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PAYING FOR IMPROVEMENTS AT
ON-BASE SCHOOLS FOR MILITARY
DEPENDENTS: A PROTOTYPE MODEL

Report FP803R1

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Executive Summary**PAYING FOR IMPROVEMENTS AT ON-BASE SCHOOLS
FOR MILITARY DEPENDENTS: A PROTOTYPE MODEL**

DoD and the Department of Education (ED) have identified \$183 million of construction, repair, and rehabilitation improvements at 124 military dependent schools on U.S. military installations. In their September 1987 report to Congress, DoD and ED recommended that state and local jurisdictions pay for an equitable share of the improvements and that Federal assistance be provided to cover any shortfalls.

We developed a prototype model for assessing the state and local jurisdictions' ability to pay based on their revenue and expenditure flows associated with a military installation and its on-base schools. The model addresses the question of whether state or local government jurisdictions *can* pay for the needed improvements to on-base schools for military dependents. It does not address the policy question of who *should* pay for the improvements.

We successfully tested the model for on-base schools at Fort Riley, Kansas, and Robins Air Force Base, Georgia. The test results show that the model is effective in determining state and local fiscal capacities, and can be easily adapted for use elsewhere.

We recommend that the Office of Economic Adjustment (OEA) apply the model to other installations with on-base schools. Such applications will require minor changes to reflect unique state and installation characteristics. To make the most effective use of their efforts, we recommend that OEA analyze all installations within a state at the same time. This will minimize data collection requirements at the state level; it will prevent the possibility of having to make multiple cost-sharing negotiations with a given state; and it will ensure that the state-level results are not distorted by the omission of certain schools or installations.

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CHAPTER 1

INTRODUCTION

BACKGROUND

The 1987 Military Construction Authorization Act directed DoD and the Department of Education (ED) to conduct a joint study of the construction, repair, and rehabilitation needs of military dependent schools on U.S. military installations and to develop a policy to meet those needs. The final report from this joint study was submitted to Congress in September 1987.

The study covered 186 on-base dependent school facilities owned and/or operated by DoD, ED, and local educational agencies (LEAs). Total enrollment at these schools is approximately 88,800 students, representing about 40 percent of all dependent school children residing on U.S. military installations; the majority of students attend off-base schools that are owned and operated by LEAs.

Two-thirds of the schools were found to have construction, repair, or rehabilitation needs. Of those 124 schools, 47 are owned by ED but operated by DoD, 49 are owned by ED but operated by LEAs, and 28 are owned and operated by LEAs. The total estimated costs of \$183 million represent needs resulting from conditions that threaten health or safety (\$35 million), needs generated by enrollment increases that require additional capacity (\$94 million), and needs mandated by Federal, state, or local laws, standards, or regulations (\$54 million).

DoD and ED recommended that the school facility needs identified in their study be met, and that the cost of meeting those facility needs be shared among local, state, and Federal agencies. The ability of state and local agencies to fund those costs would be determined through fiscal impact analyses of revenues generated and expenditures required by military installations.

ROLE OF LMI

LMI was asked to help the Office of Economic Adjustment (OEA) in their efforts to evaluate options for involving state and local governments in funding on-

base school improvements. LMI's task was to develop a model which examines the fiscal flows among DoD, the installation, the state government, and the LEA. The task further specified that this prototype model was to be refined and tested at on-base schools at two installations (bases). The two bases chosen by OEA were Fort Riley, Kansas, and Robins Air Force Base (AFB), Georgia.

ORGANIZATION OF REPORT

The model is described in Chapter 2; key methodological issues are discussed in Chapter 3; and LMI's conclusions and recommendations are presented in Chapter 4. The test results for Fort Riley and Robins AFB (including inputs, outputs, and supporting notes) are shown in Appendix A and Appendix B, respectively. These results are intended to illustrate the model's overall methodology and should not be viewed as the final fiscal impact results for either Fort Riley or Robins Air Force Base. The final results can be found in separate OEA reports for these two installations.

CHAPTER 2

DESCRIPTION OF MODEL

OVERALL APPROACH

The ability of an LEA to fund on-base school needs is determined by comparing the costs required to satisfy those needs against the finances of the LEA (operating cash flow, capital cash flow, carry-over fund balances). The ability of a state to fund on-base school needs is similarly determined by comparing the costs required to satisfy those needs against the operating cash flow generated by the base-related military and civilian populations.

Input data are collected from the base, the LEA, the state, and (in some cases) from ED. Three historical fiscal years are examined in order to identify trends and to minimize the impact of unusual occurrences: FY85 (1984 – 1985), FY86 (1985 – 1986), and FY87 (1986 – 1987). Projections are then made for 3 future years to allow for both short- and medium-term planning: FY88 (1987 – 1988), FY89 (1988 – 1989), and FY90 (1989 – 1990). Where actual data are available for FY88, they are used instead of model-generated projections. The model utilizes the Lotus 1-2-3 microcomputer software package.

SCHOOL POPULATION SUMMARY

The model consists of five major sections. The first section analyzes the LEA and on-base school population. Input data are collected on total LEA enrollment and on the numbers of Military A, Military B, Civilian A, and Civilian B¹ students in the LEA. Input data are also collected on enrollment for each on-base school. Projections are then made for each enrollment category based on historical patterns and on discussions with LEA officials.

¹"A" students are school-age children with one or more of their parents working for the Federal Government and who reside on Federal property. "B" students are school-age children with one or more of their parents working for the Federal Government and who reside in the local community. The numbers of children in each category have a direct bearing on Federal Impact Aid.

MILITARY BASE ECONOMIC AND POPULATION DATA

The second section of the model analyzes the economics and demographics of the military base. Input data are collected on base-related employment (military personnel, Federal civilians, and other civilians), on salaries paid to military and civilian employees, and on the military population. Data are also collected on local procurement and major construction expenditures. Projections are made for each of these variables based on historical patterns and on discussions with base officials.

The composition of the military population is an important part of this second section. The numbers of on-base and off-base personnel (and dependents) are usually available from the base. The numbers of single and married personnel must be estimated using demographic data,² data on the on-base/off-base mix of personnel and dependents, and data on the number of on-base housing units. Similarly, the number of dependents who are school-age children must usually be estimated using demographic data and school enrollment data from the LEA.

