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Study: Results and Use of Army Studies

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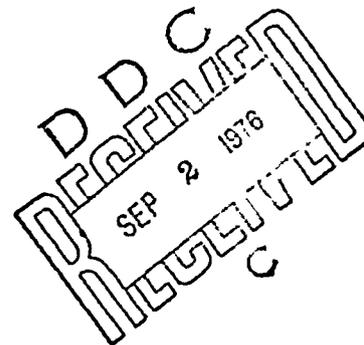
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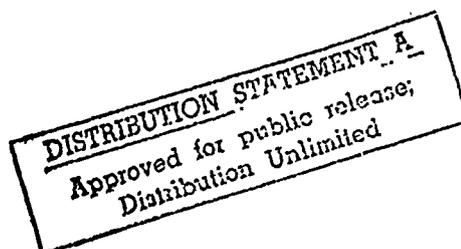
RESULTS AND USE OF ARMY STUDIES



Prepared by

Engineer Studies Group
Office, Chief of Engineers
Department of the Army

August 1976



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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) STUDY: RESULTS AND USE OF ARMY STUDIES		5. TYPE OF REPORT & PERIOD COVERED Final
7. AUTHOR(s) Lyle G. Suprise		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Engineer Studies Group 6500 Brookes Lane Washington, D.C. 20315		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS Director of Management Office, Chief of Staff, Army Washington, D. C. 20310		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE August 1976
		13. NUMBER OF PAGES 124
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number)		
Study Evaluation	Study Management	Results and Use Survey
Use of Study Results	Cost of Studies	Impact of Studies
Study Planning Guidance	In-house Studies	
Army Study Program	Contract Studies	
20. ABSTRACT (Continue on reverse side if necessary and identify by block number)		
<p>This study evaluates a sample of Army Studies completed or terminated during FYs 74 & 75. Goal is to determine the extent to which individual studies achieve stated goals and objectives. Data were gathered from questionnaires completed by study sponsors and users and from the sample studies. Sample included studies in all The Army Study System (TASS) categories & by all means of accomplishment. Results are stated as observations, conclusions, and recommendations related to resource levels, study achievements, use & nonuse, benefits, critical issues for study, & TASS. Results are intended for use by top study management.</p>		

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ACKNOWLEDGMENTS

This study was prepared by the Engineer Studies Group (ESG) professional staff. Mr. Lyle G. Surprise served as ESG's Project Director assisted by Mr. Elton H. Underwood. All ESG senior project directors, project directors, and analysts participated in questionnaire development. They also helped evaluate studies in their respective fields of expertise.

Invaluable advice, assistance, and guidance was provided by Dr. F. Paul Dunn, Chief, Study Management Office and his staff. LTC Arville L. Hickerson from that office served as Project Officer for the Director of Management.

This study could not have been completed without the cooperation and assistance provided by the DA Staff Agency and MACOM Study Coordinators. They were particularly helpful during questionnaire execution. ESG offers special appreciation to all the unnamed individuals who diligently completed the rather long questionnaires.

The Army Library Staff was extremely helpful and cooperative in explaining the use of the ASDIRS terminal and making it available to ESG. ESG used that terminal to obtain study information summaries from the DDC data bank.

In expressing its appreciation for the efforts of others contributing to the study, ESG also acknowledges its ultimate responsibility to use and apply such contributions and any conclusions derived therefrom.

Ms Jill M. Davis and Ms G. Leslie Geiger edited the report.

Mrs. Jean A. Lamrouex prepared the report for publication under the supervision of Mrs. Doreen A. Myers.

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ABSTRACT

This study evaluates the results, uses, and benefits of a sample of Army studies completed or terminated during FY 74 and FY 75. The primary concern is with study evaluation, the extent to which individual studies achieve stated goals and objectives. (The question of whether those stated goals and objectives are appropriate--considered a part of total program evaluation--is not addressed in this study.) Data were gathered from questionnaires completed by study sponsors and users and from examination of study documents. Included in the sample are studies in all The Army Study System (TASS) categories and by all means of accomplishment. Results are in the form of observations, conclusions, and recommendations related to resource levels, study achievements, use and nonuse, benefits, critical issues for study, and TASS. These results are intended to be used by top study management when taking actions or making decisions regarding funding levels, program focus, study undertakings, and improvements in study planning, programing, and execution to enhance chances of study success and usefulness. Not included in this report is a paper on study program management which was provided to the study sponsor under separate cover.

SUMMARY

1. The Army Study System (TASS) enables the Army to respond to changing conditions based on thorough analyses of current and projected problems. Studies are basic to the formulation of concepts, doctrine, plans, and policies. They help high-level managers in making decisions and/or providing persuasive inputs to the Joint Staff and the Department of Defense.

2. Army studies are characterized by decentralized program development and centralized review and evaluation. They are conducted by a wide variety of in-house organizations and by contract support. Management responsibilities are delegated to Army Staff agencies and major Army commands (MACOMs). Although HQDA studies were evaluated (for results and use) in 1974 and HQDA and MACOM studies were evaluated in 1975, continued reduction of resources available for studies indicated that a more detailed assessment was needed at this time. The Director of Management, Office, Chief of Staff, Army, therefore, requested that ESG undertake this analysis.

3. The objectives of this study are to:

a. Determine the immediate, residual, and derivative impacts of studies evaluated. Evaluate the cost effectiveness of individual studies that have resulted in tangible benefits.

b. Identify common characteristics/attributes of successful studies. Identify common causes for study failure. Draw inferences from success and failure and make recommendations regarding study efforts and resources.

c. Affirm the validity and usage of available data bases (e.g., Defense Documentation Center, Defense Logistics Studies Information Exchange, and the Army Study Documentation and Information Retrieval Systems) during the development and execution of study efforts. Review existing procedures to determine if study information is being disseminated adequately to preclude duplicating study effort.

d. Contribute to a better understanding of the relative cost effectiveness of in-house and contract studies. Obtain insights into the range of resource levels the Army should commit to and within the study program.

e. Develop criteria for use in evaluating the merits of study proposals.

4. This study analysis is based on data pertaining to the 145 studies chosen as a sample from 462 studies completed or terminated in FY 74 and FY 75. The sample represented a resource investment of about \$50 million, both in-house and contract, or approximately one-half the resources consumed by the 462 total. The study data were acquired by mailed questionnaires, by examining study reports and other documents, and by follow-on interviews by ESG analysts. A principal purpose of the interviews was to verify the reliability of questionnaire responses. ESG analyzed the acquired data on each individual study and the total consolidated sample and arrived at the following findings and conclusions.

a. There is a tendency at all levels to equate a study's importance to the hierarchical position of the requestor. There is no generally used mechanism which establishes priorities based on goals, substance, or issues addressed.

b. Critical Army issues are identified and ordered in only enough detail to influence planned resource allocations in very broad terms. Allocating resources based on level of effort per study category is meaningless because the categories are not strictly defined.

c. Return on study resource investment can be improved by critically weighing certain types of study efforts and by strengthening study management from inception to implementation. Results and use data do not indicate imbalances between in-house and contract efforts.

d. Study Planning Guidance (SPG) has marginal causal effect on the focus and content of the annual study programs. There is no direct connection between SPG and appropriate levels of effort.

e. Studies generally achieve most of what they set out to do; however, this is not a guarantee that the study results will be effectively used.

f. Causes for not using study results include: turbulence in study management, insufficient data, delays in approval, delay in completion/problem passed with time, and insufficient knowledge as to the study's usefulness either because it was not publicized or because documentation did not permit confident use of the results.

g. It is difficult (and maybe meaningless) to compute the cost effectiveness of studies because the assumptions drive the solution of such calculations.

h. There appears to be no doubt that TASS produces significant benefits. Ultimate benefits are not explicitly considered when a study is undertaken.

i. Except at HQDA level, existing study data are not widely used for the purposes intended. Data discipline needs to be enforced in the preparation of study summaries (DD Forms 1498); entries pertaining to results and implementation are proving particularly inadequate.

5. TASS has experienced a rather constant and evolutionary change over the years. The following recommendations are intended to give top study management a basis for directing future TASS improvements.

a. Do not now radically change the manner in which individual study programs are developed but revamp the SPG to reflect key issues and to distinguish between important and less important priority areas.

b. Study proposals should be evaluated to insure that:

(1) The problem and purpose are clearly defined.

(2) The need, expected results, and user are identified.

(3) There are a manageable number of objectives combined with consistent scope and resource estimate.

(4) There is assurance of high-level sponsor interest and a specified sponsor management mechanism (i.e., steering/advising group or manager.)

c. The problem of action officer and study advisory group turbulence needs to be resolved. Top management should, as a matter of policy, be sure that individuals assigned to these positions expect to be available for the duration of the study.

d. Executives and commanders need to become more involved early--when the need for a study is established. It may be advisable to establish a threshold above which they must personally approve study undertakings.

e. Results, uses, and benefits data must be recorded for future program evaluation purposes before all people involved in the study execution and implementation have departed. The implementation plan should have a provision for gathering information necessary to a comprehensive and valid appraisal of results and use.

f. Publish, at least quarterly, a list of all studies completed or terminated during the period.

g. Institute a simple newsletter disseminating items of interest to the study community.

h. Resource levels should be keyed to actual identified need rather than arbitrary level of effort. Cutbacks in the short run can be absorbed with least loss of benefits by:

- (1) Curtailing large-scale model and simulation efforts.
- (2) Curtailing broad methods and standardization projects.
- (3) Selectively reducing contract support.

i. AR 5-5, which defines TASS and prescribes administrative procedures, must be strongly enforced. This is essential if study top management is to exert control over the system.

6. This report is concerned primarily with evaluating results, use, and benefits of individual studies. ESG has supplied the Director of Management a separate, informal paper which relates to total program evaluation.

RESULTS AND USE OF ARMY STUDIES

I. GENERAL

1. Purpose. This study assesses the results, uses, and benefits of Army studies to be considered by the Director of Management, Office of the Chief of Staff of the Army (OCSA), in decisions and actions regarding the directions of current and future Army study efforts.

2. Scope.

a. This report is based on analysis of a 145-study sample selected from over 460 studies completed or terminated during FY 74 and FY 75. In-house and contractor studies in all The Army Study Program (TASP) categories have been included.

b. The evaluation of each study did not include a peer review of study contents or procedure or any attempt to duplicate the results. Rather, the analysis concentrated on results of the studies in terms of the objectives and the uses made of these results. Mailed questionnaires served as the primary data-collection instrument.

c. Both tangible and intangible benefits are assessed relative to study purposes, issues addressed, achievements, and uses in the limited context of individual study evaluation. The much broader question of whether individual study goals and objectives are appropriate is considered a part of total program evaluation and is given much less attention in this study. (However, insights related to program evaluation have been supplied to the Director of Management in a separate, informal paper.)

d. Administrative procedures and regulations governing The Army Study System (TASS) are discussed to the extent that they influence the studies' results, uses, and benefits.

3. Background.

a. TASS is defined in AR 5-5. It enables the Army to respond to changing conditions based on thorough and detailed analyses of present and projected problems. Army studies are characterized by decentralized program development and centralized review and evaluation. Management responsibilities are delegated to Army Staff agencies and major Army commands (MACOMs). Procedures emphasize quality control and efficient allocation of study resources. A primary TASS objective is to conduct studies that will produce usable results. Those results should aid decisionmaking by presenting alternative solutions to problems and/or providing a basis for Army inputs to Joint Staff and Department of Defense (DOD) policies and positions.

b. TASS evolution over the years has been directly influenced by several critical assessments.^{1/2/3/} These efforts concentrated primarily on management and administrative procedures within the system. There has been no comprehensive effort to address the application of study results nor to identify benefits resulting from study resource investments.^{4/}

^{1/} DA, OAVCSA, After-Action Report of PRIMAR.

^{2/} DA, OAVCSA, Final Report of the Committee to Evaluate the Army Study System (ETASS).

^{3/} DA, Ofc of the VCSA, The Army Study System (Bonesteel Report).

^{4/} There have been studies in this area with limited scope concentrating primarily on models, simulations, and war games. Three of the more recent efforts are listed as references 8, 9, and 10.

c. The Director of Management, OCSA, was concerned that scarce study resources must be effectively committed and noted the need for a definitive review of study results, uses, and benefits. The Engineer Studies Group (ESG) was tasked to perform that review.^{5/} This report contains the results of that review.

4. Organization of the Report. This main paper is summary in nature. Major findings and conclusions are discussed in Part II and recommendations are developed in Part III.

a. Annex A presents a more detailed discussion of the review process (sample selection, data gathering, verification, analysis, synthesis). It also contains the data tabulations and consolidated responses to the questionnaires.

b. Annex B contains a list of the studies reviewed and Annex C contains the Bibliography.

II. MAJOR FINDINGS AND CONCLUSIONS

5. General. Overall, the TASS appears to be in better administrative health than its critics have led us to believe. Within agency/command programs, customer satisfaction and demand for studies are high. Studies and analyses were found to be initiated and accomplished in line with applicable directives and regulations. However, there appear to be opportunities for substantial improvement. The study system itself appears to be in a continuous state of change. Even as this study was in progress, revisions

^{5/} DA, Ofc of the AG, Ltr, Study: Results and Use of Army Studies.

to study regulations were being staffed and administrative changes were being made anticipating approval of the revisions. Study program managers, particularly at staff agency/MACOM level appear to have reasonable control of the admittedly imperfect study programs. It is apparent that the reports and approval procedures embodied in TASS have resulted in more thought and care being given to allocation of study resources. The issues addressed by the hundreds of studies always underway range from very narrow functional problems to the most complex planning and policy issues affecting the entire Army and DOD. Decisions at all levels are generally complex. Specific decisions are a result of many compromises among competing considerations. It is difficult--and will remain difficult--to single out a specific decision and say "that one was different because of a study."

