

AD A 069442

9

FINAL REPORT.

2

LEVEL III

REVIEW OF ARMY ANALYSIS.

VOLUME II, APPENDIXES C-M.

11

APR 1979

19

372p.

DDC
JUN 6 1979
A

DDC FILE COPY

DISCLAIMER

The findings of this report are not to be construed as an official Department of the Army position, policy, or decision unless so designated by other official documentation. Comments or suggestions should be addressed to:

Deputy Chief of Staff for Operations and Plans
Department of Army
ATTN: DAMO-ZD
Washington, D. C. 20310

SPECIAL STUDY GROUP
DEPARTMENT OF THE ARMY
WASHINGTON, D. C.

391 347
79 05 31

DISTRIBUTION STATEMENT A
Approved for public release;
Distribution Unlimited

020LB

REVIEW OF ARMY ANALYSIS

VOLUME II - APPENDICES C - M

A069441

April 1979

SPECIAL STUDY GROUP
DEPARTMENT OF THE ARMY
Washington, DC 20310

1 2 3 4 5 6 7 8 9 10

TABLES

TABLE		Page
E-1	Top Management Group.....	E-17
G-1	Summary of Concerns Expressed by 95th Congress on Contract Studies and Analyses.....	G-2
G-2	Army Studies and Analysis Program Elements....	G-4
G-3	Reductions in Explicit Studies and Analysis Requests for FY 78 and FY 79 by Appropriation and Service.....	G-7
G-4	Comparison of Current Process and Preferred Alternative.....	G-14
G-I-1	Description of the Army Studies and Analysis Program by FYDP Program Element Showing Amounts Requested by Appropriation and Method of Performance for FY 79 and Congressional Actions.....	G-15
H-1	Contract Study Effort.....	H-3
J-1	Education Levels.....	J-4
J-2	Promotion Selection Rates.....	J-4
J-3	Distribution of ORSA Officers.....	J-6
K-1	Classification of Army Models.....	K-2
K-2	Combined Arms Combat Models.....	K-3
K-3	Command Group Training Models in Current Use..	K-6
K-4	A System of Army Models.....	K-6
K-5	Key Analysis Organization Interfaces.....	K-9
K-6	A System of Army Models--Optional Factors of Organization and Implementation.....	K-12
K-7	Army Model Management.....	K-14
K-8	Data Base Requirements and Sources.....	K-21

FIGURES

FIGURE

G-1	Logical Development of the Alternatives.....	G-9
H-1	Profile of PMY Mix.....	H-4
J-1	ORSA Officer Utilization.....	J-7
J-2	Production of Military Analysts.....	J-10
K-1	Basic Structural Concept Operations and Evaluation.....	K-7
K-2	A Hierarchical Organization of Army Analysis..	K-8
K-3	A Conceptual Structured Set of Simulations, Games, and Analytic Models.....	K-11
K-4	Analytic Community Data Information Interfaces.....	K-22
K-5	Army Analysis and Training Developments Data Base Schematic.....	K-23

APPENDIX C
PERCEPTIONS

C-1. SOURCE. Early in the study a collection effort was conducted, the objective of which was to ascertain and record the perceptions of a variety of knowledgeable personnel regarding the strengths and weaknesses of the Army analytical community. The concept was that perceptions of experienced people could be used to point the way toward avenues of further investigation of the Army analysis community during the study. Personal interviews, questionnaires, and group sensing sessions were the techniques employed to acquire the perceptual information. Roughly 100 individuals in OSD, the Army, other services, and industry contributed. The perceptions are reported below, first by strengths and second by weaknesses. Within each category the specific perceptions are organized into sub-categories corresponding to the main areas of investigation during the study. Because the main thrust of the Review of Army Analysis was to seek ways to improve the community, a considerably larger number of perceived weaknesses than strengths is identified.

C-2. PERCEIVED STRENGTHS. a. Program Formulation and Presentation
The Army's capability to anticipate the hard analytical questions has improved in the past four to five years, as has its ability to answer them. This, in part, results from the demand of Congressional and Executive Branch Staffs for programs with a sound analytical basis and partially results from the revised ASARC/DSARC process which formalized much of the demand.

b. Organization

(1) Decentralization of Initiatives. By providing systems analysis capabilities to support decisionmaking processes at the major Army commands and their subordinate elements, each command level can better assimilate data available to it, arrive at better thought-out conclusions, and pass on more competent command products to the next higher authority.

(2) Character of Institutions. The Army studies and analysis community consists of many organizations, each with a team character of its own, each with pride in what makes it different from others, and each with confidence in itself and its product.

c. Resources

(1) Integrity. The Army ORSA community does well in resisting pressures to bias analysis or to arrive at preconceived conclusions in order to please those who are less than objective in their viewpoint.

(2) Enthusiasm. Considerable drive and ambition exist within the Army analytical community to tackle and solve the most critical issues of the time.

(3) High Quality of Military Analysts. The quality of Army officers possessing the 49 specialty code (ORSA) is excellent.

(4) Capacity to Produce. The Army analysis community is more productive than indicated by a simple count of studies. Such additional products as report reviews, peripheral and side analyses to studies, quick responses to higher headquarter's questions, briefings, and methodology improvements are evidence.

(5) Willingness to Tackle Tough Problems. Recognition of analysis technology weakness, cooperation between organizations in methodology development, and ready acceptance and application of new techniques where useful, all characterize the Army analysis community's willingness to attack problems for which current analysis technology is less than adequate.

(6) Continuity. The sizeable fraction of civilian analysts comprising the Army analysis community provides continuity and an institutional memory which serves the Army well in recalling issues and pitfalls of previous analyses and in precluding reinventing the wheel.

(7) Size Maturity. The Army in-house analytical structure is large, stable, and experienced. A wide range of methodologies and models exists, as does a sizable data base. Considerable knowledge and experience exist ranging from weapons system analysis to force structuring.

(8) Access to Experimentation. Army resources available to conduct field experiments exist in considerable quantity and versatility and constitute a potential source of valuable experimental data to improve Army studies and analyses.

d. Techniques

(1) Communications. Army study program topics, findings, analysis techniques, simulations, and data are subjects of considerable dialogue between analytical organizations and between individual analysts within the analysis community. Much of this dialogue is self initiated and is motivated by a genuine desire to share information, to improve techniques, and to obtain peer review.

(2) Respect for Counter-example. A healthy trend in the Army materiel acquisition process is the pursuit and consideration of counter-examples in studies and analyses as exemplified by the Red Team approach.

e. Quality Assurance and Review

(1) Spirit of Openness. Army analysis organizations and individual analysts generally adopt an open door policy regarding review of their analyses, including details of models, data, and techniques employed for a study.

(2) Utility of Products. Participation by potential users of the Army study process, from problem definition to final report, is an Army practice which helps assure responsiveness of studies to user needs. The employment of ad hoc study groups and study advisory groups is useful in keeping studies on track, enabling changes in direction where necessary, and facilitating acceptance and utilization of the study product.

C-3. PERCEIVED WEAKNESSES. a. Program Formulation and Presentation

(1) Problem Identification/Prioritization. A major weakness of the Army studies and analysis program is the inability to identify, prioritize, and focus resources on the important problems needing study. In addition to studying problems of less importance, while leaving others unattended, the Army frequently assigns studies to analysis organizations which are not best qualified to do the work.

(2) Lack of Central Guidance. One possible reason for study program fragmentation is perceived to be a serious lack of program guidance or direction issuing from a central source or authority. The existing arrangement of decentralized study program execution may serve to mask recognition and inhibit corrective action of this weakness.

(3) Relationship of Analysis to Decision Process. An obscure relationship exists between studies by the analysis community and the overall Army decisionmaking process. Most analysis efforts seem to produce products which exert only a minor influence on Army decisions.

(4) Program Presentation Upward. Presentation and justification of the Army studies program and individual studies to OSD, Congress, and reviewing bodies such as RDAC, is poorly orchestrated and of variable quality.

(5) Study Areas Lacking Emphasis. Without regard to relative priority, the following issues or topics are not currently receiving adequate analytical attention in the Army studies program either because of lack of emphasis or lack of resources or both:

(a) Requirements for new materiel early in the acquisition cycle.

(b) Force planning and structuring at the theater through total Army level to include force balancing.

(c) Structuring, balancing, and materiel and functional tradeoffs at the division/corps level of combat organization.

(d) Tactical operations of currently deployed forces as opposed to studies of investment resources.

(e) Logistic sustainability of current and developmental materiel.

(f) Maintenance concepts for current and developmental materiel.

(g) Impact of countermeasures and battlefield environments on combat materiel performance and tactics.

(h) Effectiveness and cost of Army training programs and strategies.

(i) Manpower and personnel topics including:

1. Implications of women in the Army.
2. Cost/benefits of ELIFE.
3. True cost of civilian manpower.

4. Effects of varying compensation on military manpower.
5. Effect of changing rotation base on military manpower.

b. Organization

(1) Coordination. A major weakness in Army analysis is lack of coordination between the decentralized analytical organizations of the Army. This results in lack of study focus, duplication of effort, gaps in essential work, lack of priorities, and resource waste.

(2) CAA/CACDA Interface. This interface is ill-defined. CACDA combat development activities are influenced only slightly by force level efforts at CAA. Conversely, CAA analyses do not normally utilize division/corps findings developed by CACDA.

(3) DCSPER/ARI Relationship. The assignment of ARI to ODCSPER separated the personnel and training research and development program from the mainstream of Army R&D management. The program has suffered from the resulting isolation.

c. Resources

(1) Insufficient Contracting. The Army fails to take advantage of unique skills and talents available from out-of-house sources of analytic talent.

(2) Access to FCRC. A highly desirable resource which should be reacquired by the Army is an independent contractor with the intellectual freedom to provide unbiased, objective advice to Army management regarding the more difficult and complex Army issues. An FCRC arrangement would be the most desirable.

(3) Contractual Process. Obtaining contractual assistance for analysis, as governed by AR 5-6 and the ASPR, is prohibitively burdensome and unnecessarily bureaucratic. Contracting requirements must be forecast long before detailed analytical needs can be defined.

(4) CACDA Resource Imbalance. Analysis resources currently available to CACDA are insufficient to perform the analytic workload implicit in the CACDA mission which is: to design division/corps organizations; orchestration of the combat developments of the combat functional schools; design of the control and intelligence functions of combat.

(5) AMSAA Expertise Imbalance. AMSAA, by virtue of its evolution from ordnance-dedicated activities, is heavy in weapon systems oriented expertise. The AMSAA mission area of responsibility has evolved to a much wider scope, and a rebalancing of internal expertise is needed.

(6) TRADOC School Resources. Considering their mission to develop requirements for new materiel, to develop employment doctrine and tactics, and to train Army personnel, the TRADOC service schools are currently understaffed with analysis resources.

(7) Cost Analysis Resources. The cost analysis expertise of the Army is being employed on a wide variety of studies, analyses, and miscellaneous tasks which are not related to cost analysis. Better focusing of these resources is needed.

(8) Upgrading Analyst Quality. Programs are needed to assure that Army analysts, particularly civilian, are maintaining high skill quality. Encompassed in this area are problems involving recruiting, retaining, and developing analysts.

(9) Personnel Management. The civilian personnel system is slow and nonresponsive to the needs of the analysis community. Hiring, firing, and redistributing analysis personnel are problems which are aggravated by the system.

(10) Aging of Analytical Community. There is a perception that the principal analysis organizations of the Army are aging rather rapidly, perhaps well past the best balance of vigor and maturity.

d. Techniques

(1) Micromanagement. Persons at Congress, OMB, OSD, OSA, HQDA, and HQMACOM persist in micromanagement of Army studies to the net detriment of the quality of study products. Discipline is needed to restrict involvement of these elements to setting policy, establishing priorities, allocating resources, defining issues and constraints, while leaving study management and execution to the study agency.

(2) Problem Delimitation. There is a strong tendency in many Army studies to expand the study scope beyond the original study objective in order to accommodate a host of peripheral issues for which the need for analytical treatment is perceived. The consequence is excessive expenditure of analysis resources, lengthening of the study schedule, and frequently, degradation of study quality due to no schedule relief.

(3) Cost and Schedule Bias. A tendency in Army studies of developmental programs is to underestimate both future program costs and developmental schedules. This bias creeps into the Army budgeting cycle, eventually causing experienced costs to exceed previously forecast estimates.

(4) Fulda Gap Syndrome. Army weapon system studies tend to give excessive attention to scenarios set in the Fulda region of Germany at the expense of investigations of other scenarios and environments where combat is also likely to occur. The consequence is that study findings and conclusions may be suboptimized for these conditions and brittle to scenarios not investigated.

(5) Vulnerability Data. A high proportion of Army studies require as input data estimates of the vulnerability of friendly and enemy battlefield items. Production of these data continues to be untimely for studies, in part because of too few resources being applied to data generation.

(6) High Level Performance Indicators. Aggregated performance indicators such as Weapons Effectiveness Index (WEI) and Weighted Unit Value (WUV) are misleading if not employed carefully. Studies which are designed to produce such indicators should be minimized.

(7) Insufficient Data. Deficiencies in data to develop understanding of combat and support processes will always exist but much better utilization can be made of sources such as testing, military history, and training activities to remedy data deficiencies.

(8) Study Inputs vs Results. Most Army studies suffer from a lack of transparency. It is frequently impossible to establish a clear audit trail from input data and assumptions through system performance to study results. Uncertainties in the values of input performance parameters are not quantified nor are the possible effects of these uncertainties on combat effectiveness traceable.

(9) Parametric Analysis. Too little use is made of parametric analysis techniques during studies, usually because of schedule pressures. Consequently, performance parameters which should be treated as variables are instead considered constants, with the associated risk of missing important insights into weapon system or organization performance.

(10) Insane Realism. Army combat simulations have tended to evolve toward ever-increasing detail or representation. In many cases, this quest for detail is advertised as an improvement in

realism but, in fact, results not only in added simulation complexity, but does not significantly affect the outcome or the performance of the item or function being represented. Furthermore, it is frequently true that a more precise mathematical description of the realities of combat is employed than either historical knowledge or experimentation will support.

(11) Model Anarchy. Individual study groups constantly modify simulations for use in particular studies. These changes are most often not documented or communicated to other model users. Together with the uncoordinated development of new simulations, this situation has led to the existence of large numbers of simulation tools and model versions which overlap or even duplicate capabilities.

(12) Excessive Simulation. The Army studies and analysis community places entirely too much reliance on large-scale simulation to support studies where much simpler analysis tools would suffice.

(13) Hardware Solution Syndrome. Too often the Army seeks hardware solutions to problems where the best solutions may be found in doctrinal, tactical, training, or organizational fixes.

(14) Responsiveness. In most Army studies, the identification of new or changed alternatives occurs during the study despite efforts at early definition. Study techniques generally preclude rapid response to new study directions, and the study team (especially the cost analysis element) becomes the critical path in a delay in critical milestones in order to study the new alternative.

(15) DT/OT and COEA Timing. Current regulations require a COEA to be produced in time to support each major acquisition decision milestone. Operational testing activities are similarly timed. Thus, it frequently occurs that the DT/OT findings are developed too late to be accounted for in the COEA.

(16) Surrogate Decisionmaking. Analysts tend to drive a study to the point where the decisionmaker is presented with a supportable best choice to make; i.e., any other choice requires that the analysis be refuted. Instead, the analysis should illuminate the pros and cons of the alternatives in a fashion which allows the decisionmaker to apply his own judgment to select a preferred solution.

e. Quality Assurance and Review

(1) Contractor vs In-house Quality. The quality of studies performed by Army in-house resources is perceived to be inferior to that which could be produced by selected contractors.

(2) Inconsistency. There is a noticeable tendency for studies done in connection with an item system to be disturbingly inconsistent in important aspects with other studies of different item systems, particularly with regard to assumptions and environments. This leads to loss of Army credibility with higher level reviewing elements of OSD, OMB, and Congress (whose institutional memories are relatively long).

(3) Threat Tailoring and Conservatism. Threats established for conduct of Army studies in the past have proved to be consistently understated (i.e., predicted future enemy capability was always surpassed in actuality) and, in addition, have varied in content and capability between studies done in approximately the same timeframe. Threats used in Army studies are rarely reactive to the weapon system being studied. Furthermore, the analysis community has done little in the way of parametric variation of threat capability during a study in order to discover weapon system weaknesses or break points.

(4) Suppressed Alternatives. In Army studies, most of the alternative solutions to materiel requirements appear to be differences without distinction or variations on the same theme. Truly different ways of solving a problem (e.g., antitank guided missile vs attack helicopters) are rarely exposed, much less objectively analyzed.

(5) Military Assumptions. In some studies, assertions of a doctrinal nature, which appear as assumptions, overly drive the content, methodology, and conclusions of the study.

(6) Affordability. Army studies rarely contain information regarding the affordability of the item under study with respect to the out-year cost of its procurement or operation in the field. In most cases, affordability judgments are limited to the impact of a new program on current or near term budgets.

(7) Staff Study Objectivity. There exists a perception that Army Staff studies lack analytical basis and, as a result, frequently lack objectivity.

(8) Peer Review. Much better utilization of the techniques embodied in the peer review process should be made at all levels of Army analysis where products are initiated.

(9) Product Quality Standards. Nowhere in the Army studies and analysis community does there exist a universally accepted set of standards of quality for study products. Such a set of standards should be developed and enforced.

APPENDIX D
DATA
TABLE OF CONTENTS

CHAPTER	PAGE
I. Summary Data Highlights	D-I-1
Scope	D-I-1
Personnel	D-I-2
General Schedule (GS) Distribution	D-I-6
Study Program - FY 78	D-I-7
Study Program - FY 79	D-I-13
Estimated Program Cost - FY 78	D-I-19
II. Army Wide Roll-up	D-II-1
Scope	D-II-1
Personnel	D-II-1
Study Program - FY 78	D-II-8
Study Program - FY 79	D-II-14
III. HQ DA Roll-up	D-III-1
Scope	D-III-1
Personnel	D-III-2
Study Program - FY 78	D-III-9
IV. SSA/FOA Roll-up	D-IV-1
Scope	D-IV-1
Personnel	D-IV-2
Study Program - FY 78	D-IV-8
V. DARCOM (Study Activities) Roll-up	D-V-1
Scope	D-V-1
Personnel	D-V-8
Study Program - FY 78	D-V-8
VI. DARCOM (Other Activities) Roll-up	D-VI-1
Scope	D-VI-1
Personnel	D-VI-2
Study Program - FY 78	D-VI-9
VII. TRADOC Roll-up	D-VII-1
Scope	D-VII-1
Personnel	D-VII-2
Study Program - FY 78	D-VII-9
VIII. MACOM (Other) Roll-up	D-VIII-1
Scope	D-VIII-1
Personnel	D-VIII-2
Study Program - FY 78	D-VIII-9
Annex I - Questionnaire	D-IX-1

CHAPTER I

SUMMARY DATA HIGHLIGHTS

1. Scope. This chapter contains resource and study program statistics of the Army analytical community. The data is stratified to organizational level and summarized by category. The resource statistics characterize the personnel assigned and funds available for conducting studies and analysis. Statistics are also presented which characterize the thrust of the Army's 1978 and planned 1979 study programs.

2. Personnel. a. Distribution of personnel authorizations, experience and education

Organizations	Authorizations			Experience			Education			Ave. ES Grade Equiv.
	Number Prof.	Prof. Op-Band	% Mil. Prof.	Mr. Yr < 5	Average Yr > 25	Average # Advanced Degrees	% Math/Statistics	% Sci./Engr.	% Social Science	
80 de Elements	90	84	61/73	46	8.2	4	40	31	29	14.4
OCMA, SMO	4	3	2/67	0	12.3	0	33	0	67	14.7
OCMA, PAED	62	42	38/90	48	5.0	0	38	28	34	14.1
CCSCOPS, Tech Adv.	9	7	3/43	29	12.3	0	57	43	0	14.8
OCSEMA, SAAD; Sci Adv.	21	15	11/73	33	8.9	7	47	47	6	14.9
CIACSI, Red Team	9	4	2/50	50	6.0	0	0	25	75	12.0
OCSEPER, SMO	6	5	3/60	20	14.4	20	20	20	60	14.3
OCESIDC, SMO	1	1	0/0	0	15.0	0	100	0	0	13.0
OCUSA (OR)	11	7	2/29	14	15.1	14	57	29	14	15.7
SEA/JDA-Elmas w/Ready Mission	938	630	170/28	33	11.9	9	25	14	61	12.7
SSI	45	35	19/54	8	14.6	8	8	12	80	13.8
USACMA	299	185	91/69	38	11.0	5	46	23	31	13.1
USANCA	17	14	10/71	21	14.0	7	7	64	29	13.6
USARDAISA	35	50	0/0	13	11.7	0	55	7	38	12.2
USALZA	20	15	3/20	13	16.2	13	17	10	63	12.7
USAAET	371	263	17/67	33	12.6	15	6	4	90	12.3
USAMILITZICH	82	69	17/35	58	7.1	0	21	8	71	11.7
USANIE	14	11	5/50	70	8.2	10	70	20	10	11.9
ESC	53	34	8/24	20	13.6	11	29	34	37	13.1

a. Cont.