The numbers of civilian jobs indirectly generated by base-related salaries, construction, and procurement are estimated using the U.S. Department of Commerce's Regional Input-Output Modeling System (RIMS II). Total base-related civilian population is then estimated by deducting the number of civilian jobs held by spouses of base employees from total civilian employment and multiplying the result by the average household size for the state.

LEA FISCAL DATA

The third section of the model analyzes the finances of the LEA. Input data on revenues, expenditures, cash flows, and year-end fund balances are collected for both the operating budget and the capital budget. Projections for future years are then made based on historical patterns, expected enrollment levels, and discussions with LEA and state education officials.

STATE FISCAL DATA

The fourth section of the model analyzes the effects of the base on the state's operating budget. Input data on per capita state averages are obtained for each

²A common source of demographic data for military personnel and their families is the Defense Manpower Data Center (DMDC).

major expenditure and revenue category in the state's operating budget. However, the rates at which base-related military and civilian populations contribute to state revenues and require state expenditures tend to be lower than the rates for the total population. This is because the base-related populations tend to be relatively young and fully employed, and because certain services are provided by the base. State per capita adjustment factors are therefore developed for each budget category, with separate factors for the military and civilian populations.

For each year and budget category, the estimated base-related impact on the state is then defined as the sum of two terms: (1) the inflation-adjusted average per capita rate for that category, multiplied by the appropriate military adjustment factor, and multiplied again by the military base-related population; and (2) the inflation-adjusted average per capita rate for that category, multiplied by the appropriate civilian adjustment factor, and multiplied again by the civilian base-related population. The sum of the expenditure estimates is then subtracted from the sum of the revenue estimates to obtain the estimated base-related state operating cash flow.

ON-BASE SCHOOL REQUIREMENTS

The fifth section of the model examines the on-base school requirements. Input data are collected from ED and/or the LEA on the costs of any identified construction, repair, and rehabilitation needs. Where possible, these costs are broken down for each on-base school by type of need (health and safety, school capacity, and compliance with regulations). The requirements are a critical part of the analysis and should be reviewed for accuracy and reasonableness. When ED and/or the LEA cannot quantify these requirements, or the costs provided appear unreasonable, an independent estimate is needed.

Input data on the costs of operating on-base schools are also collected if those schools are operated by the Federal Government. For locally-operated on-base schools, such costs are already reflected in the LEA fiscal data. Projections are then made for these operating requirements based on historical patterns and on discussions with appropriate parties.

CHAPTER 3

METHODOLOGICAL ISSUES

STATE PER CAPITA DATA

The fiscal impact analysis utilizes per capita data on state revenues and expenditures. These data can be obtained at the state level from budget and other financial reports, or at the national level from the U.S. Department of Commerce, Bureau of the Census (which publishes an annual report on state government finances as part of its Government Finances series).

Each source has its relative advantages. Data from the individual states are likely to be more current and are considered more accurate. Data from the Census, however, are published in summary and per capita form (whereas the data from individual states generally are not); they are much easier to compile for multiple states; and they are consistent from state to state in terms of categories used and other conventions.

The advantages of the Census data outweigh the disadvantages. We used the publication, *State Government Finances in 1986*, as the source of per capita data for both Kansas and Georgia. State officials should be given the opportunity to review these data. Without such a review, state officials may be unwilling to accept the results since they do not incorporate fiscal data directly from state reports.

STATE PER CAPITA ADJUSTMENT FACTORS

It was necessary to adjust the state per capita figures to account for the unique characteristics of base-related populations. The proportions of those populations who are official residents of the state in which the base is located were used to adjust individual income tax revenues and certain license revenues. The amounts of goods and services purchased on base at commissaries and exchanges were used to adjust sales tax revenues and corporate income tax revenues (using sales as a proxy for corporate income). All other adjustment factors were based upon the extent to which

the items included in a given revenue or expenditure category were applicable to the base-related populations.

The process of developing these factors relies heavily upon the analyst's knowledge of military installations as well as the demographics and economics of base-related populations. There is therefore a significant judgmental element in many of these factors, which can vary significantly from state to state (and even from base to base within the same state).

INTERGOVERNMENTAL EXPENDITURES AND REVENUES

Another issue associated with state per capita data is the treatment of intergovernmental expenditures and revenues: amounts paid to or received from Federal and local governments as fiscal aid, as reimbursements, or in lieu of taxes. If intergovernmental flows are considered in the analysis, all such revenues and the associated expenditures must be carefully analyzed. Since most current intergovernmental revenues are linked to the expenditures associated with specific programs, there is normally little net impact on the budget if all intergovernmental flows are properly accounted for.

The argument for including these funds in the per capita rates is that they are often an integral part of the state's operating budget. The argument for excluding these funds from the state's per capita rates is that they are much less responsive to changes in (and levels of) population than a state's own-source expenditures and revenues. Either approach can be used and will, in most cases, yield similar results. When significant differences between the results of the two approaches do occur, however, the analysis should be checked carefully to ensure that some intergovernmental revenue or expenditure flows have not been overlooked.

INDIRECT EFFECTS

The model requires a decision on how to treat the effects of jobs created by base-related salaries, construction, and procurement when estimating state-level fiscal impacts. Although these 'indirect' effects cannot be measured directly, their existence is generally agreed upon, and a variety of approaches (such as RIMS II) can be used to estimate their magnitude. We estimated the indirect effects of Fort Riley on the State of Kansas. We did not estimate the indirect effects of Robins AFB on the

State of Georgia since initial analysis showed them to be insignificant when compared to the direct impacts.

INFLATION

In order to have meaningful and defensible figures for dollar-denominated variables, it is necessary to account for the effects of inflation. The issue here is the specific way in which inflation is defined or measured. Many indexes could conceivably be used as a proxy for inflation – Gross National Product deflators, Consumer Price Index, DoD deflators, the rate of state or LEA budget growth, etc. Similarly, several different indexes could be used within the model (e.g., one for base salaries and expenditures, a second for local finances, and a third for state finances).