6. Study Requirements. Based on the premise that originators of study requirements would be the most likely users and beneficiaries of study results, the sources of study requirements were identified. Figure 1 shows the percentages of DA Staff- and MACOM-sponsored study programs that originated at the various levels and similar percentages for the total TASP. (Unless otherwise noted, data displays in this main paper are based on the questionnaire responses pertaining to 141 studies. Adequate information was not available for four of the 145 studies in the sample. Annex A contains the details.)

ORIGINS OF STUDY REQUIREMENTS

Originator	DA Staff		MACOM		Total TASP	
	%	Number	%	Number	%	Number
DOD/JCS	10.7	8	4.6	3	7.8	11
CSA/SA	16.0	12	13.6	9	14.9	21
Staff Agency	66.6	50	27.3	18	48.3	68
MACOM	1.3	1	48.5	32	23.4	33
Other	2.7	2	3.0	2	2.8	4
Unsolicited Proposal	<u>2.7</u>	<u>2</u>	<u>3.0</u>	<u>2</u>	<u>2.8</u>	<u>4</u>
Total	100.0	75	100.0	66	100.0	141

Figure 1

a. Approximately 26 percent of the DA Staff Agency (hereafter referred to as DA Staff) and 45 percent of the MACOM study programs originate from above. This finding is significant but not surprising since it was also found that the DA Staff and MACOMs invariably give highest priority to requests from higher echelons. Most DA Staff and MACOMs have procedures for assigning priorities and resolving conflicts among the studies they originate. Externally originated study requirements receive priority treatment and consequently were found to be the most frequent cause for deferring/terminating studies in the DA Staff/MACOM annual study programs. Except for those instances where the externally directed study is tied in with a recurring Planning, Programing, and Budgeting System (PPBS)

or similar requirement, it is difficult for the ultimate DA Staff/MACOM sponsor to anticipate and program for the study.

b. Conclusion. There is a tendency at all levels to equate a study's importance to the hierarchical position of the requestor. There is no generally used mechanism which establishes priorities regardless of study origin and based on program goals, substance, or issues addressed.

7. Resource Levels. Figure 2 shows the resources committed to the studies completed or terminated during FY 74 and FY 75 and that portion consumed by the studies in the sample. (Costs are cumulative and cannot be interpreted as covering any one fiscal year.) Figure 3 indicates how the studies were distributed among the categories and means of accomplishment. The data show that in-house efforts accounted for 2/3 of the studies and less than 2/3 of the total costs. ESG pursued the analysis of resource levels along the lines suggested by the categories in Figures 2 and 3.

a. Relative cost effectiveness is not clear since in-house and contract resources are often applied to the same study in a collaborative effort. Further, no obvious duplication of effort (i.e., both in-house and contract resources committed to the same complete problem independently) made comparisons easier. Their more stringent accounting procedures make contract expenditures easier to determine than in-house expenditures.

Benefits, on the other hand, are more easily identified for in-house studies due to the high density of functional issues addressed. Figure 4 shows the average costs of in-house and contract studies.

COSTS FOR STUDIES
COMPLETED/TERMINATED IN FY 74 AND FY 75

	Number of Studies	Costs		
		In-house (PMY)	Contract (\$K)	Total ^{a/} (\$K)
Included in Evaluation	145	626	19,527	50,300
Total During Period	462	1,363	38,950	107,100

^{a/} Calculated using \$50K per in-house professional man-year. Use of \$50K per PMY is somewhat arbitrary. DOD used that amount for estimates in 1974. It is not a DA-approved planning factor. A detailed cost analysis would likely find that in-house costs are lower, possibly as low as \$40K per PMY. Contract costs, on the other hand, do not include the in-house costs for contract administration (i.e., contracting officer, advisory group, and other necessary management). Refined estimates would tend to tip the cost balance in favor of in-house studies.

Figure 2

b. The study categories are not particularly useful as indicators of resource imbalances. They do, however, focus attention on the general content of the matter being studied. Except for those very narrow in scope, studies frequently can be assigned to more than one category.

DISTRIBUTION OF STUDIES (FY 74 AND FY 75)

TASP Category	Number			Costs						
	In-house	Contract	Total	% In-house	% Contract	Total	% In-house	% Contract		
1	20	13	33	61	39	7,480	4,268	11,748	64	36
2	49	29	78	63	37	8,690	5,953	14,643	59	41
3	64	43	107	60	40	18,760	13,045	31,805	59	41
4	87	25	112	78	22	20,550	7,305	27,855	74	26
5	66	40	106	62	38	8,055	7,110	15,165	53	47
6	<u>19</u>	<u>7</u>	<u>26</u>	<u>73</u>	<u>27</u>	<u>4,625</u>	<u>1,258</u>	<u>5,883</u>	<u>79</u>	<u>21</u>
Totals	305	157	462	66	34	68,160	38,938	107,089	64	36

a/ In-house PMY converted @ \$50K per PMY.

Figure 3

THE "AVERAGE" STUDY COST
(FY 74 and FY 75)

Category	In-house		Contract	Combined Average Cost	Number of Studies
	Man- years	Dollars (K) ^{a/}	Dollars (K)		
1	7.48	374.0	328.5	355.9	33
2	3.55	177.3	205.3	187.7	78
3	5.86	293.1	303.4	297.2	107
4	4.72	236.2	292.2	248.7	112
5	2.44	122.0	177.8	143.1	106
6	4.87	243.4	179.7	226.3	26
Overall	4.47	223.5	248.0	231.8	462

^{a/} One man-year = \$50K.

Figure 4

c. The question of resource imbalances remains unanswered. ESG's analysis did not disclose any reasons to suggest that significant reallocations should be made based on the FY 74 and FY 75 data. It was found that quick-reaction study requirements are rather effectively met by deferral of ongoing, less urgent efforts and occasional creation of ad hoc study groups. Organizations with an in-house study capability are decidedly more responsive to quick-reaction studies than are contractors, particularly since the demise of Army-affiliated Federal Contract Research Centers (FCRCs) and level-of-effort contracts.

d. The Army is fundamentally concerned that its study resources should be applied to genuine Army problems. TASS was developed to give HQ DA a broader view of its study program and greater assurance that its TASP funds are being spent wisely. From a sponsor's viewpoint, the problems being studied are genuine and must be solved if the Army's missions and functions are to be executed effectively. In this sense, resource commitments must be justified from an operational standpoint--as part of the cost of doing the job we have to do. In effect all problems would have been analyzed regardless of whether the results of analysis are termed as a "study." The net result is that individual program sponsors will commit resources to DA Staff/MACOM mission and function problems (which are prioritized by the sponsor) independent of other programs. HQ DA combines these individual programs to form TASP. TASP is not constructed to identify which studies are most important (overall to the Army) in terms of critical issues/problems/decisions addressed.

e. Roughly one-third of the studies in the sample were classed as having a low rate of return on the resource investment. These studies had limited use, marginal impact, and low or unrecognizable benefits. This classification is a judgment based on questionnaire responses identifying benefits, uses, and impacts of each study. All of the questions were relative to the original study purpose and objectives. Studies in this

low-return class were spread over all categories and means of accomplishment. However, there were some characteristics which could be useful as caution signals in future undertakings.

(1) Large-scale model/method/standardization developments are very expensive and risky ventures. Although the theory or process studied may have been developed, several of these undertakings were poor investments (particularly in the short run) and were not used because real data were not available. Most are salvageable if one is willing to commit additional resources to data development. In other instances, particularly in methods/standardization projects, the underlying object of study was nonstable or ill defined. Resultant methods/standardization developments tend to be overtaken by events.

(2) Low return on study resource investment is associated with discontinuities in study management (changes in action officers, sponsor representatives, SAG principals, or in the study agency). Their differing perceptions of the original problem and anticipated uses caused ongoing studies to flounder and even successful studies (all objectives met) to be less than fully used.

(3) A very long or phased study was found to be a prime candidate for a low-return rating. These are likely to be large-scale developments ((1) above), vulnerable to (2) above, are expensive, and the ultimate costs are generally underestimated. These studies also

have little direct value when terminated prior to completion--an all or none situation.

f. Conclusions:

(1) Allocating resources based on level of effort per category could be meaningless if study categories are not strictly defined.

(2) Critical Army issues are identified and ordered in only enough detail to influence planned resource allocations in broad terms.

(3) Results and use data do not suggest imbalances between in-house and contract efforts.

(4) Return on study resource investment can be improved by critically weighing certain types of study efforts and by strengthening study management from inception to implementation.

8. Program Development Study Planning Guidance (SPG) is designed as the vehicle which: knits DA Staff and MACOM study programs into the TASP; provides a benchmark for HQ DA evaluation, review, or approval of the study programs; and helps in establishing appropriate levels of effort for priority area studies. ESG explored program development to determine the extent to which anticipated study results, uses, and benefits are considered and how critical (priority) Army issues are identified when programing study resources.

a. The most important factor in determining DA Staff or MACOM study program content was found to be the DA Staff/MACOM perception of its mission and functions. Due to the way SPG is developed, local programs are essentially feeding the DA guidance instead of vice versa. Unless the study origin is external to the DA Staff/MACOM, critical issues are really local functional/mission issues.

b. It is relatively easy to identify and justify studies with specific SPG areas of concern (not surprising in light of the way SPG is developed). Therefore, SPG is not as effective as it could be because it incorporates so many areas, there is no scale of importance or priority within the areas of concern, and there is no mechanism to resolve conflicts.

c. Conclusion. The SPG has marginal causal effect on the focus and content of the annual study programs. TASP is much more a heterogeneous conglomerate than a homogeneous program. There is no direct connection between SPG and appropriate levels of effort.

9. Study Results. Figure 5 shows the extent to which sponsors, users, and study agencies feel that study objectives were met. Questionnaire respondents were very confident of their assessments. Although ESG's followup verification of 34 studies and examination of 141 DD 1498's tended to confirm respondents' opinions, some credit for achievement may have been overly generous.

STUDY ACHIEVEMENTS

Objectives	Percent	Number
All Met	55	77
More Than Half Met	30	42
More Than Half Not Met	9	13
None Met	<u>6</u>	<u>9</u>
Total	100	141

Figure 5

a. Although 85 percent of the studies achieve most or all of their objectives, as many as 45 percent fail to achieve one or more of their objectives. The most frequent causes of failure to meet objectives were: (in descending order)

(1) Too many objectives. We call this the shotgun approach. Multiple objectives often created conflicts which were solved by ignoring one or more of the conflicting objectives. This cause of failure is compounded by an almost universal underestimation of resources required to address all objectives adequately within the allotted time.

(2) Trying to structure a nonstable, poorly defined activity. This is the primary cause of failure to achieve objectives in studies which address methods, systems, and model improvement/development.

(3) Reorganization. Some of the studies evaluated were in process during the CONUS and DA Staff reorganization. Resultant changes in roles, missions, and functions and dissolution of sponsoring elements were cited as reasons objectives were not met.

(4) Change within sponsoring organization or study agency. Change within sponsor organization causes failure primarily because new people have different perceptions of the problem being studied or the need for the study. Within the study agency, failure is due primarily to loss of expertise/capability by promotion, transfer, retirement, or reduction in budget or manning levels. (This cause is somewhat related to (3) above.)

(5) Methodology incapable of solving the problem. This cause is usually related to overestimating the tractability of the problem and the robustness of current analytic tools. (Related somewhat to (2) above.)

b. ESG found that even though a study is classed as meeting one or more of its objectives (132 studies), it may not have had a widely recognized, significant impact. Significant impact is interpreted as that which occurs either because the study results are used by one or more elements external to the sponsoring element or the study results were essential inputs to a decision or problem solution. Figure 6 shows that, on this basis, about 55 percent of the studies had significant impact. Studies in the low-impact category frequently are extremely important in a very narrow application.

IMPACT OF STUDIES

Objectives	Significant	Marginal	None	Unknown	Total
None Met	0	0	9	0	9
Most Not Met	1	6	4	2	13
Most Met	25	11	3	3	42
All Met	<u>52</u>	<u>18</u>	<u>3</u>	<u>4</u>	<u>77</u>
Total	78(55%)	35(25%)	19(14%)	9(6%)	141(100%)

Figure 6

c. Conclusion. Studies generally achieve most of what they set out to do. However, earlier perceptions of TASP's overall impact on the Army have probably been clouded because routine problems of important but local concern to a DA Staff agency or MACOM are part of TASP. Most local concerns may not have Army-wide importance.

10. Uses of Study Results. Figure 7 shows that of the 132 studies which met one or more objectives, all except 10 (8 percent) were used to some degree and about half of these provided direct input to a decision or problem solution. Eighteen percent were used as input to plans or planning processes such as JSOP. The 15 percent which were used as input to another study or were a phase of a larger study generally have little stand-alone use or value. Studies whose results are used primarily as reference data or planning factors (14 percent) are generally undertaken

with no particular decision in mind although they may ultimately influence many decisions. Reasons for nonuse of 10 studies which achieved one or more objectives were investigated further.