Organizations	Personnel		Authentications			Experience			Education				Ave. GS 2. Grade Equiv.
	Number Authorized	Number Prof.	Prof. On-Hand	% Mil. Prof.	Mr. Yr 4-5	(Years) Average	Mr. Yr > 25	Average # Advanced Degrees	% Math/ Statistics	% Sci./ Engr.	% Social Science		
TRAC-Flora e/Study Mission	1103	924	738	331/45	35	10.2	4	.56	40	31	29	12.2	
BESEP, Anal Div.	37	30	25	12/48	40	10.4	6	.80	46	20	32	12.6	
CAUDA	133	114	103	51/50	28	10.6	6	.73	31	26	23	12.5	
LOCKER	98	70	59	17/29	31	7.8	0	.46	57	12	51	12.5	
ADVANCE	100	70	38	16/42	37	10.2	3	.66	15	0	85	11.8	
Air Defense School	33	41	35	22/63	56	7.2	3	.78	69	31	0	10.9	
Army School	78	58	50	30/60	57	4.8	0	.57	57	29	14	11.5	
Army School	51	44	29	16/55	28	9.9	3	.55	48	31	21	12.1	
Inf School	37	32	21	17/81	60	5.4	0	.65	35	15	45	11.4	
Arm School	57	46	30	22/73	53	7.4	0	.59	29	18	33	12.0	
Eng School	39	31	21	14/67	35	9.8	5	.60	25	45	30	11.8	
Winnell & Wainwright School	17	13	9	6/67	13	12.6	0	.25	25	50	25	11.6	
Intelligence School	66	53	35	24/69	11	15.3	11	.29	6	29	65	11.5	
Trans School	26	23	23	12/52	38	11.2	10	.43	29	24	47	11.8	
OH School	29	21	17	10/59	12	13.1	6	.67	0	12	88	12.3	
54g School	28	25	21	19/90	0	13.8	0	.60	20	40	40	11.6	
WP School	23	21	19	16/84	34	10.7	4	.80	45	47	8	12.5	
TRAMAN	321	232	203	27/53	34	10.7	4	.80	45	47	8	12.5	

a. Cont.

Organizations	Authorizations				Experience			Education				Avg. IS Grade Equiv.
	Number Authorized	Number Prof. On-Hand	% Mil. Prof.	% Sr. Yr & S	Nr. (Years) Average	Nr. Yr > 25	Average # Advanced Degrees	% Math/Statistics	% Sci./Eng.	% Social Science		
PERSONNEL												
DAIRY-107, Kansas City Study Agency	1101	787	50/06	35	9.7	5	.57	45	47	8	12.5	
NO DANCER, SA 814	10	7	3/43	43	6.6	0	.86	29	43	28	14.1	
NO DANCER, HSI	22	13	9/69	8	16.2	8	1.00	15	39	46	15.0	
AARON	43	33	2/61	41	7.8	0	1.03	44	47	9	12.4	
CECON	12	9	0/0	22	8.0	0	.67	33	36	11	12.7	
NOICIN	76	30	2/07	35	10.5	3	.59	31	66	3	12.7	
YACIN	21	16	2/17	37	6.4	0	.43	14	86	0	12.7	
YACIN	22	18	0/0	12	15.9	12	.76	35	47	18	12.7	
ALBAUC	272	212	11/05	23	13.0	12	.59	38	61	1	12.0	
AVRACIN	12	10	0/0	10	8.8	0	1.00	50	30	20	12.2	
COMACIN	21	12	0/0	42	13.1	8	1.00	50	33	17	12.5	
YRACIN	39	29	4/57	24	10.7	0	.88	16	80	4	12.9	
26	20	16	1/06	0	18.6	25	.29	31	36	13	11.0	
19	17	14	0/0	14	12.5	0	.29	50	43	7	13.1	
33	26	26	0/0	32	7.6	0	1.04	44	22	34	11.6	
33	28	28	1/04	0	14.1	14	.71	22	64	14	13.1	
440	346	320	15/05	45	7.1	1	.42	55	38	7	12.6	
DANCER (Other)	167	119	14/12	34	11.7	13	.90	43	48	9	12.4	
APELA	38	26	0/0	6	20.0	33	.97	25	75	0	12.9	
NECCE	13	9	0/0	20	7.4	0	.86	71	29	0	12.9	
TEO	12	10	0/0	20	11.1	0	.80	100	0	0	12.3	
LEO	60	49	14/00	61	6.2	2	.90	39	39	22	11.8	
UCA	6	4	0/0	100	3.5	0	1.25	50	50	0	12.0	
USALICIN	16	13	0/0	0	10.0	0	.50	50	50	0	13.5	

a. Cont.

Originators	Professionals		Experiences		Education				Ave. GS 2. Grade Equiv.			
	Number Authorized	Number Prof. On-Hand	% Mil. Prof.	1. % Mil. Prof.	Wt. Yr-6.5 Average	(Years) Average	% > 25	Average # Advanced Degrees		% Math/ Statistics	% Sci./ Engr.	% Social Science
BALCOM (Other)	136	103	97	42/43	37	11.1	10	.58	24	14	62	12.7
USAF/USCIB	111	76	76	35/46	26	13.5	14	.47	14	12	74	12.5
USACE	10	7	7	0/0	71	5.3	0	.66	57	43	0	12.6
USAF/USCIB	15	15	14	7/30	64	4.1	36	.86	50	7	43	13.4
STRATEGY	123	90	84	61/73	46	8.2	4	1.09	40	31	29	14.4
ETA	958	708	630	174/728	33	11.9	9	.94	23	14	61	12.7
ESA/POA	1193	916	738	333/455	35	10.2	4	.56	40	31	29	12.2
TRADOC	1101	851	787	50/9	35	9.7	5	.57	45	47	8	12.5
DAFCON (Head; MAJ)	147	127	119	14/12	34	11.7	13	.90	43	48	9	12.4
DAFCON (Others)	136	103	97	42/43	37	11.1	10	.58	24	14	62	12.7
Army Total	3658	2803	2455	672/77	35	10.6	6	.71	37	31	32	12.5

1. The first figure is the number of military assigned; the second figure is the percent of professionals assigned which are military.
2. Transformation of military grade to civilian GS; COL = 15-5, LTC = 14-5, MAJ = 13.5, CPT = 12.5

b. General Schedule (GS) Distribution

Civilian Specialty Series	Group	HQ	SSA	TRADOC	MACOM	DARCOM		Total
						RAD/Readiness	Other	
000	Miscellaneous		1					1
100	Soc Sci, Psy & Welfare	1	222	18	24	1		266
200	Pers Mgt & Ind Relations		13	1				14
300	Gen Admin, Circl & Ofc Svcs	6	105	42	3	11	5	172
400	Biological Sci.		1					1
500	Army & Budget		1	1				2
600	Engr & Archt		10	17	4	131	28	190
1000	Info & Arts		6	1				7
1100	Bus. & Ind		1			2	2	5
1300	Physical Sci.	1	3	2	1	101		108
1500*	Math & Stats	15	110	317	17	401	52	912
1600	Equip, Fac & Svc			5		2		7
1700	Education			1				1
2100	Transportation			3				3
Total		23	473	408	49	649	87	1689
*1515		15	70	305	17	294	41	742 (44%)

3. Study Program - FY 78. a. Distribution of work (TMM) for FY 78 by period work first affects operational capability of Army and by level of system/function examined.

PROGRAM FY78	Work First Affects Field Op'l Capability of Army			System Level/Function Examined			
	0-2	3-10	11-20	Item	Small Units	Function	Large Units
	Total			Total	Total	Total	Total
Organizations							
SSA/FOA-Elmts with Study Mission	1323	5266	4	3454	129	1314	1389
SSI	283	445	4	24		712	319
USACAA	1721						987
USANCA	20	34		14	125	29	8
USARDAISA	48	271		217	3	217	
USALFA		169					
USABRI		2519					
USAMILPERCEN	505	113		2519			
USAREC	121			515			
ESC	346	48		121	1	103	75
				44		253	
TRADOC-Elmts with Study Mission	2066	5684	112	1549	1174	4127	950
DCSCD, Anal Div.							
CACDA	275	450		402	48	94	550
LOGCEN	254	735		86	212		40
ADVINCEH	520	237	2	65	8	383	74
Air Defense School		780		38	74	1195	
ARMOR School	87	748	48	36		360	1
ARTY School	102	83		93	41	2	105
Inf School		47		3			7
AVC School		286		12	267		
ENG School	8	201		201			
Missile & Munitions School	78	267		17			
Intelligence School	36	394	51	5		257	1
TRANS School	39	214	11	32		92	9
QM School		72		36		49	6
SIG School	91	52		47	96	182	
FP School	572	1490		476	428	86	
TRASANA						59	157

Distribution of work (TMM) for FY 78 by period work first affects operational capability of Army and by level of system/function examined.

Organizations	Work First Affects Field Opn'l Capability of Army			System Level/Function Examined			
	0-2	2-10	11-20	Item	Small Units	2 Function	3 Large Units
PROGRAM FY78							
DARCOM	2602	3915	1345	4930	483	2142	217
HQ DARCOM, SA Div.	68	29		30		36	28
HQ DARCOM, ESI	36	107	15	21		63	
AARCOM	224	28	38	258		23	9
CERCOM	108			108			
MIRCOM	137	41	3	21		160	
IARCOM	142			70		72	
TSARCOM	144	132	156		156	276	
ARRADCOM	10	200	1018	1239		1	8
AVRADCOM	24	96		120			
CORADCOM	21	95		7		39	63
ERADCOM	108	90		102	54	42	
MERADCOM	20	101			24	121	
MIRADCOM	57	171		45		159	
KARADCOM	316			4		312	
IARADCOM	7	384	20	380	12	19	
AMSAA	1180	2441	75	2525	237	819	109
DARCOM (Other)	809	337		425		720	
AMETA	353					353	
DESCOM	33	25				58	
IRO	108	12				120	
ISO	209	300		380		129	
LCA	60					60	
USAILCOM	46			46			

Distribution of work (TMM) for FY 78 by period work first affects operational capability of Army and by level of system/function examined.

Organizations	Work First Affects Field Op'n'l Capability of ARMY			System Level/Function Examined			
	0-2	2-10	11-20	Item	Small Units	Function	Large Units
MACOM (Other)	12	651		30			600
USAREUR							
USAINSCOM		600					600
USACC	12	51		30			
USAFORSCOM							
Summary							
SSA/FOA	1323	5266	4	3454	129	1314	1389
TRADOC	2066	5684	112	1549	1174	4127	950
DARCOM	2062	3915	1345	4930	483	2142	217
DARCOM (Other)	809	337	0	426	0	720	0
MACOM (Other)	12	651	0	30	0	0	600
Army Total	6812	15853	1461	10389	1786	8303	3156

1. Small units include: team, company, battalion task force.
2. Functions include both combat support and combat service support.
3. Large units include: division, corps, theater force.

b. Distribution of work (TMM) for FY 78 by type force and primary issue studied.

Organizational	PROGRAM		Type Force Studied		Training	Doctrine/ Tactics	Primary Issue Studied		Other	
	Type Force Studied		Heavy	Light			All	Requirements		COEA Elmts
	Heavy	Light								
ESA/POA-Elms with Study Mission	6567	24	2	2	1526	1	295	1677	872	2222
BSI	445									445
ESACAA	1954	24	2		7		277	418	24	1022
ESANCA	52						18	15		13
ESARDAISA	217									217
ESALZA	217				1519			217		
ESAAKI	2319							494	411	95
ESANTLZICIZ	618							96	435	107
ESAVEC	121							114	7	
ESC	394							372	15	56
TRADOC-Elms with Study Mission	6976	556	345		628	592	1317	3907	81	1362
DCSID, Asst Div.	450							402		48
CACDA	685	103	26			55	31	451		477
LOGCEN	478	2	16			13	34	274		175
ADMPCEN	1312				451		704	47	72	38
Air Defense School	396						48	252		
ABER School	69	101	4		12	96	30	122		4
ARTY School	54	91				2	2	129		18
INT School	266	20				71	67	148		
AVN School	201							201		
ERC School	250					135	45	39		56
Missile & Munitions School	102					18	14	67		21
Intelligence School	482					40	36	42		363
TRAKS School	66						130	66		
CM School	115						16	45	9	26
ETC School	16						1	99		7
MP School	2035				165		159	1523		129
TRASAM						35				
						86				

b. Continued.
 Distribution of work (TMN) for FY 78 by type force and primary issue studied.

Organizational Unit	Type Force Studied		Primary Issue Studied					Other	
	Heavy	Light	All	Training	Doctrine/ Tactics	Requirements	COA Plans		Personnel
MILCOM (Other)	600		63				647		16
USARZIE									
USAFRESCOM	600		63				600		6
USACE							47		
USAFORSCEM									
Summary									
SSA/FDA	6567	24	2	1526	1	295	1677	872	2222
TRADOC	6976	536	345	628	582	1317	3907	81	1362
DIRCOM	600	0	63	0	0	0	647	0	16
PARCOM (Other)	6771	634	257	6	212	700	4957	89	1974
MILCOM (Other)	1146	0	0	178	0	122	497	1	11
Army Total	22990	1414	667	2338	795	2434	11685	1043	5585

b. Continued.

Distribution of work (TMM) for FY 78 by type force and primary issue studied.

Organization	Type Force Studies		Training	Doc: line/ Tactics	Primary Issue Studied		Personnel	Other	
	Heavy	Light			COEA	Elmts			
BARCOM	6771	834	257	6	212	700	4957	13	1974
HQ BARCOM, SA R.I.v.	97				4		3	1	89
HQ BARCOM, BSI	153		5	1	71	33	7		47
ABRCOM	274	16					263		26
CERCOM	108						47		61
MIRCOM	131						92		89
TFRCOM	142						142		
TSARCOM	384						186		
ARBAIKOM	123	12	3			3	211		156
AVRADCOM	121								1034
CORADCOM	107		9			66	30		14
ERADCOM	186	12			102	24	96		35
HERADCOM	93	28					121		90
MIRADCOM	228						138		
NAVADCOM	316					316	377		
TARADCOM	378		33	5	4	21	3076	5	4
ANSAA	2771	786	834		31	237		7	340
BARCOM (Other)	1146			178		122	497	1	11
ALPHA	353			172			42		2
BETACOM	58					6			2
IND	120								3
LSO	509			6		110	388	1	
LCA	60						42		1
OSALCOM	46					6	25		1

4. Study Program - FY 79. a. Distribution of work (TMM) for FY 79 by period work first affects operational capability of Army and by level of system/function examined.

Organizations	Work First Affects Field Op'l Capability of Army			System Level/Function Examined			
	0-2	3-10	11-20	Item	Small Units	Function	Large Units
SSA/70A-Elms with Study Mission	938	5243	45	3326	88	1077	1413
SSI	205	405	45	78	79	562	320
USACAA	39	1660		10		45	1012
USANCA		21		222			5
USAMIAISA	48	272				228	
USALEA		180		2434		90	
USAAFI	402	7434		428			
USARLPEPZEA	122	116		122			
USAREC	122	164		32	9	152	76
ISC							
TRADOC-Elms with Study Mission	2728	7598	773	2146	1086	5539	1699
DCSD, Anal Div.							
CACDA	311	829		83	55	142	788
LOGCEN	485	689		70		732	316
ADMTGEN	815	1020		98		1734	2
Air Defense School		438	156	48		504	42
ARSUR School	63	84		96	50	1	
ARTY School	137	110					247
Inf School		304		12	280		12
AVS School	44	1056	48	874		274	
EXC School	18	252	2	37		224	11
Missile & Munitions School	45	80		15		94	16
Intelligence School	36	202	4	132		110	
TRASS School	58	210	8	58		152	
QM School		221		56		231	
SIG School	139	67		88	105		13
SP School	577	2036	55	479	596	1341	252
TRASATA							

a. cont. Distribution of work (TMM) for FY 79 by period work first affects operational capability of Army and by level of system/function examined.

PROGRAM	Work First Affects Field Ops' Capability of Army			System Level/Function Examined			
	0-2	2-10	11-20	Item	Small Units	Function	Large Units
	3067	4083	1423	5962	840	2375	114
Consolidations							
DARCOM	104	42		45		65	36
HQ DARCOM, SA Div.	7					7	
HQ DARCOM, NSI	288	137	1	365		56	
ABRACOM	132			132			
CERCOM	223		48	175		265	
MIRCOM	180			108		72	
TARCOM	156		156		144	294	
TSARCOM	42	228	1145	1415			
ABRACOM	18	102		120			
AVRACOM		252		42		210	
CORACOM	571	515	26	547	456	109	
ERACOM	34	87		5		116	
MIRACOM	68	162		37	24	149	
FINACOM	449			24		425	
TAKACOM		168		168			
AVSMA	802	2813	47	2759	216	607	78
DARCOM (Other)	841	403		425		819	
AVSMA	353					353	
RESCOM	19	69				88	
TRC	108	12				120	
LSO	268	292		374		186	
ICA	72					72	
USARCOM	21	30		51			

a. Cont. Distribution of work (TMM) for FY 79 by period work first affects operational capability of Army and by level of system/function examined.

Organizations	Work First Affects Field Op's Capability of Army			System Level/Function Examined			
	0-2	2-10	11-20	Item	Small Units	Function	Large Units
PROGRAM FY 79							
Organizations							
MACOM (Orther)	17	656		36		35	600
USAREUR							
USAINSCOM	17	600		36		35	600
USAC		56					
USAFORSOM							
Summary							
SSA/FOA	308	5243	45	3326	88	1077	1413
TRADOC	2728	7598	273	2146	1086	5539	1699
MACOM	3067	4803	1423	5962	840	2375	1114
DAACOM(Orther)	841	403		425		819	
MACOM(Orther)	17	656		36		35	600
Army Total	7582	18703	1741	11895	2014	9845	3826

b. Distribution of work (TMM) for FY 79 by type force and primary issue studied.

Organizations	Type Force Studied		Training	Doctrine/ Tactics	Require- ments	COEA Elmts	Personnel	Other
	Heavy	Light						
PROGRAM								
SSA/FOA-Elmts with Study Mission	178	6048	1516	1	538	1132	961	2078
SSI		446						446
USACAA		1910			528	363		1019
USAWCA		60		1	10	39		10
USADDAISA		222						222
USALEA	178	228				228		
USAFRI		2256	1516			434	401	63
USAMILPERCEN		518				4	410	108
USABEC		122				44	118	
ESC		286					32	210
TRADOC-Elmts with Study Mission	612	345	663	798	2099	5216	148	1675
DCSCD, Anal Div.								
LAODA	299	3		54	6	532		528
LOGCEN	17	5		19	67	656	11	421
AMSTCEN			498		1025	93	84	135
Air Defense School				144	138	252		60
ARMOR School	73			4	25	114		4
ARTY School	163			20	79	227		
ATF School	24			86	378	139		
AVC School				156	42	384	44	186
ECG School	22	14		43	44	123		64
Missile & Munitions School				36	15	69		12
Intelligence School				2	140	139		32
TRACS School	14	142		87	56	82	9	53
QI School				49				
SIG School		181		38	11	106		40
SP School			165		73	2212		120
TRISAVA		2668						

b. Cont. Distribution of work (TAW) for FY 79 by type force and primary issue studied.

