking Places	0.0245	0.0352	0.0055
	Communications	0.0165	0.0305	0.0144
	Advertising	0.0146	0.0155	0.0011
	Freight Forwarders	0.0021	0.0356	0.0070
	Transportation Services NEC	0.0495	0.0001	0.0000
	All Other Industries	0.6920	0.1988	0.1162
	Imports	0.0686	0.0026	0
	Value Added	0.0403	0.562	0.5592
	Total	100%	100%	100%

Source of Data: Bureau of Economic Analysis.

Table 6.19

We calculate the accumulated effect by modeling multiple purchase effects from a change in demand for air cargo. These calculations, however, require the full I-O analysis provided by RIMS II. The RIMS II model is capable of automatically calculating all purchasing effects. Modelling the accumulated effects enables us to calculate the multipliers for output. Fortunately, examples of similar modeling are available in BEA sources. We extract the output multipliers from BEA sources and label them "anticipated output multipliers". Table 6.20 displays these anticipated multipliers. The multipliers are available for the detailed industries within the air cargo sector. The inputs (row headings) are aggregated within 38 industries which collectively comprise all sectors of the economy. Each entry in table represents the dollar change in output that occurs in the row industry for each additional dollar delivered to the final demand by the column industry.

Upon analyzing the anticipated output multipliers, we make several conclusions. We are most concerned with those industries with the largest output multipliers. Table 6.20 indicates the top ten output multipliers by a shaded region. Transportation is the most affected air cargo input by changes in demand for air cargo industries. The multipliers for the transportation inputs are over 1.0 for all three industries. Retail trade and real estate are

two other inputs that will experience significant output effects. Retail trade output multipliers range from .0639 for air transportation to .1031 for general warehousing. Real estate output multipliers range from .8740 for air transportation to .1218 for freight transportation arrangement. Petroleum will experience significant output effects from changes in final demand for air transportation. Other industries which will experience significant accumulated effects include: food and kindred products; wholesale trade; electric, gas, and water services; business services; personal services; and miscellaneous services. This illustrative analysis gives us indications of the types of secondary output effects from the regional change in demand for air cargo.

We apply a similar analysis using national I-O accounts for calculating employment multipliers for industries of air cargo. For the same reasons describe previously, modelling the accumulated effects on employment is unfeasible; however, examples of similar modeling are also available in BEA sources. We extract the employment multipliers from the BEA sources and label them "anticipated employment multipliers". Table 6.21 displays these anticipated employment multipliers. The multipliers are available only for the aggregate industry, transportation. Transportation, however, is the aggregate industry which contains the detailed industries of air cargo. The inputs (row headings) are aggregated within 38 industries which collectively comprise all sectors of the economy. Each entry in table represents the change in the number of jobs that occurs in the row industry for each additional \$1 million of output delivered to the final demand by the column industry.

Upon analyzing the anticipated employment multipliers, we make several conclusions. We are most concerned with those industries with the largest employment multipliers. Table 6.21 indicates the top ten employment multipliers by a shaded region. Employment effects, though similar, are not the same as output effects. Transportation is the most affected transportation input by changes in demand for transportation. The multiplier for the transportation input is 17.4. Retail trade is the second largest employment multiplier at 3.3. Business services will also experience significant employment effects by changes in demand for transportation. Eating and drinking places have an employment multiplier of 1.9 for transportation. Other industries which will experience significant accumulated effects include: maintenance and repair; wholesale trade; personal services; real estate; health services; and miscellaneous services. This illustrative analysis gives us indications of the types of secondary employment effects from the regional change in demand for air cargo. Tables 6.20 and 6.21 are given on the following pages.

## Anticipated Output Multipliers

REF#	Industry Aggregation	Multipliers for detailed industries in air cargo sector		
		Sch. Air Transportation	Freight Transportation Arrangement	Gen. Warehousing and Storage
1	Agricultural products	0.0061	0.0085	0.0079
2	Forest and Fishery Products	0.0008	0.0013	0.0010
3	Coal Mining	0.0000	0.0000	0.0000
4	Crude Petroleum	0.0625	0.0212	0.0354
5	Mining	0.0004	0.0003	0.0004
6	New Construction	0.0000	0.0000	0.0000
7	Maintenance and Repair	0.0226	0.0250	0.0307
8	Food and Kindred Products	0.0277	0.3820	0.0338
9	Textile Mill Products	0.0001	0.0002	0.0002
10	Apparel	0.0053	0.0072	0.0078
11	Paper and Allied Products	0.0037	0.0069	0.0044
12	Printing and Publishing	0.0082	0.0174	0.0061
13	Chemicals and Petroleum	0.1660	0.0528	0.0915
14	Rubber and Leather	0.0006	0.0011	0.0008
15	Lumber and Wood Products	0.0015	0.0047	0.0023
16	Stone, Clay, and Glass Products	0.0017	0.0022	0.0025
17	Primary Metal Industries	0.0010	0.0006	0.0007
18	Fabricated Metal Products	0.0024	0.0022	0.0034
19	Machinery, except electric	0.0024	0.0019	0.0022
20	Electronic Equipment	0.0021	0.0030	0.0027
21	Motor Vehicles and Equipment	0.0059	0.0085	0.0089
22	Transportation Equipment	0.0196	0.0025	0.0020
23	Instruments and Related Products	0.0002	0.0002	0.0002
24	Miscellaneous Manufacturing	0.0011	0.0018	0.0014
25	Transportation	1.0937	1.0950	1.1912
26	Communication	0.0264	0.0541	0.0282
27	Electric, Gas, Water Services	0.0380	0.0497	0.0451
28	Wholesale Trade	0.0513	0.0546	0.0685
29	Retail Trade	0.0639	0.0945	0.1031
30	Finance	0.0218	0.0491	0.0272
31	Insurance	0.0160	0.0408	0.0281
32	Real Estate	0.8740	0.1218	0.1149
33	Hotels and Lodging	0.0096	0.0151	0.0131
34	Personal Services	0.0131	0.0146	0.0141
35	Business Services	0.0555	0.0751	0.0442
36	Eating and Drinking Places	0.0563	0.0763	0.0455
37	Health Services	0.0319	0.0454	0.0463
38	Miscellaneous Services	0.0316	0.0516	0.0748

Source of Data: Bureau of Economic Analysis.

Table 6.20

## Anticipated Employment Multipliers

REF#	Industry Aggregation	Aggregated Air Cargo Multiplier
1	Agricultural products	0.3000
2	Forest and Fishery Products	0.0000
3	Coal Mining	0.0000
4	Crude Petroleum	0.1000
5	Mining	0.0000
6	New Construction	0.0000
7	<b>Maintenance and Repair</b>	<b>1.3000</b>
8	Food and Kindred Products	0.2000
9	Textile Mill Products	0.0000
10	Apparel	0.2000
11	Paper and Allied Products	0.0000
12	Printing and Publishing	0.1000
13	Chemicals and Petroleum	0.2000
14	Rubber and Leather	0.0000
15	Lumber and Wood Products	0.0000
16	Stone, Clay, and Glass Products	0.0000
17	Primary Metal Industries	0.0000
18	Fabricated Metal Products	0.1000
19	Machinery, except electric	0.1000
20	Electronic Equipment	0.0000
21	Motor Vehicles and Equipment	0.0000
22	Transportation Equipment	0.3000
23	Instruments and Related Products	0.0000
24	Miscellaneous Manufacturing	0.0000
25	<b>Transportation</b>	<b>17.4000</b>
26	Communication	0.2000
27	Electric, Gas, Water Services	0.2000
28	<b>Wholesale Trade</b>	<b>1.1000</b>
29	<b>Retail Trade</b>	<b>3.3000</b>
30	Finance	0.5000
31	Insurance	0.5000
32	<b>Real Estate</b>	<b>0.5000</b>
33	Hotels and Lodging	0.4000
34	<b>Personal Services</b>	<b>0.6000</b>
35	<b>Business Services</b>	<b>2.0000</b>
36	<b>Eating and Drinking Places</b>	<b>1.9000</b>
37	<b>Health Services</b>	<b>1.1000</b>
38	<b>Miscellaneous Services</b>	<b>1.1000</b>

Source of Data: Bureau of Economic Analysis.

Table 6.21

## Target Industries

A target industry can be defined as an industry which is (1) a prominent force in the regional economy; (2) reliant on the air freight transportation industry; and (3) growing in terms of net sales and export volume. If a significant number of regional companies within a specified industry met this criteria, then that industry may be classified as a target industry. We identify three (3) industries as being a target industries. Companies within these classifications which are in close proximity to Grissom are evaluated based on the aforementioned criteria.

## Regional Target Industries

<u>SIC Code</u>	<u>Industry Title</u>
2834	Pharmaceutical Preparations
3841	Surgical and Medical Instruments
3842	Surgical Appliances

Table 6.22

Pharmaceutical preparations is an important industry to the economy of North/Central Indiana.

Eli Lilly and Company is the only major public corporation within the region under the classification of Pharmaceutical Preparations (SIC code 2834). With its headquarters in Indianapolis, Eli Lilly and Company discovers, develops, manufactures, and sells a broad line of human health products. The company produces diagnostic products such as monoclonal-anti-body-based tests for the colon, prostate cancer tests, and testicular cancer tests. Medical Devices include patient vital signs measurement, electrocardiography systems, and implantable cardiac pacemakers. Pharmaceuticals include anti-infectives, diabetic care products, and various other products.

In total Eli Lilly employs 32,700 employees at locations in Indianapolis and Lafayette. This provides evidence that the Company meets criteria #1 by acting as a major employer for the region. Eli Lilly utilizes air freight extensively to aid in the distribution of its products. A major international gateway airport used is Chicago-O'Hare. The Company's extensive use of air cargo satisfies criteria #2 for target industries.

Eli Lilly and Company has experience an average annual growth rate of 11.4% since 1989.<sup>1</sup> This might imply that the Company meets criteria #3; however, net income has dropped an average of 15.4% over that same period.<sup>2</sup> Randall L. Tobias, Chairman of the Board for Eli Lilly presented a Vision Statement in 1993 aimed at coping with the economic realities of the modern pharmaceutical industry. Tobias extolled the need to research, manufacture, and distribute more efficiently. Steps taken to achieve this goal included the "implementation of a revised distribution strategy over the next several years." (President's Letter, Annual Report to Shareholders, Feb 3, 1994) Tobias noted that company cost to achieve such radical changes have already been incurred, which may distort the trend net income.