USE OF STUDIES WHICH ACHIEVED
ONE OR MORE OBJECTIVES

<u>Type Use^{a/}</u>	<u>Percent</u>	<u>Number</u>
Direct Input to Decision/Problem	45	59
Input to a Planning Process	18	24
Input to Another Study (Or Phase)	15	20
Reference Data and Planning Factors	14	19
Not Used	<u>8</u>	<u>10</u>
Total	100	132

^{a/} Most studies have more than one possible use. They were classed according to the use which most closely matched the original purpose for undertaking the study. The nine studies which achieved no objectives are not included in this figure.

Figure 7

a. ESG found that nonuse was most frequently related to changes in the personalities involved (i.e., changes in: action officers, SAG principals, chiefs of agencies, and commanders). Insufficient data was

a close second, but this cause of nonuse primarily affected methods and model-related studies. Other causes for nonuse were:

- (1) Authorities' lack/delay in approving study results.
- (2) The problem or decision which the study addressed was overtaken by events.
- (3) Potential users questioned the logic underlying the study and its results.
- (4) Lack of knowledge of the study's usefulness either because it was not publicized or the documentation was insufficient to permit confident use of the results.

b. Conclusion. Achieving objectives is not a guarantee that study results will be used. Study results are more likely to be used if: the study management principals are the same from inception to implementation; if the results do not require acquisition of large amounts of new data in order to be effective; if appropriate authorities take approval actions expeditiously; and if the results are delivered on time.

11. Benefits. The most difficult aspect of this study was determining the benefits which had accrued as a result of TASP achievement. ESG's analysis addressed tangible and intangible benefits resulting from the fact that a study was done. Direct benefits as well as indirect and enduring bonus benefits were considered. Figure 8 summarizes ESG's findings.

BENEFITS

Type	Percent	Number
Calculable Cost Effectiveness	16	22
Significant: Direct, Intangible	52	73
Low: Indirect, Intangible	21	30
None Identified	<u>11</u>	<u>16</u>
Total	100	141

Figure 8

a. ESG found that those studies with calculable cost effectiveness are about evenly split between functional and Army-wide impact and that 75 percent in this group were conducted in-house. The cost-effectiveness calculations depend on several essential assumptions which in effect determine the results. These assumptions are required to answer the questions: How do we apportion benefit/effectiveness to a study distinct from other decision inputs? And, what would have been the alternative chosen if the study had not been done?

b. Benefits realized at the functional/local level were found easiest to identify. Those most difficult to determine had to do with long-range planning, strategy, and concepts.

c. When a sponsor decides to undertake a study--whether it be in-house or contract, they generally do not consciously consider expected benefit/payoff in a capital budgeting sense. This is where position/ authority of the study proponent carries the most weight. It becomes a question of "Who said we need this study?" If the person in the position of authority departs during the course of the study, there is a high risk of study failure and most likely no benefit.

d. ESG also found that reasonable people will disagree on the extent or nature of the benefit from any particular study. Much of the benefit depends on one's perspective, familiarity with the problem, and how the solution/decision fits in with your own execution of mission and functions.

e. The most significant indirect benefit is reflected in the Army's in-house study capability. Available in-house study resources are judged to be as good or better than contractor and other outside resources. It is doubtful that the current level of expertise would have developed without learning and experience from past study efforts.

f. Conclusions:

(1) Cost-effectiveness calculations of studies are not precise and may even be meaningless in view of the assumptions required to perform such calculations.

(2) There appears to be no doubt that the TASS produces significant benefits. Definition of these benefits requires an appreciation of the problems from the user's perspective.

(3) A priori estimation of expected study benefits is not evident in the study justification process. Benefit considerations may be implied, however, in statements asserting the importance of the expected results to solving a problem or getting the job done.

12. Study System Data. ESG relied largely on the Army studies portion of the Defense Documentation Center (DDC) data bank for study information pertaining to FYs 74 and 75. This data bank is particularly important since all Army studies undertaken are required to be reported. And, after completion the sponsor enters a results and use evaluation. Among other things, the data bank should be useful to the study system managers at all levels, should provide visibility to completed and on-going efforts, and should be used by sponsors of proposed studies to preclude duplication of effort. In the course of this study, ESG did evaluate the use and usefulness of the DDC data bank.

a. The most frequent user of the data bank was found to be HQ DA Study Management Office. Use by that office exceeded that of all other users combined.

b. On 15 December 1975, the ESG study team obtained a listing of all studies reported as completed or terminated during FY 74 and FY 75. That listing of 544 studies was found to contain many errors and duplicate entries. Of the 544 reported, 113 were duplicate entries. The study team's last use of the data bank was on 23 April 1976. At that time, 479 studies were listed and only 17 were duplicate entries--a large improvement.

c. Data discipline was found to be poor despite rather detailed instructions for completing the DD 1498 forms used to enter the study information. Both the administrative information (i.e., resource levels, categories, sponsor, study agency) and study substance information (purpose, objectives, results, use, etc.) are often ambiguous. We found that the information reported is much too general to be useful as a basis for rigorous evaluation of the results, uses, and benefits of completed studies.

d. Although ESG did not find obvious duplication of study efforts, it is not clear that significant credit should go to the data bank. It was found that coordination of the individual draft study programs and the review/consolidation at HQ DA does more to preclude duplication. Groups such as the Logistics Studies Steering Group and the recently established Strategic Studies Advisory Group also play an important role in their respective areas.

e. Lack of knowledge about how to access the data was found to discourage use. There is no automatic dissemination of completed study information. Thus, prospective users must exercise their initiative if the data bank is of value to them.^{6/}

f. Completion of the questionnaires required the recall of large amounts of information by the sponsoring organizations and study agencies. ESG found that, for the majority of studies, implementation

^{6/} Twice annually, Director of Management, OCSA provides each DA Staff and MACOM a listing of its current studies cataloged in the DDC. However, each DA Staff and MACOM does not automatically get any listing of what others have cataloged.

and use information depended on a human memory bank rather than a formally established data file (automated or not). Failure to complete a questionnaire was almost always due to the nonavailability of someone familiar with the study.

g. Conclusions.

(1) Quality of the study information in the data base is being improved and can be improved further.

(2) Existing data are not widely used for the purposes intended except at HQ DA level.

(3) Data discipline needs to be enforced in the preparation of DD Form 1498.

(4) Nature and content of automatic (top-down) dissemination should be reexamined.

(5) Steps must be taken to more carefully record use, implementation, and benefit information as part of the data file for each study.

III. DISCUSSION AND RECOMMENDATIONS

13. Study Program Focus. There is no easy way to determine the most important studies in relation to critical Army issues. The primary reason for this is that critical Army issues are not identified in specific terms. The SPG is not sufficiently discriminatory to be an effective focal force. The DA Staff/MACOM parts of the TASP are

separated physically and functionally. Each part is successful and in focus relative to its own mission and function.

a. Deference to requests for studies from higher authority has been effective in meeting nonprogramed requirements. Implicit in this reaction is the assumption that these requests are critical issues. The disruption which results has an overall negative effect on the execution of the study program. The Army's acknowledged study capacity has very little slack. Even so, in-house capability is more responsive than contract.

b. The distinction between staff actions and studies is not clear. It is even debatable that the distinction should be made, and the ESG study team tends to oppose continued distinction. The issue, problem, or decision involved is the important point. Whether "a study" is the best way to address it is a management decision which must be made by executives and commanders responsible for solving the problem. We have assumed that programing decisions by the executives and commanders imply the importance of the issue and are sufficient justifications for undertaking a study if resources are available.

c. Resources are never unconstrained, and someone must pick and choose. If the Army wants to ensure that its critical issues are studied, these issues must be identified and resources programed accordingly. The identification should be made by top management.

d. Recommendations.

(1) Do not now radically change the manner in which individual agency/command study programs are developed.

(2) Top management should make early identification of specific key issues and problems toward which portions of the study capability can be planned and programed. The SPG should be revamped to reflect key issues and to distinguish between important and less important priority areas.

14. Resource Levels. Cost and manpower data acquired for the studies evaluated were cumulative, multi-FY information. Further, ESG was only concerned with completed and terminated studies. For these reasons, the question of overall resource adequacy could not be addressed. The data available gave no indication that major resource imbalances existed. The analysis and synthesis of this study's early findings permit recommending a strategy for absorbing resource cutbacks at least cost to program effectiveness.

a. Due to the way in-house studies and study agencies are budgeted, it is not clear how selective cutbacks would be manifested. All types of studies do not require the same amount of study capability. As another variable, many of the technical and functional areas have specialized expertise. There is risk that an entire area of expertise could be inadvertently eliminated by across-the-board cuts.

b. Nevertheless, the following strategy is recommended:

(1) Only undertake large-scale model and simulation efforts that are essential and for which acceptable data are certain to be available. This applies to both in-house and contract efforts. (This must be done cautiously because it could affect the productivity of the study doers. These type studies result in tools which permit analysts to do more and different things more often and, hopefully, better.)

(2) Only undertake widespread methods and standardization efforts that address critical issues. They are expensive, time consuming, and tend to be overtaken by events. Applies to in-house and contract efforts.

(3) Curtail contract study efforts.

(4) As a last resort, absorb cuts in in-house capability.

(5) In all cases, resource levels must be keyed to actual identified need rather than level of effort.

15. Improvements in Study Planning and Programing.

a. In addition to the issues of program focus and SPG, there are study characteristics which help to ensure success. They are stated here as criteria for use when evaluating study proposals. The criteria were developed from analysis of all the sampled studies which were classed as meeting all their objectives and were used.

b. Recommendations. When evaluating study proposals, the following conditions/criteria should be met:

(1) Clearly defined problem and purpose.

(2) Identified need in terms of problem and expected results and uses.

(3) Manageable number of objectives; consistent scope and resource estimate.

(4) Statement of expected results, anticipated uses, and explicitly identified user.

(5) Assurance of high-level sponsor interest.

(6) SAG, steering group, or similar study management specified.

16. Results, Uses, and Benefits. Two fundamental problems seem to plague this area even where focus, resource levels, and planning/programming have been proper: discontinuities in study management and paucity of documented evidence of uses and benefits. The former is by far the most important.

a. Results, uses, and benefits of studies often depend on a specific individual. This is more apparent on the sponsor management side than on the study agency side. Changes in action officers, executives, and commanders can cause partial use or nonuse of results of completed studies; in other cases, studies that are ongoing can flounder. New management often has different perceptions of the problems and the manner in which they will be studied. In addition to management continuity, there must be management interest particularly at high levels in the sponsoring organization. If executives and commanders are personally interested in a study, its completion and use are almost certain.

b. Study achievements, uses, and benefits certainly are not as well known as the Army would wish. Implementation actions and effects are not uniformly documented, if at all. As previously noted, results and use evaluations reported to the data bank are of doubtful utility for a variety of reasons. If study results, uses, and benefits are to be assessed periodically for program evaluation purposes, a more effective method of acquiring the information needs to be instituted.

c. Recommendations.

(1) The problem of action officer and SAG turbulence should be addressed and resolved by top management.

(2) Executives and commanders need to become more involved early—when the need for a study is established. And, they need to continue expressing interest throughout execution and implementation. It may be advisable to establish a threshold (say 3 PMY or \$150K) above which the executive/commander must personally approve the study.

(3) Current requirements to report results, uses, and benefits data need to be examined to ensure that data are adequate for program evaluation purposes. It should be mandatory that all such data be recorded before all parties to the study execution and implementation have departed. One important consideration which should be built into the implementation plan is a specific provision for gathering information necessary to conduct a comprehensive and valid appraisal of results and use.

17. Study Information.

a. The inadequacies of the formal study information system (e.g., study portion of DDC) are compounded by the study community's general lack of knowledge about the state of the study program at a given time. Use of study results depends on knowing when results are available and what they are. Although results of one study may not apply directly to other problems, there are lessons learned, novel or new methodologies, data and data sources, and other features that can be exploited by the study community at large. Interest expressed by others in one's achievements also should result in some feeling of satisfaction and serve to encourage quality performance.

b. Recommendation.

(1) Publish, at least quarterly, a list of all studies completed or terminated during that period. That list should include the name of study agency and point of contact and should be distributed to all study coordinators.

(2) Institute a study newsletter to get the word out to commanders, executives, study agencies, and analysts regarding what is happening in the study community. The newsletter should include significant accomplishments, continuing/current technical problems, and developing issues which may require study. The newsletter should be distributed to all through executive channels.

18. General Observation.

a. AR 5-5 (and DOD Directive 5010.22) was being revised while this effort was underway. The information available to ESG indicated that the revised AR will contain the words necessary to achieving an effective TASS. ESG does not believe, however, that this AR solves the issue previously raised concerning SPG. The system will remain only words unless it is enforced.

b. Recommendation. The Study Management Office should closely monitor and enforce compliance with AR 5-5 (and its companion DA pamphlet).

ANNEX A

DATA COLLECTION--QUESTIONNAIRES--INTERPRETATION

ANNEX A

DATA COLLECTION--QUESTIONNAIRES--INTERPRETATION

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APPENDIX A-1--QUESTIONNAIRE: ARMY STUDIES--RESULTS, USES,
AND BENEFITS (TYPE I) A-1-1

APPENDIX A-2--QUESTIONNAIRE: ARMY STUDIES--RESULTS, USES,
AND BENEFITS (TYPE II) A-2-1

1. Purpose and Scope. This annex presents a somewhat detailed discussion of the processes involved in acquiring and interpreting the study data. It includes discussions of sample selection, data collection, and a variety of tabulations. Appendixes A-1 and A-2, respectively, contain Type I and Type II Questionnaires annotated to show consolidated responses.