Organization	Type Force Studied		Training	Doctrine/ Topics	Primary Issue Studied	Personnel	Other		
	Heavy	Light						Elmts	Requirements
PROGRAM FY79									
BARCOM	815	182	8296	2	544	827	5586	29	2035
HQ BARCOM, SA Div.			146						
HQ BARCOM, NSI			7						
AERCOM			421		5	7	4	2	135
CERCOM			152	1		12	330		78
MIRCOM			463			24	104	24	4
LARGEN			180				139	3	274
TSARCOM			438				180		
ARRARCOM			1364				264		156
AVRARDCOM	48	3	120				268		1148
CEARCOM			252				24		30
ERARCOM	18	24	1070				192		60
NERARCOM	26		95		495	5	470		84
PIRARCOM			230				99		17
XARARCOM			449				116		114
TARARCOM	723	153	2784	1	44	449	168		205
ANSEA							3172		
BARCOM (Other)	611		1264	172	46	131	514	28	353
ANETA			353	172					181
DESARCOM			88				49		18
LEO			120						120
LSO			560		46	110	360	28	16
LCA			72				54		18
USAIDCOM			51				51		

b. Cont. Distribution of work (TMA) for FY 79 by type force and primary issue studied.

PROGRAM Organization	Type Force Studied		Primary Issue Studied					Personnel	Other	
	Heavy	Light	All	Training	Doctrine/ Tactics	Requir- ments	COEA Elmts			
MADCOM (Other)			673					649		24
ISABEIE										
USAINSCOM			600					600		24
USACC			73					49		
USAFUSCOM										
Summary										
SSA/FDA	178	6048		1516	1	538		1132	961	2078
TRADOC	345	9642		663	798	2099		5216	148	1675
DARCOM	182	8296		2	544	827		5386	29	7305
DARCOM (Other)		1244		172	46	131		514	28	353
MACOM (Other)								649		24
Army Total	1427	705	25230	2353	1389	3595		13097	1146	6435

5. Estimated Program Cost-FY78. Estimated Cost of Army Studies and Analysis for FY 78 (\$K)

Organizations	Total (\$K)	Indirect	Source of Funds				Method of Performance	
			Direct		Contract		In-house	Contract
			Total	MPA	DXA	RDTL		
HQ DA	7355	0	1530	2495	1330	3025	1000	3330
OCSA, SMO	4455		55	1070	3330	125	1000	3330
OCSA, PAED	1329		925	400		1325		
ODSOPS, Tech Adv.	305		85	220		305		
ODSHDA, ERAD; Sci Adv.	605		275	330		605		
OACSI, Red Team	110		60	50		110		
ODSPEP, SMO	175		80	95		175		
ODSLOG, SMO	50		0	50		50		
ODUSA(OR)	330		50	280		330		
SSA/FMA-Elmks with Study Mission	41079	2148	5580	14060	19291	31427	576	9076
SSI	1565	0	775	790		1565		
USACAA	8605	25	2885	5695		8376	229	
USARCA	508	0	310	198		490	18	
USARDAISA	955	0	30	925		911	44	
USARFA	3117	0	85	3032		3033	84	
USAREI	21044	1123	630	0	19291	11968		9076
USAMFLPHIBER	1975	0	510	1465		1975	0	0
USAREC	552	0	145	407		367	185	0
ZSC	2758	1000	210	1548		2742	16	0

Estimated Cost of Army Studies and Analysis for FY 78 (\$K)

Organizations	Total (\$K)	Indirect	Source of Funds			Method of Performance			
			Total	Direct		In-House	O/P	R/TE	
				MPA	OMA				R/TE
COST									
TRADOC-Elats with Study Mission	37908	760	37148	9935	24019	3194	32747	2661	2500
DCSCD, Anal Div.	3504	0	3504	205	799	2500	934	70	2500
CACDA	5528	57	5431	1620	3796	35	5388	140	0
LOGLEN	1633	0	1633	575	1058	0	1609	24	0
ADMINCEN	2465	6	2459	1030	1429	0	2449	16	0
Air Defense School	3652	198	3454	490	2727	237	2553	999	0
ARMOR School	572	0	572	160	412	0	366	206	0
ARTY School	2592	65	2527	114C	1387	0	2541	1	0
INF School	1348	0	1348	420	928	0	1346	999	0
AVN School	235	0	235	235	0	0	235	2	0
ENG School	1748	51	1697	560	967	70	1738	10	0
Missile & Munitions School	288	0	288	105	183	0	288	0	0
Intelligence School	2560	0	2560	1380	1180	0	2060	500	0
TRAUS School	630	0	630	630	0	0	630	0	0
QM School	1193	1	1192	520	664	8	1193	0	0
SIG School	370	0	370	0	306	64	340	30	0
MP School	9590	342	9248	765	8153	300	8927	663	0
TRASANA									

Estimated Cost of Army Studies and Analysis for FY 78 (\$K)

Organizations	Total (\$K)	Indirect	Source of Funds			Method of Performance			
			Total	Direct		In-House	Contract		
				MPA	OMA		OMA	RDTE	
CIST									
BARCOM-ID; Readiness Units; Study Agencies									
HQ BARCOM, SA Div.	45418	7707	37711	1370	6331	30010	40524	296	4598
HQ BARCOM, ISI	269	0	269	85	184	0	269	0	0
BARCOM	3911	0	3911	270	0	3641	1085	0	2826
CENCOM	1505	23	1482	20	1462	0	1505	0	0
DESCOM	655	138	517	0	517	0	359	296	0
LESCOM	1305	235	1070	75	925	0	1305	0	0
TARCOM	201	0	201	0	201	0	201	0	0
TSARCOM	695	0	695	0	695	0	695	0	0
AVRADCOM	13425	4030	9395	300	150	8945	12794	0	631
AVRADCOM	310	0	310	20	24	266	310	0	0
CRADCOM	471	0	471	0	0	471	471	0	0
FRADCOM	1519	51	1468	25	40	1403	1319	0	200
MRADCOM	1199	0	1199	110	0	1089	1199	0	0
PARADCOM	897	310	587	0	0	587	897	0	0
SARADCOM	1837	60	1777	0	24	1753	1709	0	128
TARADCOM	994	0	994	25	539	430	994	0	0
AVSAA	16255	2860	13365	440	1500	11425	15412	0	813
BARCOM (Other)									
	6775	251	6524	0	6524	0	6513	262	0
AFSA									
DESCOM	3728	154	3574	0	3574	0	3699	29	0
IRG	320	0	320	0	320	0	320	0	0
LEO	485	0	485	0	485	0	485	0	0
LCA	983	97	886	0	886	0	950	33	0
DEADCOM	156	0	156	0	156	0	156	0	0
	1103	0	1103	0	1103	0	903	200	0

Estimated Cost of Army Studies and Analysis for FY 78 (\$K)

Organizations	Total (\$K)	Source of Funds				Method of Performance			
		Indirect	Direct		In-House	Contract			
			Total	MIA		OMA	OMA		
MACOM (Other)	480	0	740	240	480	0	0	0	0
USAFETR									
USAFESCOM	240	0	240	0	240	0	0	0	0
USACC	240	0	240	0	240	0	0	0	0
USAFRESCOM									
Summary									
HQ DA	7355	0	1530	2495	3025	1000	3330	3330	
SSA/FDA	41079	2148	5390	14060	31427	576	4076	4076	
TRADOC	37908	760	9935	24019	32747	2661	2500	2500	
DARCOM	45418	7707	1370	6331	40524	296	4398	4398	
MACOM (Other)	6775	251	0	6524	6513	262	0	0	
MACOM (Other)	480	0	240	240	480	0	0	0	
Army Total	139015	10866	18655	53669	114716	4795	19504	19504	

APPENDIX D

DATA

CHAPTER II

ARMY WIDE ROLL-UP

1. Scope. This chapter contains a roll-up of Army studies and analysis personnel and study program statistics,

2. Personnel

a. Distribution of position categories of professional employees.

Position Category	Nr Persons		
	Mil	Civ	Total
Managers	62	105	167
Supervisors	95	182	277
Analysts	424	1,405	1,829
Total	581	1,692	2,273

b. Distribution of grade level of incumbent professional staff.

Civilian	
Grade	Nr Persons
GS-5	14
7	29
9	56
11	206
12	486
13	631
14	234
15	116
16	9
17	5
18	6

Military	
Grade	Nr Persons
2d LT	10
1st LT	20
CPT	136
MAJ	175
LTC	183
COL	64
BC	0
MG	1

c. Distribution of Time in Current Grade,

Nr Years in Grade	2d LT	1st LT	CPT	MAJ	LTC	COL	BG	MG
0 - 2	10	12	14	56	78	27	0	1
3 - 5	0	8	42	54	61	17	0	0
6 - 10	0	0	76	59	39	10	0	0
Over 10	0	0	6	6	6	0	0	0

Nr Years in Grade	7S-5	7	9	11	12	13	14	15	16	17	18
0 - 2	10	24	44	158	201	96	43	17	2	3	1
3 - 5	2	5	6	33	144	167	81	37	3	1	1
6 - 10	1	0	5	11	108	188	71	43	3	1	2
Over 10	1	0	2	4	33	80	39	19	1	0	2

d. Distribution of total nr years in federal service.

Nr Years	Nr Persons		
	Mil	Civ	TOTAL
0 - 5	29	324	353
6 - 10	97	350	447
11 - 15	143	367	510
16 - 20	197	262	459
21 - 25	79	158	237
Over 25	36	241	277

e. Distribution of nr years professional experience in specialty.

Nr Years Actual Experience in Specialty	Nr Persons		Total
	Mil	Civ	
0 - 5	288	498	786
6 - 10	118	425	543
11 - 15	69	310	379
16 - 20	64	210	274
21 - 25	26	122	148
Over 25	16	127	143

f. Distribution of nr years experience in specialty in private sector.

Nr Years	Nr Persons		Total
	Mil	Civ	
0	639	1,042	1,681
0 - 5	42	351	359
6 - 10	0	163	163
11 - 15	0	79	79
16 - 20	0	38	35
21 - 25	0	10	10
Over 25	0	9	9

g. Distribution of nr years employed in current organization (or directly precedent organizations).

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	587	900	1,487
6 - 10	0	503	503
11 - 15	0	180	180
16 - 20	0	60	60
21 - 25	0	23	23
Over 25	0	26	26

h. Distribution of education level of professional staff.

Highest Education Level	Nr Persons		
	Mil	Civ	Total
High School	8	108	116
4-yr college degree	98	403	501
College degree + grad level credit	75	309	384
1 grad degree	336	573	909
2 or more grad degree	56	293	349

1. Distribution of fields of education,

Primary Fields of Education	Nr. Persons		Total
	Mil	Civ	
Operations Research	119	101	220
Math/Stat/Computer Sciences	57	512	569
Physica/Chem	21	172	193
Other Experimenal Sciences	18	9	27
Eng (EE, ME, AE, CE, Ind E, etc.)	105	381	486
Economics	11	33	44
Military Sciences	15	16	31
Sociology	7	13	20
Psychology	12	211	223
Pol Science	30	24	54
History/Geography	14	17	31
Art & Humanitites	6	6	12
Other Social Sciences	18	14	32
Business	87	84	171
Other	61	99	160

j. Distribution of time since last formal education.

Nr Years Since Employee Attended Any Accredited College/University, and Successfully Completed a Course That Would Normally Result in 3 SH Credit	Nr Persons		
	Mil	Civ	Total
0 - 2	241	511	752
3 - 5	134	361	495
6 - 10	121	367	488
11 - 20	62	313	375
Over 20	23	140	163

k. Distribution of reasons for professional civilians leaving the organization (two year period).

Total Leaving	For Promotion	Promoted After Leaving	For Private Sector	For Retirement
406	128	105	57	54

Total Leaving for Other Reasons
167

1. Of the 128 personnel who left, 105 were reported promoted.

1. Distribution of reasons for military officers leaving the organization (two year period).

Total Leaving	For PCS	Less Than 20 Years		At 20 Years		After 20 Years	
		For Speciality in Private Sector	For Other Job	For Speciality in Private Sector	For Other Job	For Speciality in Private Sector	For Other Job
733	495	49	71	16	15	27	50

3. Study Program - FY 78

- a. Period during which work could first affect the operational capabilities of Army forces in the field.

FY Period	In - House		Contract	
	Nr	TMM1	\$ (K) 2	NR
1978	267	3,888	873	18
1979	207	3,369	2,457	26
1980 - 1990	736	15,408	18,051	118
1991 - 2000	29	1,461	1,791	7
Other	2	15	0	0
Total	1,240	24,141	23,172	169

- b. Distribution of work primarily applicable to type Army Forces

Type	In-House		Contract	
	NR	TMM	\$ (K)	NR
Heavy Forces	160	1,414	716	23
Light Forces	61	604	417	8
All Kinds of Forces	804	18,806	18,700	106
Not Applicable to Combat Forces	215	3,317	3,539	23

1. To convert In-house TMM to \$(K), multiply by \$4.167(K).
2. To convert contract \$(K) to TMM, divide by \$75(K).

c. Distribution of work program according to source of work requirement.

Source of Work Requirement	In - House		Contract	
	NR	TMM	\$(K)	NR
Self initiated as implicit in mission	460	8489	10,878	78
Specifically directed by higher HQ	507	10523	4,270	37
Response to requests for assistance	263	5073	1,347	13
Other	10	56	6,677	31

d. Distribution of work program according to objectives of the activities.

Activity	In - House		Contract	
	NR	TMM	\$(K)	NR
Solve specific problem/illuminate a current issue	764	12,279	12,044	90
Improve analysis methods, tools, models, etc.	198	3,929	8,298	60
Acquire new experimental facts for data bases.	44	1,412	1,563	14
Expand basic knowledge of the underlying nature of, and relations among, elements of the systems being examined	147	4,455	225	2
Other	87	2,066	0	0

e. Distribution of work program according to the nature of the primary issue involved.

Issue	In - House		Contract	
	NR	TDM	S (K)	NR
Personnel selection, recruitment and assignment.	32	967	1,543	7
Individual and small unit training.	33	2,338	4,280	16
Formulation of new doctrines, tactics, techniques.	69	798	2,130	14
Determination of whether a class of system is warranted.	13	97	31	1
Analysis of what kind of system is required.	112	2,337	2,881	21
Determination of system performance.	315	3,867	2,803	37
Definition of the environments of use of Army systems.	51	681	768	8
Threat assessments.	21	802	1,719	8
Analysis of costs.	52	920	138	3
Evaluation of systems effectiveness.	272	6,515	2,239	24
Other	280	5,922	4,650	30

f. Distribution of work program according to "Study Categories" used by OSD.

Study Category	In - House		Contract	
	NR	TDM	S (K)	NR
1. Manpower & Personnel	76	2,540	2,928	16
2. Concepts & Plans	78	1,931	1,602	10
3. Operations & Force Structure	183	4,522	3,922	31
4. Installations & Logistics	142	1,736	1,240	10
5. Science, Tech, Systems & Equip	573	10,009	9,280	82
6. Management	147	1,730	909	8
7. Intelligence	30	1,053	3,276	13
8. International Security	3	36	0	0
9. Other	8	684	17	1

g. Distribution of work program according to "Level of Conflict" involved.

Level	In-House		Contract	
	NR	TMM	\$(K)	NR
Conventional	566	9,821	8,373	84
Conventional-Chemical	52	893	532	4
Conventional-Chemical-Nuclear	335	8,137	9,309	40
Not Applicable to Combat Forces	287	5,290	4,958	41

h. Distribution of work program according to the level of systems that were examined.

System Level	In - House		Contract	
	NR	TMM	\$(K)	NR
Hardware or personnel or procedures aspects of items (sub-item).	316	7,916	10221	51
Item.	284	2,473	817	30
Small units, teams, task forces.	72	1,786	313	9
Vertically integrated system of items to accomplish functional obj.	380	6,600	8814	150
Large organizations--divisions & corps.	53	1,594	1583	2
Army force structure, theater forces, joint forces.	37	1,498	729	2
Other	98	2,274	716	7

1. Distribution of work program according to "Capability Category" involved.

CAPCAT	In-House		Contract	
	NR	TMM	\$ (K)	NR
Close Combat	172	2,770	708	12
Fire Support	154	1,833	2,172	39
Air Defense	47	938	1,129	7
Other Combat Support	71	1,342	943	6
Command Systems	25	242	1,601	11
ISTA (Intelligence, Surveillance & Target Acquisition)	60	1,031	2,959	17
Combat Service Support	190	2,191	1,312	10
Other Logistics	61	1,396	0	0
Ballistic Missile Defense	1	12	0	0
Research (6.1)	16	1,231	813	4
Program Wide Support	401	9,936	10,440	52
Other	42	1,291	1,099	11

j. Distribution of work according to the TRADOC Battlefield Development Plan (BDP).

	BDP Element	In - House		Contract	
		NR	TMM	\$(K)	NR
Force Generation	Surveillance/Fusion	44	706	1327	8
	Interdiction	17	258	101	2
	Force Mobility	105	3,678	6593	22
	Reconstitution	54	444	304	4
	C ³ /EW	29	431	2172	10
	Subtotal	249	5,517	10497	46
Central Battle	Target Servicing	263	4,091	1398	39
	Suppression/Counterfire	49	515	1347	12
	Air Defense	50	994	1161	7
	Support	427	5,943	1824	21
	C ³ /EW	46	1,209	3515	23
	Subtotal	835	12,752	9245	102
	Other	156	5,872	3430	21
	Total	1240	24,141	23172	169

4. Study Program - FY 79

- a. Period during which work could first affect the operational capabilities of Army forces in the field.

FY Period	In - House		Contract	
	Nr	TMM 1.	\$ (K) 2.	NR
1979	231	3,983	10,378	22
1980	155	4,054	1,238	8
1981 - 1991	596	18,257	15,683	83
1992 - 2001	25	1,741	2,397	16
Total	1,107	28,035	29,696	129

- b. Distribution of work primarily applicable to type Army Forces

Type	In-House		Contract	
	NR	TMM	\$ (K)	NR
Heavy Forces	116	1,427	329	88
Light Forces	42	705	820	17
All Kinds of Forces	774	22,273	23,700	5
Not Applicable to Combat Forces	175	3,630	4,846	19

1. To convert In-house TMM to \$(K), multiply by \$4.167(K).
2. To convert contract \$(K) to TMM, divide by \$75(K).

c. Distribution of work program according to source of work requirement.

Source of Work Requirement	In - House		Contract	
	NR	TMM	\$(K)	NR
Self initiated as implicit in mission	471	10736	11,253	69
Specifically directed by higher HQ	446	12284	16,484	52
Response to requests for assistance	184	4889	1,959	8
Other	6	116	0	0

d. Distribution of work program according to objectives of the activities.

Activity	In - House		Contract	
	NR	TMM	\$(K)	NR
Solve specific problem/illuminate a current issue	652	14,785	10,165	50
Improve analysis methods, tools, models, etc.	188	4,663	9,076	43
Acquire new experimental facts for data bases.	34	1,577	1,659	5
Expand basic knowledge of the underlying nature of, and relations among, elements of the systems being examined	146	4,950	8,373	27
Other	87	2,060	523	4

e. Distribution of work program according to the nature of the primary issue involved.

Issue	In - House		Contract	
	NR	TDM	\$ (K)	NR
Personnel selection, recruitment and assignment.	33	1,166	1375	6
Individual and small unit training.	28	2,353	4757	11
Formulation of new doctrine, tactics, techniques.	48	1,389	300	5
Determination of whether a class of system is warranted.	12	363	0	0
Analysis of what kind of system is required.	103	3,231	6693	16
Determination of system performance.	276	4,608	3244	39
Definition of the environments of use of Army systems.	36	690	870	7
Threat assessments.	11	747	861	2
Analysis of costs.	30	793	2900	2
Evaluation of systems effectiveness.	281	6,259	3652	18
Other	249	6,436	5087	23

f. Distribution of work program according to "Study Categories" used by OSD.

Study Category	In - House		Contract	
	NR	TDM	\$ (K)	NR
1. Manpower & Personnel	73	2,977	7,330	14
2. Concepts & Plans	77	2,408	4,554	7
3. Operations & Force Structure	155	4,482	2,811	17
4. Installations & Logistics	150	2,479	1,636	10
5. Science, Tech, Systems & Equip	494	12,302	9,959	66
6. Management	132	1,745	1,361	6
7. Intelligence	18	1,350	2,131	9
8. International Security	1	5	0	0
9. Other	6	637	0	0

D-11-16

g. Distribution of work program according to "Level of Conflict" involved.

Level	In-House		Contract	
	NR	TMM	\$(K)	NR
Conventional	427	11,562	8,824	56
Conventional-Chemical	85	2,149	769	7
Conventional-Chemical-Nuclear	341	9,017	12,689	36
Not Applicable to Combat Forces	254	5,307	7,415	30

h. Distribution of work program according to the level of systems that were examined.