With change at hand, Eli Lilly is expected to rebound with 7.2% growth over the next five years.<sup>3</sup> It is evident that distribution cost, including air freight transportation, can play a role in realizing this growth trend. Tobias' comments reinforce the need to provide lower cost transportation. Based on this information, we assert that a potential exists for a new linkage between the proposed Grissom Air Cargo facility and the pharmaceutical

<sup>1</sup> *Disclosure Database*. Eli Lilly and Company. Complete Company Records. Disclosure No: E560000000.

<sup>2</sup> *ibid.*

<sup>3</sup> *ibid.*

industry regional leader, Eli Lilly and Company. For this reason, and despite the only partial satisfaction of criteria #3, Eli Lilly and Company can be classified as a target industry.

The Medical Supply industry (SIC Codes 3841-3842) which bears a similarity with the pharmaceutical industry is another significant industry emerging in the Midwest region.

Biomet is one such example of a medical supply company which is experiencing substantial growth much to the benefit of the Northern Indiana economy. With its operations in Warsaw, IN, Biomet designs, manufactures, and markets products used primarily by medical specialists in surgical and nonsurgical therapy. Products include reconstructive and trauma devices, electrical bone growth stimulators, orthopedic support devices, operating room supplies, powered surgical instruments, and a variety of general surgical instruments.

Biomet employs a total of 1,362 employees at its Warsaw, IN location. Biomet provides high tech/high wage employment for the local community and immediate region. The Company meets criteria #1 by acting as a major employer for the region. The Company utilizes air freight extensively to aid in the distribution of its products. A major international gateway airport used is Chicago-O'Hare. The Company's extensive use of air cargo satisfies criteria #2 for target industries.

Biomet has experienced an average annual growth rate of 23.1% since 1989.<sup>1</sup> This growth has occurred in light of the political debate surrounding health care reform. Biomet's growth adequately satisfies criteria #3 for target industries. In the 1994 report to shareholders, Biomet President Dane Miller extolled the company's sixteenth year of increases in both revenue and net income. In recognizing the tightening health care industry, Miller stated, "[Biomet] continues searching for new or improved products which provide economical answers to compelling health care questions." (Dane Miller Phd. , President and CEO, President's letter to the Shareholders, 1994)

In 1993, Biomet completed a 65,000 square foot addition to the Warsaw facility. This additional manufacturing and office space is expected to be sufficient to accommodate future growth. Biomet's continued success, make future investments to the company prudent. In addition to the myriad of employee stock options, the Company offers a Distributor Plan which provides for granting of options to purchase shares of the Company to persons who serve as distributors of the Company's stock.

Biomet is expected to continue its grow at an estimated 16.3% annual growth rate.<sup>2</sup> The facility expansion in Warsaw, IN exemplifies the Company's permanence in the region. Given this growth and the recognized need to improve efficiency in a tightening health care market, we conclude that a potential exists for a new linkage between the proposed Grissom Air Cargo facility and Biomet.

Guidant Corporation is another example of a company involved in the production of surgical medical instruments. With its headquarters in Indianapolis, Guidant Corporation is involved in the design, development, manufacture, and marketing a broad range of products for use in medical applications. Products include coronary artery disease intervention equipment and minimally surgical tools.

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<sup>1</sup> *Disclosure Database*. Biomet Inc. Complete Company Records. Disclosure No: B497400000.

<sup>2</sup> *ibid*. According to the accounting methods used by Biomet Inc.

Guidant Corporation employs 4,644 at facilities in Indianapolis. This provides evidence that the Company meets criteria #1 by acting as a major employer for the region. The Company utilizes air freight to aid in the distribution of its products. Major gateway airports used are Indianapolis International and Chicago-O'Hare. The Company's extensive use of air cargo satisfies criteria #2 for target industries.

Guidant Corporation has experienced an average annual growth rate in sales of 18.4% over the last five years.<sup>1</sup> During that same period, net income has fluctuated with the highest of \$115 million in 1991.<sup>2</sup> The average annual growth in net income for that same period was -3.1%.<sup>3</sup> These data reinforce the notion of increased competitiveness within the health care industry. Comparative advantage can only be increased by making production, research and development, or distribution more efficient. Given the growth in net sales and the fluctuating net income figures, we conclude that criteria #3 for target industries has been adequately met.

All three criteria for a target industry have been fully or adequately met. Further, it is evident that Guidant Corporation would benefit through more efficient distribution methods. Given this, we conclude that a potential exists for a new linkage between the proposed Grissom Air Cargo facility and Guidant.

The three companies included in this target industry analysis is only the beginning to numerous pharmaceutical companies which utilize air cargo as a means of export. Our detailed analysis of these three companies sheds light on the potential support that the target industries would provide to air carriers located at Grissom.

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<sup>1</sup> *Disclosure Database*. Guidant Corporation. Complete Company Records. Disclosure No: G921700000.

<sup>2</sup> *ibid.*

<sup>3</sup> *ibid.*

## Conclusions

In applying the MCDA we convert our written analysis to a data value based on the scale presented in Chapter 5. In the following calculation tables, we combine the assigned weights and the corresponding data values for the priority subfactors within the MCDA model. We derive subtotals for each subfactor, subfactor set, and subproblem. The total for the model represents the expected value of feasibility. The expected value sheds light on the feasibility of an air cargo facility at Grissom AFB. The subfactor values are described as follows:

### Subproblem #1: Regional Need

Line	Subfactor	Weight	Scaled Value	True Value
<b>2.0</b>	<b>Market Potential</b>	<b>0.111</b>		
2.1	Air Cargo Industry	0.035	4.0	0.138
2.2	Distance from major airport	0.024	-6.5	-0.158
2.3	Competition	0.008	-8.0	-0.062
2.4	Existing Company Relocation	0.018	-2.0	-0.035
2.5	New Company Location	0.027	-5.0	-0.134
	<b>Subtotal</b>			<b>-0.251</b>

### Subproblem #2: Feasibility

Line	Subfactor	Weight	Scaled Value	True Value
<b>7.0</b>	<b>Airport Facilities</b>	<b>0.063</b>		
7.1	Runway Capacity	0.008	8.0	0.060
7.2	Runway Availability	0.008	-2.0	-0.016
7.3	Taxiway Capacity	0.003	-2.5	-0.008
7.4	Surface Aircraft Parking Availability	0.006	0.5	0.003
7.5	Hangar Availability	0.006	1.0	0.006
7.6	Radar Approach Control Capacity	0.007	-1.5	-0.010
7.7	Land Use Compatibility	0.003	3.0	0.009
7.8	Internal Circulation	0.004	1.0	0.004
7.9	Infrastructure Circulation	0.004	4.5	0.017
7.10	Infrastructure Capacity	0.002	4.0	0.009
7.11	Employee Parking	0.004	0.0	0.000
7.12	Truck Parking	0.006	-4.0	-0.024
7.13	Public Parking	0.003	-3.0	-0.009
<b>8.0</b>	<b>Costs</b>	<b>0.087</b>		
8.1	Facility Modification	0.013	-2.0	-0.026
8.2	New Construction	0.010	6.0	0.061
8.3	Structure Demolition	0.001	0.0	0.000
8.4	Tower Improvements	0.001	-3.5	-0.002
8.5	Utility Improvements	0.008	2.0	0.016
8.6	Utility Demolition	0.001	0.0	0.000
8.7	Utility Relocation	0.008	0.0	0.000
8.8	Capital Equipment	0.005	2.5	0.013
8.9	Environmental Remediation	0.001	0.0	0.000
8.10	Site Preparation	0.008	4.0	0.032
8.11	Operational Delay	0.008	4.0	0.034
8.12	New Airport Facilities	0.008	2.5	0.019
8.13	Debt Issued	0.007	-3.5	-0.026
8.14	GARB Interest Rate	0.004	-2.0	-0.008
8.15	Revenue Bond Interest Rate	0.004	-4.0	-0.015

Table 6.23

## Subproblem #2: Feasibility (continued)

Line	Subfactor	Weight	Scaled Value	True Value
<b>9.0</b>	<b>Operating costs</b>	<b>0.053</b>		
9.1	Management	0.014	2.0	0.029
9.2	Maintenance	0.023	6.0	0.137
9.3	Marketing	0.006	2.0	0.013
9.4	Administrative	0.009	-3.5	-0.032
<b>10.0</b>	<b>Revenues</b>	<b>0.050</b>		
10.1	FAA Operational Funding	0.006	-5.0	-0.030
10.2	AIP Funding Potential	0.006	1.5	0.009
10.3	State Funding	0.007	-5.0	-0.034
10.4	Local Funding	0.004	-5.0	-0.020
10.5	Landing Fees	0.005	0.5	0.002
10.6	Airport Tax	0.004	0.0	0.000
10.7	Gas Tax	0.003	-2.0	-0.006
10.8	CEDIT Revenue	0.003	1.0	0.003
10.9	COIT Revenue	0.002	-4.0	-0.009
10.10	Property Tax Revenue	0.002	-2.0	-0.004
10.11	Sales Tax Revenue	0.003	0.0	0.000
10.12	Lease Revenue	0.005	-3.0	-0.015
10.13	Utility Revenue	0.001	0.0	0.000
	<b>Subtotal</b>			<b>0.183</b>

## Subproblem #3: Economic Development

Line	Subfactor	Weight	Scaled Value	True Value
<b>11.0</b>	<b>Economic</b>	<b>0.135</b>		
11.1	Matching of Supply Linkages	0.029	7.0	0.205
11.2	Absorbition of Displaced Labor Force	0.005	1.0	0.005
11.3	Job Creation/Retention - local	0.015	2.0	0.030
11.4	Increased Transactions - as a producer	0.029	2.0	0.059
11.5	Increased transactions - as a consumer	0.020	0.5	0.010
11.6	Job Creation/Retention - regional (indirect)	0.021	2.0	0.041
11.7	Created Regional Locational Advantages	0.018	0.5	0.009
<b>12.0</b>	<b>Target Industry</b>	<b>0.165</b>		
12.1	New Linkage Potential	0.016	-6.0	-0.096
12.2	Transportation Cost Differential	0.038	-2.0	-0.077
12.3	Tax/fees Differential	0.018	6.0	0.106
12.4	Routing Capacity	0.023	-3.5	-0.080
12.5	Potential Revenue	0.038	0.0	0.000
12.6	Freight (in dollars)	0.032	0.0	0.000
	<b>Subtotal</b>			<b>0.211</b>
		<b>Total Weight</b>		<b>Expected Value</b>
	<b>Grand Totals</b>	<b>63.387</b>		<b>0.143</b>

Table 6.24

Having responded to 63% of the weight of the model, we may make several conclusions about the feasibility of air cargo. In looking at the subtotals for individual subproblems, we find that the regional need has a significantly negative value. Both feasibility and economic development help bring the expected value to be positive. However, the subproblems have varying contributions. The economic development subfactors have the highest positive value. We conclude that the addition of regional economic development factors actually creates the positive expected value. If we consider only regional need and feasibility, we compute a negative expected value.