2. Sample Selection.

a. Sponsor guidance specified that studies completed or terminated during FY 74 and FY 75 would be candidates for evaluation. In order to determine which studies qualified for evaluation, ESG used the terminal in the Army Library to query the Army studies portion of the DDC data bank. (Army Library personnel were most helpful in this and all subsequent uses of the terminal by the ESG study team.) The initial listing contained 544 studies. Examination of the printout disclosed many duplications and "carrier studies."^{1/} In fact, 113 were deleted from the listing (61 carrier and 52 duplicate studies). Examination of available agency/MACOM study programs for FYs 75, 76, and 77 disclosed 31 completed studies which were not in the listing. (Agency/MACOM annual study programs identify studies completed in the previous fiscal year.) With the above adjustments to the DDC listing,

^{1/} Carrier studies can best be described as integrating devices which relate a group of separate studies. A carrier study is useful from a management perspective but is not a study. The term "umbrella" study is also used.

there were 462 studies as possible candidates for inclusion in the sample.^{2/}

b. The 462 studies were distributed by TASP category and means of accomplishment as shown in Figure A-1. Original plans called for each study in the sample to be evaluated by on-site interviews. Considering the time and resources available, ESG decided that no more than 80 studies could be evaluated. These 80 studies were drawn through a stratified random selection which retained the general category and in-house vs contract proportions of the study population. An additional requirement specified at least two studies in each cell. Figure A-2 shows the randomly drawn sample.

c. Thirty-one high-cost studies not included in the randomly drawn sample were identified. High cost was defined as more than 300,000 dollars for contract or 6 PMY for in-house studies. These were added to the group to be evaluated. Agencies and MACOMs were also asked to nominate up to three successful and three not so successful studies for evaluation. Thirty-four studies not in the random draw or high-cost categories were nominated. The evaluation sample totaled 145 studies.^{3/} Annex B contains a listing identifying each study by title.

^{2/} A complete dump of the DD Forms 1498 on 23 Apr 76 showed that the data bank was being policed. Of the 479 studies listed, only 30 were duplicates or carrier studies and 14 of the 31 previously not reported were included.

^{3/} Hereafter the use of the word "sample" refers to all 145 studies unless qualified with "random" or "high cost."

DISTRIBUTION OF STUDIES BY NUMBER
(FY 74 and FY 75)

Category	In-house	Contract	Total	In-house (%)	Contract (%)	Category Total (%)
1	20	13	33	61	39	7
2	49	29	78	63	37	18
3	64	43	107	60	40	23
4	87	25	112	78	22	24
5	66	40	106	62	38	23
6	<u>19</u>	<u>7</u>	<u>26</u>	73	27	<u>5</u>
Total	305	157	462	66	34	100

Figure A-1

STRATIFIED RANDOM SAMPLE

Category	In-house	Contract	Total
1	4	2	6
2	8	5	13
3	12	7	19
4	14	5	19
5	12	6	18
6	<u>3</u>	<u>2</u>	<u>5</u>
Total	53	27	80

Figure A-2

3. Data Collection. Mailed questionnaires were the primary instrument for collecting data on the 145 studies. Two types were developed: Type I for the individual study and Type II for the study process in general (see Appendixes A-1 and A-2). Both were to be executed by knowledgeable people within agencies and MACOMs. In addition to the questionnaires, major use was made of the data bank and facsimile printouts of each study's DD Form 1498. Available/locatable copies of study reports and related documents were used also.

a. Type I Questionnaires were mailed to sponsors and known users (other than sponsors) of the studies in the sample. In all, 178 questionnaires were sent, 33 studies being covered by two questionnaires. Addressees were allowed 4 weeks to complete the questionnaire. In the meantime, the study team began independently evaluating a group of studies from the sample in order to assess the adequacy of the replies and to verify questionnaire responses. The study team completed 34 study evaluations. ESG's evaluation consisted of examining study documents (reports, taskers, implementation instruments, and related materials) and contacting, primarily by phone, their users or preparers.

b. Type I Questionnaire returns totaled 161 or 90 percent of those mailed. They pertained to 134 out of the 145 studies in the sample (92 percent). ESG considered the response excellent. Before tabulating the data, ESG compared its independent evaluations with the corresponding questionnaires and found reasonably close agreement. Separate

sponsor and user assessments also tended to agree. Questionnaire data were augmented with data acquired from study reports, files, and the DD 1498s. Figure A-3 summarizes the individual study data acquisition effort.

INDIVIDUAL STUDY DATA ACQUISITION

Action	No. of Studies
178 Questionnaires Mailed	145
161 Questionnaires Returned	134
Independent Evaluation	34
Examination of Reports/Files	91
Examination of DD 1498	141

Figure A-3

c. Type II Questionnaires were mailed to agencies and MACOMs that develop annual study programs. The questionnaire sought to obtain information about program development procedures, past program experiences, cost effectiveness and benefits, and suggested improvements. Sixteen questionnaires were mailed, and 14 were returned. Appendix A-2 is a consolidated version of the questionnaire.

4. Resource Expenditures. The 462 studies completed in FY 74 and FY 75 required approximately 1,363 man-years of in-house effort and

DISTRIBUTION OF STUDIES BY COST
(FY 74 and FY 75)

Category	Number of Studies	In-house		Contract \$K	Contract & In-house \$K	Category In-house (%)	Category Contract (%)	Category as % of Total
		Man-years	Dollars (K) ^{a/}					
1	33	149.6	7,480.0	4,267.8	11,747.8	64	36	11.0
2	78	173.8	8,690.0	5,952.6	14,642.6	59	41	13.7
3	107	375.2	18,760.0	13,045.0	31,805.0	59	41	29.7
4	112	411.0	20,550.0	7,304.8	27,854.8	74	26	26.0
5	106	161.1	8,055.0	7,110.4	15,165.4	53	47	14.1
6	<u>26</u>	<u>92.5</u>	<u>4,625.0</u>	<u>1,257.7</u>	<u>5,882.7</u>	79	21	<u>5.5</u>
Total	462	1,363.2	68,160.0	38,938.3	107,098.3	64	36	100.0

^{a/} One man-year = \$50,000 (K).

Figure A-4

DISTRIBUTION OF SAMPLE BY COST

Category	Number of Studies	In-house		Contract \$K	Combined Cost \$K	In-house (%)	Contract (%)	Category as % of Total
		PMY	\$K ^{a/}					
1	13	95.10	4,755.0	2,779.5	7,534.5	63	37	13
2	22	71.40	3,570.0	3,579.0	7,149.0	50	50	12
3	34	286.90	14,345.0	4,664.8	19,009.8	75	25	33
4	37	226.50	11,325.5	4,339.0	15,664.5	72	28	27
5	26	46.80	2,340.0	1,751.5	4,091.5	57	43	7
6	<u>13</u>	<u>70.15</u>	<u>3,507.5</u>	<u>797.0</u>	<u>4,304.5</u>	81	19	<u>8</u>
Total	145	796.85	39,843.0	17,910.8	57,753.8	69	31	100

a/ One PMY = \$50K.

Figure A-5

b. Because there was disparity between data bank and questionnaires with regard to cost data, ESG elected to use the DD 1498 figures for the sake of consistency. Figures A-4 and A-5 are based on DD 1498 data.

c. Similarly, the category assignment of a particular study is based on the DD 1498. There appears to be a great deal of flexibility in designating the category to which a study will be assigned. One out of three responses assigned the study to a category other than that reported to the data bank. Examination of these studies' problems, purposes, and objectives disclosed that, indeed, it was quite likely that different people could legitimately specify different categories depending on their viewpoint or area of emphasis. Because the categories are not mutually exclusive, it did not appear useful or enlightening to pursue the question of category "level-of-effort." If the categories are to be used as a resource management device, there must be a strict method of assigning a study to a category.

d. Using the DD 1498 data for all 462 studies, the costs of the "average" study were calculated. Figure A-6 shows that there is not a great deal of difference between the average in-house and contract costs.

5. Identifying and Planning for Studies. The investment in studies is by no means insignificant. Who identifies the need for this commitment of resources? Throughout TASS's history, top management has been

concerned that Army resources were being used in some cases for studies that made little sense in terms of their relation to genuine Army problems and missions. Concern has also been expressed that the real critical issues may not be adequately studied. Part of the questionnaire addressed problem identification and planning for study efforts.

THE "AVERAGE" STUDY COST
(FY 74 and FY 75)

Category	In-house		Contract	Combined Average Cost	Number of Studies
	Man- years	Dollars (K) ^{a/}	Dollars (K)		
1	7.48	374.0	328.5	355.9	33
2	3.55	177.3	205.3	187.7	78
3	5.86	293.1	303.4	297.2	107
4	4.72	236.2	292.2	248.7	112
5	2.44	122.0	177.8	143.1	106
6	4.87	243.4	179.7	226.3	26
Overall	4.47	223.5	248.0	231.8	462

^{a/} One man-year = \$50K.

Figure A-6

a. Origins of study requirements. ESG thought it important to know the extent to which study sponsors are told (or asked) to undertake particular studies. Figure A-7 shows the findings based on the Type I

Questionnaire, question 12. Although the proportions pertain to the sample and may not be entirely transferable to studies in general, it seems safe to say that a significant proportion of an agency- or MACOM-sponsored study program is devoted to problems or issues which originate from above. This result was compared with the responses to questions 13 and 17 of the Type II Questionnaire. Question 13 asked how priorities are assigned, and 17 asked for the most frequent cause of deferring or terminating a study. Responses to these two questions can be summarized simply as "higher headquarters' requests." Highest priority is given to requests from above and causes deferral and/or termination of programmed studies.

ORIGINS OF STUDY REQUIREMENTS

Originator	DA Staff		MACOM		Total TASP	
	%	Number	%	Number	%	Number
DOD/JCS	10.7	8	4.6	3	7.8	11
CSA/SA	16.0	12	13.6	9	14.9	21
Staff Agency	66.6	50	27.3	18	48.3	68
MACOM	1.3	1	48.5	32	23.4	33
Other	2.7	2	3.0	2	2.8	4
Unsolicited Proposal	<u>2.7</u>	<u>2</u>	<u>3.0</u>	<u>2</u>	<u>2.8</u>	<u>4</u>
Total	100.0	75	100.0	66	100.0	141

Figure A-7

b. Agency/MACOM study program development. Questions 7, 9, and 10 of the Type II Questionnaire addressed program development. The responses are summarized as follows.

(1) The requirements of AR 5-5 are followed. Most agencies and MACOMs have augmented the procedures of the AR with local supplementary instructions and procedures.

(2) SPG has marginal to important influence on program focus but is not a decisive factor.

(3) Agency/MACOM perception of its mission and its function responsibilities is the most important factor in determining study program content.

c. Interpretation. Reflecting on the responses noted above and the study program development process specified in TASS, the following observations were made.

(1) This deference to higher headquarters study requirements implies that the problem or issue from that source is of higher priority. However, the responses tend to show that priority is related more to who has the problem than to what is the problem. ESG is not in a position to say that this is good or bad, but suggests later that the authority-problem relationship can be exploited to ensure successful completion and use of studies.

(2) SPG does not appear to serve its intended purposes. ESG thinks it is not sufficiently discriminatory to be a useful yardstick

for evaluating the appropriateness of agency/MACOM study programs. Because the SPG is developed from the bottom up, it essentially reflects local mission and function issues--making it easy, should the need arise, to justify almost any study based on identity with an SPG priority area. Within and among the priority areas, there are no orders of importance (e.g., priority of the priority areas). In short, it is still difficult to translate the SPG into a comprehensible set of specific critical decisions or problems requiring study. It is not surprising that most people queried consider the SPG marginally important in providing focus to their annual study programs.

(3) From an agency/MACOM perspective, the study programs seem properly oriented toward solving mission and function problems. For their own generated programs, agencies and MACOMs have implemented systems for establishing priorities based on the importance of the issue, resources available, and the guidance of the executive or commander. Several of these systems are formally established and documented.

6. Study Results. One goal of this undertaking was to determine if studies achieved what they set out to do. ESG also wanted to determine characteristics associated with successful and unsuccessful studies. Respondents were asked for their opinions about study execution and results.

a. As shown in Figure A-8, 45 percent of the sample (64 studies) failed to achieve one or more of their objectives. Respondents were asked to indicate why objectives were not met (question 29, Type I Questionnaire). In general, there were multiple reasons for not meeting a particular objective. Following are the most frequently mentioned causes.

(1) Time or resources did not permit covering all objectives. Too many objectives.

(2) Objective was to develop a method, system, or model for some activity which turned out to be ill-defined or nonstable (i.e., undergoing rather rapid change).

(3) The DA Staff and CONUS reorganization primarily affected studies which had been initiated or sponsored by elements which did not survive the reorganization. In some cases, the problem (or the need) apparently disappeared as a result of the reorganization.

(4) There were changes within the sponsoring organization (action officers) and study agency. Such changes affect the perceived need for or focus of the study.

(5) As the study progresses, the problem proves less tractable than originally thought or the available analytic tools are found unsuitable.

OBJECTIVES MET

Objectives	Percent	Number
All Met	55	77
More Than Half Met	30	42
More Than Half Not Met	9	13
None Met	<u>6</u>	<u>9</u>
Total	100	141 ^{a/}

^{a/} Returned were 134 questionnaires. DD 1498s were the source of data for seven studies. Four studies were not included because of inadequate information.