For the period in question (FY85 – FY90), the actual and expected inflation rates are relatively low. The results were therefore relatively insensitive to the choice of index, and they would not have been significantly improved by using multiple indexes. The DoD Deflator for Total Excluding Retirement Pay (as of 27 January 87) was used as the principal inflation index for both Fort Riley and Robins AFB. However, at the request of state officials and OEA, the growth in Kansas state expenditures from all funds was used as the FY85 – FY87 portion of the inflation index in the Fort Riley analysis. These indexes should be updated as new and/or additional data become available.

FACILITY IMPROVEMENT COSTS

The testing of the model revealed some potential problems concerning the facility improvement cost data. As part of their report to Congress, DoD and ED identified the needs at all on-base schools and estimated the associated costs. However, the accuracy of these cost estimates, particularly at the school or base level, need to be further substantiated.

TIMING OF COSTS AND BENEFITS

The timing of the estimated costs and benefits is an issue that relates more to the interpretation of the results than to the model itself. For the two test sites, the data on the estimated costs of on-base school improvements did not specify when each piece of work would (or should) start and end. Since the model estimates fiscal capacities primarily in terms of annual cash flows, information on when costs are

expected to be incurred would allow the model user to compute a discounted present value of these cash flows for the years in question.

EFFECT OF ASSUMPTIONS

The final methodological issue is the effect of various assumptions on the model results. The LEA-level outputs are based on historical fiscal data along with assumptions about future enrollment growth and inflation. Since both enrollment growth and inflation can be predicted (at least in the short run) with a high degree of accuracy, and since the model is relatively insensitive to these two variables, the LEA-level results are extremely robust.

At the state level, the composition and growth of the base-related populations can be forecast with a high degree of accuracy, and the model is relatively insensitive to these assumptions (since it mainly relies on actual historical data for its population effects). For similar reasons, the assumed rate of future inflation has little effect on the state-level results.

However, the assumptions about the rates at which the base-related military and civilian populations generate state revenues and require state expenditures have a major impact on the state-level results. For both test sites, the two most critical assumptions of this type concerned public welfare expenditures and sales tax revenues. The individual income tax revenue assumptions were also important, but these rates can usually be estimated more accurately. The most critical rate assumptions for other states will depend upon the military/civilian population mix at the installation (the military rates were more important for Fort Riley, while the civilian rates were more important for Robins AFB) and on the composition of state revenues and expenditures (the most important rates will be for budget categories with high per capita revenues or expenditures).

CHAPTER 4

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

Fiscal impact analysis can be used to estimate the ability of LEAs and states to bear the costs associated with facility improvement needs at on-base schools for military dependents. These estimates will help the Federal Government determine whether a shortfall exists between the total costs and the state and local jurisdictions' ability to pay. This determination is important because DoD and ED recommended that Federal assistance be provided to cover any such shortfalls.

However, the model developed by LMI and described in this report is not a "canned" process. Modifications to formats and/or formulas will often be required for future applications. Furthermore, the methodological issues identified in Chapter 3 can significantly affect the results, so the resolution of those issues could become a political decision as well as an analytical one.

A comparison of the test results at Fort Riley and Robins AFB reveals that the estimated fiscal capacities (particularly at the state level) are heavily influenced by the characteristics of the installation being analyzed. An installation where most of the base-related population is civilian will tend to generate greater state-level fiscal capacity, since civilians generally contribute more income and sales tax revenues (on a per capita basis) than their military counterparts. However, this differential is less at installations where the proportion of military personnel who are in-state residents is relatively high, or where on-base sales of otherwise taxable goods and services are relatively low.

RECOMMENDATIONS

We recommend that OEA utilize the FIA-based model described in this report for the analysis of on-base school funding options. The model yields meaningful and reliable estimates of state and local fiscal capacities, while generating a set of output tables containing a great deal of useful supporting information.

We recommend that the available information concerning on-base school needs at these and other DoD installations be improved. The needs themselves should be verified and prioritized, the costs associated with those needs should be validated, and the timing of these costs should be determined, so that OEA can have an accurate and detailed picture of how much money (in total and by school/installation) will be required in each of the next several budget years.

We recommend that OEA analyze all of the affected military bases within a given state at the same time. This will prevent making multiple data requests from the same state; it will provide a more complete picture of each state's fiscal capacity; and it will facilitate the coordination of negotiations between local, state, and Federal governments.

APPENDIX A

ILLUSTRATIVE RESULTS FOR FORT RILEY

Note: Final results can be found in the OEA Fort Riley Fiscal Impact Analysis Report.

ILLUSTRATIVE RESULTS FOR FORT RILEY

Fort Riley, Kansas, is an Army installation with about 16,000 military personnel. Five elementary schools and one junior high school at Fort Riley are owned by ED but operated by Geary County Unified School District No. 475 [the local educational agency (LEA)] under Section 10 of Public Law 81-815. Almost 3,000 students attend these on-base schools, representing about 40 percent of the LEA's total enrollment. The detailed outputs of the Fort Riley fiscal analysis, along with supporting notes, are shown in the six tables which follow. The total cost for the construction, repair, and rehabilitation needs of Fort Riley schools is estimated to be \$5.25 million.

The LEA is expected to experience negative cash flows in its operating and capital budgets through at least FY90. The operating and capital fund balances, while significant, will be needed to offset these negative cash flows. However, Fort Riley is expected to generate a positive operating cash flow for Kansas of \$431,000 in FY88, growing to \$461,000 in FY90. Using an effective discount rate of 6 percent (Office of Management and Budget Circular A-94 specifies a 10 percent discount rate, while the DoD deflators imply a 4 percent inflation rate), the present value of these state cash flows is \$1.8 million for 5 years and \$3.2 million for 10 years.

These results show that the Geary County School District does not have the fiscal capacity to fund any of the on-base school needs at Fort Riley, while the State of Kansas has enough fiscal capacity to fund a large portion – but not all – of the Fort Riley school needs. The specific costs to be borne by the state and Federal governments should be negotiated.