System Level	In - House		Contract	
	NR	TMM	\$(K)	NR
Hardware or personnel or procedures aspects of items (sub-item).	296	8,922	18084	47
Item.	239	2,975	1309	26
Small units, teams, task forces.	68	2,014	645	9
Vertically integrated system of items to accomplish functional obj.	352	7,823	6693	38
Large organizations--divisions & corps.	46	1,918	1591	3
Army force structure, theater forces, joint forces.	47	1,908	1300	4
Other	89	2,475	174	1

1. Distribution of work program according to "Capability Category" involved.

CAPCAT	In-house		Contract	
	NR	TMM	\$ (K)	NR
Close Combat	132	3,151	565	7
Fire Support	97	1,803	1,037	27
Air Defense	42	1,396	602	8
Other Combat Support	69	2,508	1,057	7
Command Systems	21	377	1,515	4
ISTA (Intelligence, Surveillance & Target Acquisition)	41	1,389	5,380	10
Combat Service Support	192	3,428	1,845	11
Other Logistics	48	1,497	626	4
Ballistic Missile Defense	1	12	0	0
Research (6.1)	17	1,215	1,661	3
Program Wide Support	399	9,905	14,699	43
Other	48	1,354	709	5

1. Distribution of work according to the TRADOC Battlefield Development Plan (BDP).

BDF Element	In - House		Contract		
	NR	TMM	\$(K)	NR	
Force Generation	Surveillance/Fusion	32	1,521	420	3
	Interdiction	11	254	155	1
	Force Mobility	95	4,110	6782	18
	Reconstitution	53	513	260	2
	C ³ /EW	26	513	1780	5
Subtotal	217	6,911	9397	29	
Central Battle	Target Servicing	193	4,081	1368	30
	Suppression/Counterfire	32	462	248	6
	Air Defense	44	1,480	595	7
	Support	446	7,838	7454	26
	C ³ /EW	34	1,024	3110	11
Subtotal	749	14,885	12775	80	
Other	141	6,239	7524	20	
Total	1107	28,035	29696	129	

APPENDIX D
DATA

CHAPTER III
HQDA

1. Scope. This chapter contains a roll-up of personnel and FY 78 contract study program statistics for Headquarters, Department of the Army (HQDA). The HQDA elements included in the roll-up are as follows:

- a. OCSA, SMO
- B. OCSA, PAED
- c. ODSOPS, Tech Adv.
- d. ODSRDA, SRAQ; Sci Adv.
- e. OACSI, Red Team
- f. ODSPER, SMO
- g. ODSLOG, SMO
- h. ODUSA (OR)

2. Personnel

a. Distribution of position categories of professional employees.

Position Category	Nr Persons		
	Mil	Civ	Total
Managers	3	1	4
Supervisors	6	7	13
Analysts	49	16	65
Total	58	24	82

b. Distribution of grade level of incumbent professional staff.

Civilian	
Grade	Nr Persons
GS-5	1
7	0
9	0
11	0
12	1
13	5
14	4
15	6
16	2
17	2
18	3

Military	
Grade	Nr Persons
2d LT	0
1st LT	0
CPT	0
MAJ	19
LTC	32
COL	7
MG	0
MG	0

c. Distribution of Time in Current Grade,

Nr Years in Grade	2d LT	1st LT	CPT	MAJ	LTC	COL	BG	MG
0 - 2	0	0	0	2	13	2	0	0
3 - 5	0	0	0	10	18	4	0	0
6 - 10	0	0	0	7	1	1	0	0
Over 10	0	0	0	0	0	0	0	0

Nr Years in Grade	3S-5	7	9	11	12	13	14	15	16	17	18
0 - 2	0	0	0	0	1	1	0	1	0	1	1
3 - 5	1	0	0	0	0	1	1	2	0	0	0
6 - 10	0	0	0	0	0	2	2	1	1	1	1
Over 10	0	0	0	0	0	1	1	2	1	0	1

d. Distribution of total nr years in federal service,

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	0	0	0
6 - 10	3	4	7
11 - 15	17	6	23
16 - 20	28	3	31
21 - 25	7	4	11
Over 25	3	7	10

e. Distribution of nr years professional experience in specialty.

Nr Years Actual Experience in Specialty	Nr Persons		Total
	Mil	Civ	
0 - 5	37	2	39
6 - 10	17	3	20
11 - 15	2	7	9
16 - 20	1	9	10
21 - 25	0	1	1
Over 25	1	2	3

f. Distribution of nr years experience in specialty in private sector.

Nr Years	Nr Persons		Total
	Mil	Civ	
0	57	15	72
0 - 5	1	1	2
6 - 10	0	8	8
11 - 15	0	0	0
16 - 20	0	0	0
21 - 25	0	0	0
Over 25	0	0	0

g. Distribution of nr years employed in current organization (or directly precedent organizations).

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	58	12	70
6 - 10	0	6	6
11 - 15	0	5	5
16 - 20	0	1	1
21 - 25	0	0	0
Over 25	0	0	0

h. Distribution of education level of professional staff.

Highest Education Level	Nr Persons		
	Mil	Civ	Total
High School	0	1	1
4-yr college degree	1	6	7
College degree + grad level credit	0	2	2
1 grad degree	46	9	55
2 or more grad degree	11	6	17

1. Distribution of fields of education.

Primary Fields of Education	Nr. Parsons		Total
	Mil	Civ	
Operations Research	25	2	27
Math/Stat/Computer Sciences	3	3	6
Physics/Chem	0	5	5
Other Experimental Sciences	1	0	1
Eng (EE, ME, AE, CE, Ind E, etc.)	15	4	19
Economics	0	1	1
Military Sciences	0	0	0
Sociology	0	0	0
Psychology	1	1	2
Pol Science	2	0	2
History/Geography	0	2	2
Art & Humanities	1	0	1
Other Social Sciences	0	0	0
Business	3	4	7
Other	7	2	9

j. Distribution of time since last formal education.

Nr Years Since Employee Attended Any Accredited College/University, and Successfully Completed a Course That Would Normally Result in 3 SH Credit	Nr Persons		
	Mil	Civ	Total
0 - 2	8	3	11
3 - 5	16	3	19
6 - 10	30	5	35
11 - 20	4	8	12
Over 20	0	4	4

k. Distribution of reasons for professional civilians leaving the organization (two year period).

Total Leaving	For Promotion	Promoted After Leaving ¹	For Private Sector	For Retirement
9	4	4	1	1

Total Leaving for Other Reasons
3

1. All professionals who left for promotion were reported promoted.

1. Distribution of reasons for military officers leaving the organization (two year period).

Total Leaving	For PCS	Less Than 20 Years		At 20 Years		After 20 Years	
		For Speciality in Private Sector	For Other Job	For Speciality in Private Sector	For Other Job	For Speciality in Private Sector	For Other Job
63	54	0	0	3	0	3	3

3. Study Program - FY 78.

- a. Period during which work could first affect the operational capabilities of Army forces in the field.

FY Period	In - House		Contract	
	Nr	TMM	\$ (K)	NR
1978			60	1
1979			608	5
1980 - 1990			3212	23
1991 - 2000			584	1
Total			4464	30

- b. Distribution of work primarily applicable to type Army Forces

Type	In-House		Contract	
	NR	TMM	\$ (K)	NR
Heavy Forces			200	1
Light Forces			15	1
All Kinds of Forces			3209	15
Not Applicable to Combat Forces			1240	3

c. Distribution of work program according to source of work requirement.

Source of Work Requirement	In - House		Contract	
	NR	TMM	\$(K)	NR
Self initiated as implicit in mission			4339	28
Specifically directed by higher HQ			0	0
Response to requests for assistance			125	2
Other				

d. Distribution of work program according to objectives of the activities.

Activity	In - House		Contract	
	NR	TMM	\$(K)	NR
Solve specific problem/illuminate a current issue			3021	19
Improve analysis methods, tools, models, etc.			1301	8
Acquire new experimental facts for data bases.			0	0
Expand basic knowledge of the underlying nature of, and relations among, elements of the systems being examined			0	0
Other			142	3

e. Distribution of work program according to the nature of the primary issue involved.

Issue	In - House		Contract	
	NR	TMC	\$ (K)	NR
Personnel selection, recruitment and assignment.			248	2
Individual and small unit training.			167	4
Formulation of new doctrines, tactics, techniques.			27	1
Determination of whether a class of system is warranted.			0	0
Analysis of what kind of system is required.			159	4
Determination of system performance.			749	1
Definition of the environments of use of Army systems.			100	1
Threat assessments.			479	3
Analysis of costs.			0	0
Evaluation of systems effectiveness.			780	6
Other			1755	9

f. Distribution of work program according to "Study Categories" used by OSD.

Study Category	In - House		Contract	
	NR	TMC	\$ (K)	NR
1. Manpower & Personnel			385	4
2. Concepts & Plans			595	5
3. Operations & Force Structure			1411	10
4. Installations & Logistics			419	1
5. Science, Tech, Systems & Equip			1059	7
6. Management			480	1
7. Intelligence			99	1
8. International Security			0	0
9. Other			17	1

g. Distribution of work program according to "Level of Conflict" involved.

Level	In-House		Contract	
	NR	TMM	\$(K)	NR
Conventional			833	7
Conventional-Chemical			419	1
Conventional-Chemical-Nuclear			777	5
Not Applicable to Combat Forces			2435	17

h. Distribution of work program according to the level of systems that were examined.

System Level	In - House		Contract	
	NR	TMM	\$(K)	NR
Hardware or personnel or procedures aspects of items (sub-item).			797	9
Item.			0	0
Small units, teams, task forces.			0	0
Vertically integrated system of items to accomplish functional obj.			2343	11
Large organizations--divisions & corps.			0	0
Army force structure, theater forces, joint forces.			629	3
Other			715	7

1. Distribution of work program according to "Capability Category" involved.

CAPCAT	In-House		Contract	
	NR	TMM	\$ (K)	NR
Close Combat			334	3
Fire Support			581	5
Air Defense			0	0
Other Combat Support			246	1
Command Systems			695	5
ISTA (Intelligence, Surveillance & Target Acquisition)			0	0
Combat Service Support			419	1
Other Logistics			0	0
Ballistic Missile Defense			0	0
Research (6.1)			0	0
Program Wide Support			1629	8
Other			560	7

j. Distribution of work according to the TRADOC Battlefield Development Plan (BDP).

BDP Element	In - House		Contract	
	NR	TMM	\$(K)	NR
Force Generation			180	1
	Surveillance/Fusion			
	Interdiction		15	1
	Force Mobility		0	0
	Reconstitution		249	2
C ³ /EW		1230	5	
Subtotal			1674	9
Central Battle			431	3
	Target Servicing			
	Suppression/Counterfire		50	1
	Air Defense		0	0
	Support		694	4
C ³ /EW		697	7	
Subtotal			1772	15
Other			1018	6
Total			4464	30

APPENDIX D
DATA
CHAPTER IV
SSA/FOA ROLL-UP

1. Scope. This chapter contains a roll-up of personnel and FY 78 study program statistics for Field Operating Agencies (FOA) and Staff Support Agencies (SSA). The organizations (elements with study missions) included in the roll-up are as follows:

- a. SSI
- b. USACAA
- c. USANCA
- d. USARDAISA
- e. USALEA
- f. USAARI
- g. USAMILPERCEN
- h. USAREC
- i. ESC

2. Personnel

a. Distribution of position categories of professional employees.

Position Category	Nr Persons		
	Mil	Civ	Total
Managers	21	23	44
Supervisors	21	58	79
Analysts	135	392	527
Total	177	473	650

b. Distribution of grade level of incumbent professional staff.

Civilian	
Grade	Nr Persons
GS-5	9
7	9
9	22
11	78
12	109
13	124
14	76
15	41
16	3
17	1
18	2

Military	
Grade	Nr Persons
2d LT	2
1st LT	3
CPT	20
MAJ	60
LTC	70
COL	21
BO	0
MG	1

c. Distribution of Time in Current Grade,

Nr Years in Grade	2d LT	1st LT	CPT	MAJ	LTC	COL	BG	MG
0 - 2	2	2	2	16	27	13	0	1
3 - 5	0	1	6	19	21	3	0	0
6 - 10	0	0	12	24	20	5	0	0
Over 10	0	0	0	1	2	0	0	0

Nr Years in Grade	3S-5	7	9	11	12	13	14	15	16	17	18
0 - 2	6	4	14	57	39	28	13	7	0	0	1
3 - 5	1	5	3	17	40	38	20	13	3	1	0
6 - 10	1	0	3	3	20	37	27	12	0	0	1
Over 10	1	0	2	1	10	21	15	9	0	0	0

d. Distribution of total nr years in federal service.

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	3	130	133
6 - 10	14	95	109
11 - 15	48	72	120
16 - 20	67	70	137
21 - 25	33	36	69
Over 25	12	70	82

e. Distribution of nr years professional experience in specialty.

Nr Years Actual Experience in Specialty	Nr Persons		Total
	Mil	Civ	
0 - 5	93	118	211
6 - 10	24	100	124
11 - 15	20	84	104
16 - 20	22	76	98
21 - 25	11	43	54
Over 25	7	52	59

f. Distribution of nr years experience in specialty in private sector.

Nr Years	Nr Persons		Total
	Mil	Civ	
0	163	199	362
0 - 5	14	167	171
6 - 10	0	64	64
11 - 15	0	30	30
16 - 20	0	18	18
21 - 25	0	4	4
Over 25	0	1	1

g. Distribution of nr years employed in current organization (or directly precedent organizations).

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	177	271	448
6 - 10	0	83	83
11 - 15	0	79	79
16 - 20	0	20	20
21 - 25	0	9	9
Over 25	0	11	11

h. Distribution of education level of professional staff.

Highest Education Level	Nr Persons		
	Mil	Civ	Total
High School	1	65	66
4-yr college degree	17	54	71
College degree + grad level credit	21	68	89
1 grad degree	117	117	234
2 or more grad degree	21	169	190

1. Distribution of fields of education.

Primary Fields of Education	Nr. Persons		Total
	Mil	Civ	
Operations Research	36	11	47
Math/Stat/Computer Sciences	19	82	101
Physics/Chem	8	9	17
Other Experimental Sciences	4	2	6
Eng (EE, ME, AE, CE, Ind E, etc.)	24	37	61
Economics	1	13	14
Military Sciences	8	6	14
Sociology	3	9	12
Psychology	7	198	205
Pol Science	12	13	25
History/Geography	7	7	14
Art & Humanities	1	3	4
Other Social Sciences	7	10	17
Business	21	32	53
Other	14	41	55

j. Distribution of time since last formal education.

Nr Years Since Employee Attended Any Accredited College/University, and Successfully Completed a Course That Would Normally Result in 3 SR Credit	Nr Persons		
	Mil	Civ	Total
0 - 2	71	154	225
3 - 5	40	88	128
6 - 10	31	98	129
11 - 20	25	97	122
Over 20	10	36	46

k. Distribution of reasons for professional civilians leaving the organization (two year period).

Total Leaving	For Promotion	Promoted After Leaving	For Private Sector	For Retirement
133	44	35	18	13

Total Leaving for Other Reasons
64

1. Of the 44 personnel who left for promotion, 36 were reported promoted.

1. Distribution of reasons for military officers leaving the organization (two year period).

Total Leaving	For PCS	Less Than 20 Years		At 20 Years		After 20 Years	
		For Speciality In Private Sector	For Other Job	For Speciality In Private Sector	For Other Job	For Speciality In Private Sector	For Other Job
135	89	5	1	2	1	9	28

3. Study Program - FY 78

- a. Period during which work could first affect the operational capabilities of Army forces in the field.

FY Period	In - House		Contract	
	Nr	TMM 1.	\$ (K) 2.	NR
1978	36	715	155	2
1979	1	4	30	1
1980 - 1990	108	4,821	7,240	23
1991 - 2000	21	1,053	0	0
Total	166	6,593	7,425	26

- b. Distribution of work primarily applicable to type Army Forces

Type	In-House		Contract	
	NR	TMM	\$ (K)	NR
Heavy Forces	1	24	0	0
Light Forces	1	2	0	0
All Kinds of Forces	143	6,998	7,240	23
Not Applicable to Combat Forces	21	569	185	3

1. To convert in-house TMM to \$(K), multiply by \$4.167(K).
2. To convert contract \$(K) to TMM, divide by \$75(K).

c. Distribution of work program according to source of work requirement.

Source of Work Requirement	In - House		Contract	
	NR	TMM	\$(K)	NR
Self initiated as implicit in mission	36	1950	2589	10
Specifically directed by higher HQ	37	2397	4711	22
Response to requests for assistance	92	2240	0	0
Other	1	6	125	0

d. Distribution of work program according to objectives of the activities.

Activity	In - House		Contract	
	NR	TMM	\$(K)	NR
Solve specific problem/illuminate a current issue	84	2,821	155	2
Improve analysis methods, tools, models, etc.	50	1,666	2,633	10
Acquire new experimental facts for data bases.	1	11	0	1
Expand basic knowledge of the underlying nature of, and relations among, elements of the systems being examined	24	1,888	4,637	10
Other	7	207	0	0

e. Distribution of work program according to the nature of the primary issue involved.

Issue	In - House		Contract	
	NR	TRM	\$ (K)	LR
Personnel selection, recruitment and assignment.	25	872	1295	5
Individual and small unit training.	12	1,526	4013	11
Formulation of new doctrine, tactics, techniques.	1	1	0	0
Determination of whether a class of system is warranted.	0	0	0	0
Analysis of what kind of system is required.	11	295	0	0
Determination of system performance.	10	691	1244	3
Definition of the environments of use of Army systems.	2	6	0	0
Threat assessments.	4	85	0	0
Analysis of costs.	1	14	0	0
Evaluation of systems effectiveness.	24	879	361	2
Other	76	2,222	510	4

f. Distribution of work program according to "Study Categories" used by OSD.

Study Category	In - House		Contract	
	NR	TRM	\$ (K)	NR
1. Manpower & Personnel	34	1,789	2,539	11
2. Concepts & Plans	11	627	671	1
3. Operations & Force Structure	37	1,458	155	3
4. Installations & Logistics	6	335	0	0
5. Science, Tech, Systems & Equip	18	1,218	4,044	10
6. Management	50	634	16	1
7. Intelligence	3	69	0	0
8. International Security	2	26	0	0
9. Other	5	627	0	0

g. Distribution of work program according to "Level of Conflict" involved.

Level	In-House		Contract	
	NR	TMM	\$(K)	NR
Conventional	51	1633	155	2
Conventional-Chemical	1	1	0	0
Conventional-Chemical-Nuclear	48	3949	7,069	20
Not Applicable to Combat Forces	66	1010	201	4

h. Distribution of work program according to the level of systems that were examined.

System Level	In - House		Contract	
	NR	TMM	\$(K)	NR
Hardware or personnel or procedures aspects of items (sub-item).	45	3,201	7254	22
Item.	46	263	16	1
Small units, teams, task forces.	3	129	0	
Vertically integrated system of items to accomplish functional obj.	30	1,097	155	3
Large organizations--divisions & corps.	6	217	0	0
Army force structure, theater forces, joint forces.	24	1,272	0	0
Other	17	307	0	0

1. Distribution of work program according to "Capability Category" involved.

CAPCAT	In-House		Contract	
	NR	TMM	\$ (K)	NR
Close Combat	5	145	0	0
Fire Support	7	181	0	0
Air Defense	1	4	0	0
Other Combat Support	10	121	0	0
Command Systems	0	0	0	0
ISTA (Intelligence, Surveillance & Target Acquisition)	6	113	0	0
Combat Service Support	9	82	0	0
Other Logistics	5	128	0	0
Ballistic Missile Defense	0	0	0	0
Research (6.1)	3	120	155	2
Program Wide Support	62	5,116	7,115	24
Other	11	583	0	0

1. Distribution of work according to the TRADOC Battlefield Development Plan (BDP).

BDP Element	In - House		Contract		
	NR	TMM	\$ (K)	NR	
Force Generation	Surveillance/Fusion	3	110	0	0
	Interdiction	23	2,244	6236	17
	Force Mobility	1	11	0	0
	Reconstitution	3	3	0	0
	C ³ /EW	0	0	0	0
Subtotal	30	2,368	6236	17	
Central Battle	Target Servicing	7	256	0	0
	Suppression/Counterfire	4	4	0	0
	Air Defense	1	4	16	1
	Support	63	1,013	833	2
	C ³ /EW	2	297	0	0
Subtotal	77	1,574	849	3	
Other	59	2,651	340	6	
Total	166	6,593	7425	26	

APPENDIX D

DATA

CHAPTER V

DARCOM

1. Scope. This chapter contains a roll-up of personnel and FY 78 study program statistics for Headquarters DARCOM, DARCOM Readiness and R&D Commands and study agencies. The DARCOM organizations (elements with study mission) included in the roll-up are as follows:

- a. HQ DARCOM, SA Div.
- b. HQ DARCOM, BSI
- c. AARCOM
- d. CERCOM
- e. MIRCOM
- f. TARCOM
- g. TSARCOM
- h. ARRADCOM
- i. AVRADCOM
- j. CORADCOM
- k. ERADCOM
- l. MERADCOM
- m. MIRADCOM
- n. NARADCOM
- o. TARADCOM
- p. AMSAA

2. Personnel

a. Distribution of position categories of professional employees.