Figure A-8

b. In a later question (question 39, type I Questionnaire), respondents were asked to indicate what should have been done differently to improve the success of their study. ESG wanted to ascertain, among other things, their opinions regarding the weaknesses in the execution of the particular study. Not all people responded to this question. Of the 161 questionnaires returned, 96 pertaining to 89 studies answered question 39. The responses, however, are perceptive. The narrative responses are summarized as follows.

(1) Improvements related to planning and programing in the broad sense were most frequently mentioned. A few examples of such statements are: "should have been done earlier;" "should have allowed

more time and/or resources;" "should not have changed their minds;" and so on, all related, we believe, to planning and programing.

(2) The second most frequently mentioned improvement had to do with stability in proponency and/or lack of interest "where it counted." In some respects, the lack of demand or motivation to produce was combined with changes in study direction due to proponent changes.

(3) Other types of responses did not fall into any particular pattern. They ranged from "would not do it at all" to "no change."

7. Use of Study Results. Questions 32, 33, 34, and 37 of the Type I Questionnaire and question 11 of the Type II Questionnaire solicit information about uses and users of study results. Figure A-9 shows how studies were used. Since studies can have multiple uses, they were classed according to the use which most closely matched their original purpose. Classification was a study team judgment based on questionnaire and DD 1498 interpretation.

a. The 19 studies that were not used included three for which there was insufficient information to say with any confidence that they were or were not used. ESG thought that grouping them with Not Used would be the safest approach. Nine were not used because they either achieved no objectives or were terminated before completion. Reasons for nonuse of the others identified by the respondents were:

(1) Problem passed with time or changed significantly.

(2) Study a complete failure or suffered from unconvincing methodology/logic.

(3) Departure of individuals who expressed the need.

(4) Study achieved its objectives, but the implementation has not been approved.

(5) Insufficient/unacceptable input data; process has changed.

USE OF STUDY RESULTS

Type Use	Percent	Number
Direct Input to Decision/Problem Solution	42.0	59
Input to Planning Process	17.0	24
Input to Another Study (Phase)	14.0	20
Reference Data/Planning Factor	13.5	19
Not Used	<u>13.5</u>	<u>19</u>
Total	100.0	141

Figure A-9

b. The last cause of nonuse is probably the most important because large-scale model/simulation, method improvement, and process standardization type studies are about half of the Not Used category. These undertakings are usually among the most expensive and time consuming. The sample information suggests that before undertaking such

efforts, one should ensure that the system or process is tractable and that the inputs essential to the product do exist or are sure to be developed.

c. In order to determine the necessity/criticality of the study results and use, ESG asked (question 40, Type I Questionnaire) what the impact would have been if the study had not been done. The response to the question was narrative so some interpretation was required. ESG defined significant impact as whenever a study was widely used and/or the results were essential input to a decision or problem solution. Figure A-10 relates the impact with achievement of objectives. The marginal impact category included studies of local interest. It must be noted, however, that the impact at the local level, in most cases, was significant. The sponsor/user and ESG team could not form opinions on the impact of nine studies. Some of these were planning factor and reference document studies. The "no impact" response for the studies which achieved no objectives is self-explanatory and reasonable. The other no-impact responses were somewhat surprising. The respondents, however, thought there would have been no impact even if the studies had not been done. Such studies were not used or they were not essential to a decision or problem solution. In four of the cases, the respondents felt the decision had already been made and the study was superfluous.

IMPACT OF STUDIES

Objectives	Impact			
	Significant	Marginal	None	Unknown
None Met	--	--	9	--
Most Not Met	1	6	4	2
Most Met	25	11	3	3
All Met	<u>52</u>	<u>18</u>	<u>3</u>	<u>4</u>
Total	78	35	19	9

Figure A-10

8. Benefits. Individually and overall, the benefits from studies are extremely difficult to specify in concrete terms. Questions 35 and 36 of the Type I Questionnaire and 18, 19, and 20 of the Type II Questionnaire pertained, respectively, to individual study and overall program benefits. Respondents generally felt that a cost-effectiveness or cost-benefit approach was inappropriate. While all felt that studies were worthwhile, there was little in the way of measurable value associated with the feeling. The responses were broad qualitative statements in about 85 percent of the cases. We interpreted "not applicable" responses to mean that the respondent felt that the measurement of benefits for his particular study was inappropriate. Because benefits were not well defined in the response, ESG used judgment to determine and categorize benefits for each study. The judgment was influenced by "who benefited," how the study was used relative to decisionmaking/problem

solving, and the nature of the impact of using the study results. Figure A-11 shows the findings that pertain to benefits.

BENEFITS		
Type	Percent	Number
Calculable Cost Effectiveness	16	22
Significant	52	73
Low	21	30
None	<u>11</u>	<u>16</u>
Total	100	141

Figure A-11

a. Cost-effectiveness figures can be spurious. In order to make such calculations, one must assume the degree of influence that the study had in decisionmaking/problem solving. (It is practically impossible to recreate the original decisionmaking/problem-solving environment.) Also, in the absence of other information, one must assume what decision/solution would have been selected without the study. In effect, the assumptions determine the cost-effectiveness rating--a very unsatisfactory state of affairs. Nevertheless, 16 percent of the studies were applicable to decisions/problems which resulted in quantifiable (in dollars) results. These studies were about evenly split between those having functional and Army-wide impact.

b. Significant benefit is a judgment. A study was rated as having significant benefit if it was implemented/used as intended, resulted in officially recognized improvements, or had widespread impact. Benefits usually cannot be specified quantitatively, and the actual measure frequently must wait the test of time. Overall, significant benefit suggests very attractive returns on resource investment.

c. Low-benefit rating is also judgmental. These studies had limited impact (even though used), had obvious indirect value, and/or are not currently used but are salvageable. These are considered marginal returns on resource investments.

d. No-benefit rating means that, based on questionnaire responses and ESG's research, the study efforts were of no identifiable direct or indirect value.

e. Indirect benefits from study undertakings are probably best demonstrated by the capacity and capability of the Army's in-house study resources. The response to question 21, Type II Questionnaire, indicates that the in-house resources are equal to or better than contract. From an overall perspective, none of the data comparisons suggest any other assessment. It is doubtful that current levels of expertise would exist if the Army had not learned from past efforts. In addition to learning (both from success and failure), other indirect benefits include reusable study tools (methods, models, systems) and many unintended spinoff uses

of study results. A spinoff use would be a study now used as a reference/ data source which originally was used in a one-time decision or problem solution.

f. Expected benefits do not seem to drive decisions to commit resources to a study. As indicated earlier, the position and authority of the element requiring the study seems to be the most important determinant of whether or not a study will be undertaken. More than one respondent indicated that some problems/decisions will be addressed, whether or not we call them studies, in executing their mission and function responsibilities. The benefit from study support to planning, readiness, equipment, organization, and so on, they argue, must be ultimately tested on the field of battle.

9. Summary Observations.

a. When interpreting the previous discussion and the questionnaires in the appendixes, one must realize that the data are based on opinions. ESG believes that the responses are sincere and based on the best available information. Time for completing the questionnaires and performing the synthesis and analysis was limited. ESG did not try to "audit" any study or judge the quality of the study process. It seems apparent, however, that studies which are used widely do achieve useful results.

b. There are certain issues that were not fully developed in specific terms. They are:

(1) Do studies adequately address the critical Army issues?

Even in retrospect, it is not clear which were the critical issues in FY 74 and FY 75. Therefore, ESG could not determine whether these issues were studied. The study team became convinced that the quality and precision of guidance--the critical issue forecast--are very important in this area.

(2) Resource allocations, in-house vs contract, do not necessarily reflect the current situation. FCRC affiliations and level-of-effort arrangements existed when most of the contract and contract/in-house studies completed in FY 74 and FY 75 were undertaken. None of the data supports a strong position regarding how resources should be split. The findings indicate that any required resource adjustments should be made on a case-by-case basis considering the issue, need, and most timely means of accomplishment. A workable priority system is fundamental to such a strategy.

c. The accuracy of the data is questionable in many areas. Because the reporting requirements are relatively new (FY 74), some inconsistencies are to be expected. But if study management wishes to use the studies' portion of the DDC data bank for program evaluation and individual study evaluation, the data and reporting discipline needs to be improved. Unless the data are recorded in a useful form as events occur (i.e., completion, implementation, use, benefits), it is difficult to recall the important information. People move frequently and the organizational memory is poor in many areas of study information.

LAST PAGE OF ANNEX A

APPENDIX A-1

QUESTIONNAIRE: ARMY STUDIES--RESULTS, USES, AND BENEFITS

TYPE I

```
***** EVALUATION TEAM USE ONLY *****
*
*
* Agency/Command: 178 Mailed; 161 Returned
*
* Category: TASP: _____(0-1)
*
* Sample: _____(0-2)
*
* Method: _____(0-3)
*
* Interview: _____
*
* Analyst: _____
*
*****
```

QUESTIONNAIRE: ARMY STUDIES--RESULTS, USES, AND BENEFITS

TYPE I

INTRODUCTION

The purpose of this questionnaire is to aid in gathering data for use in evaluating the results, uses, and benefits of Army studies. Use of this questionnaire makes it possible for a larger number of studies to be considered than would otherwise be practical. It also provides the potential for more parties to participate.

Questionnaire conceptualization and design is difficult. This particular questionnaire covers a complex and diverse subject and activity. The questions have been phrased as precisely as possible to avoid semantic difficulties. To help ensure validity and minimize nonresponse, followup telephone calls will be made to check for questionnaire receipt and to clarify any questions.

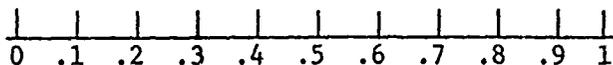
Two questionnaires are being distributed. This questionnaire, Type I, is designed for the individual study. The Type II questionnaire is concerned with studies and the study process in general at the staff agency and major command level and is not applicable to the individual study.

INSTRUCTIONS

As many questions as possible have been designed to be answered by marking one or more responses to each question. However, in some instances

the available choices may not quite reflect the properties of the study or activity being characterized. Respondents are requested to mark the most relevant response, then to make any written commentary modifying the answer. Space for comments is provided following each question.

Following certain questions there is a confidence scale. If you are certain of your answer, mark an "X" at the extreme right of the scale. Please mark your confidence level for all questions where the scale is indicated.



CONFIDENCE LEVEL

On the scale of 0-1, your answers will be interpreted as follows:

Virtually Certain	.9 to 1
High	.6 to .9
Middle	.3 to .6
Low	0 to .3

Responses to some questions undoubtedly will be extracted from existing documents of various kinds. The respondent may answer by reference to a page and paragraph in the study documentation. For example, rather than entering the study objectives, you may reference the study plan or other document in which the objectives are stated. THIS MAY ONLY BE DONE, HOWEVER, IF THE STUDY DOCUMENTS ARE APPENDED TO THE COMPLETED QUESTIONNAIRE.

It is important that the name, office location, and phone number of the individual or group completing this questionnaire be entered. Followup and feedback actions will flow through that individual or group.

* * * * *

1. RESPONDENT INFORMATION:

NAME: _____

RANK, TITLE, POSITION: _____

OFFICE SYMBOL AND PHONE NO: _____

ROLE IN THIS STUDY: _____

2. STUDY TITLE: _____

(Indicate the full title and any short titles or acronyms)

3. The Army Study Program (TASP) Category. Indicate one of the six TASP categories for this study.

3-1 MANPOWER AND PERSONNEL	<u>12</u>
3-2 CONCEPTS AND PLANS	<u>25</u>
3-3 OPERATIONS AND FORCE STRUCTURE	<u>32</u>
3-4 LOGISTICS	<u>36</u>
3-5 SCIENCE AND TECHNOLOGY	<u>25</u>
3-6 MANAGEMENT	<u>11</u>

4. How was the study accomplished?

4-1 IN-HOUSE--AD HOC	<u>28</u>
4-2 IN-HOUSE--STUDY AGENCY	<u>56</u>
4-3 CONTRACT--FCRC	<u>17</u>
4-4 CONTRACT--NON-FCRC	<u>11</u>
4-5 PART IN-HOUSE, PART CONTRACT	<u>23</u>
4-6 OTHER GOVERNMENT AGENCY	<u>3</u>
4-7 OTHER (SPECIFY _____)	<u>3</u>

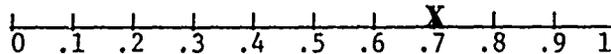
5. Identify the study agency or firm indicated in the previous question.

(If it was an ad hoc group, specify the chairing organization.)

NAME: _____

6. Total Cost. Care must be taken to ensure that cumulative total costs are reported if the study spanned more than one fiscal year. State in-house costs in professional man-years to the nearest tenth. State contract costs in dollars. Include costs for studies terminated prior to completion.