The detailed model inputs and outputs for Fort Riley are shown in the following pages. Table A-1 presents the school population summary, Table A-2 presents base economic and population data, Table A-3 presents local school district fiscal data, Table A-4 presents base-related state fiscal data, Table A-5 presents on-base school requirements (operating requirements are not shown because they are included in the local school district fiscal data), and Table A-6 presents explanatory notes.

TABLE A-1

SCHOOL POPULATION SUMMARY FOR FORT RILEY

	FY85	FY86	FY87	FY88	FY89	FY90
	Actual	Actual	Actual	Actual	Projection	Projection
LEA						
Total enrollment	6,654	6,798	6,919	6,975	7,045	7,115
Military category A	3,084	3,071	3,015	2,937	2,966	2,996
Civilian category A	0	0	0	0	0	0
Military category B	882	918	1,110	1,171	1,183	1,195
Civilian category B	531	585	670	652	659	666
On-base						
Total enrollment	2,792	2,740	2,857	2,846	2,876	2,906
Military category A	2,792	2,740	2,857	2,846	2,876	2,906
Fort Riley Elementary	378	378	363	356	360	364
Custer Hill Elementary	349	377	358	369	373	377
Jefferson Elementary	338	357	392	384	388	392
Morris Hill Elementary	323	328	337	314	317	320
Ware Elementary	793	716	854	866	875	884
Fort Riley Junior High	611	584	553	557	563	569

TABLE A-2

BASE ECONOMIC AND POPULATION DATA FOR FORT RILEY

	FY85	FY86	FY87	FY88	FY89	FY90
	Actual	Actual	Actual	Projection	Projection	Projection
Base-related employment:						
Military personnel	16,188	16,281	15,690	15,690	15,690	15,690
Federal civilians	2,641	2,656	2,592	2,592	2,592	2,592
NAF civilians	337	356	441	441	441	441
AAFES civilians	316	338	349	349	349	349
Other civilians	306	341	385	385	385	385
Military population:						
Military personnel	16,188	16,281	15,690	15,690	15,690	15,690
Single military personnel	7,285	7,326	7,060	7,060	7,060	7,060
Married military personnel	8,903	8,955	8,630	8,630	8,630	8,630
Military dependents	16,362	16,723	16,498	16,498	16,498	16,498
School-age children	6,510	6,601	6,438	6,438	6,438	6,438
Total (personnel + dependents)	32,550	33,004	32,188	32,188	32,188	32,188
On-base military population:						
Military personnel	10,620	10,566	10,373	10,373	10,373	10,373
Single military personnel	7,122	7,068	6,875	6,875	6,875	6,875
Married military personnel	3,498	3,498	3,498	3,498	3,498	3,498
Military dependents	8,066	7,775	7,828	7,828	7,828	7,828
School-age children	3,209	3,069	3,055	3,055	3,055	3,055
Off-base military population:						
Military personnel	5,568	5,715	5,317	5,317	5,317	5,317
Single military personnel	163	258	185	185	185	185
Married military personnel	5,405	5,457	5,132	5,132	5,132	5,132
Military dependents	8,296	8,948	8,670	8,670	8,670	8,670
School-age children	3,301	3,532	3,383	3,383	3,383	3,383
Base salaries and spending:						
Base-related salaries						
Military personnel	\$316,191,426	\$329,418,054	\$325,256,088	\$339,900,000	\$351,800,000	\$363,500,000
Federal civilians	\$57,193,587	\$56,471,763	\$61,754,874	\$64,500,000	\$66,800,000	\$69,000,000
NAF civilians	\$2,553,135	\$2,634,306	\$3,039,300	\$3,200,000	\$3,300,000	\$3,400,000
AAFES civilians	\$2,515,710	\$2,887,035	\$3,129,663	\$3,300,000	\$3,400,000	\$3,500,000
Other civilians	\$5,985,207	\$6,631,314	\$7,322,820	\$7,700,000	\$7,900,000	\$8,200,000
Local procurement	\$19,611,122	\$24,060,829	\$23,407,968	\$24,500,000	\$25,300,000	\$26,200,000
Major construction	\$39,515,901	\$48,481,944	\$32,065,944	\$33,500,000	\$34,700,000	\$35,800,000
Civilian population (estimated):						
Directly associated with base	6,883	7,101	7,376	7,376	7,376	7,376
Indirectly associated with base	1,975	2,304	1,864	1,864	1,864	1,864
Total (direct + indirect)	8,858	9,405	9,240	9,240	9,240	9,240

TABLE A-3

LOCAL SCHOOL DISTRICT FISCAL DATA FOR FORT RILEY

	FY85	FY86	FY87	FY88	FY89	FY90
	Actual	Actual	Actual	Projection	Projection	Projection
Operating budget						
Revenues						
Local: property tax	\$1,591,515	\$1,756,452	\$1,931,698	\$2,300,000	\$2,700,000	\$3,100,000
Local: other	534,838	349,244	376,230	388,000	400,000	412,000
State: equalization	8,942,124	10,306,845	10,895,959	11,223,000	11,560,000	11,907,000
State: other	2,053,379	2,288,786	2,373,273	2,444,000	2,517,000	2,593,000
Federal: PL-874	4,346,153	4,036,263	4,428,241	4,400,000	4,000,000	4,000,000
Federal: other	514,463	915,707	903,521	931,000	959,000	988,000
Miscellaneous	637,050	697,839	807,081	831,000	856,000	882,000
Transfers	780,000	1,090,000	1,235,000	1,272,000	1,310,000	1,349,000
Total	19,399,523	21,441,136	22,951,003	23,789,000	24,302,000	25,231,000
Expenditures						
Instruction	12,494,314	14,554,443	15,330,702	15,791,000	16,265,000	16,753,000
Administration	577,158	615,156	643,844	663,000	683,000	703,000
Maintenance & operation	2,794,607	2,561,221	2,622,898	2,702,000	2,783,000	2,866,000
Transportation	543,376	553,561	601,424	619,000	638,000	657,000
Food	1,116,344	1,214,234	1,277,879	1,316,000	1,355,000	1,396,000
Fixed charges	1,048,398	1,296,775	1,397,640	1,440,000	1,483,000	1,527,000
Other	106,410	122,846	128,592	132,000	136,000	140,000
Transfers	780,000	1,090,000	1,235,000	1,272,000	1,310,000	1,349,000
Total	19,460,606	22,008,236	23,237,979	23,935,000	24,653,000	25,391,000
Operating cash flow	(61,083)	(567,100)	(286,976)	(146,000)	(351,000)	(160,000)
Year-end fund balance	8,177,925	7,610,825	7,323,849	7,178,000	6,827,000	6,667,000
Capital budget						
Revenues	1,272,046	1,232,548	881,402	908,000	935,000	963,000
Expenditures	758,658	928,473	1,053,553	1,085,000	1,118,000	1,152,000
Capital cash flow	513,388	304,075	(172,151)	(177,000)	(183,000)	(189,000)
Year-end fund balance	1,559,092	1,863,167	1,691,016	1,514,000	1,331,000	1,142,000