Position Category	Nr Persons		
	Mil	Civ	Total
Managers	6	46	52
Supervisors	4	61	65
Analysts	43	544	587
Total	53	651	704

b. Distribution of grade level of incumbent professional staff.

Civilian	
Grade	Nr Persons
GS-5	2
7	6
9	19
11	78
12	201
13	205
14	89
15	45
16	4
17	1
18	1

Military	
Grade	Nr Persons
2d LT	3
1st LT	9
CPT	11
MAJ	13
LTC	7
COL	10
SG	0
MG	0

c. Distribution of Time in Current Grade,

Nr Years in Grade	2d LT	1st LT	CPT	MAJ	LTC	COL	SG	MG
0 - 2	0	4	0	4	1	4	0	0
3 - 5	1	1	3	1	4	4	0	0
6 - 10	2	1	6	6	2	2	0	0
Over 10	0	3	2	2	0	0	0	0

Nr Years in Grade	6S-5	7	9	11	12	13	14	15	16	17	18
0 - 2	2	6	17	58	73	38	16	8	2	1	0
3 - 5	0	0	1	12	57	63	34	11	0	0	1
6 - 10	0	0	1	6	53	72	23	20	2	0	0
Over 10	0	0	0	2	18	32	16	6	0	0	0

d. Distribution of total nr years in federal service.

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	5	99	104
6 - 10	5	119	124
11 - 15	10	163	173
16 - 20	15	114	129
21 - 25	6	64	70
Over 25	12	92	104

e. Distribution of nr years professional experience in specialty.

Nr Years Actual Experience in Specialty	Nr Persons		Total
	Mil	Civ	
0 - 5	15	228	243
6 - 10	15	188	203
11 - 15	7	120	127
16 - 20	5	54	59
21 - 25	5	35	40
Over 25	6	26	32

f. Distribution of nr years experience in specialty in private sector.

Nr Years	Nr Persons		Total
	Mil	Civ	
0	44	484	528
0 - 5	5	82	87
6 - 10	0	41	41
11 - 15	3	26	29
16 - 20	1	9	10
21 - 25	0	4	4
Over 25	0	5	5

g. Distribution of nr years employed in current organization (or directly precedent organizations).

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	53	309	362
6 - 10	0	249	249
11 - 15	0	48	48
16 - 20	0	21	21
21 - 25	0	10	10
Over 25	0	14	14

h. Distribution of education level of professional staff.

Highest Education Level	Nr Persons		
	Mil	Civ	Total
High School	1	6	7
4-yr college degree	14	265	279
College degree + grad level credit	8	79	87
1 grad degree	24	231	255
2 or more grad degree	6	66	72
Other	0	4	4

1. Distribution of fields of education.

Primary Fields of Education	Nr. Persons		Total
	Mil	Civ	
Operations Research	6	29	35
Math/Stat/Computer Sciences	7	263	270
Physica/Chem	5	111	116
Other Experimental Sciences	1	4	5
Eng (EE, ME, AE, CE, Ind E, etc.)	17	194	211
Economics	0	8	8
Military Sciences	1	5	6
Sociology	0	1	1
Psychology	0	2	2
Pol Science	2	1	3
History/Geography	0	1	1
Art & Humanities	0	1	1
Other Social Sciences	0	0	0
Business	12	13	25
Other	2	18	20

j. Distribution of time since last formal education.

Nr Years Since Employee Attended Any Accredited College/University, and Successfully Completed a Course That Would Normally Result in 3 SR Credit	Nr Persons		
	Mil	Civ	Total
0 - 2	16	157	173
3 - 5	11	150	161
6 - 10	10	140	150
11 - 20	10	137	147
Over 20	6	67	73

k. Distribution of reasons for professional civilians leaving the organization (two year period).

Total Leaving	For Promotion	Promoted After Leaving	For Private Sector	For Retirement
184	45	35	23	17

Total Leaving for Other Reasons
69

1. Of the 45 personnel who left for promotion, 35 were reported promoted.

1. Distribution of reasons for military officers leaving the organization (two year period).

Total Leaving	For PCS	Less Than 20 Years		At 20 Years		After 20 Years	
		For Speciality in Private Sector	For Other Job	For Speciality in Private Sector	For Other Job	For Speciality in Private Sector	For Other Job
55	28	9	10	1	0	4	3

3. Study Program - FY 78

- a. Period during which work could first affect the operational capabilities of Army forces in the field.

FY Period	In - House		Contract	
	Nr	TMM	\$ (K)	NR
1978	128	1697	432	10
1979	105	905	1198	15
1980 - 1990	348	3915	3542	46
1991 - 2000	22	1345	857	4
Total	603	7862	6029	75

- b. Distribution of work primarily applicable to type Army Forces

Type	In-House		Contract	
	NR	TMM	\$ (K)	NR
Heavy Forces	112	834	466	21
Light Forces	32	257	80	3
All kinds of Forces	368	6951	5301	46
Not Applicable to Combat Forces	91	820	182	5

1. To convert in-house TMM to \$(K), multiply by \$4.167(K).
2. To convert contract \$(K) to TMM, divide by \$75(K).

c. Distribution of work program according to source of work requirement.

Source of Work Requirement	In - House		Contract	
	NR	TMR	\$(K)	NR
Self initiated as implicit in mission	275	4005	3961	42
Specifically directed by higher HQ	210	2484	472	18
Response to requests for assistance	113	1336	782	6
Other	5	37	814	9

d. Distribution of work program according to objectives of the activities.

Activity	In - House		Contract	
	NR	TMR	\$(K)	NR
Solve specific problem/illuminate a current issue	394	4395	4532	44
Improve analysis methods, tools, models, etc.	80	976	635	18
Acquire new experimental facts for data bases.	25	1192	762	12
Expand basic knowledge of the underlying nature of, and relations among, elements of the systems being examined	74	1050	100	1
Other	30	249	0	0

e. Distribution of work program according to the nature of the primary issue involved.

Issue	In - House		Contract	
	NR	TRM	\$(K)	NR
Personnel selection, recruitment and assignment.	3	13	0	0
Individual and small unit training.	6	6	0	0
Formulation of new doctrine, tactics, techniques.	21	212	1917	11
Determination of whether a class of system is warranted.	9	49	31	1
Analysis of what kind of system is required.	47	651	1491	9
Determination of system performance.	64	2812	695	32
Definition of the environments of use of Army systems.	19	201	58	2
Threat assessments.	9	47	12	1
Analysis of costs.	18	338	50	1
Evaluation of systems effectiveness.	102	1659	675	10
Other	106	1974	1200	8

f. Distribution of work program according to "Study Categories" used by OSD.

Study Category	In - House		Contract	
	NR	TRM	\$(K)	NR
1. Manpower & Personnel	7	46	0	0
2. Concepts & Plans	24	262	0	0
3. Operations & Force Structure	36	324	1316	11
4. Installations & Logistics	43	481	24	2
5. Science, Tech, Systems & Equip	415	6182	3515	55
6. Management	70	532	125	3
7. Intelligence	5	16	1049	4
8. International Security	1	0	0	0
9. Other	2	9	0	0

g. Distribution of work program according to "Level of Conflict" involved.

Level	In-House		Contract	
	NR	TOT	\$(K)	NR
Conventional	318	3809	5225	59
Conventional-Chemical	36	625	113	3
Conventional-Chemical-Nuclear	144	2266	459	7
Not Applicable to Combat Forces	105	1162	222	6

h. Distribution of work program according to the level of systems that were examined.

System Level	In - House		Contract	
	NR	TOT	\$(K)	NR
Hardware or personnel or procedures aspects of items (sub-item).	159	2852	1475	13
Item.	227	2078	751	28
Small units, teams, task forces.	50	483	238	8
Vertically integrated system of items to accomplish functional obj.	124	1253	3053	21
Large organizations--divisions & corps.	6	66	0	0
Army force structure, theater forces, joint forces.	6	88	0	0
Other	51	1042	0	0

4. Distribution of work program according to "Capability Category" involved.

CAPCAT	In-House		Contract	
	NR	TMM	\$ (K)	NR
Close Combat	103	1124	374	9
Fire Support	121	1140	1541	33
Air Defense	32	305	730	4
Other Combat Support	32	705	557	3
Command Systems	14	143	339	3
ISTA (Intelligence, Surveillance & Target Acquisition)	27	239	174	6
Combat Service Support	35	434	5	1
Other Logistics	26	529	0	0
Ballistic Missile Defense	1	12	0	0
Research (6.1)	11	1091	658	2
Program Wide Support	195	2092	468	13
Other	6	48	183	1

j. Distribution of work according to the TRADOC Battlefield Development Plan (BDP).

BDP Element	In - House		Contract		
	NR	TMM	\$(K)	NR	
Force Generation	Surveillance/Fusion	25	318	1049	5
	Interdiction	12	248	86	1
	Force Mobility	50	822	30	1
	Reconstitution	31	209	5	1
	C ³ / W	12	67	375	2
Subtotal	130	1664	1545	10	
Central Battle	Target Servicing	180	1769	777	32
	Suppression/Counterfire	42	446	1297	11
	Air Defense	37	402	761	4
	Support	153	1880	613	8
	C ³ /EW	15	166	320	5
Subtotal	427	4663	3668	60	
Other	46	1535	816	5	
Total	603	7862	6029	75	

APPENDIX D
DATA
CHAPTER VI
DARCOM (Other activities) Roll-up

1. Scope. This chapter contains a roll-up of personnel and FY 78 study program statistics for DARCOM organizations not included in Chapter V. The organizations (elements with study mission) included in this chapter are as follows:

- a. AMETA
- b. DESCOM
- c. IRO
- d. LSO
- e. LCA
- f. USAILCOM

2. Personnel

a. Distribution of position categories of professional employees.

Position Category	Nr Persons		
	Mil	Civ	Total
Managers	1	4	5
Supervisors	2	11	13
Analysts	10	72	82
Total	13	87	100

b. Distribution of grade level of incumbent professional staff.

Civilian	
Grade	Nr Persons
GS-5	0
7	0
9	1
11	5
12	23
13	42
14	10
15	4
16	0
17	0
18	0

Military	
Grade	Nr Persons
2d LT	0
1st LT	1
CPT	10
MAJ	0
LTC	1
COL	1
SG	0
MG	0

c. Distribution of Time in Current Grade,

Nr Years in Grade	2d LT	1st LT	CPT	MAJ	LTC	COL	BG	MG
0 - 2	0	1	1	0	1	0	0	0
3 - 5	0	0	5	0	0	0	0	0
6 - 10	0	0	4	0	0	1	0	0
Over 10	0	0	0	0	0	0	0	0

Nr Years in Grade	3-5	7	9	11	12	13	14	15	16	17	18
0 - 2	0	0	1	5	15	3	2	0	0	0	0
3 - 5	0	0	0	0	5	18	4	2	0	0	0
6 - 10	0	0	0	0	5	15	3	2	0	0	0
Over 10	0	0	0	0	0	6	1	0	0	0	0

d. Distribution of total nr years in federal service.

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	2	8	10
6 - 10	9	25	34
11 - 15	0	25	25
16 - 20	1	10	11
21 - 25	0	7	7
Over 25	1	12	13

e. Distribution of nr years professional experience in specialty.

Nr Years Actual Experience in Specialty	Nr Persons		Total
	Mil	Civ	
0 - 5	12	22	34
6 - 10	0	22	22
11 - 15	0	15	15
16 - 20	1	8	9
21 - 25	0	7	7
Over 25	0	13	13

f. Distribution of nr years experience in specialty in private sector.

Nr Years	Nr Persons		Total
	Mil	Civ	
0	13	55	68
0 - 5	0	13	13
6 - 10	0	9	9
11 - 15	0	4	4
16 - 20	0	4	4
21 - 25	0	1	1
Over 25	0	1	1

g. Distribution of nr years employed in current organization (or directly precedent organizations).

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	12	38	50
6 - 10	0	29	29
11 - 15	0	14	14
16 - 20	0	5	5
21 - 25	0	1	1
Over 25	0	1	1

h. Distribution of education level of professional staff.

Highest Education Level	Nr Persons		
	Mil	Civ	Total
High School	0	3	3
4-yr college degree	1	0	1
College degree + grad level credit	1	18	19
1 grad degree	11	53	64
2 or more grad degree	0	13	13

1. Distribution of fields of education.

Primary Fields of Education	Nr. Persons		Total
	Mil	Civ	
Operations Research	6	16	22
Math/Stat/Computer Sciences	0	20	20
Physics/Chem	0	1	1
Other Experimental Sciences	0	0	0
Eng (BE, ME, AE, CE, Ind E, etc.)	3	44	47
Economics	0	1	1
Military Sciences	0	0	0
Sociology	0	0	0
Psychology	0	0	0
Pol Science	0	0	0
History/Geography	0	0	0
Art & Humanities	0	0	0
Other Social Sciences	0	0	0
Business	2	3	5
Other	2	2	4

j. Distribution of time since last formal education.

Nr Years Since Employee Attended Any Accredited College/University, and Successfully Completed a Course That Would Normally Result in 3 SH Credit	Nr Persons		
	Mil	Civ	Total
0 - 2	9	42	51
3 - 5	2	28	30
6 - 10	0	14	14
11 - 20	1	2	3
Over 20	1	1	2

k. Distribution of reasons for professional civilians leaving the organization (two year period).

Total Leaving	For Promotion	Promoted After Leaving	For Private Sector	For Retirement
25	7	6	6	2

Total Leaving for Other Reasons
11

1. Of the seven personnel who left for promotion, six were reported promoted.

1. Distribution of reasons for military officers leaving the organization (two year period).

Total Leaving	For PCS	Less Than 20 Years		At 20 Years		After 20 Years	
		For Specialty in Private Sector	For Other Job	For Specialty in Private Sector	For Other Job	For Specialty in Private Sector	For Other Job
11	2	2	6	0	0	1	0

3. Study Program - FY 78

- a. Period during which work could first affect the operational capabilities of Army forces in the field.

FY Period	In - House		Contract	
	Nr	TMM	\$(K)	Nr
1978	24	597	222	3
1979	8	212	0	0
1980 - 1990	7	337	0	0
1991 - 2000	0	0	0	0
Total	39	1146	222	3

- b. Distribution of work primarily applicable to type Army Forces

Type	In-House		Contract	
	Nr	TMM	\$(K)	Nr
Heavy Forces	0	0	2	184
Light Forces	0	0	1	39
All Kinds of Forces	8	330	0	0
Not Applicable to Combat Forces	31	816	0	0

1. To convert in-house TMM to \$(K), multiply by \$4.167(K).
2. To convert contract \$(K) to TMM, divide by \$75(K).

c. Distribution of work program according to source of work requirement.

Source of Work Requirement	In - House		Contract	
	NR	TMM	\$(K)	NR
Self initiated as implicit in mission	10	100	38	1
Specifically directed by higher HQ	22	657	50	1
Response to requests for assistance	7	389	0	0
Other	0	0	134	1

d. Distribution of work program according to objectives of the activities.

Activity	In - House		Contract	
	NR	TMM	\$(K)	NR
Solve specific problem/illuminate a current issue	26	698	184	2
Improve analysis methods, tools, models, etc.	6	316	38	1
Acquire new experimental facts for data bases.	6	117	0	0
Expand basic knowledge of the underlying nature of, and relations among, elements of the systems being examined	1	15	0	0
Other	0	0	0	0

e. Distribution of work program according to the nature of the primary issue involved.

Issue	In - House		Contract	
	NR	TR	NR	TR
Personnel selection, recruitment and assignment.	1	1	0	0
Individual and small unit training.	2	178	0	0
Formulation of new doctrine, tactics, techniques.	0	0	0	0
Determination of whether a class of system is warranted.	0	0	0	0
Analysis of what kind of system is required.	3	122	0	0
Determination of system performance.	4	45	0	0
Definition of the environments of use of Army systems.	2	45	134	1
Threat assessments.	0	0	0	0
Analysis of costs.	10	345	0	0
Evaluation of systems effectiveness.	6	62	88	2
Other	11	348	0	0

f. Distribution of work program according to "Study Categories" used 250.

Study Category	In - House		Contract	
	NR	TR	NR	TR
1. Manpower & Personnel	4	35	0	0
2. Concepts & Plans	1	6	0	0
3. Operations & Force Structure	0	0	0	0
4. Installations & Logistics	21	376	50	1
5. Science, Tech, Systems & Equip	1	264	172	2
6. Management	2	465	0	0
7. Intelligence	0	0	0	0
8. International Security	0	0	0	0
9. Other	0	0	0	0

g. Distribution of work program according to "Level of Conflict" involved.

Level	In-House		Contract	
	NR	TMM	\$(K)	NR
Conventional	51	1633	155	2
Conventional-Chemical	1	1	0	0
Conventional-Chemical-Nuclear	48	3949	7,069	20
Not Applicable to Combat Forces	66	1010	201	4

h. Distribution of work program according to the level of systems that were examined.

System Level	In - House		Contract	
	NR	TMM	\$(K)	NR
Hardware or personnel or procedures aspects of items (sub-item).	45	3,201	7254	22
Item.	45	253	16	1
Small units, teams, task forces.	3	129	0	
Vertically integrated system of items to accomplish functional obj.	30	1,097	155	3
Large organizations--divisions & corps.	6	217	0	0
Army force structure, theater forces, joint forces.	24	1,272	0	0
Other	17	307	0	0

1. Distribution of work program according to "Capability Category" involved.

CAPCAT	In-House		Contract	
	NR	TMM	\$ (K)	NR
Close Combat	0	0	0	0
Fire Support	0	0	0	0
Air Defense	0	0	0	0
Other Combat Support	4	64	134	1
Command Systems	0	0	0	0
ISTA (Intelligence, Surveillance & Target Acquisition)	0	0	0	0
Combat Service Support	1	6	0	0
Other Logistics	0	0	0	0
Ballistic Missile Defense	0	0	0	0
Research (6.1)	4	1	0	0
Program Wide Support	0	0	88	2
Other	383	11	0	0

j. Distribution of work according to the TRADOC Battlefield Development Plan (BDP).

BDP Element	In - House		Contract		
	NR	TMM	\$(K)	NR	
Force Generation	Surveillance/Fusion	0	0	0	0
	Interdiction	0	0	0	0
	Force Mobility	0	0	0	0
	Reconstitution	2	108	0	0
	C ³ /EW	0	0	0	0
	Subtotal	2	108	0	0
Central Battle	Target Servicing	0	0	0	0
	Suppressor Counterfire	0	0	0	0
	Air Defense	0	0	0	0
	Support	31	716	88	2
	C ³ /EW	0	0	0	0
	Subtotal	31	716	0	0
Other	6	322	134	1	
Total	39	1146	222	3	

APPENDIX D
DATA
CHAPTER VII
TRADOC ROLL-UP

1. Scope. This chapter contains a roll-up of personnel and FY 78 study program statistics for TRADOC. TRADOC organizations (elements with study missions) included in the roll-up are as follows:

- a. HQ TRADOC: DCSCD, Anal. Div.
- b. CACDA
- c. LOGCEN
- d. ADMINCEN
- e. Armor School
- f. Artillery School
- g. Air Defense School
- h. Engineer School
- i. Transportation School
- j. Quarter Master School
- k. Missile & Munition School
- l. Intelligence School
- m. Signal School
- n. Military Police School
- o. TRASANA

2. Personnel

a. Distribution of position categories of professional employees.

Position Category	Nr Persons		
	Mil	Civ	Total
Managers	30	30	60
Supervisors	56	39	95
Analysts	165	339	504
Total	251	408	659

b. Distribution of grade level of incumbent professional staff.