In looking at individual subfactors, we can point out major influences on the expected value. The distance from major airports has the most negative value in the MCDA model. Given the proximity of Chicago-O'Hare, Indianapolis, and Dayton and the cargo volume at each, Grissom fares very poorly in this subfactor. Figure 6.2 emphasizes this point. High cargo volumes at nearby airports also complicate company relocation. First, nearly all of the largest international air carriers currently serve international gateways within the catchment area. Secondly, those few which lie outside the catchment are significantly smaller and more specialized air carriers.

We conclude that Grissom has the potential to attract service only from existing hubs, either through diversion or as a reliever airport. This diversion is not easy and requires a substantial cost advantage. Forwarders and air carriers are influenced most by the transshipment cost at the facility as opposed to line haul costs. Grissom, therefore, must be extremely competitive in offering a low package of rates and facility charges.

The most positive subfactors are found within the economic development subproblem. The matching of existing supplier linkages (line 11.1), for example, completely offsets the distance from airports subfactor (line 2.2). The economic analysis contained in the RIMS II model shows behavioral relationships among industries and supplier linkages. We conclude that air cargo is extremely beneficial in restoring equilibrium in the supplier linkages that were once associated with the operations at Grissom. We also conclude that air cargo generates regional economic benefits well beyond the restoration of equilibrium. The input-output analysis reveals that air cargo can generate tremendous development and job growth in the sectors of transportation, communications, business services, and warehousing.

The target industry analysis provides mixed results. First, the Grissom site offers a substantial transportation (transshipment included) cost differential. However, the linkage potential is limited because of factors mentioned under regional need. The volume of cargo already being processed at Chicago and Indianapolis helps reduce the risk of delays and inefficiencies. Forwarders thrive in numerous air carrier environments. Therefore, linkage potential is limited without offering at least two major air carriers.

The cost and revenue analysis is generally positive. The positive expected value for the feasibility subproblem is attributed to the existence of quality facilities. The GRA also is not responsible for direct costs associated with maintenance and environmental remediation.

Grissom also offers a relatively short "turn-key" time. With facilities already able to handle the largest of aircraft, Grissom has little or no operational delay. Further, the existing infrastructure and roadway systems are moderately equipped to handle truck traffic.

Revenues, especially state and local, are at a minimum. In fact, revenues actually lower the expected value generated by the subfactor sets of airport facilities and costs. The taxing ability and bond capacity of the GRA and County are low in comparison to the risk associated with developing Grissom AFB. We see that without federal or state assistance, the chances for redevelopment success are virtually eliminated. We remain optimis-

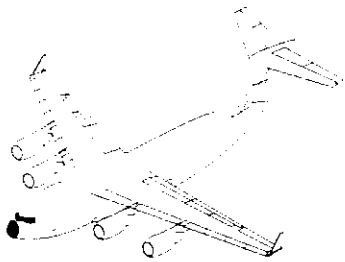
tic, however, that the state will recognize the regional economic benefits as discussed in this study, and begin working towards developing a partnership with the local community.

**Given the amount of analysis in answering the key subfactors, we have justification to make an educated projection. We can project that an air cargo facility is moderately feasible given an aggressive strategy towards redevelopment.**

This projection is based solely on the priority feasibility subfactors. This feasibility projection is not based on a comparative value to other reuse options.

# Chapter 7

## Summary and Lessons Learned



Summary  
Lessons Learned

## **Summary**

In this chapter we summarize the processes of evaluating an air cargo feasibility study for Grissom Air Force Base.

We began the process by establishing the problem. The Defense Base Closure and Realignment Commission announced the closure of Grissom Air Force Base in 1991. Since that time, the Grissom Redevelopment Authority (GRA) has been working to develop a reuse strategy. Three different reuse strategies have emerged from a series of studies: an industrial development strategy; an air cargo (joint use) alternative; and a no-action alternative. While the first reuse has been heavily studied by the Air Force and RKG and the third discarded as a viable option, the second option appears to be in need of further study. Cargo Marketing Group first brought the issue of the air cargo alternative to the forefront by completing an air cargo feasibility study in 1994. The results of CMG study are questionable. We question the comprehensiveness of the variables used in constructing the study. Further, the CMG admits that the results are inconclusive and warrant additional study. Thus, we reopen the problem of air cargo as a viable reuse option for Grissom AFB.

First, we divide the "ultimate question of feasibility" into three, smaller components called subproblems. The three subproblems are: regional need, feasibility, and economic development. Each subproblem contains a separate set of issues that helps to answer the ultimate question of feasibility. We provide literary support for each subproblem. This support not only reinforces the importance of each subproblem but also reinforces the need for additional study.

In chapter 2 we set the limitations of our analysis. We present the goal of our research as follows: to offer a new methodology for preparing air cargo feasibility studies in base reuse planning. To reach our goal, we divide the study into three main components: the evaluation of the CMG study, a preferred method, and the application of the preferred method.

We must establish two major assumptions. First, we establish the catchment area for Grissom AFB. The definition of the catchment area affects the variables used in later analysis. We define a catchment area based on travel time and maximum obtainable distance. Second, we establish the employment region for Grissom AFB. The definition of the employment region affects the measurement of local economic impact as well as inputs to the proposed reuse.

We then establish the methodology for pursuing each of the three components. All three methodologies are based the analysis of subfactors, smaller components of the subproblems. In the methodology for evaluating the CMG study, we group the various types of analyses into a tabular format of subproblems and subfactors. The methodology for generating the preferred method is also based on the use of subproblems and subfactors. We introduce a quantitative analysis technique, MCDA, which utilizes the subfactors in calculating an expected value of feasibility. In the methodology for applying the preferred method, we propose the use of the MCDA model in determining the expected value of feasibility for air cargo at Grissom AFB.

Prior to any analysis, we present the existing situation at Grissom AFB through a post-alignment assessment. This assessment is important for two reasons. First, we must understand the development potential which exists on the site. Second, we must have a general understanding of the conditions of existing facilities. In preparing the post-alignment assessment, we are "setting the stage" for the feasibility study.

We begin the by addressing the first component, the evaluation of the CMG feasibility study. We convert the different forms of analysis used in the CMG study into a table of subfactors. This conversion places the data

into a format that is easily compared to the second and third components of our study. We group the subfactors according to our three subproblems.

We proceed by analyzing each and every subfactor used in the CMG study. In conducting this evaluation, we present arguments from multiple sources including our own. We summarize the results of this evaluation in the original table of subfactors. The process of evaluation allows us to measure the inadequacies of the CMG method. We also discover areas (subfactors) which require more attention. And, as we suspected, we find entire subfactors which have been omitted from the CMG study. The two major omissions in the CMG study are the lack of regional economic analysis and cost accounting. Aside from this, a significant amount of the analysis of certain subfactors is incomplete. These deficiencies lead us to the development of a preferred method.

The Preferred Method is the second component of the study. The preferred method, as given in Chapter 5, is a model for planning air cargo reuse of closed military bases. We structure the language in this chapter such that the method is applicable to other, similar reuse studies.

The Preferred Method consists of a table of subfactors and a calculation method, called the Multiple Criteria Decision Analysis (MCDA) model. We create the table of subfactors through extensive research of base reuse planning documents, airport planning documents, and other relevant sources. As in Chapter 4, we first present the table of subfactors. We follow this table with written justifications for each and every subfactor. After justifying all subfactors, we present a calculation method for estimating the feasibility of air cargo. We chose the Multiple Criteria Decision Analysis (MCDA) based on its ability to eliminate biases in generating a true, expected value of feasibility. The MCDA utilizes quantitative analysis in solving a multivariate problem. We establish a data scale for converting qualitative data into quantitative data. We also introduce a weighting system that recognizes the varying importance of different subfactors.

The preferred method introduces new subfactors primarily in areas associated with costs and economic development. We also improve and redefine other, established subfactors. The preferred method is unique not only to the CMG study but also to most other base reuse studies because of the regional economic development subfactors. These subfactors are often overlooked in base reuse planning. However, as we point out in Chapter 6, this omission can be deleterious to our findings.

In Chapter 6, we begin to apply the preferred method to the situation at Grissom Air Force Base. We begin the application process by determining the weights of the subfactors. This first step is crucial because we do not intend to answer all subfactors. By establishing the subfactor weights, we may begin responding to those subfactors which have relatively high weight. We respond to enough subfactors until we are within the range of acceptability (50% to 100%). If we were to answer *all* subproblems then the order in which the weight assignment took place would be irrelevant. We suggest our approach for all studies facing similar constraints.

We respond to six major subfactors which collectively account for nearly 2/3 of the weight of the entire model. Our application is well within the range of acceptability. First we provide written analysis in response to all subfactors. Next, we compare this analysis with the data scale given in Chapter 5. The result is a series of calculation tables which include the subfactors' weight, data value, and scaled value. We sum the scaled values to achieve an expected value for the subfactors. The expected value gives us an indication (in a numeric format) as to the feasibility of air cargo at Grissom AFB. We then make conclusions based on the expected value and analyze influential subfactors within the model. We conclude that an air cargo facility is a feasible reuse at Grissom Air Force Base.

## **Lessons Learned**

In this section, we reflect on some of the lessons learned from this research. We have essentially introduced an entirely new method for making a feasibility assessment. In presenting these lessons learned, we advocate more research and empirical testing of the preferred method. Base reuse planning like all fields must evolve with research.

Several areas of concern arose in conducting this research. These areas should be recognized by reuse planners who employ similar methods. The model is clearly the most important component to the feasibility assessment. If the model contains inaccuracies, then the conclusions may not necessarily be valid. Several lessons should be noted regarding the construction of our preferred method.

First, in assembling the subfactor list, we found that some consolidation of subfactors may be needed. This lesson arose in interactive meetings with the GRA. The resulting weights of some subfactors suggest that such subfactors should have been eliminated or consolidated with others.

Second, we found the application of the data scale to be difficult. Such application is difficult because the data scale must measure all sets of subfactors, no matter the format. Costs, for example, which may be considered as "negative" at any level can actually be positive according to our data scale. Alternatively, revenues, which could be construed as always positive in value, may actually be negative on the data scale if such revenues falls below expectations. We learn that we need to research the generation of data scales more and find one that is more descriptive and adaptable to all types of subfactors.