TABLE A-4

BASE-RELATED STATE FISCAL DATA FOR FORT RILEY

	FY85	FY86	FY87	FY88	FY89	FY90	FY86 state per capita	Military %	Civilian %
	Estimate	Estimate	Estimate	Projection	Projection	Projection			
Expenditures									
Education	\$10,054,000	\$11,069,000	\$11,206,000	\$11,711,000	\$12,121,000	\$12,525,000	\$261	100%	100%
Highways	6,818,000	7,506,000	7,600,000	7,942,000	8,220,000	8,494,000	177	100	100
Public welfare	1,583,000	1,746,000	1,768,000	1,848,000	1,912,000	1,976,000	195	20	25
Health & hospitals	1,240,000	1,392,000	1,414,000	1,478,000	1,530,000	1,581,000	97	15	100
Natural resources	1,348,000	1,484,000	1,503,000	1,570,000	1,625,000	1,680,000	35	100	100
Public safety	1,257,000	1,389,000	1,407,000	1,470,000	1,522,000	1,572,000	45	65	100
Administration	2,080,000	2,290,000	2,319,000	2,423,000	2,508,000	2,591,000	54	100	100
Debt	231,000	254,000	258,000	269,000	279,000	288,000	6	100	100
All other	1,230,000	1,357,000	1,375,000	1,437,000	1,487,000	1,537,000	43	70	90
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Total	25,841,000	28,487,000	28,850,000	30,148,000	31,204,000	32,244,000			
Revenues									
General sales tax	6,712,000	7,412,000	7,508,000	7,846,000	8,120,000	8,391,000	228	70	100
Selective sales tax	3,886,000	4,291,000	4,346,000	4,542,000	4,701,000	4,858,000	132	70	100
Motor vehicle licenses	302,000	342,000	347,000	363,000	376,000	388,000	30	6	100
Other licenses	316,000	353,000	358,000	374,000	388,000	401,000	20	25	100
Indiv. income tax	2,384,000	2,698,000	2,744,000	2,868,000	2,968,000	3,067,000	237	6	100
Corp. income tax	1,884,000	2,080,000	2,107,000	2,202,000	2,279,000	2,355,000	64	70	100
Miscellaneous taxes	2,542,000	2,799,000	2,834,000	2,961,000	3,065,000	3,167,000	66	100	100
Intergovern., Fed	0	0	0	0	0	0	0	100	100
Intergovern., local	0	0	0	0	0	0	0	100	100
Charges and misc	8,090,000	8,906,000	9,017,000	9,423,000	9,753,000	10,078,000	210	100	100
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Total	26,116,000	28,881,000	29,261,000	30,579,000	31,650,000	32,705,000			
Net cash flow from base	275,000	394,000	411,000	431,000	446,000	461,000			

TABLE A-5

ON-BASE SCHOOL REQUIREMENTS FOR FORT RILEY

	FY85	FY86	FY87	FY88	FY89	FY90	Total
Construction/repair/rehabilitation needs							
Health and safety							
Fort Riley Elementary							\$164,400
Custer Hill Elementary							529,950
Jefferson Elementary							85,480
Morris Hill Elementary							287,250
Ware Elementary							0
Fort Riley Junior High							1,150,400
School capacity							
Fort Riley Elementary							0
Custer Hill Elementary							0
Jefferson Elementary							0
Morris Hill Elementary							0
Ware Elementary							0
Fort Riley Junior High							0
Compliance with regulations							
Fort Riley Elementary							10,950
Custer Hill Elementary							0
Jefferson Elementary							79,670
Morris Hill Elementary							262,500
Ware Elementary							22,500
Fort Riley Junior High							2,658,300
Total							5,251,400
Operating requirements							
Administrative costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Educational costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Logistical costs	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total							

TABLE A-6

FORT RILEY FISCAL IMPACT ANALYSIS NOTES

School Population Summary (Table A-1)

- (1) All enrollments were assumed to grow by 1 percent in FY89 and again in FY90.

Military Base Economic and Population Data (Table A-2)

- (1) FY88 - FY90 population was assumed to equal actual FY87 population.
- (2) FY88 - FY90 salaries were assumed to equal actual FY87 salaries adjusted for inflation.
- (3) The number of military personnel living on-base was assumed to equal the number of on-base family housing units times 1.1 (to account for spouses in the military); the number living off-base equals the total minus the number living on-base.
- (4) Approximately 55 percent of all military personnel were assumed to be married; the number of single personnel equals total personnel minus married personnel (total, on-base, and off-base).
- (5) Approximately 20 percent of the total military population (personnel + dependents) were assumed to be school children; these school children were assumed to live on-base or off-base in the same proportions as total military dependents.
- (6) The estimated base-related civilian population was assumed to equal base-related civilian employment (Federal + NAF + AAFES + Other) minus the assumed number of employees who are military spouses (10 percent of married military personnel), multiplied by 2.54 (average 1986 Kansas household size).
- (7) The RIMS II multiplier of 26.1 indirect jobs per \$1M (1982 dollars; 1982 - 1986 inflation = 14 percent) was applied to total military salaries times 0.7 (to account for on-base spending), total direct civilian salaries times 1.0, and local procurement and major construction expenditures times 2.0 (to account for both direct and indirect jobs associated with these two activities).
- (8) Indirect jobs were assumed to have been filled by 60 percent of military spouses (excluding the 10 percent with direct civilian jobs), 60 percent of direct civilian workers' spouses (assuming 83 percent married), and immigrants (assuming 1.44 workers and 2.54 people per immigrating household).