Civilian	
Grade	Nr Persons
GS-5	2
7	14
9	14
11	41
12	132
13	133
14	50
15	20
16	0
17	1
18	1

Military	
Grade	Nr Persons
2d LT	5
1st LT	7
CPT	89
MAJ	75
LTC	63
COL	12
SG	0
MG	0

c. Distribution of Time in Current Grade,

Nr Years in Grade	2d LT	1st LT	CPT	MAJ	LTC	COL	BG	MG
0 - 2	5	5	11	32	29	6	0	0
3 - 5	0	2	28	22	16	6	0	0
6 - 10	0	0	46	18	15	0	0	0
Over 10	0	0	4	3	3	0	0	0

Nr Years in Grade	GS-5	7	9	11	12	13	14	15	16	17	18
0 - 2	2	14	12	34	65	22	11	1	0	1	0
3 - 5	0	0	1	4	39	41	19	9	0	0	0
6 - 10	0	0	1	2	24	52	15	8	0	0	0
Over 10	0	0	0	1	4	18	5	2	0	0	0

d. Distribution of total nr years in federal service.

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	19	84	103
6 - 10	60	100	160
11 - 15	61	81	142
16 - 20	74	57	131
21 - 25	30	43	73
Over 25	7	43	50

e. Distribution of nr years professional experience in specialty.

Nr Years Actual Experience in Specialty	Nr Persons		Total
	Mil	Civ	
0 - 5	116	115	231
6 - 10	52	102	154
11 - 15	39	76	115
16 - 20	32	58	90
21 - 25	10	31	41
Over 25	2	26	28

f. Distribution of nr years experience in specialty in private sector.

Nr Years	Nr Persons		Total
	Mil	Civ	
0	234	251	485
0 - 5	17	91	108
6 - 10	0	39	39
11 - 15	0	18	18
16 - 20	0	7	7
21 - 25	0	1	1
Over 25	0	1	1

g. Distribution of nr years employed in current organization (or directly precedent organizations).

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	245	237	482
6 - 10	6	125	131
11 - 15	0	31	31
16 - 20	0	12	12
21 - 25	0	3	3
Over 25	0	0	0

h. Distribution of education level of professional staff.

Highest Education Level	Nr Persons		
	Mil	Civ	Total
High School	6	24	30
4-yr college degree	61	72	133
College degree + grad level credit	40	128	168
1 grad degree	120	148	268
2 or more grad degree	17	34	51

i. Distribution of fields of education.

Primary Fields of Education	Nr. Persons		
	Mil	Civ	Total
Operations Research	41	44	85
Math/Stat/Computer Sciences	28	136	164
Physics/Chem	7	47	54
Other Experimental Sciences	11	2	13
Eng (EE, ME, AE, CE, Ind E, etc.)	40	94	134
Economics	7	7	14
Military Sciences	5	4	9
Sociology	4	3	7
Psychology	4	10	14
Pol Science	8	5	13
History/Geography	5	5	10
Art & Humanitites	4	1	5
Other Social Sciences	7	0	7
Business	46	24	70
Other	34	26	60

j. Distribution of time since last formal education.

Nr Years Since Employee Attended Any Accredited College/University, and Successfully Completed a Course That Would Normally Result in 3 SH Credit	Nr Persons		
	Mil	Civ	Total
0 - 2	125	140	265
3 - 5	57	83	140
6 - 10	39	100	139
11 - 20	24	59	83
Over 20	6	26	32

k. Distribution of reasons for professional civilians leaving the organization (two year period).

Total Leaving	For Promotion	Promoted After Leaving ¹	For Private Sector	For Retirement
74	25	21	16	18

Total Leaving for Other Reasons
15

1. Of the 25 personnel who left for promotion, 21 were reported promoted.

1. Distribution of reasons for military officers leaving the organization (two year period).

Total Leaving	For PCS	Less Than 20 Years		At 20 Years		After 20 Years	
		For Specialty in Private Sector	For Other Job	For Specialty in Private Sector	For Other Job	For Specialty in Private Sector	For Other Job
450	305	32	53	10	14	10	26

3. Study Program - FY 78

- a. Period during which work could first affect the operational capabilities of Army forces in the field.

FY Period	In - House		Contract	
	Nr	TMM	\$ (K)	NR
1978	76	869	4	2
1979	72	1197	620	5
1980 - 1990	269	5699	3306	25
1991 - 2000	6	112	350	2
Total	423	7877	4820	34

- b. Distribution of work primarily applicable to type Army Forces

Type	In-House		Contract	
	NR	TMM	\$ (K)	NR
Heavy Forces	47	556	50	1
Light Forces	28	345	322	4
All Kinds of Forces	284	5927	2198	20
Not Applicable to Combat Forces	64	1049	1710	9

1. To convert In-house TMM to \$(K), multiply by \$4.167(K).
2. To convert contract \$(K) to TMM, divide by \$75 (K).

c. Distribution of work program according to source of work requirement.

Source of Work Requirement	In - House		Contract	
	NR	TMM	\$(K)	NR
Self initiated as implicit in mission	139	2434	1633	14
Specifically directed by higher HQ	235	4958	1115	8
Response to requests for assistance	45	472	440	5
Other	4	13	1092	7

d. Distribution of work program according to objectives of the activities.

Activity	In - House		Contract	
	NR	TMM	\$(K)	NR
Solve specific problem/illuminate a current issue	256	3745	2618	15
Improve analysis methods, tools, models, etc.	57	928	1612	18
Acquire new experimental facts for data bases.	18	209	50	1
Expand basic knowledge of the underlying nature of, and relations among, elements of the systems being examined	43	1400	0	0
Other	49	1595	0	0

e. Distribution of work program according to the nature of the primary issue involved.

Issue	In - House		Contract	
	NR	TMM	\$(K)	NR
Personnel selection, recruitment and assignment.	3	81	0	0
Individual and small unit training.	14	628	98	1
Formulation of new doctrine, tactics, techniques.	37	582	186	2
Determination of whether a class of system is warranted.	4	48	0	0
Analysis of what kind of system is required.	51	1269	1231	7
Determination of system performance.	36	313	115	1
Definition of the environments of use of Army systems.	28	327	466	4
Threat assessments.	7	70	477	3
Analysis of costs.	21	209	0	0
Evaluation of systems effectiveness.	138	2988	524	7
Other	84	1362	1184	9

f. Distribution of work program according to "Study Categories" used by OSD.

Study Category	In - House		Contract	
	NR	TMM	\$(K)	NR
1. Manpower & Personnel	31	670	4	1
2. Concepts & Plans	41	1034	336	4
3. Operations & Force Structure	110	2730	1040	7
4. Installations & Logistics	72	544	746	6
5. Science, Tech, Systems & Equip	132	2284	662	8
6. Management	15	199	116	1
7. Intelligence	21	368	376	7
8. International Security	0	0	0	0
9. Other	1	48	0	0

g. Distribution of work program according to "Level of Conflict" involved.

Level	In-House		Contract	
	NR	TMM	\$(K)	NR
Conventional	194	3755	1409	15
Conventional-Chemical	15	267	0	0
Conventional-Chemical-Nuclear	138	1868	993	8
Not Applicable to Combat Forces	76	1987	1878	11

h. Distribution of work program according to the level of systems that were examined.

System Level	In - House		Contract	
	NR	TMM	\$(K)	NR
Hardware or personnel or procedures aspects of items (sub-item).	103	1407	561	6
Item.	16	142	50	1
Small units, teams, task forces.	39	1174	75	1
Vertically integrated system of items to accomplish functional obj.	207	3991	2662	19
Large organizations--divisions & corps.	40	811	832	6
Army force structure, theater forces, joint forces.	7	138	100	1
Other	11	214	0	0

4. Distribution of work program according to "Capability Category" involved.

CAPCAT	In-House		Contract	
	NR	TMM	\$ (K)	NR
Close Combat	64	1501	0	0
Fire Support	26	512	50	1
Air Defense	13	627	400	3
Other Combat Support	28	510	142	2
Command Systems	10	75	567	3
ISTA (Intelligence, Surveillance & Target Acquisition)	27	679	1785	11
Combat Service Support	145	1669	888	8
Other Logistics	7	30	0	0
Ballistic Missile Defense	0	0	0	0
Research (6.1)	1	16	0	0
Program Wide Support	82	1716	234	4
Other	20	542	215	2

j. Distribution of work according to the TRADOC Battlefield Development Plan (BDP).

BDP Element	In - House		Contract		
	NR	TMM	\$(K)	NR	
Force Generation	Surveillance/Fusion	16	278	98	2
	Interdiction	5	10	0	0
	Force Mobility	32	612	327	4
	Reconstitution	20	116	50	1
	C ³ /EW	14	361	567	3
Subtotal	87	1377	1042	10	
Central Battle	Target Servicing	76	2066	190	3
	Suppression/Counterfire	3	65	0	0
	Air Defense	11	586	400	3
	Support	173	2273	613	6
	C ³ /EW	29	746	1665	9
Subtotal	292	6736	2868	21	
Other	44	764	370	3	
Total	423	7877	4820	34	

APPENDIX D

DATA

CHAPTER VIII

MACOM (OTHER)

1. Scope. This chapter contains a roll-up of personnel and FY 78 study program statistics for Army Major Commands (MACOMs), excluding TRADOC and DARCOM. The MACOMs included in the roll-up are as follows:

- a. USAINSCOM
- b. USACC
- c. USAFORSCOM

2. Personnel.

a. Distribution of position categories of professional employees.

Position Category	Nr Persons		
	Mil	Civ	Total
Managers	1	1	2
Supervisors	6	6	12
Analysts	21	43	64
Total	28	50	78

b. Distribution of grade level of incumbent professional staff.

Civilian	
Grade	Nr Persons
GS-5	0
7	0
9	0
11	3
12	19
13	22
14	6
15	0
16	0
17	0
18	0

Military	
Grade	Nr Persons
2d LT	0
1st LT	0
CPT	8
MAJ	8
LTC	9
COL	3
BG	0
MG	0

c. Distribution of Time in Current Grade,

Nr Years in Grade	2d LT	1st LT	CPT	MAJ	LTC	COL	BG	MG
0 - 2	0	0	0	2	6	2	0	0
3 - 5	0	0	0	2	2	0	0	0
6 - 10	0	0	8	4	1	1	0	0
Over 10	0	0	0	0	0	0	0	0

Nr Years in Grade	GS-5	7	9	11	12	13	14	15	16	17	18
0 - 2	0	0	0	3	9	4	1	0	0	0	0
3 - 5	0	0	0	0	3	6	3	0	0	0	0
6 - 10	0	0	0	0	6	10	1	0	0	0	0
Over 10	0	0	0	0	1	2	1	0	0	0	0

d. Distribution of total nr years in federal service.

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	0	3	3
6 - 10	7	7	14
11 - 15	7	10	17
16 - 20	10	9	19
21 - 25	3	4	7
Over 25	1	17	18

e. Distribution of nr years professional experience in specialty.

Nr Years Actual Experience in Specialty	Nr Persons		Total
	Mil	Civ	
0 - 5	15	14	29
6 - 10	9	10	19
11 - 15	1	8	9
16 - 20	3	5	8
21 - 25	0	5	5
Over 25	0	8	8

f. Distribution of nr years experience in specialty in private sector.

Nr Years	Nr Persons		Total
	Mil	Civ	
0	27	39	66
0 - 5	1	7	8
6 - 10	0	2	2
11 - 15	0	1	1
16 - 20	0	0	0
21 - 25	0	0	0
Over 25	0	1	1

g. Distribution of nr years employed in current organization (or directly precedent organizations).

Nr Years	Nr Persons		
	Mil	Civ	Total
0 - 5	28	34	2
6 - 10	0	12	12
11 - 15	0	3	3
16 - 20	0	1	1
21 - 25	0	0	0
Over 25	0	0	0

h. Distribution of education level of professional staff.

Highest Education Level	Nr Persons		
	Mil	Civ	Total
High School	0	8	8
4-yr college degree	5	7	12
College degree + grad level credit	5	14	19
1 grad degree	17	16	33
2 or more grad degree	1	5	6

1. Distribution of fields of education.

Primary Fields of Education	Nr. Persons		Total
	Mil	Civ	
Operations Research	4	1	5
Math/Stat/Computer Sciences	1	7	8
Physics/Chem	0	0	0
Other Experimental Sciences	1	1	2
Eng (EE, ME, AE, CE, Ind E, etc.)	1	8	9
Economics	2	4	6
Military Sciences	1	1	2
Sociology	0	0	0
Psychology	0	0	0
Pol Science	6	4	10
History/Geography	2	2	4
Art & Humanities	0	1	1
Other Social Sciences	4	3	7
Business	3	8	11
Other	3	10	13

j. Distribution of time since last formal education.

Nr Years Since Employee Attended Any Accredited College/University, and Successfully Completed a Course That Would Normally Result in 3 SH Credit	Nr Persons		
	Mil	Civ	Total
0 - 2	11	15	26
3 - 5	4	13	17
6 - 10	9	8	17
11 - 20	3	9	12
Over 20	1	5	6

k. Distribution of reasons for professional civilians leaving the organization (two year period).

Total Leaving	For Promotion	Promoted After Leaving ^{1.}	For Private Sector	For Retirement
11	4	4	0	3

Total Leaving for Other Reasons
4

1. Of the four personnel who left for promotion, all were reported promoted.

1. Distribution of reasons for military officers leaving the organization (two year period).

Total Leaving	For PCS	Less Than 20 Years		At 20 Years		After 20 Years	
		For Specialty in Private Sector	For Other Job	For Specialty in Private Sector	For Other Job	For Specialty in Private Sector	For Other Job
19	17	1	1	0	0	0	0

3. Study Program - FY 78

- a. Period during which work could first affect the operational capabilities of Army forces in the field.

FY Period	In - House		Contract	
	Nr	TMM 1	\$ (K) 2	NR
1978	3	10	0	0
1979	1	2	0	0
1980 - 1990	5	651	751	1
1991 - 2000	0	0	0	0
Total	9	663	751	1

- b. Distribution of work primarily applicable to type Army Forces

Type	In-House		Contract	
	NR	TMM	\$ (K)	NR
Heavy Forces	0	0	0	0
Light Forces	0	0	0	0
All Kinds of Forces	1	600	751	1
Not Applicable to Combat Forces	8	63	0	0

1. To convert In-house TMM to \$(K), multiply by \$4.167(K).
2. To convert contract \$(K) to TMM, divide by \$75(K).

c. Distribution of work program according to source of work requirement.

Source of Work Requirement	In - House		Contract	
	NR	TMM	\$(K)	NR
Self initiated as implicit in mission	0	0	751	1
Specifically directed by higher HQ	3	27	0	0
Response to requests for assistance	6	636	0	0
Other	0	0	0	0

d. Distribution of work program according to objectives of the activities.

Activity	In - House		Contract	
	NR	TMM	\$(K)	NR
Solve specific problem/illuminate a current issue	4	620	0	0
Improve analysis methods, tools, models, etc.	5	43	0	0
Acquire new experimental facts for data bases.	0	0	751	1
Expand basic knowledge of the underlying nature of, and relations among, elements of the systems being examined	0	0	0	0
Other	0	0	0	0

e. Distribution of work program according to the nature of the primary issue involved.

Issue	In - House		Contract	
	NR	TMM	\$(K)	NR
Personnel selection, recruitment and assignment.	0	0	0	0
Individual and small unit training.	0	0	0	0
Formulation of new doctrine, tactics, techniques.	0	0	0	0
Determination of whether a class of system is warranted.	0	0	0	0
Analysis of what kind of system is required.	0	0	0	0
Determination of system performance.	1	6	0	0
Definition of the environments of use of Army systems.	0	0	0	0
Threat assessments.	1	600	751	1
Analysis of costs.	2	14	0	0
Evaluation of systems effectiveness.	2	27	0	0
Other	3	16	0	0

f. Distribution of work program according to "Study Categories" used by OSD.

Study Category	In - House		Contract	
	NR	TMM	\$(K)	NR
1. Manpower & Personnel	0	0	0	0
2. Concepts & Plans	1	2	0	0
3. Operations & Force Structure	0	0	0	0
4. Installations & Logistics	0	0	0	0
5. Science, Tech, Systems & Equip	7	61	0	0
6. Management	0	0	0	0
7. Intelligence	1	600	751	1
8. International Security	0	0	0	0
9. Other	0	0	0	0

g. Distribution of work program according to "Level of Conflict" involved.

Level	In-House		Contract	
	NR	TMM	\$(K)	NR
Conventional	1	600	751	1
Conventional-Chemical	0	0	0	0
Conventional-Chemical-Nuclear	0	0	0	0
Not Applicable to Combat Forces	8	63	0	0

h. Distribution of work program according to the level of systems that were examined.

System Level	In - House		Contract	
	NR	TMM	\$(K)	NR
Hardware or personnel or procedures aspects of items (sub-item).	2	30	0	0
Item.	0	0	0	0
Small units, teams, task forces.	0	0	0	0
Vertically integrated system of items to accomplish functional obj.	0	0	0	0
Large organizations--divisions & corps.	1	600	751	1
Army force structure, theater forces, joint forces.	0	0	6	0
Other	6	33	0	0

1. Distribution of work program according to "Capability Category" involved.

CAPCAT	In-House		Contract	
	NR	TMM	\$ (K)	NR
Close Combat	0	0	0	0
Fire Support	0	0	0	0
Air Defense	1	2	0	0
Other Combat Support	1	6	0	0
Command Systems	1	24	0	0
ISTA (Intelligence, Surveillance & Target Acquisition)	0	0	0	0
Combat Service Support	0	0	0	0
Other Logistics	1	2	0	0
Ballistic Missile Defense	0	0	0	0
Research (6.1)	0	0	0	0
Program Wide Support	5	629	751	1
Other	0	0	0	0

j. Distribution of work according to the TRADOC Battlefield Development Plan (BDP).

BDP Element	In - House		Contract		
	NR	TMM	\$(K)	NR	
Force Generation	Surveillance/Fusion	0	0	0	0
	Interdiction	0	0	0	0
	Force Mobility	0	0	0	0
	Reconstitution	0	0	0	0
	C ³ /EW	0	0	0	0
Subtotal	0	0	0	0	
Central Battle	Target Servicing	0	0	0	0
	Suppression/Counterfire	0	0	0	0
	Air Defense	1	2	0	0
	Support	7	61	0	0
	C ³ /EW	0	0	0	0
Subtotal	8	63	0	0	
Other	1	600	751	1	
Total	9	663	751	1	

APPENDIX D
DATA
ANNEX I
QUESTIONNAIRE

DEPARTMENT OF THE ARMY
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D.C. 20310



24 August 1978

SAUS-OR

SUBJECT: Review of Army Analysis

By direction of the Under Secretary of the Army (Inclosure 1), a review of Army analysis is being conducted by a Special Study Group. The HQDA staff responsibility has been assigned to the Office of the Deputy Chief of Staff for Operations and Plans. The Special Study Group has been charged to review the resources, organization, and procedures of the Army analytical community and to make recommendations to improve the contribution the community makes to the solution of Army problems. The Terms of Reference are included at Inclosure 2 for your information.

The Study Group must determine what resources presently exist in the analytical community and to what end those resources are committed. At present, the bulk of the Army's analytical resources are located at places such as the US Army Materiel Systems Analysis Agency of the US Army Materiel Development and Readiness Command, the US Army Concepts Analysis Agency, a Staff Support Agency of ODCSOPS, HQDA, and the Combined Arms Combat Development Activity and TRADOC Systems Analysis Agency of US Army Training and Doctrine Command. However, other Major Commands also have some personnel and resources committed to somewhat similar study and analysis activities. Although a clear definition is not possible, we are not interested in the normal "staff study" type of work, the routine financial management functions of the comptroller, or "estimate of the situation" type analyses, but rather in the identification of personnel and resources involved in the studious application of quantitative analysis methodology to the solution of Army problems.



SAUS-OR
SUBJECT: Review of Army Analysis

24 August 1978

Because of severe time constraints which the Special Study Group is under, I, as chairman, am taking the liberty of writing direct to ask for your support in helping us understand your Command's capability to conduct analyses of Army problems. Providing the information requested in our survey (Inclosure 3) would be of great assistance to us in achieving this understanding. Some additional instructions for completing the survey are provided at Inclosure 4.

Our purposes are satisfied if the survey is returned to us by 15 September 1978. The Study Group point of contact is MAJ Jeffrey A. Larson, ODUSA(OR), AV 227-0367. Request that the name of your point of contact be forwarded to MAJ Larson as soon as practical, but NLT 5 Sep 1978.