Several of our approaches to this problem were successful. The actual structure of the research provides for easy comprehension. First, we evaluate the existing study and find all of the deficiencies. Next, we build a model based on correcting these deficiencies. We then apply the model to a specific case study.

The subproblem-subfactor relationship is extremely strong and is perhaps the most effective means to explain a multivariate problem. This relationship is easy to understand through the use of charts and tables. This arrangement helps facilitate weight assignment and ultimately the application of the MCDA model.

The Multiple Criteria Decision Analysis (MCDA) model is an effective method to divert discussion away from simple cost/benefit accounting. The MCDA allows the base reuse planner to analyze non-monetary effects side-by-side with cost/revenue analysis. The MCDA helps us realize that there is in effect one question: feasibility of air cargo. The MCDA converts all qualitative data in quantitative data values. In doing so, we eliminate the need for subjective judgements and conclusions. We suspect that such subjectivity is a problem in base reuse planning studies and deserves attention. We recommend some form of the MCDA for any such study.

The flexibility of this model makes the results seem more realistic. We answer only the most pressing questions until we are within the range of acceptability. Next, we draw conclusions based on conclusive evidence. The expected value represents a degree of potential for success. We do not arrive at a "yes" or a "no" answer; rather we present an expected value and allow for interpretation.

With these lessons in mind we must encourage further research into the methods for conducting base reuse feasibility assessments. We realize the importance of such studies to the livelihoods of the citizens and communities associated with military bases. We, therefore, must be compelled to develop more accurate tools for offsetting the negative impacts of base closure.

First, we must continually research the accuracy of the data scale. The data scale is essentially a measuring stick for converting qualitative data into quantitative. This conversion must be conducted with precision in order to reach accurate conclusions.

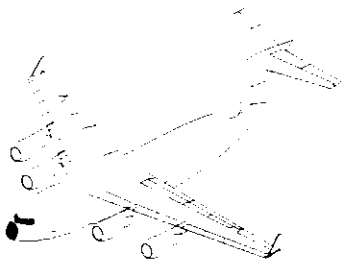
Secondly, we recommend the research and use of a full RIMS II model for calculating regional economic impacts. The RIMS II model must be continually improved to meet the demands of the base closure industry. The application of the RIMS II model, which was not originally developed for base closure planning, should become an integral part of planning for base reuse.

Lastly, we recommend further research in target industry analysis. Target industry analysis, as presented in this study, is actually a reformative form of the conventional definition. In this case, target industries are those industries which provide significant support for the proposed reuse. We essential research the same research that is involved in the location decision of the air cargo firm. When the base reuse planner conducts similar target industry analysis, he/she is beginning to understand the location factors facing air cargo companies. We must research further our application of the target industry analysis. This research is invaluable in helping us, as planners, understand the constraints faced by the reuse activity.

The process of researching effective base reuse planning techniques should never rest. Planning, like any science, must evolve with research. This study shall serve as the impetus for such research.

# Appendix A

## Definitions



accumulated effect - the sum of all impacts on inputs from a change in the final demand for a particular consumption industry.

additive effect - the resulting sum of forwarder and airline rates.

air cargo facility - a land use activity which handles the movement of goods between land and air modes of transportation and does not accommodate the movement of people.

air carrier - a company which engages in activity dedicated exclusively to the air transportation of freight.

combination freight - cargo which is shipped in the belly hold of a passenger aircraft.

commercial aviation - aircraft activity licensed by state or federal authority to transport passengers and/or cargo for hire on a scheduled or nonscheduled basis.

convey - to deliver or otherwise dispose title of property to another entity.

employment region - the area within the average employment commuting distance (20-25 miles) in radius around Grissom Air Force Base.

entrant air carrier - an air carrier that does not hold a slot at the airport concerned and has never sold nor given up a slot at that airport, as further defined in subpart S of part 93 of title 14, Code of Federal Regulations.

expeditor - an air cargo carrier which offers over-night service of small parcels.

forwarder - an air cargo service company which facilitates the scheduling and coordination of air cargo on air carriers.

foreign trade zone - secure areas inside the United States where merchandise is taken and, for U.S. Customs purposes, are not considered within the U.S. While import merchandise is within the zone, it can be stored, tested cleaned, sampled, relabeled, repacked, and displayed, repaired, and otherwise manipulated. Merchandise is not assessed a duty until it is brought out of the zone and enters the United States.

general aviation - all aircraft that are not commercial or military aircraft.

graph grid - a paper recording system for motor carrier operators in which the driver records on a timeline the type and amount of time spent in operating the motor carrier.

hardstand area - a paved surface area designated for the parking of aircraft and maneuvering thereabouts.

high density airport - an airport at which the FAA limits the number of instrument rule takeoff or landings of aircraft.

joint use aviation - the use of an airport facility for military as well as civilian personnel activities.

Multiple Criteria Decision Analysis (MCDA) - a calculation method for multi-attribute problems which employs the quantitative analysis of data values and respective numeric weights.

military cantonment - for purposes of analysis, the military cantonment comprises areas utilized by the 434th Air Refueling Wing and the U.S. Army Reserves to support military activities including billeting, industrial, storage, administrative, and airfield and flightline facilities.

Primary (PR) airport - defined by the National Plan of Integrated Airport Systems (NPIAS) as those airports receiving scheduled service and having 10,000 or more annual enplanements.

Public Benefit Transfer (PBT) - the conveyance of federally owned surplus land to local authorities at no or little cost provided that the property be used for a specified purpose which will yield a public benefit.

service region - the area within 100 miles of Grissom Air Force Base which would be affected by the proposed reuse.

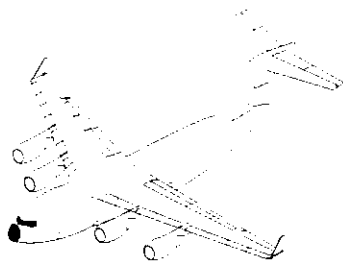
slot - a reservation for an instrument flight rule takeoff or landing by an aircraft in air transportation. Only applicable at a high density airport.

surplus property - property designated as excess that is of no interest to any federal agency. The General Services Administration makes these properties available to state, local, or nonprofit organizations or sold to private organizations for purposes of reuse.

target industry - a sector of the regional economy which benefits significantly from an increase in a produced input because of the sector's dependence on the produced good.

# Appendix B

## Bibliography

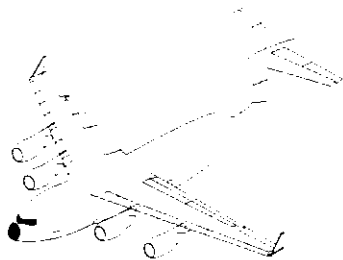


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# Appendix C Meetings Log



September 1994. Meeting with Jeff Eder, Planner, GRA.

November 1994. Presentation by HNTB of Draft (25% completion) of Joint Use Aviation Study.

December 10, 1994. Presentation of Research Proposal.

January 11, 1995. Meeting with Dr. Francis Parker, Thesis Committee Chairman.

January 18, 1995. Meeting with Dr. Francis Parker, Thesis Committee Chairman.

January 26, 1995. Meeting with Dr. Francis Parker, Thesis Committee Chairman.

January 26, 1995. Meeting with David Upchurch, Thesis Writing Consultant.

January 27, 1995. Meeting with Jim Tidd, GRA Deputy Director.

February 1, 1995. Presentation by HNTB of Draft (50% completion) of Joint Use Aviation Study.

February 2, 1995. Meeting with Dr. Francis Parker, Thesis Committee Chairman.

February 2, 1995. Meeting with David Upchurch, Thesis Writing Consultant.

February 9, 1995. Meeting with Dr. Francis Parker, Thesis Committee Chairman.

February 15, 1995. Phone interview with Roadway Package System.

February 15, 1995. Phone interview with Emery Worldwide.

February 15, 1995. Phone interview with Airborne Express.

February 15, 1995. Phone interview with Burlington.

February 15, 1995. Phone interview with DHL.

February 16, 1995. Phone interview with Emery Worldwide.

February 16, 1995. Meeting with Dr. Francis Parker, Thesis Committee Chairman.

February 23, 1995. Phone interview with James Hicks, V.P. for Planning at RKG Associates.

March 1, 1995. Meeting with Dr. Francis Parker, Thesis Committee Chairman.

March 2, 1995. Phone interview with Grissom AFB Base Conversion Agency.

March 7, 1995. Meeting with Daniel Goddard, Executive Director and James Tidd, Deputy Director of GRA.

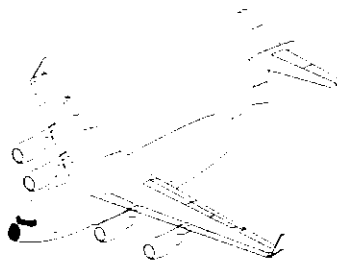
March 15, 1995. Presentation by HNTB of Draft (75% completion) of Joint Use Aviation Study.

March 20, 1995. Meeting with Dr. Francis Parker, Thesis Committee Chairman.

March 31, 1995. Phone interview with Chief of Environmental Planning Division. Grissom Project.

## Appendix D

# Defense Base Closure and Realignment Act of 1990



What follows is a copy of the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510). In italics are the subsequent changes made by Congress in the Fiscal Years 1992/1993 Department of Defense Authorization Bill (P.L. 102-311) and the Fiscal Year 1993 Department of Defense Authorization Bill (P.L. 102-484).

## TITLE XXIX - DEFENSE BASE CLOSURES AND REALIGNMENTS

### PART A--Defense Base Closure and Realignment Commission

#### SEC. 2901. SHORT TITLE AND PURPOSE

- (a) **Short Title.** - This part may be cited as the "Defense Base Closure and Realignment Act of 1990".
- (b) **Purpose.** - The purpose of this part is to provide a fair process that will result in the timely closure and realignment of military installations inside the United States.