(Continued)

TABLE A-6
FORT RILEY FISCAL IMPACT ANALYSIS NOTES (Continued)

Local School District Fiscal Data (Table A-3)

- (1) All FY88 – FY90 projections were rounded to the nearest \$1,000.
- (2) Except as noted below, revenues and expenditures in FY88 – FY90 were assumed to increase by 3 percent annually (2 percent statutory limit plus 1 percent for enrollment growth) from their actual FY87 levels.
- (3) Local property tax revenues were assumed to equal \$2.3M in FY88, \$2.7M in FY89, and \$3.1M in FY90 (based on expected tax rate increases).
- (4) Federal PL-874 revenues were assumed to equal \$4.4M in FY88, and \$4.0M in FY89 and FY90 (based on FY87 and FY88 data).
- (5) Changes in actual year-end fund balances reflect periodic adjustments as well as cash flows.

Base-Related State Fiscal Data (Table A-4)

- (1) Inflatons for FY85 – FY87 were based on the growth in total state budget expenditures from all funds, while inflators for FY88 – FY90 were based on the "total excluding retirement pay" DoD deflator (as of 1/27/87).
- (2) State per capita data are from *State Government Finances in 1986* (U.S. Department of Commerce, Bureau of the Census).
- (3) Per capita figures reflect "own-source" revenues and associated expenditures; amounts received from or paid to Federal and local governments ("intergovernmental" revenues and expenditures) are not included, since these amounts are less directly related to changes in state population and since the estimated state cash flows are relatively insensitive to their inclusion or exclusion.
- (4) FY85 – FY90 base-related revenues and expenditures were assumed to equal state per capita rates multiplied by [(Total Military Population + Military %) + (Total Civilian Population + Civilian %)], adjusted for inflation and rounded to the nearest \$1,000.

APPENDIX B

ILLUSTRATIVE RESULTS FOR ROBINS AIR FORCE BASE

**Note: Final results can be found in the OEA Robins Air Force Base Fiscal
Impact Analysis Report.**

ILLUSTRATIVE RESULTS FOR ROBINS AIR FORCE BASE

Robins Air Force Base (AFB), Georgia, is an Air Force installation with about 4,000 military personnel. Two elementary schools at Robins AFB are owned by the Department of Education (ED) but operated by DoD under Section 6 of Public Law 81-874 [the local educational agency (LEA) is the Houston County School District]. Almost 900 students attend these on-base schools, representing about 6 percent of the total LEA enrollment. The detailed outputs of the Robins AFB fiscal analysis, along with supporting notes, are shown in the tables which follow. The total cost for the construction, repair, and rehabilitation needs of Robins AFB schools is estimated to be \$2.24 million.

The LEA is expected to experience negative operating budget cash flows (and zero capital budget cash flows) through at least FY90. The operating and capital fund balances, while significant, will be needed to offset these negative cash flows. However, Robins AFB is expected to generate a positive operating cash flow for Georgia of \$8,799,000 in FY88, growing to \$9,427,000 in FY90. The present value of these cash flows was not computed because it would not have affected the interpretation of the results (the estimated state cash flow for a single year is greater than the total estimated school needs costs).

These results show that the Houston County School District does not have the fiscal capacity to fund any of the on-base school needs at Robins AFB, while the State of Georgia has enough fiscal capacity to fund all of the Robins AFB school needs. Based solely on ability to pay (i.e., ignoring equity or other policy issues), it appears that no Federal assistance will be required.

The detailed model inputs and outputs for Robins AFB are shown in the following pages. Table B-1 presents the school population summary, Table B-2 presents base economic and population data, Table B-3 presents local school district fiscal data, Table B-4 presents base-related state fiscal data, Table B-5 presents on-base school requirements, and Table B-6 presents explanatory notes.

TABLE B-1

SCHOOL POPULATION SUMMARY FOR ROBINS AFB

	FY85	FY86	FY87	FY88	FY89	FY90
	Actual	Actual	Actual	Projection	Projection	Projection
LEA						
Total enrollment	14,871	15,274	15,302	15,500	15,700	15,900
Military category A	388	433	429	429	429	429
Civilian category A	34	30	30	30	30	30
Military category B	855	914	914	914	914	914
Civilian category B	4,413	4,487	4,487	4,487	4,487	4,487
On-base						
Total enrollment	888	874	870	870	870	870
Military category A	888	874	870	870	870	870
Linwood Elementary	389	401	403	403	403	403
Robins Elementary	499	473	467	467	467	467