4 Incl
as

David C. Hardison

David C. Hardison
Chairman, Special Study Group
Review of Army Analysis

D-IX-2

SURVEY OF ARMY ORGANIZATIONS INVOLVED IN OPERATIONS RESEARCH,
STUDIES, AND SYSTEMS ANALYSIS ACTIVITIES

- PART I - Identification of Organization
- PART II - Mission, Functions, and Organizational Structure
- PART III - Personnel Resources
- PART IV - Facilities
- PART V - Computers
- PART VI - Funds
- PART VII - Expected Program of Work During FY 1979
- PART VIII - Work Program Content - FY 1979
- PART IX - Special Topics

SURVEY OF ARMY ORGANIZATIONS INVOLVED IN OPERATIONS RESEARCH,
STUDIES, AND SYSTEMS ANALYSIS ACTIVITIES

PART I - Identification of Organization

1. Name of organization.
2. Location.
3. Name of organization to which this organization reports.
4. Age of this organization.
5. If this organization is essentially a renamed earlier organization(s) having essentially the same mission, what was the name of the original organization?
6. When was the original organization established?

PART II - Mission, Functions, and Organizational Structure

1. In what official document is the missions and functions of the organization formally stated?
2. Please provide a copy of the missions and functions of the organization as stated in the document listed next above.
3. Please provide a copy of any additional MOU, directives, etc., which have the effect of altering or extending the missions assigned to the organization.
4. Please provide a copy of the current organizational structure of the agency.
5. To the extent possible, correlate the organization's structure to its missions and functions.
6. Please provide a copy of the TDA of the organization.
7. What part of the personnel resources of the organization, if any, are not involved in operations research, studies, or systems analysis studies?
8. In addition to the above, what else characterizes the missions, functions, and structure of the organization, to include assumed missions?

PART III - Personnel Resources

(Please fill in data in Form PRDS (Personnel Resources Data Sheet) on page 6)

Code

- 1-3. How many professional civilian spaces are authorized for this organization?
- 4-5. What is the total number of civilian spaces authorized?
- 6-8. How many military officer spaces are authorized?
- 9-11. What is the total number of military spaces authorized?
- 12-14. How many professional civilian spaces are filled?
- 15-17. What is the total number of civilian spaces that are filled?
- 18-20. How many military officer spaces are filled?
- 21-23. What is the total number of military spaces that are filled?
- 24-25. How many professional civilians came to this organization during the past two years?
- 26-27. How many professional civilians left this organization during the past two years?
- 28-29. Of the professional civilians who left, how many are thought to have moved to other government organizations for promotions?
- 30-31. Of the professional civilians who left, how many are thought to have moved to other government organizations and received promotions?
- 32-33. Of the professional civilians who left, how many are thought to have left to obtain employment in the private sector?
- 34-35. Of the professional civilians who left, how many retired?
- 36-37. How many military officers came to this organization during the past two years?
- 38-39. How many military officers left this organization during the past two years?

- 40-41. Of the military officers who left during the past two years, how many left the Army?
- 42-43. Of the military officers who left the Army from this organization during the past two years, how many left with less than 20 years active duty service?
- 44-45. Of the military officers who left the Army from this organization during the past two years, how many left with 20 years active duty service?
- 46-47. Of the military officers who left the Army from this organization during the past two years, how many left with more than 20 years active duty service?
- 48-49. Of the military officers who left the Army with less than 20 years active duty service, how many are thought to have obtained employment in his specialty in the private sector?
- 50-51. Of the military officers who left the Army with 20 years active duty service, how many are thought to have obtained employment in his specialty in the private sector?
- 52-53. Of the military officers who left the Army with more than 20 years active duty service, how many are thought to have obtained employment in his specialty in the private sector?
- 54-55. Number of liaison personnel attached to organization.
- 56-57. Number of personnel of the organization that are attached to other organizations for a period of at least a year.
- 58-59. Number of persons that are, de facto, working for the agency but not included in the TDA.

60-61. How many interns currently work in the organization?

Please provide the data requested in Form PDDS (Personnel Description Data Sheet) on page 8. Provide one data sheet for each of your professional staff personnel.

Personnel Resources Data Sheet

1. Name of Organization
2. Coded Personnel Resource Summary

			-			-				-			
1	2	3	-	4	5	-	6	7	8	-	9	10	11

			-				-				-			
12	13	14	-	15	16	17	-	18	19	20	-	21	22	23

		-			-			-			-		
24	25	-	26	27	-	28	29	-	30	31	-	32	33

		-			-			-			-		
34	35	-	36	37	-	38	39	-	40	41	-	42	43

		-			-			-			-		
44	45	-	46	47	-	48	49	-	50	51	-	52	53

		-			-			-		
54	55	-	56	57	-	58	59	-	60	61

FORM PDDS

Personnel Description Data Sheet

1. Name of Organization
2. This data sheet Nr ____ of ____
3. Coded Personnel Descriptive Summary

	-			-			-			-			
--	---	--	--	---	--	--	---	--	--	---	--	--	--

		-				-		-			-		
--	--	---	--	--	--	---	--	---	--	--	---	--	--

(See attached descriptor code)

FORM PDDS

Persnnel Descriptive Summary Descriptor Code
(Professional Staff)

1	-	2	3	-	4	5	-	6	7	-	8	9	-	10	11
---	---	---	---	---	---	---	---	---	---	---	---	---	---	----	----

12	13	-	14	15	16	17	-	18	-	19	20	-	21	22
----	----	---	----	----	----	----	---	----	---	----	----	---	----	----

Code

1.

Position Category

- 1 - Manager (overhead)
- 2 - Supervisor (first line)
- 3 - Analyst (individual worker)

2&3.

Grade Level

- 01 - GS5
- 02 - GS7
- 03 - GS9
- 04 - GS11
- 05 - GS12
- 06 - GS13
- 07 - GS14
- 08 - GS15
- 09 - GS16
- 10 - GS17
- 11 - GS18

- 12 - 2d LT
- 13 - 1st LT
- 14 - CPT
- 15 - MAJ
- 16 - LTC
- 17 - COL
- 18 - BG
- 19 - MG

4&5.

Time in Current Grade

Enter number of years

6&7.

Total Nr Years in
Federal Service

Enter number of years

8&9.

Yrs Professional Experience
in Specialty

Enter number of years

10&11.

Nr Years in Specialty
in Private Sector

Enter number of years

12&13.

Nr Years in Current Organization
(or directly precedent organizations)

Enter number of years

14-17.

Specialty

Enter job series or military specialty
(e.g., 1515 or 1249)

18. Education Level
- 01 - High School
 - 02 - 4 Year College Degree
 - 03 - College Degree Plus Graduate Level Credit
 - 04 - 1 Graduate Degree
 - 05 - 2 or more Graduate Degrees
- 19&20. Field of Education
- 01 - Operations Research
 - 02 - Math/Stat/Computer Science
 - 03 - Physics/Chem
 - 04 - Other Experimental Science
 - 05 - Engineer (EE, ME, AE, CE, Ind E, etc.)
 - 06 - Economics
 - 07 - Military Science
 - 08 - Sociology
 - 09 - Psychology
 - 10 - Political Science
 - 11 - History/Geography
 - 12 - Arts & Humanities
 - 13 - Other Social Sciences
 - 14 - Business
 - 15 - Other
- 21&22. Time Since Last Formal Education*
- Enter number of years (if currently enrolled or less than $\frac{1}{2}$ year, enter "0").

*Nr years since employee attended any accredited college/university, and successfully completed a course that would normally result in 3 semester hours credit.

PART IV - Facilities

--	--	--	--	--	--

1. Office space (square footage)

--	--	--	--	--	--

2. Conference room space (square footage)

--	--	--	--	--	--

3. Wargaming room space (square footage)

--	--	--	--	--	--

4. Computer space (square footage)

--	--	--	--	--	--

5. Library space (square footage)

--	--	--	--	--	--

6. Support facility space (square footage)

--	--	--	--	--	--

7. Lab space (square footage)

--	--	--

8. Number BOQ rooms available on your host installation

--	--	--	--	--	--

9. Additional space available without construction (square footage)

--	--	--	--	--	--

10. Additional space currently programed
(square footage)

--	--	--	--	--	--

11. Training area space (square miles)

--	--	--	--	--	--

12. Range space (square miles)

13. Describe any special facilities your
agency has available.

14. List each facility not owned by
government together with the lease/rental
cost and date of expiration/renewal.

PART V - Computers

FORM CRDS

Information Code

1	2	3	4	5	-	6	7	8	9	10	-	11	-	12	-	13
---	---	---	---	---	---	---	---	---	---	----	---	----	---	----	---	----

Code

Please provide requested data for each computer operated by this organization, using Form CRDS (Computer Resources Data Sheet) on page 14,

- 1-5 Core capacity (in K words).
- 6-10 Average monthly production time (in CPU hours).
- 11 Classification (A = Disk Operating System (DOS); B = Operating System (OS); C = Machine Virtual Storage (MVS)).
- 12 Current primary limitation on computer utilization (A = Available Production Time; B = Core Capacity; C = Individual Model Run Times; D = No Limitations; E = Other--enter comment in paragraph 6 of Form CRDS).
- 13 Outside agency use (A = 0; B = 1; C = 2; D = 3; E = 4; F = 5; G = 5-10; H = more than 10).

FORM CRDS

Computer Resources Data Sheet

1. Name of Organization.
2. This is Data Sheet Nr ____ of ____.
3. Name and Model Number of Computer.
4. Coded Description of Computer

					-						-		-		-	
--	--	--	--	--	---	--	--	--	--	--	---	--	---	--	---	--

5. What peripheral equipment is available for use with this computer?

How many of each type equipment?

6. "Other" current primary limitation (Code 12).

Supplemental
Computer Survey

1. What can be done, if necessary, to increase the production capacity of agency computers? Describe briefly for each applicable computer, to include a cost estimate and personnel requirements (in TMM).
2. Describe any actions currently under way to increase production capacity of agency computers, to include cost and personnel requirements.
3. What computer time do you obtain from sources outside of your organization?

<u>Source Agency</u>	<u>Name & Model of Computer Used</u>	<u>FY 78 Average Monthly Production Time (in CPU Hours) Used</u>	<u>FY 78 Average Monthly Cost</u>
----------------------	--	--	---

PART VI - Funds

- RECEIPTS -

1. List organizational (mission) funding receipts as follows:

	<u>Source</u>	<u>Appropriation</u>	Amount (FY, K Dollars)
A.			FY 77
B.			FY 78
C.			FY 79

2. List funds received from customers for services rendered as follows:

	<u>Customer Providing</u>	<u>Amount (FY, K Dollars)</u>	<u>Product Requested</u>
A.			FY 77
B.			FY 78
C.			FY 79

3. List cost of studies/reports/model building, etc., being done for your agency, but paid for by some other organization as follows:

	<u>Product</u>	<u>Amount (FY, K Dollars)</u>	<u>Agency Providing Funds</u>
A.	FY 77		
B.	FY 78		
C.	FY 79		

4. What funds are the hardest for your agency to obtain? Please explain.

5. What funds are the easiest for your agency to obtain? Please explain.

Fund Expenditures Information Code

1	-	2	3	4	5	6	-	7	8	9	10	11	-	12	13	14	15	16
---	---	---	---	---	---	---	---	---	---	---	----	----	---	----	----	----	----	----

17	18	19	20	21	-	22	23	24	25	26	-	27	28	29	30	31
----	----	----	----	----	---	----	----	----	----	----	---	----	----	----	----	----

32	33	34	35	36	-	37	38	39	40	41	-	42	43	44	45	46
----	----	----	----	----	---	----	----	----	----	----	---	----	----	----	----	----

47	48	49	50	51
----	----	----	----	----

Code

- 1. Fiscal Year (A=FY77; B=FY78; C=FY79)
- 2-6. Civilian Salaries (FY, K Dollars)
- 7-11. TDY Cost (FY, K Dollars)
- 12-16. Facility Maintenance/Upkeep Costs (FY, K Dollars)
- 17-21. Computer Operating Costs (FY, K Dollars)
- 22-26. Other Overhead (Consultants, Publication, Leasing) (FY, K Dollars)
- 27-31. Experiment, Lab Costs (FY, K Dollars)
- 32-36. Training Area, Range Costs (FY, K Dollars)
- 37-41. Contractual Costs (FY, K Dollars)
- 42-46. Costs for Services from Other Army Agencies (FY, K Dollars)
- 47-51. Other Costs (FY, K Dollars)

FORM FEDS

Fund Expenditures Data Sheet

- 1. Name of Organization
- 2. This is Data Sheet Nr ____ of 3.
- 3. Coded Expenditure Summary

	-						-						-				
--	---	--	--	--	--	--	---	--	--	--	--	--	---	--	--	--	--

					-						-						
--	--	--	--	--	---	--	--	--	--	--	---	--	--	--	--	--	--

					-						-						
--	--	--	--	--	---	--	--	--	--	--	---	--	--	--	--	--	--

--	--	--	--	--

PART VII - Expected Program of Work During FY 1979

1. Please stop at this point, go get a cup of coffee, reestablish your sense of humor and return to the next item.
2. We want--despite experience which confirms that much of our work is ad hoc and directed--to make the best forecast possible of to what the organization will actually commit its resources during FY 79. Tough task, but we are good at that sort of stuff.
3. We would like to see your program in terms of a set of "work units", which you can define as you find convenient, together with certain descriptors which will help us understand its nature. To enable us to do a little combining and sorting we are asking that--however inconvenient--you try to fit your information into our format--same old story--the computer wins again. So please look over our Form WPDS (work program data sheet) before you decide exactly how you will partition your planned activities into work units.
4. We'd like to have a data sheet for each work unit.
5. If everything is done correctly, the sum of the resources on the data sheets will be that which the organization expects to have for use during FY 79. Similarly, the work described on the set of data sheets is what you expect to do during 1979.
6. Please complete as many data sheets as necessary to describe your planned program of work in FY 79.

FORM WPDS

Work Program Data Sheet

- 1. Name of Organisation:
- 2. This is Data Sheet Nr _____ of _____.
- 3. Title of the Work Unit:

- 4. Coded Description of Work:

	-		-		-		-		-		-		-		-		-		-
--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---

(see attached descriptor code)

	-		-		-		-		-		-		-		-		-		-
--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---	--	---

- 5. Planned Expenditure of Manpower: Technical Man Month _____
- 6. Planned Expenditure of Funds: \$ _____
- 7. Will Contractor be Used: Yes No
- 8. If Contractor Used, At What Cost?

- 9. If Computer Model(s) Used, Which & How Many Hours?

Name	CPU Hrs

- 10. Briefly Describe:
 - What intend to learn.
 - Who will use results for what.

Form WPDS
Activity Descriptor Code

1 - 2 - 3 - 4 - 5 6 - 7

8 - 9 10 - 11 12 - 13 14

- | | | |
|--------------------|-----------------|-------------|
| 1. Period Work | I = Immediate | 0-1 Years |
| First Affects | | |
| Army's Operational | S = Short-Range | 1-2 Years |
| Capabilities | | |
| | M = Mid-Range | 2-10 Years |
| | L = Long-Range | 10-20 Years |

NOTE: Estimate years from start (Oct) of FY being described (FY 78 or FY 7

- | | | |
|-------------------|---------------|-----------------------|
| 2. Type Forces to | H = Hvy Units | A = All Units |
| Which Work | | |
| Applicable | L = Lt Units | N = Not Applicable to |
| | | Combat Forces |

- | | |
|-------------------|--|
| 3. Source of Work | 1 - Mission Implicit, Self Initiated |
| Task | |
| | 2 - Specifically Directed by Higher Echelons |
| | 3 - Customer Request for Support Services |
| | 4 - Other |

- | | |
|-------------------|--|
| 4. Type Objective | 1 - Solve Specific Problem/Illuminate a Current Issue. |
| | 2 - Improve Analysis Methods, Tools, Models, etc. |
| | 3 - Acquire New Experimental Facts for Data Bases. |
| | 4 - Systems Research to Expand Basic Knowledge of the Underlying Nature of, and Relations Among, Elements of the Systems Being Examined. |

5&6. Nature of Issue
Primarily
Examined

- 01 - Personnel Selection, Recruitment, Assignment
- 02 - Individual and Small Unit Training
- 03 - Formulation of New Tactics & Tech
- 04 - Determination of Whether System Class RQD
- 05 - Define What Kind of System is RQD
- 06 - Determine System Performance
- 07 - Definition of Environments of System Use
- 08 - Threat Assessments
- 09 - Analysis of Costs
- 10 - Evaluation of System Effectiveness
- 99 - Other

7. Study Category

- 1 - Manpower and Personnel
- 2 - Concepts and Plans
- 3 - Operations and Force Structure
- 4 - Installations and Logistics
- 5 - Science, Technology, Systems & Equipment
- 6 - Management
- 7 - Intelligence
- 8 - International Security

8. Level of Conflict

- 1 - Conventional
- 2 - Conventional with Chemical
- 3 - Conventional with Chemical and Nuclear
- 4 - Not Applicable to Combat Forces

9&10. System Level/Function
Examined

- 01 - Sub-Item - Personnel
- 02 - Sub-Item - Hardware
- 03 - Sub-Item - Procedures
- 10 - Items
- 20 - Small Units, Teams, Tasks Forces
(Close Combat)
- 31 - ISTA
- 32 - Fire Spt, Including FW Aircraft
- 33 - Air Defense
- 34 - Combat Eng & Other Combat Spt
- 35 - Control, Including Command & Commo
- 36 - Supply, Transportation, Maintenance
- 37 - Personnel, Admin, Finance, Medical
- 38 - Other
- 40 - Major Organizations - (Div & Corps)
- 50 - Army Force Structure - Theater Forces,
Joint Forces

Functional
(Normally thought of as
Combat Support & Combat
Service Support)

- 11&12. Capability Category
- 01 - Close Combat
 - 11 - Fire Support
 - 21 - Air Defense
 - 31 - Other Combat Support
 - 41 - Command Systems
 - 51 - Intelligence, Surveillance & Target Acquisition (ISTA)
 - 61 - Combat Service Support
 - 71 - Other Logistics
 - 81 - Ballistic Missile Defense
 - 91 - Research (6.1)
 - 92 - Program Wide Support (6.5) (Testing, Studies/Analysis, HQ Support, Information Systems)
 - 93 - Program Wide Support (Other) (Personnel Performance & Training Research)
 - 94 - Program Wide Support, Ammo PBS
 - 95 - Program Wide Support, Other PBS
 - 96 - Program Wide Support, Non-System Training Devices

13&14. Force Generation/
Central Battle
Aspect Examined

A1 - Surveillance/Fusion

A2 - Interdiction

A3 - Force Mobility

A4 - Reconstitution

A5 - C³

B1 - Target Servicing

B2 - Suppression/Counterfire

B3 - Air Defense

B4 - Support

B5 - C³/EW

PART VIII - Work Program Content - FY 1978

1. Well, we had hoped it would be adequate to look at FY 1979 only.
But now we find it is necessary to ask you to look at what your organization will have done during FY78 as well.
2. Please provide work program data sheets for FY78 in a manner just like those you provided for FY79 plans.

PART IX - Special Topics

1. Please briefly describe your perception of the worth of your organization to the Army.
2. Please briefly describe your organization's area of greatest contribution to the Army analytical community's program of studies.
3. Please briefly describe your organization's three most important areas of expertise.
4. Please briefly describe your organization's two most significant weaknesses.
5. For each weakness, briefly describe how the weakness might be overcome.
6. Describe how priorities are established and implemented in your agency.
7. Describe briefly how your agency obtains feedback concerning the suitability, timeliness, and completeness of its products.
8. What tests and experiments has your agency requested during FY78 in order to develop model input data? From what agencies have these been requested? Provide similar information on what you propose for FY79.
9. What special education programs are supported by your organization to assist professional staff to maintain currency of knowledge in professional specialty?
10. Describe briefly the process by which your agency assesses its mission performance.
11. Describe briefly how your agency alters its mission and functions.

12. Describe, if applicable, your intern program or other programs to acquire and train professional analysts.
13. Identify any problems your organization may have in acquiring, training, holding, and/or replacing professional analysis personnel, and any solutions which you suggest.
14. Does your organization maintain a data base(s)? If yes, please describe (number of data points; how stored--tape, card deck, printout only, etc.; means of updating; frequency of updating; source of (and documentation of) data points; how is it accessed).