#### SEC. 2902. THE COMMISSION

- (a) **Establishment.** - There is established an independent commission to be known as the "Defense Base Closure and Realignment Commission".
- (b) **Duties.** - The Commission shall carry out the duties specified for it in this part.
- (c) **Appointment.** (1)(A) The Commission shall be composed of eight members appointed by the President, by and with the advice and consent of the Senate.  
(B) The President shall transmit to the Senate the nominations for appointment to the Commission -
  - (i) by no later than January 3, 1991, in the case of members of the Commission whose terms will expire at the end of the first session of the 102nd Congress;
  - (ii) by no later than January 25, 1993, in the case of members of the Commission whose terms will expire at the end of the first session of the 103rd Congress; and
  - (iii) by no later than January 3, 1995, in the case of members of the Commission whose terms will expire at the end of the first session of the 104th Congress.
- (C) If the President does not transmit to Congress the nominations for appointment to the Commission on or before the date specified for 1993 in clause (ii) of subparagraph (B) or for 1995 in clause (iii) of such subparagraph, the process by which military installations may be selected for closure or realignment under this part with respect to that year shall be terminated".
- (2) In selecting individuals for nominations for appointments to the Commission, the President should consult with :
  - (A) the Speaker of the House of Representatives concerning the appointment of two members;
  - (B) the majority leader of the Senate concerning the appointment of two members;
  - (C) the minority leader of the House of Representatives concerning the appointment of one member;
  - (D) the minority leader of the Senate concerning the appointment of one member.
- (3) At the time the President nominates individuals for appointment to the Commission for each session of Congress referred to in paragraph (1)(B), the President shall designate one such individual who shall serve as Chairman of the Commission.
- (d) **Terms.** - (1) Except as provided in paragraph (2), each member of the Commission shall serve until the adjournment of Congress sine die for the session during which the member was appointed to the Commission.  
(2) The Chairman of the Commission shall serve until the confirmation of a successor.
- (e) **Meetings.** - (1) The Commission shall meet only during calendar years 1991, 1993, and 1995.

- (2)(A) Each meeting of the Commission. Other than meetings in which classified information is to be discussed, shall be open to the public.
- (B) All the proceedings, information, and deliberations of the Commission shall be open, upon request, to the following:
- (i) The Chairman and the ranking minority party member of the Subcommittee on Readiness, Sustainability, and Support of the Committee on Armed Services of the Senate, or such other members of the Subcommittee designated by such Chairman or ranking minority party member.
  - (ii) The Chairman and the ranking minority party member of the Subcommittee on Military Installations and Facilities of the Committee on Armed Services of the House of Representatives, or such other members of the Subcommittee designated by such Chairman or ranking minority party member.
  - (iii) The Chairmen and ranking minority party members of the Subcommittees on Military Construction of the Committees on Appropriations of the Senate and of the House of Representatives, or such other members of the Subcommittees designated by such Chairmen or ranking minority party members.
- (f) **Vacancies.** - A vacancy in the Commission shall be filled in the same manner as the original appointment, but the individual appointed to fill the vacancy shall serve only for the unexpired portion of the term for which the individual's predecessor was appointed.
- (g) **Pay and Travel Expenses.** - (1)(A) Each member, other than the Chairman, shall be paid at a rate equal to the daily equivalent of the minimum annual rate of basic pay payable for level IV of the Executive Schedule under section 5315 of title 5, United States Code, for each day (including travel time) during which the member is engaged in the actual performance of duties vested in the Commission.
- (B) The Chairman shall be paid for each day referred to in subparagraph (A) at a rate equal to the daily equivalent of the minimum annual rate of basic pay payable for level III of the Executive Schedule under section 5314 of title 5, United States Code.
- (2) Members shall receive travel expenses, including per diem in lieu of subsistence, in accordance with sections 5702 and 5703 of title 5, United States Code.
- (h) **Director of Staff.** (1) The Commission shall, without regard to section 5311(b) of title 5, United States code, appoint a Director who has not served on active duty in the Armed Forces or as a civilian employee of the Department of Defense during the one-year period preceding the date of such appointment.
- (2) The Director shall be paid at the rate of basic pay payable for level IV of the Executive Schedule under section 5315 of title 5, United States Code.
- (i) **Staff.** - (1) Subject to paragraphs (2) and (3), the Director, with the approval of the Commission, may appoint and fix the pay of additional personnel.
- (2) The Director may make such appointments without regard to the provisions of title 5, United States Code, governing appointments in the competitive service, and any personnel so appointed may be paid without regard to the provisions of chapter 51 and subchapter III of chapter 53 of that title relating to classification and General Schedule pay rates, except that an individual so appointed may not receive pay in excess of the annual rate of basic pay payable for GS-18 of the General Schedule.
- (3)(A) Not more than one-third of the personnel employed by or detailed to the Commission may be on detail from the Department of Defense.
- "(B)(i) Not more than one fifth of the professional analysts of the Commission staff may be persons detailed from the Department of Defense to the Commission.*

- "(ii) No person detailed from the Department of Defense to the Commission may be assigned as the lead professional analyst with respect to a military department or defense agency.*
- "(C) A person may not be detailed from the Department of Defense to the Commission if within 12 months before the detail is to begin, that person participated personally and substantially in any matter within the Department of Defense concerning the preparation of recommendations for closures or realignments of military installations.*
- "(D) No member of the Armed Forces, and no officer or employee of the Department of Defense, may -*
- "(i) prepare any report concerning the effectiveness, fitness, or efficiency of the performance on the staff of the Commission of any person detailed from the Department of Defense to that staff;*
- "(ii) review the preparation of such a report; or*
- "(iii) approve or disapprove such a report."; and*
- (4) Upon request of the Director, the head of any Federal department or agency may detail any of the personnel of that department or agency to the Commission to assist the Commission in carrying out its duties under this part.
- (5) The Comptroller General of the United States shall provide assistance, including the detailing of employees, to the Commission in accordance with an agreement entered into with the Commission.
- "(6) The following restrictions relating to the personnel of the Commission shall apply during 1992 and 1994:*
- "(A) There may not be more than 15 persons on the staff at any one time.*
- "(B) The staff may perform only such functions as are necessary to prepare for the transition to new membership on the Commission in the following year.*
- "(C) No member of the Armed Forces and no employee of the Department of Defense may serve on the staff."*
- (j) **Other Authority.** - (1) The Commission may procure by contract, to the extent funds are available, the temporary or intermittent services of experts or consultants pursuant to section 3109 of title 5, United States Code.
- (2) The Commission may lease space and acquire personal property to the extent funds are available.
- (k) **Funding.** - (1) There are authorized to be appropriated to the Commission such funds as are necessary to carry out its duties under this part. Such funds shall remain available until expended.
- (2) If no funds are appropriated to the Commission by the end of the second session of the 101st Congress, the Secretary of Defense shall transfer, for fiscal year 1991, to the Commission funds from the Department of Defense Base Closure Account established by section 207 of Public Law 100-526. Such funds shall remain available until expended.
- (l) **Termination.** - The Commission shall terminate on December 31, 1995.
- "(m) Prohibition Against Restricting Communications. - Section 1034 of title 10, United States Code, shall apply with respect to communications with the Commission."*

#### SEC. 2903. PROCEDURE FOR MAKING RECOMMENDATIONS FOR BASE CLOSURES AND REALIGNMENTS

- (a) **Force-Structure Plan.** - (1) As part of the budget justification documents submitted to Congress in support of the budget for the Department of Defense for each of the fiscal years 1992, 1994, and 1996. The Secretary shall include a force-structure plan for the Armed Forces based on an assessment by the Secretary of the probable threats to the national security

- during the six-year period beginning with the fiscal year for which the budget request is made and of the anticipated levels of funding that will be available for national defense purposes during such period.
- (2) Such plan shall include, without any reference (directly or indirectly) to military installations inside the United States that may be closed or realigned under such plan -
- (A) a description of the assessment referenced to in paragraph (1);
  - (B) a description (i) of the anticipated force-structure during and at the end of such period for each military department (with specifications of the number and type of units in the active and reserve force of each such department), and (ii) of the units that will need to be forward, based (with a justification thereof) during and at the end of each such period; and
  - (C) a description of the anticipated implementation of such force-structure plan.
- (3) The Secretary shall also transmit a copy of each such force-structure plan to the Commission.
- (b) **Selection Criteria.** - (1) The Secretary shall, by no later than December 31, 1990, publish in the Federal Register and transmit to the congressional defense committees the criteria proposed to be used by the Department of Defense in making recommendations for the closure or realignment of military installations inside the United States under this part. The Secretary shall provide an opportunity for public comment on the proposed criteria for a period of at least 30 days and shall include notice of that opportunity in the publication required under the preceding sentence.
- (2)(A) The Secretary shall, by no later than February 15, 1991, publish in the Federal Register and transmit to the congressional defense committees the final criteria to be used in making recommendations for the closure or realignment of military installations inside the United States under this part. Except as provided in subparagraph (B), such criteria shall be the final criteria to be used, making such recommendations unless disapproved by a joint resolution of Congress enacted on or before March 15, 1991.
- (B) The Secretary may amend such criteria, but such amendments may not become effective until they have been published in the Federal Register, opened to public comment for at least 30 days, and then transmitted to the congressional defense committees in final form by no later than "January 15" of the year concerned. Such amended criteria shall be the final criteria to be used, along with the force-structure plan referred to in subsection (a), in making such recommendations unless disapproved by a joint resolution of Congress enacted on or before "February 15" of the year concerned.
- (c) **DoD Recommendations.** - (1) The Secretary may, by no later than April 15, 1991, "March 15, 1993 and March 15, 1995," publish in the Federal Register and transmit to the congressional defense committees and to the Commission a list of the military installations inside the United States that the Secretary recommends for closure or realignment on the basis of the force-structure plan and the final criteria referred to in subsection (b)(2) that are applicable to the year concerned.
- (2) The Secretary shall include, with the list of recommendations published and transmitted pursuant to paragraph (1), a summary of the selection process that resulted in the recommendation for each installation, including a justification for each recommendation.
- (3) In considering military installations for closure or realignment, the Secretary shall consider all military installations inside the United States equally without regard to whether the installation has been previously considered or proposed for closure or realignment by the Department.
- "(4) In addition to making all information used by the Secretary to prepare the recommendations under this subsection available to Congress (including any committee or member of Congress), the Secretary shall also make such information available to the Commission and the Comptroller General of the United States. "; and*