TABLE B-2

BASE ECONOMIC AND POPULATION DATA FOR ROBINS AFB

	FY85	FY86	FY87	FY88	FY89	FY90
	Actual	Actual	Actual	Projection	Projection	Projection
Total base-related employment:						
Military personnel	3,889	4,005	4,084	4,084	4,084	4,084
Federal civilians	16,102	16,030	15,652	15,652	15,652	15,652
NAF civilians	640	666	671	671	671	671
Service contractors	1,103	1,178	966	966	966	966
Construction contractors (estimated)	174	326	309	309	319	331
Other base businesses	157	176	183	183	183	183
Estimated base-related civilian population	45,033	45,449	43,751	43,751	43,778	43,810
Total military population:						
Military personnel	3,889	4,005	4,084	4,084	4,084	4,084
Single military personnel	1,291	1,330	1,356	1,356	1,356	1,356
Married military personnel	2,598	2,675	2,728	2,728	2,728	2,728
Military dependents	5,885	5,969	5,992	5,992	5,992	5,992
School-age children	2,150	2,194	2,217	2,217	2,217	2,217
On-base military population:						
Military personnel	2,666	2,659	2,655	2,655	2,655	2,655
Single military personnel	1,270	1,263	1,259	1,259	1,259	1,259
Married military personnel	1,396	1,396	1,396	1,396	1,396	1,396
Military dependents	3,444	3,339	3,248	3,248	3,248	3,248
School-age children	1,344	1,320	1,299	1,299	1,299	1,299
Off-base military population:						
Military personnel	1,223	1,346	1,429	1,429	1,429	1,429
Single military personnel	21	67	97	97	97	97
Married military personnel	1,202	1,279	1,332	1,332	1,332	1,332
Military dependents	2,441	2,630	2,744	2,744	2,744	2,744
School-age children	806	874	918	918	918	918
Base salaries and spending:						
Base-related salaries						
Military personnel	\$119,300,000	\$126,400,000	\$140,600,000	\$146,900,000	\$152,100,000	\$157,100,000
Federal civilians	\$459,200,000	\$486,800,000	\$480,000,000	\$501,600,000	\$519,200,000	\$536,500,000
NAF civilians	\$4,700,000	\$5,100,000	\$5,200,000	\$5,400,000	\$5,600,000	\$5,800,000
Service contractors	\$14,800,000	\$16,400,000	\$13,600,000	\$14,200,000	\$14,700,000	\$15,200,000
Construction contractors	\$4,100,000	\$7,900,000	\$7,700,000	\$8,000,000	\$8,300,000	\$8,600,000
Other base businesses	\$2,400,000	\$2,800,000	\$3,000,000	\$3,100,000	\$3,200,000	\$3,400,000
Local procurement	\$53,500,000	\$48,500,000	\$54,800,000	\$57,300,000	\$59,300,000	\$61,200,000
Total construction completed	\$16,900,000	\$32,500,000	\$31,600,000	\$33,100,000	\$34,200,000	\$35,400,000

TABLE B-3

LOCAL SCHOOL DISTRICT FISCAL DATA FOR ROBINS AFB

	FY85	FY86	FY87	FY88	FY89	FY90
	Actual	Actual	Actual	Projection	Projection	Projection
Operating budget						
Revenues						
Local sales tax	\$5,414,271	\$5,765,831	\$6,284,031	\$6,000,000	\$6,210,000	\$6,417,000
Local Ad Valorem tax	5,357,909	3,583,095	3,517,940	6,003,000	6,213,000	6,420,000
Local other	2,437,781	2,455,830	2,509,822	2,305,000	2,386,000	2,466,000
State APEG/GBE grants	16,500,519	18,842,448	24,994,620	26,849,000	28,135,000	29,431,000
State other	5,025,923	5,021,618	5,004,081	3,708,000	3,838,000	3,966,000
Federal: PL-874	987,668	894,822	1,259,999	1,260,000	1,260,000	1,260,000
Federal other	1,090,502	1,180,205	2,860,074	2,555,000	2,644,000	2,732,000
Transfers	3,842,964	6,621,428	5,615,213	5,972,000	6,181,000	6,387,000
Miscellaneous	59,790	15,003	13,833	10,000	10,000	10,000
Total	40,717,379	44,380,280	52,059,612	54,662,000	56,877,000	59,089,000
Expenditures						
Instruction	19,031,034	21,754,753	28,795,978	30,892,000	32,372,000	33,863,000
Support services	2,570,125	3,356,648	5,177,796	5,476,000	5,668,000	5,857,000
Administration	1,910,320	2,079,797	3,020,457	2,916,000	3,018,000	3,119,000
Maintenance & operation	3,131,914	3,632,578	4,151,492	4,369,000	4,522,000	4,673,000
Transportation	1,217,223	1,206,876	1,461,355	1,310,000	1,356,000	1,401,000
Food	2,123,421	2,186,546	2,419,072	2,366,000	2,449,000	2,531,000
Facilities	115,484	236,447	665,693	861,000	891,000	921,000
Transfers	4,244,314	6,857,820	6,957,046	6,597,000	6,828,000	7,056,000
Other uses	2,920,365	3,519,426	55,455	54,000	56,000	58,000
Total	37,264,200	44,830,890	52,704,344	54,841,000	57,160,000	59,479,000
Operating cash flow - with projected PL-874 revenues	3,453,179	(450,610)	(644,731)	(179,000)	(283,000)	(390,000)
Operating cash flow - without projected PL-874 revenues	N/A	N/A	N/A	(1,439,000)	(1,543,000)	(1,650,000)
Year-end fund balance - with projected PL-874 revenues	14,457,746	14,043,817	13,419,959	13,241,000	12,958,000	12,568,000
Capital budget						
Revenues	2,601,074	1,802,153	4,388,564	625,000	647,000	669,000
Expenditures	2,381,493	2,147,551	4,502,550	625,000	647,000	669,000
Capital cash flow	219,581	(345,398)	(113,986)	0	0	0
Year-end fund balance	685,099	277,751	234,091	234,000	234,000	234,000

TABLE B-4

BASE-RELATED STATE FISCAL DATA FOR ROBINS AFB

	FY85	FY86	FY87	FY88	FY89	FY90	FY86 state per capita	Military %	Civilian %
	Estimate	Estimate	Estimate	Projection	Projection	Projection			
Expenditures									
Education	\$11,499,000	\$11,881,000	\$11,815,000	\$12,348,000	\$12,787,000	13,221,000	\$231	60%	100%
Highways	7,665,000	7,925,000	7,906,000	8,262,000	8,556,000	8,846,000	143	100	100
Public welfare	2,340,000	2,417,000	2,404,000	2,512,000	2,602,000	2,690,000	188	15	25
Health & hospitals	3,780,000	3,901,000	3,862,000	4,036,000	4,180,000	4,322,000	84	10	100
Natural resources	1,715,000	1,774,000	1,769,000	1,849,000	1,915,000	1,980,000	32	100	100
Public safety	3,101,000	3,206,000	3,193,000	3,337,000	3,456,000	3,573,000	60	80	100
Administration	1,930,000	1,995,000	1,990,000	2,080,000	2,154,000	2,227,000	36	100	100
Debt	1,501,000	1,552,000	1,548,000	1,618,000	1,675,000	1,732,000	28	100	100
All other	3,567,000	3,687,000	3,672,000	3,838,000	3,974,000	4,109,000	77	70	90
Total	37,098,000	38,338,000	38,159,000	39,880,000	41,299,000	42,700,000			
Revenues									
General sales tax	12,876,000	13,299,000	13,202,000	13,797,000	14,288,000	14,774,000	269	40	100
Selective sales tax	5,505,000	5,685,000	5,644,000	5,898,000	6,108,000	6,316,000	115	40	100
Motor vehicle licenses	540,000	557,000	552,000	577,000	597,000	617,000	12	10	100
Other licenses	650,000	671,000	665,000	695,000	720,000	745,000	14	25	100
Indiv. income tax	14,354,000	14,816,000	14,666,000	15,326,000	15,872,000	16,413,000	319	10	100
Corp. income tax	3,255,000	3,362,000	3,337,000	3,488,000	3,612,000	3,735,000	68	40	100
Miscellaneous taxes	536,000	554,000	553,000	578,000	598,000	619,000	10	100	100
Intergovern., Fed.	0	0	0	0	0	0	0	100	100
Intergovern., local	0	0	0	0	0	0	0	100	100
Charges and misc.	7,719,000	7,981,000	7,962,000	8,320,000	8,616,000	8,908,000	144	100	100
Total	45,435,000	46,925,000	46,581,000	48,679,000	50,411,000	52,127,000			
Net cash flow from base	8,337,000	8,587,000	8,422,000	8,799,000	9,112,000	9,427,000			