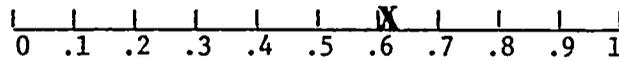
6-1 IN-HOUSE PMY	<u>626</u>
6-2 CONTRACT DOLLARS	<u>\$19,527,000</u>



CONFIDENCE LEVEL

7. Source of Contract Funds. Indicate the program element for RDTE funds.

7-1 OPERATIONS AND MAINTENANCE, ARMY	<u>11</u>
7-2 RDTE PROGRAM ELEMENT	<u>31</u>
7-3 OTHER (SPECIFY _____)	_____
7-4 UNKNOWN	<u>9</u>



CONFIDENCE LEVEL

8. Duration of the Study.

8-1 START DATE	_____
8-2 COMPLETION/TERMINATION DATE	_____

9. Study sponsor and point of contact (POC) and, for contract studies, the contracting officer's representative (COR).

AGENCY/COMMAND	_____
SPONSOR POC NAME	_____
POC OFFICE	_____
POC TITLE/POSITION	_____
CONTRACTING OFFICER REP	_____
COR OFFICE	_____

10. Study Advisory Group (SAG). The study sponsor forms a SAG and designates a SAG chairman or designates a study manager if only one agency is involved. Indicate the action(s) taken by the sponsor for this study.

10-1 SAG APPOINTED	<u>63</u>
10-2 SAG CHAIRMAN DESIGNATED	<u>63</u>
10-3 STEERING COMMITTEE FORMED	<u>12</u>
10-4 STEERING COMMITTEE CHAIRMAN DESIGNATED	<u>12</u>
10-5 STUDY MANAGER DESIGNATED	<u>30</u>
10-6 OTHER MANAGEMENT TECHNIQUE USED	<u>36</u>

(SPECIFY: Generally a group or committee similar to a SAG or steering committee.)

11. If a SAG was appointed, list the chair and member agencies/commands.

CHAIR As few as three to as many as 20 members average

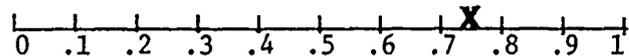
MEMBERS membership is 6.

12. Origin of Study Requirement. The sponsor may not have originated the requirement. For example, DOD or JCS may specify a study requirement which is subsequently sponsored by an Army Staff agency or major command.

12-1 DA AGENCY	<u>68</u>
12-2 MAJOR COMMAND	<u>33</u>
12-3 CSA/SA	<u>21</u>
12-4 JCS	<u>3</u>
12-5 DOD	<u>8</u>
12-6 UNSOLICITED PROPOSAL	<u>4</u>
12-7 OTHER	<u>4</u>

OFFICE IDENTITY: _____

(SAUS-OR; ASD(I&L); J5; ODCSOPS; etc)



CONFIDENCE LEVEL

13. Indicate what type of directive, tasker, or action initiated the study.

13-1 HQDA LETTER	<u>28</u>
13-2 COMMAND LETTER	<u>22</u>
13-3 DF	<u>17</u>
13-4 VERBAL REQUEST	<u>19</u>
13-5 CSM	<u>14</u>
13-6 OTHER	<u>41</u>

(SPECIFY: Approved Contract 23
Required by regulation or Mission 18.)

14. What specific area or decision problem does this study address?

Do not repeat the TASP category (question 3). Choose up to three areas which best fit your study from the following list, indicating the order of your choice. You may add comments qualifying your choices.

14-1	SYSTEMS EFFECTIVENESS	<u>53</u>
14-2	REQUIREMENTS (MATERIEL, FORCES)	<u>47</u>
14-3	CAPABILITIES (MATERIEL, FORCES)	<u>32</u>
14-4	JUSTIFICATION OF PROGRAMS	<u>18</u>
14-5	DESIGN/PERFORMANCE EVALUATION	<u>26</u>
14-6	INPUT TO CYCLIC PLANNING PROCESS	<u>29</u>
14-7	ORGANIZATION EVALUATION/DEVELOPMENT	<u>17</u>
14-8	SUPPORT OF OPERATIONAL TESTING	<u>7</u>
14-9	DOCTRINE EVALUATION/DEVELOPMENT	<u>12</u>
14-10	POLICY DEVELOPMENT/ASSESSMENT	<u>18</u>
14-11	METHODS IMPROVEMENT	<u>38</u>
14-12	THREAT ANALYSIS	<u>6</u>
14-13	COST AND OP EFFECTIVENESS ANALYSIS	<u>20</u>
14-14	NET ASSESSMENT	<u>2</u>
14-15	MODEL DEVELOPMENT/IMPROVEMENT	<u>31</u>
14-16	INPUT TO OTHER STUDIES	<u>26</u>
14-17	PROGRAM EVALUATION	<u>12</u>

NOTE: Questions 15-17 may be answered conveniently by reference to documents if you append such documents to the questionnaire.

15. Study Purpose. Study directives, taskers, contracts, and plans include a statement of the purpose for the undertaking. Indicate the purpose as specified at the outset of your study

PURPOSE:

16. Problem Statement. Specify the original statement of the problem addressed and any restatements or refinements made in the course of study execution.

PROBLEM STATEMENT:

17. Specific Study Objectives. Study objectives reflect the depth and scope of attacking the problem. They establish goals for the particular study effort. List the objectives which were established for your study.

OBJECTIVES:

Number of objectives ranged from 1 to 11. Examination of 91 study reports disclosed that each objective may be broken down into 1 or more subobjectives and/or essential elements of analysis.

18. Methodology. The methods to be used in accomplishing a study are sometimes specified by directive, tasker, or contract. For example, a particular model (e.g., ATLAS), technique (e.g., random survey), or analytical approach (e.g., input-output) could be specified. In other cases the study team selects a recognized methodology or develops its own. Indicate which of the following apply to your study.

18-1 METHODOLOGY SPECIFIED	<u>28</u>
18-2 EXISTING METHODOLOGY USED	<u>106</u>
18-3 NEW METHODOLOGY DEVELOPED	<u>41</u>

40 Qualified their response by stating that no particular model or methodology was used, rather process was plain research and analysis.

34 Checked more than one response.

19. List the names of all models, techniques, or analytical approaches used in this study.

20. Data Sources and Validity. Where did the data for this study come from? List the sources in as complete a fashion as possible. Describe any checks which were made to insure accuracy, consistency, and overall quality of the data.

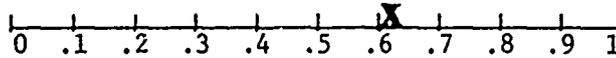
DOD and Service Records and Files
Intelligence Planning Documents
Exercise Plan of Analysis
Official Documents
Provided by Sponsor
DPPF, POM, JSOP, etc
War Games
R&D Results
Experimental Data

No particular validation effort--"are officially approved planning factors."

21. Number of Briefings. Indicate the total number to date based on this study.

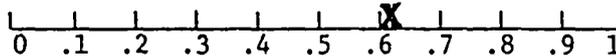
21-1 NUMBER OF BRIEFINGS: UNKNOWN 47

21-2 NUMBER OF BRIEFINGS: (SPECIFY) 94 (Ranged from 1 to 200; average number was 9)



CONFIDENCE LEVEL

22. Level and Purpose of Briefing. By level of briefing we refer to organizational level. Typical purposes could be information, in-process review, and decision; or you may specify a principal topic. List all levels at which this study was briefed and indicate purpose.

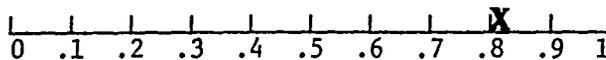


CONFIDENCE LEVEL

BY TO PURPOSE OR PRINCIPAL TOPIC DATE

Most were able to indicate that briefings were given but were generally not sure of the dates or the exact total number of briefings.

23. If your study was terminated prior to completion, describe the conditions, circumstances, and reasons for termination. Indicate WHO made the decision to terminate the study. (Complete the remainder of the questionnaire even if your study was terminated.)



CONFIDENCE LEVEL

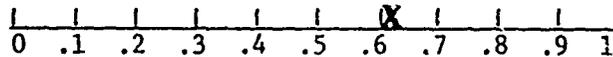
WHO TERMINATED: Sponsor, usually upon recommendation from SAG or study manager.

- WHY:
1. Higher priority.
 2. Consolidation with another study.
 3. Not a study but routine staff action which is a continuous function.
 4. Not a study--falls under ADP-AR 18-1.
 5. Poor progress.

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26. Publicity of Study Results. In addition to briefings indicated in 21 and 22, which of the following apply to this study?

26-1 SUBJECT OF SYMPOSIUM PAPER	<u>31</u>
26-2 ABSTRACTED IN MILITARY PERIODICALS	<u>21</u>
26-3 CLASSIFICATION PREVENTED PUBLICITY	<u>31</u>
26-4 PUBLICITY NOT SOUGHT	<u>42</u>
26-5 ABSTRACTED IN DDC, DLSIE, ASDIRS	<u>53</u>
26-6 REPORT IN DDC, DLSIE, ASDIRS	<u>62</u>



CONFIDENCE LEVEL

27. Distribution of Study Documentation. This is meant to include the study report and, if applicable, model and other methodology documentation and user's guide. Describe the distribution made for your study. Identify recipients and number of copies distributed. Explain any limits which were placed on the distribution and identify who imposed the limitations. (You may attach a copy of the distribution list.)

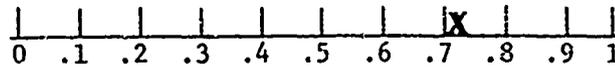
DESCRIBE:

LIMITS:

YES (EXPLAIN) 3 Sponsor directed no distribution.
NO 138 Other than security classification.

28. Study Achievements. Referring to the objectives of this study, choose the one statement which in your opinion best describes the study results. Consider "most" to mean more than half.

28-1 NO OBJECTIVES MET	<u>9</u>
28-2 ALL OBJECTIVES MET	<u>77</u>
28-3 MOST OBJECTIVES MET	<u>42</u>
28-4 MOST OBJECTIVES NOT MET	<u>13</u>



CONFIDENCE LEVEL

30. Approvals, Disapprovals, and Staffing. Describe the channels through which the results of this study were staffed to obtain approval and concurrence. Indicate the organization, level, and title or position of those who could approve or disapprove the final recommendations.

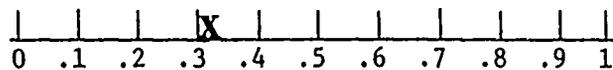
DESCRIBE:

Usual chain of command, sponsor, and SAG/steering group channels.

31. Approvals, Disapprovals, and Staffing. This question is similar to the previous question. In this case indicate what types of decisions were made (i.e., approval, disapproval, concurrence, or nonconcurrence). Specify the title and/or position of the decisionmaker and the date of the decision.

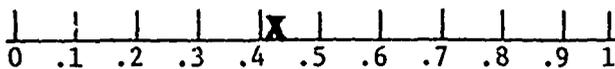
SPECIFY: WHO TYPE WHEN

Most found it difficult to reconstruct these events.



CONFIDENCE LEVEL

32. Based upon the information available to you, list all agencies, commands, or other activities that have or are using the results of this study.



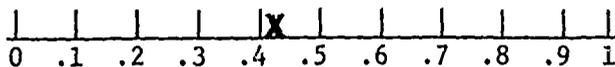
CONFIDENCE LEVEL

LIST:

Except for their own agency/command, few were confident in identifying others who used or are using particular study results.

33. Are there any agencies, commands, or other activities that you feel could use the results of this study but who, to the best of your knowledge, do not?

33-1 NO 83 (only 111 answered
this question)
33-2 YES (LIST) 28



CONFIDENCE LEVEL

34. Describe how the results of this study are being used or could be used by those you have identified in 32 and 33. Cite a "for instance" for each different use.

DESCRIBE:

Uses were identified in relation to the purposes of the particular study. Responses were categorized as follows:

Direct input to decision/problem solution	59
Input to follow-on study	20
Input to planning systems or processes	24
Reference data or planning factors	19
Not used	19

35. Benefits From This Study. Describe the benefits that you feel were realized because this study was done. Include direct and indirect benefits. Indirect benefits are such as professional development, training of study participants, unintended identification of other problem areas, creation of contingency study capability, and methodology state-of-the-art advancement. Indicate which benefits are auditable. Describe the benefits and recipients as precisely as possible.

DESCRIBE:

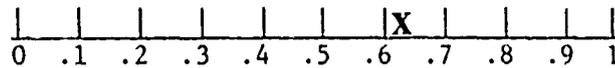
Respondents had considerable difficulty in identification of benefits in precise terms. Phrases such as significant, widespread, Army-wide, etc were used. Only eleven thought benefits were "auditable." Indirect benefits most frequently mentioned were related to increased knowledge and capabilities at all levels (study agency and staff) to approach and solve problems whether they are studies or not.

36. Measure of Benefits. Specify what you regard as a reasonable measure of the benefits and success of this study. Here you are asked to attach a value to the benefits.

SPECIFY:

Qualitative Description:	40
Dollar Value Indicated:	22
Cannot Estimate:	79

37. Influence on Decisions. Do you know of any decisions that were made using the results of this study as input (directly or indirectly) to the decisionmaking process? List and describe these decisions.



CONFIDENCE LEVEL

LIST:

77 responded that studies were used directly or indirectly in some decision.

49 stated "Unknown."

15 stated "Not Applicable."

38. In your opinion what is the most important decision or problem solution that this study has influenced?

SPECIFY:

93 responded to this question, 69 indicating a specific decision (direct or indirect); the remainder specified a general problem area (i.e., force structuring) where results were used.

39. Knowing what you know now and if this study was just beginning, what things do you feel should be done differently to improve its success and usefulness?

LIST:

"More time."

"Better planning."

"Start sooner."

"Get command interest early-on."

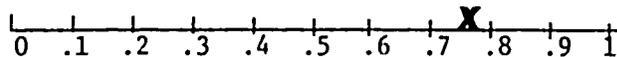
"Nothing."