- "(5)(A) Each person referred to in subparagraph (B), when submitting information to the Secretary of Defense or the Commission concerning the closure or realignment of a military installation, shall certify that such information is accurate and complete to the best of that person's knowledge and I belief.*
- "(B) Subparagraph (A) applies to the following persons:*
- "(i) The Secretaries of the military departments*
- "(ii) The heads of the Defense Agencies.*
- "(iii) Each person who is in a position the duties of which include personal and substantial involvement in the preparation and submission of information and recommendations concerning the closure or realignment of military installations, as designated in regulations which the Secretary of Defense shall prescribe, regulations which the Secretary of each military department shall prescribe for personnel within that military department, or regulations which the head of each Defense Agency shall prescribe for personnel within that Defense Agency.*
- "(6) In the case of and information provided to the Commission by a person described in paragraph (5)(B), the Commission shall submit that information to the Senate and the House of Representatives to be made available to the Members of the House concerned in accordance with the rules of that House. The information shall be submitted to the Senate and the House of Representatives within 21 hours after the submission of the information to the Commission. The Secretary of Defense shall prescribe regulations to ensure the compliance of the Commission with this paragraph".*
- (d) Review and Recommendations by the Commission.** - (1) After receiving the recommendations from the Secretary pursuant to subsection (c) for any year, the Commission shall conduct public hearings on the recommendations.
- (Z)(A)** The Commission shall, by no later than July 1 of each year in which the Secretary transmits recommendations to it pursuant to subsection (c), transmit to the President a report containing the Commission's findings and conclusions based on a review and analysis of the recommendations made by the Secretary, together with the Commission's recommendations for closures and realignments of military installations inside the United States.
- (B)** *"Subject to subparagraph (C), in making"* its recommendations, the Commission may make changes in any of the recommendations made by the Secretary if the Commission determines that the Secretary deviated substantially from the force-structure plan and final criteria referred to in subsection (c)(1) in making recommendations.
- "(C) In the case of a change described in subparagraph (D) in the recommendations made by the Secretary, the Commission may make the change only if the Commission -*
- "(i) makes the determination required by subparagraph (B);*
- "(ii) determines that the change is consistent with the force-structure plan and final criteria referred to in subsection (c)(1);*
- "(iii) publishes a notice of the proposed change in the Federal Register not less than 30 days before transmitting its recommendations to the President pursuant to Paragraph (2); and*
- "(iv) conducts public hearings on the proposed change.*
- "(D) Subparagraph (C) shall apply to a change by the Commission in the Secretary's recommendations that would -*
- "(i) add a military installation to the list of military installations recommended by the Secretary for closure;*

*"(ii) add a military installation to the list of military installations recommended by the Secretary for realignment; or*

*"(iii) increase the extent of a realignment of a particular military installation recommended by the Secretary. "*

- (3) The Commission shall explain and justify in its report submitted to the President pursuant to paragraph (2) any recommendation made by the Commission that is different from the recommendations made by the Secretary pursuant to subsection(c). The Commission shall transmit a copy of such report to the congressional defense committees on the same date on which it transmits its recommendations to the President under paragraph (2).
- (4) After July 1 of each year in which the Commission transmits recommendations to the President under this subsection, the Commission shall promptly provide, upon request, to any Member of Congress information used by the Commission in making its recommendations.
- (5) The Comptroller General of the United States shall -
  - (A) assist the Commission, to the extent requested, in the Commission's review and analysis of the recommendations made by the Secretary pursuant to subsection (C); and
  - (B) by no later than April 15 of each year in which the Secretary makes such recommendations, transmit to the Congress and to the Commission a report containing a detailed analysis of the Secretary's recommendations and selection process.
- (e) **Review by the President.** - (1) The President shall, by no later than July 15 of each year in which the Commission makes recommendations under subsection (d), transmit to the Commission and to the Congress a report containing the President's approval or disapproval of the Commission's recommendations.
- (2) If the President approves all the recommendations of the Commission. The President shall transmit a copy of such recommendations to the Congress, together with a certification of such approval.
- (3) If the President disapproves the recommendations of the Commission, in whole or in part, the President shall transmit to the Commission and the Congress the reasons for that disapproval. The Commission shall then transmit to the President, by no later than August 15 of the year concerned, a revised list of recommendations for the closure and realignment of military installations.
- (4) If the President approves all of the revised recommendations of the Commission transmitted to the President under paragraph (3), the President shall transmit a copy of such revised recommendations to the Congress, together with a certification of such approval.
- (5) If the President does not transmit to the Congress an approval and certification described in paragraph (2) or (4) by September 1 of any year in which the Commission has transmitted recommendations to the President under this part, the process by which military installations may be selected for closure or realignment under this part with respect to that year shall be terminated.

#### SEC. 2904. CLOSURE AND REALIGNMENT OF MILITARY INSTALLATIONS

(a) **In General.** - Subject to subsection (b), the Secretary shall -

- (1) close all military installations recommended for closure by the Commission in each report transmitted to the Congress by the President pursuant to section 2903(e);
- (2) realign all military installations recommended for realignment by such Commission in each such report;

- (3) initiate all such closures and realignments no later than two years after the date on which the President transmits a report to the Congress pursuant to section 2903(e) containing the recommendations for such closures or realignments; and
- (4) complete all such closures and realignments no later than the end of the six-year period beginning on the date on which the President transmits the report pursuant to section 2903(e) containing the recommendations for such closures or realignments.
- (b) **Congressional Disapproval.** - (1) The Secretary may not carry out any closure or realignment recommended by the Commission in a report transmitted from the President pursuant to section 2903(e) if a joint resolution is enacted, in accordance with the provisions of section 2908, disapproving such recommendations of the Commission before the earlier of -
  - (A) the end of the 45-day period beginning on the date on which the President transmits such report; or
  - (B) the adjournment of Congress sine die for the session during which such report is transmitted.
- (2) For purposes of paragraph (1) of this subsection and subsections (a) and (c) of section 2908, the days on which either House of Congress is not in session because of adjournment of more than three days to a day certain shall be excluded in the computation of a period.

#### SEC. 2905. IMPLEMENTATION

- (a) **In General.** - (1) In closing or realigning any military installation under this part, the Secretary may --
  - (A) take such actions as may be necessary to close or realign any military installation, including the acquisition of such land, the construction of such replacement facilities, the performance of such activities, and the conduct of such advance planning and design as may be required to transfer functions from a military installation being closed or realigned to another military installation, and may use for such purpose funds in the Account or funds appropriated to the Department of Defense for use in planning and design, minor construction, or operation and maintenance;
  - (B) provide --
    - (i) economic adjustment assistance to any community located near a military installation being closed or realigned, and
    - (ii) community planning assistance to any community located near a military installation to which functions will be transferred as a result of the closure or realignment of a military installation, if the Secretary of Defense determines that the financial resources available to the community (by grant or otherwise) for such purposes are inadequate, and may use for such purposes funds in the Account or funds appropriated to the Department of Defense for economic adjustment assistance or community planning assistance;
  - (C) carry out activities for the purposes of environmental restoration and mitigation at any such installation, and "shall" use for such purposes funds in the Account or funds appropriated to the Department of Defense. *The amendments made by this subsection shall take effect on the date of the enactment of this Act.*
  - (D) provide outplacement assistance to civilian employees employed by the Department of Defense at military installations being closed or realigned, and may use for such purpose funds in the Account or funds appropriated to the Department of Defense for outplacement assistance to employees; and
  - (E) reimburse other Federal agencies for actions performed at the request of the Secretary with respect to any such closure or realignment, and may use for such purpose funds in the Account or funds appropriated to the Department of Defense and available for such purpose.

- (2) In carrying out any closure or realignment under this part, the Secretary shall ensure that environmental restoration of any property made excess to the needs of the Department of Defense as a result of such closure or realignment be carried out as soon as possible with funds available for such purpose.
- (b) **Management and Disposal of Property.** - (1) The Administration; of General Services shall delegate to the Secretary of Defense, with respect to excess surplus real property and facilities located at a military installation closed or realigned under this part -
- (A) the authority of the Administrator to utilize excess property under section 202 of the Federal Property and Administrative Services Act of 1949 (40 USC 483);
  - (B) the authority of the Administrator to dispose of surplus property under section 203 of that Act (40 USC 484);
  - (C) the authority of the Administrator to grant approvals and make determinations under section 13(g) of the Surplus Property Act of 1944 (50 USC App. 1622(g)); and
  - (D) the authority of the Administrator to determine the availability of excess or surplus real property for wildlife conservation purposes in accordance with the Act of May 19, 1948 (16 USC 667b).
- (2)(A) Subject to subparagraph (C), the Secretary of Defense shall exercise the authority delegated to the Secretary pursuant to paragraph (1) in accordance with -
- (i) all regulations in effect on the date of the enactment of this Act governing the utilization of excess property and the disposal of surplus property under the Federal Property and Administrative Services Act of 1919; and
  - (ii) all regulations in effect on the date of the enactment of this Act governing the conveyance and disposal of property under section 13(g) of the Surplus Property Act of 1944 (50 USC App. 1622(g)).
- (B) The Secretary, after consulting with the Administrator of General Services, may issue regulations that are necessary to carry out the delegation of authority required by paragraph (1).
- (C) The authority required to be delegated by paragraph (1) to the Secretary by the Administrator of General Services shall not include the authority to prescribe general policies and methods for utilizing excess property and disposing of surplus property.
- (D) The Secretary of Defense may transfer real property or facilities located at a military installation to be closed or realigned under this part, with or without reimbursement, to a military department or other entity (including a nonappropriated fund instrumentality) within the Department of Defense or the Coast Guard.
- (E) Before any action may be taken with respect to the disposal of any surplus real property or facility located at any military installation to be closed or realigned under this part, the Secretary of Defense shall consult with the Governor of the State and the heads of the local governments concerned for the purpose of considering any plan for the use of such property by the local community concerned.
- (c) **Applicability of National Environmental Policy Act of 1969.** - (1) The provisions of the National Environmental Policy Act of 1969 (42 USC 4321 et seq.) shall not apply to the actions of the President, the Commission, and, except as provided in paragraph (2), the Department of Defense in carrying out this part.
- (2)(A) The provisions of the National Environmental Policy Act of 1969 shall apply to actions of the Department of Defense under this part (i) during the process of property disposal, and (ii) during the process of relocating functions from a military installation being closed or realigned to another military installation after the receiving installation has been selected but before the

- functions are relocated.
- (B) In applying the provisions of the National Environmental Policy Act of 1969 to the processes referred to in subparagraph (A), the Secretary of Defense and the Secretary of the military departments concerned shall not have to consider -
- (i) the need for closing or realigning the military installation which has been recommended for closure or realignment by the Commission;
  - (ii) the need for transferring functions to any military installation which has been selected as the receiving installation; or
  - (iii) military installations alternative to those recommended or selected.
- (3) A civil action for judicial review, with respect to any requirement of the National Environmental Policy Act of 1969 to the extent such Act is applicable under paragraph (2), of any act or failure to act by the Department of Defense during closing, realigning, or relocating of functions referred to in clauses (i) and (ii) of paragraph (2)(A), may not be brought more than 60 days after the date of such act or failure to act.
- (d) **Waiver.** - The Secretary of Defense may close or realign military installations under this part without regard to -
- (1) any provision of law restricting the use of funds for closing or realigning military installations included in any appropriations or authorization Act; and
  - (2) sections 2662 and 2687 of title 10, United States Code.