TABLE B-5

ON-BASE SCHOOL REQUIREMENTS FOR ROBINS AFB

	FY85	FY86	FY87	FY88	FY89	FY90	Total
Construction/repair/rehabilitation needs							
Health and safety							\$0
Linwood Elementary							0
Robins Elementary							0
School capacity							0
Linwood Elementary							0
Robins Elementary							0
Compliance with regulations							2,240,000
Linwood Elementary							0
Robins Elementary							0
Total							2,240,000
Operating requirements							
Administrative costs	\$127,000	\$125,000	\$148,000	\$159,000	\$164,000	\$169,000	
Educational costs	1,938,000	2,118,000	2,298,000	2,535,000	2,616,000	2,703,000	
Logistical costs	354,000	559,000	481,000	436,000	454,000	469,000	
Total	2,419,000	2,802,000	2,927,000	3,130,000	3,234,000	3,341,000	

TABLE B-6
ROBINS AFB FISCAL IMPACT ANALYSIS NOTES

School Population Summary (Table B-1)

- (1) FY88 - FY90 enrollments were assumed to equal actual FY87 except for total LEA enrollment, where growth of 200 students per year was assumed.

Military Base Economic and Population Data (Table B-2)

- (1) FY88 - FY90 population was assumed to equal actual FY87 population.
- (2) FY88 - FY90 salaries were assumed to equal actual FY87 salaries adjusted for inflation.
- (3) FY85 - FY87 construction contractor employment and salaries were estimated based on total construction completed.
- (4) Approximately 67 percent of total military personnel were assumed to be married (based on DMDC data).
- (5) The number of school-age children was estimated to equal 22 percent of total military population (personnel plus dependents).
- (6) The estimated base-related civilian population was assumed to equal base-related civilian employment (Federal + NAF + Service + Construction + Other) minus the assumed number of employees who are military spouses (60 percent of married military personnel), multiplied by 2.71 (average 1986 Georgia household size).

Local School District Fiscal Data (Table B-3)

- (1) All FY88 - FY90 projections were rounded to the nearest \$1,000.
- (2) Except as noted below, FY88 revenues and expenditures were assumed to equal FY88 budget values.
- (3) Except as noted below, FY89 - FY90 revenues and expenditures were assumed to equal FY88 values multiplied by DoD deflators.
- (4) Federal PL-874 revenues for FY88 - FY90 were assumed to equal actual FY87 value (no adjustment for inflation).
- (5) FY89 - FY90 State APEG/QBE revenues and Instruction expenditures were assumed to equal FY88 values multiplied by DoD deflators and the projected LEA enrollment growth rate.
- (6) Other expenditures category includes employee benefits in FY85 and FY86, but not in FY87 - FY90.
- (7) Changes in actual year-end fund balances reflect periodic adjustments as well as cash flows.

Base-Related State Fiscal Data (Table B-4)

- (1) FY85 - FY90 base-related revenues and expenditures were assumed to equal state per capita rates multiplied by [(Total Military Population + Military %) + (Total Civilian Population + Civilian %)], adjusted for inflation and rounded to the nearest \$1,000.
- (2) Inflators for all dollar variables were based on the "total excluding retirement pay" DoD deflator (as of 1/27/87).
- (3) State per capita data are from *State Government Finances in 1986* (U.S. Department of Commerce, Bureau of the Census).

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<p>DoD and the Department of Education (ED) have identified \$183 million of construction, repair, and rehabilitation needs at 124 military dependent schools on U.S. military installations. Fiscal impact analysis can be used to estimate the ability of state and local jurisdictions to bear the costs associated with the on-base school facility improvement needs. These estimates can help the Federal Government determine whether a shortfall exists between the total costs and the state and local jurisdictions' ability to pay. This determination is important because DoD and ED recommended in their September 1987 report to Congress that Federal assistance be provided to cover any such shortfalls.</p> <p>We developed a prototype model which can assess state and local financial capacities by examining the revenue and expenditure flows associated with a military installation and its on-base schools. The model addresses the question of whether state or local government jurisdictions can pay for the needed improvements to on-base schools for military dependents. It does not address the policy question of who <i>should</i> pay for the improvements.</p> <p>We successfully tested the model for on-base schools at Fort Riley, Kansas, and Robins Air Force Base, Georgia. The test results show that the model is effective in determining state and local fiscal capacities, and can be easily adapted for use elsewhere.</p>					
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20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS				21. ABSTRACT SECURITY CLASSIFICATION	
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ABSTRACT (Continued)

We recommend that the Office of Economic Adjustment (OEA) apply the model to other installations with on-base schools. Such applications will require minor changes to the basic model to reflect the unique characteristics of each state and military installation. To make the most effective use of their efforts, we recommend that OEA analyze all installations within a state at the same time. This will minimize data collection requirements at the state level; it will prevent the possibility of having to make multiple negotiations with a given state; and it will ensure that the state-level results are not distorted by the omission of certain schools or installations.