"Don't do the study."

"More publicity."

40. What would have been the impact if this study had not been done?

Describe as best you can the nature and extent of the impact.



CONFIDENCE LEVEL

No Impact:	19
Low Impact:	35
Significant Impact:	78
Unknown:	9

41. You are asked to provide copies of all pertinent literature from the files for this study. Listed below are the items we are most interested in obtaining. Should you be unable to forward them with this completed questionnaire, indicate whether they exist or not, their location, classification, and explain how we must proceed to obtain them.

41-1 DIRECTIVE, TASKER, CONTRACT

41-2 RACS

41-3 STUDY PLAN

41-4 BRIEFING SCRIPTS

41-5 SAG MEETING MINUTES

41-6 STUDY REPORT

41-7 MODEL/METHOD DOCUMENTATION

41-8 APPROVAL/IMPLEMENTATION DOCUMENTS

42. Respondent Commentary. You may add comments relative to your study, studies in general, the Army Study Program, the merits of this endeavor, or any pertinent subject.

LAST PAGE OF APPENDIX A-1

A-1-25

APPENDIX A-2

QUESTIONNAIRE: ARMY STUDIES--RESULTS, USES, AND BENEFITS

TYPE II

```
***** EVALUATION TEAM USE ONLY *****
*
*
* Agency/Command: 16 Mailed; 14 Returned
*
* Level Code:
*
* Follow-up:
*
* Data Code:
*
* Analyst:
*
*****
```

QUESTIONNAIRE: ARMY STUDIES--RESULTS, USES, AND BENEFITS

TYPE II

INTRODUCTION

The purpose of this questionnaire is to aid in gathering data for use in evaluating the results, uses, and benefits of Army studies. Use of this questionnaire makes it possible for more parties to participate. It permits members of the Army study community to describe, characterize, and assess their own study activities.

Questionnaire conceptualization and design is difficult. This particular questionnaire covers a complex and diverse subject and activity. The questions have been phrased as precisely as possible to avoid semantic difficulties. To help ensure validity and minimize nonresponse, followup telephone calls will be made to check for questionnaire receipt and clarify any questions.

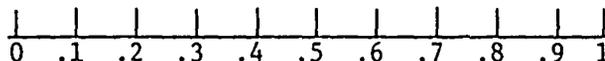
Two questionnaires have been distributed. This questionnaire, Type II, is concerned with studies and the study process in general at the staff agency and major command level. Type I is designed for the individual study and those involved with a particular study.

INSTRUCTIONS

As many questions as possible have been designed to be answered by marking one or more responses to each question. However, in some

instances the available choices may not quite reflect the properties of the subject or activity being characterized. Respondents are requested to mark the most relevant response, then to make any written commentary modifying the answer. Space for comments is provided following each question.

Following certain questions there is a confidence scale. If you are certain of your answer mark an "X" at the extreme right on the scale. Please mark your confidence level for all questions where the scale is indicated.



CONFIDENCE LEVEL

On the scale of 0-1, your answers will be interpreted as follows:

Virtually Certain	.9 to 1
High	.6 to .9
Middle	.3 to .6
Low	0 to .3

Responses to some questions undoubtedly could be extracted from existing documents of various kinds. Respondents may answer such questions by reference to the documents PROVIDING the documents are appended to the completed questionnaire.

RESULTS AND USE OF ARMY STUDIES

I. GENERAL

1. Purpose. This study assesses the results, uses, and benefits of Army studies to be considered by the Director of Management, Office of the Chief of Staff of the Army (OCSA), in decisions and actions regarding the directions of current and future Army study efforts.

2. Scope.

a. This report is based on analysis of a 145-study sample selected from over 460 studies completed or terminated during FY 74 and FY 75. In-house and contractor studies in all The Army Study Program (TASP) categories have been included.

b. The evaluation of each study did not include a peer review of study contents or procedure or any attempt to duplicate the results. Rather, the analysis concentrated on results of the studies in terms of the objectives and the uses made of these results. Mailed questionnaires served as the primary data-collection instrument.

c. Both tangible and intangible benefits are assessed relative to study purposes, issues addressed, achievements, and uses in the limited context of individual study evaluation. The much broader question of whether individual study goals and objectives are appropriate is considered a part of total program evaluation and is given much less attention in this study. (However, insights related to program evaluation have been supplied to the Director of Management in a separate, informal paper.)

It is also important that the name, office location, and phone number of the individual or group completing the questionnaire be entered. Followup and feedback actions will flow through that individual or group.

* * * * *

1. RESPONDENTS INFORMATION:

NAME: _____

RANK, TITLE, POSITION: _____

AGENCY/COMMAND: _____

OFFICE SYMBOL AND PHONE NO: _____

2. Length of time you have been working with or a part of the Army study system.

More than 7 years--4; 4 to 7 years--2; 2 to 4 years--2; _____

1 to 2 years--3; Less than 1 year--3. _____

3. Study Coordinators serve as their agency or command point of contact for outside agencies on all study matters. List the information concerning your agency/command and study coordinator.

STUDY COORDINATOR NAME: _____

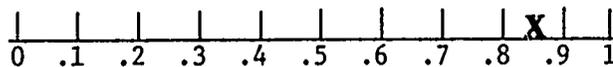
PHONE NO: _____

OFFICE SYMBOL: _____

4. There are six categories of Army studies. What proportion of your total agency/command study resources expended during FY 74 and FY 75 was devoted to each? Develop proportions using professional man-years (PMY) for in-house and dollars for contract.

PROPORTION OF RESOURCES:

	In-house		Contract	
	FY 74	FY 75	FY 74	FY 75
4-1 MANPOWER AND PERSONNEL	<u>11.5%</u>	<u>10.5%</u>	<u>10.1%</u>	<u>10.3%</u>
4-2 CONCEPTS AND PLANS	<u>20.3%</u>	<u>18.6%</u>	<u>22.5%</u>	<u>17.7%</u>
4-3 OPERATIONS AND FORCE STRUCTURE	<u>24.8%</u>	<u>26.2%</u>	<u>24.1%</u>	<u>21.1%</u>
4-4 LOGISTICS	<u>23.6%</u>	<u>21.9%</u>	<u>18.9%</u>	<u>19.2%</u>
4-5 SCIENCE AND TECHNOLOGY	<u>9.6%</u>	<u>10.0%</u>	<u>11.4%</u>	<u>11.7%</u>
4-6 MANAGEMENT	<u>10.2%</u>	<u>12.8%</u>	<u>13.0%</u>	<u>20.0%</u>
	100.0%	100.0%	100.0%	100.0%

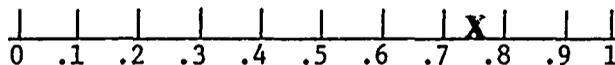


CONFIDENCE LEVEL

5. This question is similar to the previous question. In this case list the proportion of studies accomplished by in-house or contract means by study category.

PROPORTION OF STUDIES:

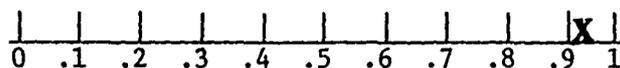
	In-house		Contract	
	FY 74	FY 75	FY 74	FY 75
5-1 MANPOWER AND PERSONNEL	<u>71 %</u>	<u>63 %</u>	<u>29 %</u>	<u>37 %</u>
5-2 CONCEPTS AND PLANS	<u>68 %</u>	<u>72 %</u>	<u>32 %</u>	<u>28 %</u>
5-3 OPERATIONS AND FORCE STRUCTURE	<u>57 %</u>	<u>64 %</u>	<u>43 %</u>	<u>36 %</u>
5-4 LOGISTICS	<u>72 %</u>	<u>83 %</u>	<u>28 %</u>	<u>17 %</u>
5-5 SCIENCE AND TECHNOLOGY	<u>59 %</u>	<u>66 %</u>	<u>41 %</u>	<u>34 %</u>
5-6 MANAGEMENT	<u>70 %</u>	<u>71 %</u>	<u>30 %</u>	<u>29 %</u>



CONFIDENCE LEVEL

6. There are several ways to conduct a study. Indicate those your agency/command has used in FY 74 and FY 75 and is currently using.

	<u>FY 74</u>	<u>FY 75</u>	<u>CURRENT</u>
6-1 AGENCY/COMMAND STUDY AGENCY	<u>8</u>	<u>9</u>	<u>9</u>
6-2 AGENCY/COMMAND AD HOC GROUP	<u>10</u>	<u>9</u>	<u>9</u>
6-3 ARMY STUDY AGENCY (NOT YOURS)	<u>7</u>	<u>10</u>	<u>9</u>
6-4 CONTRACT	<u>10</u>	<u>9</u>	<u>8</u>
6-5 OTHER (SPECIFY) _____	<u>0</u>	<u>0</u>	<u>0</u>



CONFIDENCE LEVEL

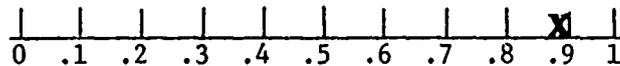
7. Development of your annual study program:

[Briefly describe how your agency/command annual study requirements are identified and put together as a study program. This could be done on a separate sheet or if you have a directive or memo, simply attach a copy.]

All respondents identified procedures keyed to the provisions of AR 5-5 and/or the PPBS. Most had formally published Staff memoranda, taskers, or supplements to AR 5-5 assigning responsibilities for their study program development and execution.

8. Agencies/commands often conduct studies for other sponsors. Indicate the extent to which your agency/command conducts studies sponsored by others.

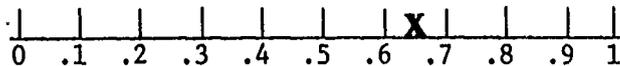
	<u>FY 74</u>	<u>FY 75</u>	<u>CURRENT</u>
8-1 MORE THAN 75% OF STUDIES	<u>2</u>	<u>2</u>	<u>2</u>
8-2 50-75% OF STUDIES	<u>1</u>	<u>2</u>	<u>2</u>
8-3 25-50% OF STUDIES	<u>1</u>	<u>1</u>	<u>3</u>
8-4 0-25% OF STUDIES	<u>4</u>	<u>5</u>	<u>4</u>
8-5 NEVER	<u>6</u>	<u>4</u>	<u>3</u>



CONFIDENCE LEVEL

9. Indicate the degree to which the annual Study Planning Guidance influences the formulation of your agency/command study program.

9-1 DECISIVE	<u>2</u>
9-2 IMPORTANT	<u>4</u>
9-3 MARGINAL	<u>8</u>
9-4 NO INFLUENCE	<u> </u>



CONFIDENCE LEVEL

10. What is the single most important factor in determining the content of your agency/command study program?

10-1 AGENCY/COMMAND MISSION AND FUNCTIONS	<u>9</u>
10-2 PLANNING DOCUMENTS (DPPG, POM, ETC.)	<u>1</u>
10-3 CSA STUDY PLANNING GUIDANCE	<u>2</u>
10-4 OTHER (SPECIFY)	<u>2</u>
(<u>Executive, Command Guidance</u>)	

0 .1 .2 .3 .4 .5 .6 .7 .8 .9 1

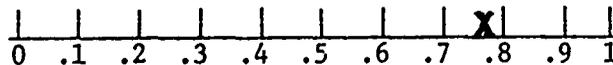
CONFIDENCE LEVEL

11. Where do you expect the results of your agency/command study program are most frequently used?

11-1 INTERNAL (YOUR AGENCY/COMMAND)	<u>8</u>
11-2 EXTERNAL AGENCY/COMMAND (WITHIN ARMY)	<u>6</u>
11-3 EXTERNAL ARMY (BY OSD, JCS)	<u>0</u>

12. Describe your FY 74, FY 75, and current study program in terms of resources (in-house professional man-years, dollars contract).

	EXPENDED		PROGRAMED
	FY 74	FY 75	CURRENT
12-1 IN-HOUSE (PMY)	<u>814.5</u>	<u>974.95</u>	<u>1,265.9</u>
12-2 CONTRACT (\$K) (TOTAL)	<u>6,572.5</u>	<u>6,280.70</u>	<u>9,265.0</u>
OMA (\$K)	<u>638.0</u>	<u>1,144.70</u>	<u>2,555.0</u>
RDTE (\$K)	<u>5,934.5</u>	<u>5,004.00</u>	<u>6,710.0</u>
OTHER (\$K)	<u> </u>	<u>132.00</u>	<u> </u>



CONFIDENCE LEVEL

13. When study requirements exceed available resources, decisions are made concerning requirements which will not be met. Usually a system of priorities is employed. Describe how priorities are assigned in your agency/command.

Responses included examples of formally documented priority scoring systems as well as general policy statements. Overall, the schemes establish priorities in the following order:

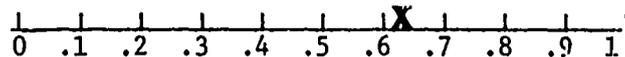
1. Higher directives.
2. Executive, Commander emphasis.
3. Urgent mission and function requirements.
4. Overall guidance (SPG, POM, DPPG).

14. How frequently is your study program progress reviewed internally?

14-1 EVERY 30 DAYS OR LESS	<u>7</u>
14-2 QUARTERLY	<u>5</u>
14-3 SEMI-ANNUALLY	<u>2</u>
14-4 ANNUALLY	<u> </u>
14-5 NO REGULAR REVIEW	<u> </u>

15. Completed studies may or may not be approved by the sponsor. For those studies sponsored by your agency/command and completed during FY 74 and FY 75, indicate the proportion of studies in the listed categories.