**SEC. 2906. ACCOUNT**

- (a) **In General.** - (1) There is hereby established on the books of the Treasury an account to be known as the "Department of Defense Base Closure Account 1990" which shall be administered by the Secretary as a single account.
- (2) there shall be deposited into the Account -
- (A) funds authorized for and appropriated to the Account;
  - (B) any funds that the Secretary may, subject to approval in an appropriation Act, transfer to the Account from funds appropriated to the Department of Defense for any purpose, except that such funds may be transferred only after the date on which the Secretary transmits written notice of, and justification for, such transfer to the congressional defense committees; and
  - (C) proceeds received from the transfer or disposal of any property at a military installation closed or realigned under this part.
- (b) **Use of Funds.** - (1) The Secretary may use the funds in the Account only for the purposes described in section 2905(a).
- (2) When a decision is made to use funds in the Account to carry out a construction project under section 2905(a) and the cost of the project will exceed the maximum amount authorized by law for a minor military construction project, the Secretary shall notify in writing the congressional defense committees of the nature of, and justification for, the project and the amount of expenditures for such project. And such construction project may be carried out without regard to section 2802(a) of title 10, United States Code.
- (c) **Reports.** - (1) No later than 60 days after the end of each fiscal year in which the Secretary carries out activities under this part, the Secretary shall transmit a report to the congressional defense committees of the amount and nature of the deposits into, and the expenditures from, the Account during such fiscal year and of the amount and nature of other expenditures made pursuant to section 2905(a) during such fiscal year.

- "(d) Account Exclusive Source of Funds for Environmental Restoration Projects. -Except for funds deposited into the Account under subsection (a), funds appropriated to the Department of Defense may not be used for purposes described in section 2905(a)(1)(C). The prohibition in this subsection shall expire upon the termination of the authority of the Secretary to carry out a closure or realignment under this part."*
- (2) Unobligated funds which remain in the Account after the termination of the Commission shall be held in the Account until transferred by law after the congressional defense committees receive the report transmitted under paragraph (3).
- (3) No later than 60 days after the termination of the Commission, the Secretary shall transmit to the congressional committees a report containing an accounting of -
- (A) all the funds deposited into and expended from the Account or otherwise expended under this part; and
- (B) any amount remaining in the Account.

#### SEC. 2907. REPORTS

As part of the budget request for fiscal year 1393 and for each fiscal year thereafter the Department of Defense, the Secretary shall transmit to the congressional defense committees of Congress

- (1) a schedule of the closure and realignment actions to be carried out under this part in the fiscal year for which the request is made and an estimate of the total expenditures required and cost savings to be achieved by each such closure and realignment and of the time period in which these savings are to be achieved in each case, together with the Secretary's assessment of the environmental effects of such actions; and
- (2) a description of the military installations, including those under construction and those planned for construction, to which functions are to be transferred as a result of such closures and realignments, together with the Secretary's assessment of the environmental effects of such transfers.

*"Report on Environmental Restoration Costs for Installations to be Closed Under 1990 Base Closure Law. - (1) Each year, at the same time the President submits to Congress the budget for a fiscal year (pursuant to section 1105 of title 31, United States Code), the Secretary of Defense shall submit to Congress a report on the funding needed for the fiscal year for which the budget is submitted, and for each of the following four fiscal year, for environmental restoration activities at each military installation described in paragraph (2), set forth separately by fiscal year for each military installation.*

- (2) The report required under paragraph (1) shall cover each military installation which is to be closed pursuant to the Defense Base Closure and Realignment Act of 1990 (part A of title XXIX of Public Law 101-510).*

#### SEC. 2908. CONGRESSIONAL CONSIDERATION OF COMMISSION REPORT

- (a) **Terms of the Resolution.** - For purposes of section 2904(b), the term 301 "joint resolution" only a joint resolution which is introduced within the 10-day period beginning on the date on which the President transmits the report to the Congress under section 2903(e), and -
- (1) which does not have a preamble;
- (2) the matter after the resolving clause of which is as follows: "That Congress disapproves the recommendations of the Defense Base Closure and Realignment Commission as submitted by the President on \_\_\_\_\_", the blank space being filled in with the appropriate date; and
- (3) the title of which is as follows: "Joint resolution disapproving the recommendations of the Defense Base Closure and Realignment Commission."

- (b) **Referral.** - A resolution described in subsection (a) that is introduced in the House of Representatives shall be referred to the Committee on Armed Services of the House of Representatives. A resolution described in subsection (a) introduced in the Senate shall be referred to the Committee on Armed Services of the Senate.
- (c) **Discharge.** - If the committee to which a resolution described in subsection (a) is referred has not reported such a resolution (or an identical resolution) by the end of the 20-day period beginning on the date on which the President transmits the report to the Congress under section 2903(e), such committee shall be, at the end of such period, discharged from further consideration of such resolution, and such resolution shall be placed on the appropriate calendar of the House involved.

- (d) **Consideration.** - (1) On or after the third day after the date on which the committee to which such a resolution is referred has reported, or has been discharged (under subsection (c)) from further consideration of, such a resolution, it is in order (even though a previous motion to the same effect has been disagreed to) for any Member of the respective House to move to proceed to the consideration of

*"the resolution. A member may make the motion only on the day after the calendar day on which the Member announces to the House concerned the Member's intention to make the motion, except that, in the case of the House of Representatives, the motion may be made without such prior announcement if the motion is made by direction of the committee to which the resolution was referred."*

The motion is highly privileged in the House of Representatives and is privileged in the Senate and is not debatable. The motion is not subject to amendment, or to a motion to postpone, or to a motion to proceed to the consideration of other business. A motion to reconsider the vote by which the motion is agreed to or disagreed to shall not be in order. If a motion to proceed to the consideration of the resolution is agreed to, the respective House shall immediately proceed to consideration of the joint resolution without intervening motion, order, or other business, and the resolution shall remain the unfinished business of the respective House until disposed of.

- (2) Debate on the resolution, and on all debatable motions and appeals in connection therewith, shall be limited to not more than 2 hours, which shall be divided equally between those favoring and those opposing the resolution. An amendment to the resolution is not in order. A motion further to limit debate is in order and not debatable. A motion to postpone, or a motion to proceed to the consideration of other business, or a motion to recommit the resolution is not in order. A motion to reconsider the vote by which the resolution is agreed to or disagreed to is not in order.
- (3) Immediately following the conclusion of the debate on a resolution described in subsection (a) and a single quorum call at the conclusion of the debate if requested in accordance with the rules of the appropriate House, the vote on final passage of the resolution shall occur.
- (4) Appeals from the decisions of the Chair relating to the application of the rules of the Senate or the House of Representatives, as the case may be, to the procedure relating to a resolution described in subsection (a) shall be decided without debate.
- (e) **Consideration by Other House.** - (1) If, before the passage by one House of a resolution of that House described in subsection (a), that House received from the other House a resolution described in subsection (a), then the following procedures shall apply:
- (A) The resolution of the other House shall not be referred to a committee and may not be considered in the House receiving it except in the case of final passage as provided in subparagraph (B)(ii).

- (B) With respect to a resolution described in subsection (a) of the House receiving the resolution-
- (i) the procedure in that House shall be the same as if no resolution had been received from the other House; but
  - (ii) the vote on final passage shall be on the resolution of the other House.
- (2) Upon disposition of the resolution received from the other House, it shall no longer be in order to consider the resolution that originated in the receiving House.
- (f) **Rules of the Senate and House.** - This section is enacted by Congress -
- (1) as an exercise of the rulemaking power of the Senate and House of Representatives, respectively, and as such it is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of a resolution described in subsection (a), and it supersedes other rules only to the extent that it is inconsistent with such rules; and
  - (2) with full recognition of the constitutional right of either House to change the rules (so far as relating to the procedure of that House) at any time, in the same manner, and to the same extent as in the case of any other rule of that House.

#### SEC. 2909. RESTRICTION ON OTHER BASE CLOSURE AUTHORITY

- (a) **In General.** - Except as provided in subsection (c), during the period beginning on the date of the enactment of this Act and ending on December 31, 1995. This part shall be the exclusive authority for selecting for closure or realignment, or for carrying out any closure or realignment of, a military installation inside the United States.
- (b) **Restriction.** - Except as provided in subsection (c), none of the funds available to the Department of Defense may be used, other than under this part.; during the period specified in subsection (a) -
- (1) to identify, through any transmittal to the Congress or through any other public announcement or notification, any military installation inside the United States as an installation to be closed or realigned or as an installation under consideration for closure or realignment; or
  - (2) to carry out any closure or realignment of a military installation inside the United States.
- (c) **Exception.** - Nothing in this part affects the authority of the Secretary to carry out -
- (1) closures and realignments under title II of Public Law 100-526; and
  - (2) closures and realignments to which section 2687 of title 10, United States Code, is not applicable, including closures and realignments carried out for reasons of national security or a military emergency referred to in subsection (c) of such section.

#### SEC. 2910. DEFINITIONS

As used in this part:

- (1) The term "Account" means the Department of Defense Base Closure Account 1990 established by section 2906(a)(1).
- (2) The term "congressional defense committees" means the Committees on Armed Services and the Committees on Appropriations of the Senate and of the House of Representatives.
- (3) The term "Commission" means the Commission established by section 2902.
- (4) The term "military installation" means a base, camp, post, station, yard, center, homeport facility for any ship, or other activity under the jurisdiction of the Department of Defense, including any leased facility.

*"Such term does not include any facility used primarily for civil works, rivers and harbors projects, flood control, or other projects not under the primary jurisdiction or control of the Department of Defense."*

*The amendment made by paragraph (4) shall take effect as of November 5, 1990, and shall apply as if it had been included in section 2910(4) of the Defense Base Closure and Realignment Act of 1990 on that date.*"

- (5) The term "realignment" includes any action which both reduces and relocates functions and civilian personnel positions but does not include a reduction in force resulting from workload adjustments, reduced personnel or funding levels, or skill imbalances.
- (6) The term "Secretary" means the Secretary of Defense.
- (7) The term "United States" means the 50 States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, American Samoa, and any other commonwealth, territory, or possession of the United States.

#### SEC. 2911. CLARIFYING AMENDMENT

Section 2687(e)(1) of title 10, United States Code, is amended -

- (1) by inserting "homeport facility for any ship," after "center," and
- (2) by striking out "under the jurisdiction of the Secretary of a military department" and inserting in lieu thereof "under the jurisdiction of the Department of Defense, including any leased facility,"

#### PART B--Other Provisions Relating to Defense Base Closures and Realignments

##### 10 USC 2687 SEC. 2921. CLOSURE OF FOREIGN MILITARY INSTALLATIONS

(a) **Sense of Congress.** It is the sense of the Congress that -

- (1) the termination of military operations by the United States at military installations outside the United States should be accomplished at the discretion of the Secretary of Defense at the earliest opportunity;
  - (2) in providing for such termination, the Secretary of Defense should make steps to ensure that the United States receives, through direct payment or otherwise, consideration equal to the fair market value of the improvements made by the United States at facilities that will be released to host countries;
  - (3) the Secretary of Defense, acting through the military component commands or the subunified commands to the combatant commands, should be the lead official in negotiations relating to determining and receiving such consideration; and
  - (4) the determination of the fair market value of such improvements released to host countries in whole or in part by the United States should be handled on a facility-by-facility basis.
- (b) **Residual Value.** - (1) For each installation outside the United States at which military operations were being carried out by the United States on October 1, 1990, the Secretary of Defense shall transmit by no later than June 1, 1991, an estimate of the fair market value, as of January 1, 1991, of the improvements made by the United States at facilities at each such installation.
- (2) For purposes of this section:
- (A) The term "fair market value of the improvements" means the value of improvements determined by the Secretary on the basis of their highest use.
  - (B) The term "improvements" includes new construction of facilities and all additions, improvements, modifications, or renovations made to existing facilities or to real property, without regard to whether they were carried out with appropriated or nonappropriated funds.
- (c) **Establishment of Special Account.** - (1) There is established on the books of the Treasury a special account to be known as the "Department of Defense Overseas Military Facility Invest-

ment Recovery Account". Any amounts paid to the United States, pursuant to any treaty, status of forces agreement, or other international agreement to which the United States is a party, for the residual value of real property or improvements to real property used by civilian or military personnel of the Department of Defense shall be deposited into such account.

- (2) Money deposited in the Department of Defense Overseas Military Facility Investment Recovery Account shall be available to the Secretary of Defense for payment, as provided in appropriation Acts, of costs incurred by the Department of Defense in connection with facility maintenance and repair and environmental restoration at military installations in the United States. Funds in the Account shall remain available until expended.

#### SEC. 2922. MODIFICATION OF THE CONTENT OF BIENNIAL REPORT OF THE COMMISSION ON ALTERNATIVE UTILIZATION OF MILITARY FACILITIES

(a) **Uses of Facilities.** - Section 2819(b) of the National Defense Authorization Act, Fiscal Year 1989 (Public Law 100-456; 102 Stat. 2119; 10 USC 2391 note) is amended -

- (1) in Paragraph (2) by striking out "minimum security facilities for nonviolent prisoners" and inserting in lieu thereof "Federal confinement or correctional facilities including shock incarceration facilities"
- (2) by striking out "and" at the end of paragraph (3);
- (3) by redesignating paragraph (4) as paragraph (5); and
- (4) by inserting after paragraph (3) the following new paragraph (4):
- "(4) identify those facilities, or parts of facilities, that could be effectively utilized or renovated to meet the needs of States and local jurisdictions for confinement or correctional facilities; and"
- (b) **Effective Date.** The amendments made by subsection (a) shall take effect with respect to the first report required to be submitted under section 2819 the National Defense Authorization Act, Fiscal Year 1989, after September 30, 1990.

#### SEC. 2923. FUNDING FOR ENVIRONMENTAL RESTORATION AT MILITARY INSTALLATIONS SCHEDULED FOR CLOSURE INSIDE THE UNITED STATES

- (a) **Authorization of Appropriations.** There is hereby authorized to be appropriated to the Department of Defense Base Closure Account for fiscal year 1991, in addition to any other funds authorized to be appropriated to that account for that fiscal year. The sum of 5100.000,000. Amounts appropriated to that account pursuant to the preceding sentence shall be available only for activities for the purpose of environmental restoration at military installations closed or realigned under Title II of Public Law 100-326, as authorized under section 204(a)(3) of that title.
- (b) **Exclusive Source of Funding.** - (1) Section 207 of Public Law 100-526 is amended by adding at the end the following:
- "(b) **Base Closure Account to be Exclusive Source of Funds for Environmental Restoration Projects.** No funds appropriated to the Department of Defense may be used for purposes described in section 204(a)(3) except funds that have been authorized for and appropriated to the Account. The prohibition in the preceding sentence expires upon the termination of the authority of the Secretary to carry out a closure or realignment under this title."
- (2) The amendment made by paragraph (1) does not apply with respect to the availability of funds appropriated before the date of the enactment of this Act.
- (c) **Task Force Report.** -(1) No later than 12 months after the date of the enactment of this Act, the Secretary of Defense shall submit to Congress a report continuing the findings and recommendations of the task force established under paragraph (2) concerning -

- (A) ways to improve interagency coordination, within existing laws, regulations, and administrative policies, of environmental response actions at military installations (or portions of installations) that are being closed, or are scheduled to be closed, pursuant to title II of the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526); and
  - (B) ways to consolidate and streamline, within existing laws and regulations, the practices, policies, and administrative procedures of relevant Federal and State agencies with respect to such environmental response actions so as to enable those actions to be carried out more expeditiously.
- (2) There is hereby established an environmental response task force to make the findings and recommendations, and to prepare the report, required by paragraph (1). The task force shall consist of the following (or their designees):
- (A) The Secretary of Defense, who shall be chairman of the task force.
  - (B) The Attorney General.
  - (C) The Administrator of the General Services Administration.
  - (D) The Administrator of the Environmental Protection Agency.
  - (E) The Chief of Engineers, Department of the Army.
  - (F) A representative of a State environmental protection agency, appointed by the head of the National Governors Association.
  - (G) A representative of a State Attorney general's office, appointed by the head of the National Association of Attorney Generals.
  - (H) A representative of a public-interest environmental organization, appointed by the Speaker of the House of Representatives.

#### SEC. 2924. COMMUNITY PREFERENCE CONSIDERATION IN CLOSURE AND REALIGNMENT OF MILITARY INSTALLATIONS

In any process of selecting any military installation inside the United States for closure or realignment, the Secretary of Defense shall take such steps as are necessary to assure that special consideration and emphasis is given to any official statement from a unit of general local government adjacent to or within a military installation requesting the closure or realignment of such installation.

#### SEC. 2925. RECOMMENDATIONS OF THE BASE CLOSURE COMMISSION

- (a) **Norton Air Force Base.** - (1) Consistent with the recommendations of the Commission on Base Realignment and Closure, the Secretary of the Air Force may not relocate, until after September 30, 1995, any of the functions that were being carried out at the ballistics missile office at Norton Air Force Base, California, on the date on which the Secretary of Defense transmitted a report to the Committees on Armed Services of the Senate and House of Representatives as described in section 202(a)(1) of Public Law 100-526.
- (2) This subsection shall take effect as of the date on which the report referred to in subsection (a) was transmitted to such Committees.
- (b) **General Directive.** - Consistent with the requirements of section 201 of Public Law 100-526, the Secretary of Defense shall direct each of the Secretaries of the military departments to take all actions necessary to carry out the recommendations of the Commission on Base Realignment and Closure and to take no action that is inconsistent with such recommendations.

SEC. 2926. CONTRACTS FOR CERTAIN ENVIRONMENTAL RESTORATION ACTIVITIES

- (a) **Establishment of Model Program.** - Not later than 90 days after the date of enactment of this Act, the Secretary of Defense shall establish a model program to improve the efficiency and effectiveness of the base closure environmental restoration program.
- (b) **Administrator of Program.** - The Secretary shall designate the Deputy Assistant Secretary of Defense for Environment as the Administrator of the model program referred to in subsection (a). The Deputy Assistant Secretary shall report to the Secretary of Defense through the Under Secretary of Defense for Acquisition.
- (c) **Applicability.** - This section shall apply to environmental restoration activities at installations selected by the Secretary pursuant to the provisions of subsection (d)(1).
- (d) **Program Requirements.** - In carrying out the model program, the Secretary of Defense shall:
- (1) Designate for the model program two installations under his jurisdiction that have been designated for closure pursuant to the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526) and for which preliminary assessments, site inspections, and Environmental Impact Statements required by law or regulation have been completed. The Secretary shall designate only those installations which have satisfied the requirements of section 204 of the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526).
  - (2) Compile a prequalification list of prospective contractors for solicitation and negotiation in accordance with the procedures set forth in title IX of the Federal Property and Administrative Services Act (Public Law 92-582; 40 USC 541 et seq., as amended). Such contractors shall satisfy all applicable statutory and regulatory requirements. In addition, the contractor selected for one of the two installations under this program shall indemnify the Federal Government against all liabilities, claims, penalties, costs, and damages caused by (A) the contractor's breach of any term or provision of the contract; and (B) any negligent or willful act or omission of the contractor, its employees, or its subcontractors in the performance of the contract.
  - (3) Within 180 days after the date of enactment of this Act, solicit proposals from qualified contractors for response action (as defined under section 101 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9601)) at the installations designated under paragraph (1). Such solicitations and proposals shall include the following:
    - (A) Proposals to perform response action. Such proposals shall include provisions for receiving the necessary authorizations or approvals of the response action by appropriate Federal, State, or local agencies.
    - (B) To the maximum extent possible, provisions offered by single prime contractors to perform all phases of the response action, using performance specifications supplied by the Secretary of Defense and including any safeguards the Secretary deems essential to avoid conflict of interest.
  - (4) Evaluate bids on the basis of price and other evaluation criteria.
  - (5) Subject to the availability of authorized and appropriated funds to the Department of Defense, make contract awards for response action within 120 days after the solicitation of proposals pursuant to paragraph (3) for the response action, or within 120 days after receipt of the necessary authorizations or approvals of the response action by appropriate Federal, State, or local agencies, whichever is later.

- (e) **Application of Section 120 of CERCLA.** - Activities of the model program shall be carried out subject to, and in a manner consistent with section 120 (relating to Federal facilities) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9620).
- (f) **Expedited Agreements.** The Secretary shall, with the concurrence of the Administrator of the Environmental Protection Agency, assure compliance with all applicable Federal statutes and regulations and, in addition, take all reasonable and appropriate measures to expedite all necessary administrative decisions, agreements, and concurrences.
- (g) **Report.** - The Secretary of Defense shall include a description of the progress made during the preceding fiscal year in implementing and accomplishing the goals of this section within the annual report to Congress required by section 2706 of title 10, United States Code.
- (h) **Applicability of Existing Law.** - Nothing in this section affects or modifies, in any way, the obligations or liability of any person under other Federal or State law, including common law, with respect to the disposal or release of hazardous substances or pollutants or contaminants as defined under section 101 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 USC 9601).