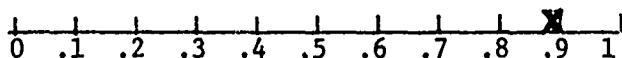
	<u>FY 74</u>	<u>FY 75</u>
15-1 APPROVED FOR AGENCY/COMMAND USE ONLY	<u>17.1%</u>	<u>15.3%</u>
15-2 APPROVED FOR INTERNAL AND EXTERNAL USE	<u>63.1%</u>	<u>62.4%</u>
15-3 PARTIALLY APPROVED	<u>5.0%</u>	<u>6.2%</u>
15-4 NOT APPROVED	<u>2.4%</u>	<u>2.1%</u>
15-5 SPONSOR APPROVAL NOT REQUIRED	<u>4.0%</u>	<u>3.6%</u>
15-6 APPROVAL REQUIRED NEXT HIGHER HEADQUARTERS	<u>5.7%</u>	<u>4.3%</u>
15-7 UNKNOWN	<u>2.7%</u>	<u>3.1%</u>



CONFIDENCE LEVEL

18. It is extremely difficult to measure and ascribe a value to the results of an agency/command study program. It is often just as difficult to specify the value or benefit of an individual study. Considering the resources that your agency/command commits to its annual study program, select the category below which best describes the program's cost effectiveness.

- | | |
|----------------------------|---------------|
| 18-1 HIGHLY COST EFFECTIVE | <u>6</u> |
| 18-2 COST EFFECTIVE | <u>7</u> |
| 18-3 NOT COST EFFECTIVE | <u> </u> |
| 18-4 UNKNOWN (NO OPINION) | <u>1</u> |



CONFIDENCE LEVEL

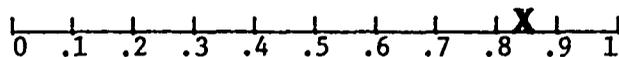
19. Referring to your response to the previous question, describe the nature of the effectiveness or benefits resulting from your study program. Include tangible and intangible results that you feel benefit your agency/command or the Army even if they do not fit neatly in a cost-effectiveness equation. Cite concrete examples where possible and the extent of the benefit/effect; i.e., internal, Army-wide, DOD-wide. (This question can be answered on separate sheets of paper.) If you choose response 18-4, explain why you are unable to form an opinion.

In general, the responses to this question were in terms of fulfilling mission and function responsibilities relative to the current Army posture and meeting PPBS requirements.

20. Considering your responses to the two previous questions, can you estimate a benefit/cost ratio for your total study program? Briefly explain your choice.

20-1 YES 3 : ESTIMATED RATIO 1 : 1

20-2 NO 11



CONFIDENCE LEVEL .

EXPLAIN:

Yes responses were all qualitative.

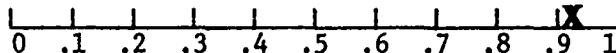
Explanation of no responses centered around the extreme difficulty of measuring benefits in concrete terms. All pointed out that some studies lend themselves to cost/benefit analysis but most, and the program as a whole, do not.

21. Based on your agency/command experiences, how do your in-house study sources compare with contract study sources in terms of effectiveness? Briefly describe why, citing one or more "for instances."

21-1 EQUAL 8

21-2 CONTRACT BETTER _____

21-3 IN-HOUSE BETTER 6



CONFIDENCE LEVEL

WHY:

"More responsive, quicker, and probably more thorough if done in-house."

"Only advantage of contractor is he doesn't have an axe to grind."

"Contractors generally do not have the same depth of military oriented problem experience."

"In-house sources really excel if given the necessary priorities and dedicated guidance."

22. Regardless of how well we are doing in the study business, most will agree that there is always room for improvement. List in order of importance those actions (or inactions) that you feel would do the most to improve the success and usefulness of the Army Study Program.

LIST:

"Reduce the Administrative burden."

"Need access instructions to DA studies data base."

"Improve planning guidance. Current guidance is too burdensome to be useful."

"Improve accuracy of data bank information by quality control of data input."

"There ought to be a better coordination policy."

"The paperwork needs to be tailored, that is, should be reduced."

"Currently, the system suffers from a lack of high level direction that it was originally designed to have."

"Demand quality within our study agencies. Do not trade off quality and substance for form of the program or effort."

"Do better program planning to reduce fluctuations and turbulence."

"Increased communications between DA study office and study coordinators. Increased meetings of study coordinators."

23. Respondent commentary. You may add comments relative to studies, the Army Study System, the merits of this endeavor, or any pertinent subject.

"...hope the information retrieved by questionnaire will give the credibility inherent to a team independently gathering data. I feel a questionnaire allows too much room for individual interpretation of some of the facts."

"This particular effort to further determine the costs and benefits of the Army Study System is worthwhile, though frustrating. It highlights a need by study agencies to document results and uses of studies--a necessary endeavor if the study system is to continue."

ANNEX B

LIST OF STUDIES

ANNEX B

LIST OF STUDIES

<u>Section</u>		<u>Page</u>
I	STRATIFIED RANDOM SAMPLE	B-2
II	CONTRACT STUDY ADD-ONS--COSTS MORE THAN \$300K	B-7
III	IN-HOUSE STUDY ADD-ONS--COSTS MORE THAN 6 PMY	B-8
IV	AGENCY/COMMAND NOMINATIONS	B-9

I. STRATIFIED RANDOM SAMPLE

Category 1--In-house

Army Direct Support (SIGNIT) Resources

Study of the Army Publication System (STARPUBS)

Processing of Words Efficiently and Effectively (POWER)

Professional Accreditation Program for Law Enforcement Personnel
(Career Management Field 95)

Category 1--Contract

Analytic Techniques for Examination of Manpower Policy Alternatives

Enlisted Personnel Assignment System Study

Category 2--In-house

Cost Effectiveness Study on DAAL

Tactical Nuclear Weapons Requirements Methodology

Lance Missile Battery Red Team Analysis

Carmonette Night Vision Analysis

Integrated Battlefield Control System--Command and Control Concept for
Echelons Above Division (IBCS/EAD)

Nuclear Force Posture--An Analysis of Selected Alternatives (NUCFO)

Weapons Requirements to Support Nuclear Targeting Options

Nuclear Doctrine, Organization, and Equipment (NUDORE I)

Category 2--Contract

Long Range Standardization of Air Traffic Control Equipment

Automated Technical Control Information Brochure and Staff Planners Guide

Net Technical Assessment of Proving Ground and Test Facilities

Methodology for Integrated Forces Requirements and Capabilities (MINTCAP)

NATO Combat Capabilities Analysis (COMCAP III)

Category 3--In-house

TOW/DRAGON Survivability Study

Mutual and Balanced Force Reduction Wargames and Analyses (MBFR II)

Mine Flow Evaluation Study

Conceptual Designs of the Army in the Field (CONAF) III

Analysis of the Army Requirement to Own and Operate Watercraft

Cavalry/Scout Study

Force Stratification Analysis

Joint OSD/DA NATO Land Forces Requirements Review

Army Total Force Study--1974

Division SHORAD Study (DIVAD)

Requirements Methodology (TAN REM) Phase II

Tank Special Study Group (TSSG)

Category 3--Contract

Tactical Effectiveness Testing Antitank Missiles (TETAM)
Wideband Communications at Unused Frequencies
Modification of Math Model for Small Independent Action
Development and Improvement of CEM
Force Structure and Programing (SPECIFOR)
GLOBAL Model Documentation
Rough Notes on Ways of Improving US/NATO Antitank Capability

Category 4--In-house

Tactical Landing System (COEA)
Interrelationship of Management Indicators
Feasibility of Eliminating Depot Maintenance in USAREUR
Army Replacement Requirements Objectives for Wartime
U.S. Army Trans-Hydro Craft (TRANS-HYDRO) 1975-1985
Programed Review of Basic Elements (PROBE)
The Army in the Field Container System Study
Contaminated Area Clearance and Land Use Alternatives (CLEAR)
Ammunition Fire Fighting Doctrine
Army Retail Materiel Management Model (ARMMM)
Aircraft Refueling and Rearming System (ARRS)
AN/URC-78 Cost Effectiveness Study
Army Installation Energy Requirements in CONUS
Management of Army Wholesale Logistics Literature (AWLL)

Category 4--Contract

Operational Readiness Policies for Selected Units and Weapons Systems

Evaluating and Improving the Direct Support System Subelements

Improved Methods for Developing Army Worldwide Asset Position

Logistics Performance Standards (Phase II)

Tactical Vehicle Fleet Inventory Model

Category 5--In-house

Personnel Armor System for Ground Troops (COEA)

Reevaluation of 60% Gradability Requirement

Universal Drivers Viewer

Remotely Piloted Aerial Observer/Designator System (RPAODS)

Study of the Susceptibility of SAM-D to ARM Attack

Initial Evaluation--FRG vs U.S. Track Design

Probability of Hits of Aircraft by Antiaircraft Fire (HITVAL)

Deadline Cost Model Study

A Study of the Benefit/Risk Involved in Replacing Current Explosive Melt-Pour Facilities

Red Team Evaluation of Transfer vs Convention Machines

Loop Optimization

Automatic Steerable Null Antenna Processors

Category 5--Contract

Optimal Distribution of Budget Dollars Among Materiel Procurement Programs

Radio Wave Propagation Through or Over Jungle Covered Terrain

CADENS Modification and Revision

Countermine Systems Synthesis and Evaluation

Improved Electromagnetic Compatibility Analyses (II)

Category 6--In-house

Medical Care Composite Unit Study (MECCUS)

Measurement of Standardization Program Workload

Development of Improved Methodology for Stating and Evaluating Maintenance Requirements

Category 6--Contract

Measures of Effectiveness--CONUS Reorganization--1973

TACFIRE Cost Effectiveness Analysis

II. CONTRACT STUDY ADD-ONS--COSTS MORE THAN \$300K

Army Manpower Prediction System (AMPS) (Part II)

Methodology for Conventional Purpose Forces Under the Total Force Concept (METOFOR II)--FY 74

Impact of Alternative National Strategies on Army Planning

Nike-Hercules System Simulation Model

Analytic Support for Reserve Component Field Experimentations and Evaluations

Evaluation of Reserve Component Improvement Concepts (Cost and Effectiveness)

Fast Frequency Hopping

Systems Improvements to the Reserve Components Personnel Projection Model (RP2M) (II)

Evaluation of Modern Volunteer Army Program (Phase III)

Family of Observation, Scout, and Attack Helicopters (SCAT II)

IBCS Division Level Systems Definition, Staff Organization and Procedures, 3d Refinement (IBCS-3D REF)

Integrated Global Force Posture Analysis (Task Order 1)

Technical Assistance to the DSS Task Group

Standard Army Management Language, Phase II (SAML II)

Computer Programming Support for Conversion of Models and Simulations

Air and Ballistic Missile Defense

Models of the U. S. Army Worldwide Logistics System (MAWLOGS)

III. IN-HOUSE STUDY ADD-ONS--COSTS MORE THAN 6 PMY

Education of Army Officers Under the Officer Personnel Management System

Records Administration in Microform Mode (RAM 2)

Production Base Plan for the FY 76 Planning Period

Force Assessment and Capability Evaluation (FACE)

Op Effectiveness Analysis (HLH COEA)

Dragon Cost and Op Effectiveness Analysis (DRAGON-COEA)

CEM-ATLAS Wargame Comparison (WAGCOM)

Armored Reconnaissance Scout Vehicle Study

Integrated Support Services MIS (ISSMIS)

DSU Repair Parts Stockouts

Logistic Scenario Oriented Recurring Evaluation

Economic Modeling of Army Ammunition Production Base

Army Qualitative Resource Requirements for Nuclear Weapons Effects Information

Image Simulation (Thermal/Intensifier)

IV. AGENCY/COMMAND NOMINATIONS

Repair Parts Study

US Army Aircraft Peacetime Replacement Factors

Track Cost Model

AVSCOM Measures of Effectiveness

Criteria for Establishing Planning Factors

Evaluation of Operations and Programing Effectiveness for Mechanized Stock Control Processing

Financing of Army Inventory

USACC EMP Program Requirements

Supply and Maintenance Support Concept for USACC

ALREP

STRAMS Update

32H Series Communications Study for FY 74-76

USASA Tactical Communications Study FY 76-86

Priorities for Allocation of COMSEC Resources

War Reserves

Review and Analysis of the Human Self-Development Program--FY 75

Wartime Active Replacement Factor Study (Phase III)

Evaluation of TRICAP Division

Company Administration Study

Air Movement Planning System

Nuclear Cannon Projectile Study, Phase II, 155 mm--Artillery Fired Projectile (COEA)

Accuracy Analysis of Arty Cannon Systems

IBCS Concept for ATACOMAP

Organizational Development Pilot Test for Army Personnel Center

People Management

Student Instructor Load Model (SIL III)

Contingency Planning and Forecasting (FORECAST 90)

NIKE HERCULES Effectiveness Study (1976-1980) (NIKE 77)

Nonnuclear Ammunition Combat Rates Programing FY 76-80

An Analysis of Deployment of the 101st Airborne Division (Air Assault)
to Europe

Management Study on Housekeeping Service for Dwight D. Eisenhower Army
Medical Center

Evaluation of Expanded Role of Physical Therapist in Screening
Musculoskeletal Disorders

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ANNEX C

BIBLIOGRAPHY

ANNEX C

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