DEFINITIONS

1. **STUDY** - A careful examination or analysis of a phenomenon, development, or question; a paper in which the results of such an effort are published.
2. **ANALYSIS** - An examination of a complex, its elements, and their relations.
3. **RESEARCH** - A studious inquiry or examination, especially investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of new or revised theories or laws.
4. **OPERATIONS RESEARCH** - The application of scientific and especially mathematical methods to the study and analysis of problems involving complex systems (as firm management, economic planning, and the waging of war).
5. **SCIENTIFIC METHOD** - Principles and procedures for the systematic pursuit of knowledge involving the recognition and formulation of a problem, collection of data thru observation and experiment, formulation of hypotheses, and testing the hypotheses for validity.
6. **SYSTEM** - Regularly interacting or interdependent items forming a unified whole.

PERCEPTIONS

<p>"RESEARCH"</p> <p>Usually--</p> <ul style="list-style-type: none"> - is concerned with new concepts and technical questions - uses the methods of science, especially - involves experimentation - aims to generate new facts and establish new laws - generate information that can be used in studies 	<p>"STUDIES & ANALYSIS"</p> <p>Usually--</p> <ul style="list-style-type: none"> - are concerned with solution of management and/or policy problems - uses the methods of logic and especially those of quantitative analysis - analyzes available information - aims to process old facts, recombine them, and solve current problems - uncover information gaps that can only be filled by research
---	---

Additional Instructions for Completing Survey
of Army Organizations Involved in Operations Research,
Studies, and Systems Analysis Activities

A. Part I - Identification of Organization

The organization of interest is that element which is directly involved in OR, studies, and Systems Analysis Activities (definitions are provided at Inclosure 1). For example, we do not want the entire service school/center included in the reported data, but only the appropriate sub-elements -- Combat Developments, Training Developments, and the Board, if appropriate. It is possible that part of the sub-element is not involved with studies and analyses. Its work program and resources should not be reported. Question 7, Part II, indicates that less than the full sub-element is included in the report. The terms "organization" and "agency" are used interchangeably throughout the survey.

B. Part II - Mission, Functions, and Organizational Structure

As discussed in Part I, only the directly involved element should be the basis for information provided in this part. Question 7 should be answered only by those organizations which have a mission(s) in addition to operations research, studies or systems analysis studies.

C. Part III - Personnel Resources

1. There are two forms provided which will allow recording of all desired information. The Personnel Resources Data Sheet (Form PRDS) is completed only once, but the Personnel Description Data Sheet (Form PDDS) must be completed once for each individual classified as "professional staff." As a general guide, professional staff includes grade levels GS5 thru GS18 and 2dLT thru MG. Reproduction of Form PDDS is required, based on the number of professional staff included in your organization.

Personnel Resources Data Sheet (Form PRDS)

2. Coded Item 1-3 should not equal the number reported in Item 4-5. The difference represents the civilian personnel who support the organization's analysts (secretaries, admin personnel, maintenance repair personnel, etc.).

3. The same philosophy applies to Coded Items 6-8 and 9-11.

4. Coded Items 12-14, 15-17, 18-20, & 21-23 should be reported in the same manner as the categories discussed in paragraphs C2 and C3 above. Projection through the end of FY78 should be included in these data.

5. Coded Items 24-25, 26-27, 36-37, & 38-39 should be projected through the end of FY78.

6. The sum of Coded Items 28-29, 30-31, 32-33, & 34-35, should not necessarily equal Coded Item 26-27, specifically if some civilian personnel moved to other government organizations and did not receive promotions.

7. Coded Item 40-41 should not equal Item 38-39 unless there have been no reassignments during the past two FYs.

8. The sum of Coded Items 42-43, 44-45, & 46-47 should equal Item 40-41. These items are designed to determine how many military personnel are leaving the Army before retirement, how many leave at first retirement eligibility, and how many leave sometime after their initial retirement eligibility.

9. Coded Items 48-49, 50-51, and 52-53 should equal 42-43, 44-45, and 46-47, respectively, only if all military personnel who left the Army obtained employment in their specialty in the private sector.

10. Coded Items 54-55, 56-57, 58-59, & 60-61 are self-explanatory.

Personnel Description Data Sheet (Form PDDS)

11. The descriptor code on page 9 explains the code choices available for use in completing Form PDDS (page 8). The code number locations on Form PDDS are also defined in the descriptor code (page 9). One Form PDDS should be completed for each "professional staff" member.

12. Coded Item 1 is designed to separate the professional staff into three general categories--a group which basically manages and performs little original work; a group which manages, but also performs some original work; and a group which only works on the organization's "work units" (defined in the program part (Part VII)) of the survey.

13. Coded Items 2&3 and 4&5 are self-explanatory.

14. Coded Item 6&7 should include military plus civil service time, if appropriate for the individual concerned.

15. Coded Items 8&9, 10&11, and 12&13 are self-explanatory.

16. Coded Item 14-17 should, for military, reflect the two-digit primary specialty first, followed by the two-digit alternate specialty.

17. Coded Items 18 and 19&20 are self-explanatory.

18. Coded Item 21&22 involves college/university education only. Any comments concerning military courses or short training courses (e.g., ORSA Executive Course) should be incorporated in questions 9 or 12 of Part IX (page 30).

D. Part IV - Facilities

1. Coded Items 1 thru 7 are self-explanatory.
2. Coded Item 8 is intended to identify government quarters readily accessible for organization visitors, without involving any determination of whether or not the quarters physically belong to the organization.
3. Coded Items 9 and 10 refer to additional working space (previously documented in Items 1 thru 7), but should not include additional BOQ space. If additional BOQ space is programmed, it may be reported in Coded Item 13.
4. Coded Items 11, 12 and 13 are self-explanatory.

E. Part V - Computers

1. A separate Computer Resources Data Sheet (Form CRDS, page 14) should be completed for each computer operated by your organization. If you own no computers, your leased time should be reported in question 3 of the Supplemental Computer Survey (page 15).
2. The information code on page 13 defines the location of each code number on Form CRDS and explains the code choices available for use in completing Form CRDS.
3. Coded Items 1-5, 6-10, 11, 12 are self-explanatory.
4. Coded Item 13 should indicate the number of outside agencies which use your organization's computer during an average month.
5. Question 5 on Form CRDS (page 14) may require additional space; please use the bottom of the page and the reverse side, if required.
6. The Supplemental Computer Survey (page 15) is self-explanatory.

F. Part VI - Funds

Receipts

1. Question 1 requests a listing of the funds, by appropriation, the organization receives in a given year, through the budget process, to accomplish its assigned mission.
2. Question 2 requests a listing of funds received for providing a service to a customer. These funds are in addition to those received through appropriation. This question implicitly involves those funds which are transferred from one organization to another.

3. Question 3 requests a listing of funds which should be attributed to your organization in that the product will benefit primarily your organization, even though your organization was not requested to pay for the product.

4. Questions 4 and 5 are self-explanatory.

Expenditures

5. The information code for the Fund Expenditures Data Sheet (Form FEDES, page 19) describes, on page 18, the code choices available for use and the location of each code number on Form FEDES.

6. All code items are self-explanatory. The sum of all items must equal the total amount of funds expended by your organization.

C. Part VII - Expected Program of Work During FY 1979

1. The basic unit of reference to be tabulated in this part of the survey is the "work unit". A work unit is a level of effort expended by your organization, expressed in TPI, to perform an analysis or study. The work unit scope should be chosen so that the description of the problem addressed can be uniquely characterized by the Activity Description Codes, pages 22-26 of the survey.

2. It is anticipated that individual studies or analyses conducted by your organization will normally serve to define a work unit. However, if the study is broad in scope and the effort expended cannot be stratified uniquely by the Activity Description Codes, then the study must be subdivided into its component parts. In this regard, a separate Form WPDS must be completed for each work unit, and each work unit must have a unique title descriptor. It is permissible to combine a number of individual efforts into a work unit which, when combined, can be uniquely characterized by the Activity Description Codes. In this case, only one Form WPDS should be used to record this combined effort work unit.

Work Program Data Sheet

3. The Activity Description Code (pages 22-26) describes the choices available for, and the location of, each coded item on the Work Program Data Sheet (Form WPDS, page 21). One Form WPDS should be completed for each work unit planned for FY79 by your organization.

4. In addition to the Coded Description of Work, each Data Sheet requires additional information. All questions are self-explanatory except planned expenditure of funds (item 7). In this regard, the cost of the FY79 work units should equal the organization's command operating budget plus the pay and allowances of assigned military. If the listing of computer models requires additional space, the lower right corner or reverse side of the form can be used.

Activity Descriptor Code (for Form WPDS)

5. Coded Items 1 and 2 are self-explanatory.

6. Coded Item 3 should be answered based on where the source of work originated without regard to administrative tasking procedures which may be in effect to assist in developing priorities of effort. This is especially critical in determining whether the source of work originated in a peer organization or was dictated by a higher headquarters.

7. Coded Item 4 requires the use of "other" in those cases not described in the offered choices. Review of other studies and work units are examples of when the use of the choice "other" would be appropriate.

8. Coded Item 5 and 6 requires careful consideration. This choice will often require redefinition of the work unit. Proper selection of "whether" or "what kind" of system required are the most difficult choices to correctly identify.

9. Coded Item 7 requires a "best fit". These are designated OSD categories and "other" is not a possible selection.

10. Coded Item 8 will be troublesome only in the case of nuclear-only studies. Choice 3 is the desired choice in this case. This approach was taken to reduce the number of possible-combination answers.

11. Coded Item 9 and 10 integrates two approaches. The work unit is concerned with either a system level (sub-item, item (system), small unit, large unit or Army force) or a functional level. If, for example, the DIVAD gun is being examined, Choice "02" or "10" is the appropriate response; if the DIVAD gun as part of the air defense system is being examined, then "33" is the appropriate response. Helicopters used in organizations should be reported by Choice "20".

12. The Capability Categories in Coded Item 11 and 12 are the current DA CAPCATS. In this choice, helicopter work units should be reported under Choice "01".

13. Coded Item 13 and 14 choices describe the TRADOC Battlefield Development Plan (BDP) breakout. Choices A1 thru A5 are elements of Force Generation and Choices B1 thru B5 are elements of the Central Battle. These choices require a "best fit" based upon the fundamental objective of the work unit.

H. Part VIII - Work Program Content - FY 1978

Use the same activity designator code and Form (Form WPDS) as were used for your FY79 program description. Again, proper definition of work units is the key. Each work unit should be reported on a separate Form WPDS.

I. Part IX - Special Topics

Responses should be provided on a separate piece of paper. Each question is self-explanatory. Concise, but complete narratives are desired. Question 14 is particularly important in assisting the study group to understand the current status of Army analysis.

APPENDIX E

MANAGEMENT OF THE ARMY STUDY PROGRAM AND STUDY SYSTEM

E-1. INTRODUCTION. This appendix examines the Army study program (TASP) and the system by which it is managed--the Army Study System (TASS). It begins with a detailed discussion of the current system in its ideal form as specified by regulation. In reality this system has serious shortcomings which are described as are what the Study Group considers to be the characteristics of an adequate study system. This is followed by a discussion of three alternatives to the current system.

E-2. PROGRAM DEVELOPMENT, IMPLEMENTATION AND EVALUATION. a. General

(1) The Army Study System (TASS) provides the Army ability to conduct selected study and analysis projects. These thorough and detailed analyses of present and projected problems help Army decisionmakers respond to changing conditions.

(2) Army studies are managed under a system characterized by decentralized program development to provide maximum creativity and flexibility, and centralized program review. Administrative responsibilities are delegated to Army Staff agencies and to the MACOMs. Administrative procedures are intended to be as simple as practical and emphasize quality control. The study system is oriented toward maximum use of in-house study capabilities, supplemented by contract support only when absolutely necessary.

(3) The annually developed program is a two-year program of studies planned for initiation or completion during the next two fiscal years. Program development and performance consists of five activities

- (a) Publication of Secretary of the Army/Chief of Staff Study Planning Guidance.
- (b) Preparation of MACOM and HQDA Staff agency programs.
- (c) Development of The Army Study Program (TASP).
- (d) Implementation of the annual program.
- (e) Evaluation of the program.

b. Study Planning Guidance

(1) HQDA publishes Study Planning Guidance (SPG) in October. The guidance is a specially designed expression of the principal concerns of the Secretary of the Army and the Chief of Staff. SPG covers the budget and first outyears. It identifies priority problem areas (PPA), the resolution of which would provide substantive contributions to Army planning, programing, and decision-making. The intent of SPG is to give direction to the total study effort and serve as a basis for establishing priorities among individual study proposals.

(2) Before SPG is drafted, the MACOMs and HQDA Staff agencies are invited to provide ideas concerning the PPAs which should be included in the new edition. These contributions are reviewed at SA/CSA level and selected items are incorporated into the final SPG.

(3) SPG identifies only a select few of the most important problem areas. It would be possible to publish a very large list of potential PPAs, but this large list would lose its sense of priority and importance. Therefore, only a few PPAs are provided.

(4) Each PPA is assigned to a HQDA Staff agency. That agency serves as "Project Manager" and develops a subprogram of studies and related actions to resolve the problems identified in the PPA. The PPAs are continued in subsequent annual editions of the SPG until the identified problems are solved. The systematic addressal and resolution of a PPA implies preparation of a coherent grouping of studies which frequently cuts across agency/MACOM functional areas. Therefore, coordination between agencies and MACOMs is necessary in the planning of studies to adequately address the PPAs. The studies the "Project Manager" initiates are included in the annual TASP.

c. MACOM and HQDA Staff Agency Programs

(1) Each MACOM and HQDA Staff Agency prepares and maintains a two-year program. These local programs are prepared annually, and include all the studies ongoing and planned. Each program is based on SPG (paragraph E-1 above) and on the study needs of the local command and agency. Format and content for the programs are prescribed in AR 5-5.

(2) The principal action officer for preparation of the program is the local Study Coordinator. The Coordinator may issue command guidance for his subordinate organizations to follow in preparation of the command program.

(3) All command and agency programs are reviewed centrally. However, the method for that review varies widely. In some cases, the review is conducted mainly by the Study Coordinator, with minimal staff coordination. In other cases, there is a highly structured command study review board which goes over the program thoroughly and establishes study priorities.

(4) The command and agency study programs are forwarded to HQDA during the second quarter of each fiscal year. There, they are coordinated and consolidated into the master Army Study Program. HQDA notifies the MACOMs/agencies when their programs have been reviewed by the VCSA. When the individual command and agency programs are finalized, some are printed in formal documents, and some are maintained as less formal staff papers.

d. The Army Study Program (TASP)

(1) The TASP is a single document which lists the studies the Army has ongoing or plans to initiate. The program is published in September, just prior to the beginning of each fiscal year. It lists studies for the next two years. It is a compilation of all the MACOM and HQDA Staff agency programs.

(2) The TASP provides the following information:

(a) Studies by major study categories (manpower, operations, management, intelligence, etc.).

(b) Studies by MACOM and HQDA Staff agency.

(c) Studies by fiscal year, for the next two years.

(d) Names, addresses and phone numbers for MACOM and Staff agency Study Coordinators.

(e) Study points of contact in OSD and the Services.

(f) In-house study agencies and reference facilities.

(3) The annual edition of the TASP is prepared by the Study Management Office, OCSA. MACOM and Staff agency programs are consolidated and provided to the HQDA Staff and Secretariat for review. During the review, each proposed study is represented by an abbreviated DD Form 1498, which provides the study title, level of effort, and brief description of the project. Staff and Secretariat comments of the individual study proposals are consolidated and provided to the MACOMs and Staff proponents for resolution. In this process, several proposed studies are either deleted or

revised to resolve any adverse comments. A computer program has been developed by USAMSSA to assist with the production of the several listings necessary during the review and final production process.

(4) The final draft, after concurrence by the HQDA Staff and Secretariat, is provided to the VCSA for review/approval. It should be noted that MACOM commanders, in accord with AR 5-5, have full authority and responsibility for development of their own study programs. Consequently, when the final consolidated TASP is provided to the VCSA, he reviews and notes the MACOM parts of the TASP, and he reviews and approves the HQDA part of the TASP.

(5) The approved TASP is printed in approximately 500 copies, and distributed to the MACOMs and HQDA Staff agencies, other Services, and to organizations outside DOD upon request. In accordance with DODD 5010.22, a copy of the TASP together with copies of each of the DD Forms 1498, are provided to the Office of Under Secretary of Defense (Research and Engineering) for review by the DOD Study and Analysis Steering Group.

(6) The TASP is a snapshot at a point in time. Soon after publication, some studies are determined to be not necessary, and others are added. There is continual change during the fiscal year. The TASP is not updated after publication. There is no attempt to keep track of additions and deletions. Changes are made at the discretion of the MACOM commanders and HQDA Staff agency heads. However, at time of preparation of the next year's TASP, the MACOMs and agencies report the changes made during the year.

e. Program Implementation

(1) Implementation of the TASP is conducted on a decentralized basis. Upon TASP approval, MACOMs and HQDA Staff agencies proceed to initiate the individual study efforts within their programs. AR 5-5 prescribes the requirements and procedures for the initiation, validation, development, and conduct for individual studies and the application of study results.

(2) Unprogramed study requirements are often identified by the MACOMs and Staff agencies, and may be initiated if resources are available. The unprogramed studies require the same definition, justification, monitorship, and use of results as programed studies.

(3) Some unprogramed studies result from unsolicited proposals from outside contract organizations. The recipient of an unsolicited proposal performs certain administrative tasks regarding

acknowledgement, protection, review, and evaluation of the proposal. The checklist of responsibilities, and sample correspondence are given in AR 5-5.

(4) Before a study is begun, the sponsor establishes the need for the study, defines the problem and scope, determines a manageable number of valid objectives, identifies the use and users of the study results, determines when the results are needed, and conducts a thorough literature search to preclude duplication of previous study efforts.

(5) The sponsor confirms the validity of the proposed effort by coordinating the requirement among interested MACOMs and Staff agencies, determines the availability of in-house resources to perform the study, and obtains approval of contract funding or prepares a study directive.

(6) Contract and grant studies are initiated by means of a Request for Approval of Contractual Support (RACS). The RACS is written by the sponsor's action officer, and coordinated for approval. AR 5-5 provides the format for the RACS.

(7) In the MACOMs, a RACS is approved by the MACOM or sub-MACOM commander if the study is to cost less than \$200,000. If \$200,000 or more, the RACS is forwarded to HQDA for approval at the Secretariat level. OCSA Study Management Office designates a HQDA Staff agency to coordinate the RACS within the Staff and with the ODUSA(OR). The coordinated RACS is approved by the OCSA. If funded with RDTE money, it is forwarded to ASA(RDA) for final approval, and if funded with OMA or other appropriations, it is approved by ASA(IL&FM). The approved RACS is returned to the sponsoring MACOM for initiation of the study contract.

(8) For HQDA Staff contract studies, a RACS is approved by the head of the Staff agency when the study costs less than \$200,000 and if it has been approved by the VCSA in the annual program. If the study was not programed at the beginning of the year, the RACS is approved by the OCSA. If \$200,000 or more, the RACS goes through OCSA to the Secretariat for final approval. If funded by RDTE, the ASA(RDA) approves the study, and if funded by OMA, the ASA(IL&FM) approves. The RACS is returned to the sponsoring Staff agency for initiation of the study contract. The Study Management Office initiates funding documentation for the approved HQDA contract studies.

(9) In-house studies to be conducted by ad hoc study groups or by established study organizations are initiated by means of study directives. A study directive may be a formal document

initiated by HQDA requesting a MACOM to conduct a study in one of its in-house study organizations. In that case, the study directive is written by HQDA Staff proponent and coordinated with the MACOM staff prior to publication. A sample format for a formal directive is given in AR 5-5. On the other hand, if the study is initiated within an organization, the directive may be as simple as a local memorandum addressed to the head of the study team. In-house studies are authorized at any time, as the need arises, by local managers so long as resources can be made available. Authority to initiate in-house study projects is completely decentralized. The size of the in-house effort is immaterial--it may range from as little as one man-year effort or as much as twenty man-years.

(10) Actual conduct of the study begins upon award of the contract or when the in-house study team begins work. A Study Advisory Group (SAG) is convened, or a Study Advisor is appointed to guide the efforts of the Study Group. A study plan is prepared and approved by the SAG or Study Advisor. The role of the SAG or Study Advisor is advisory unless management responsibility is delegated by the sponsor.

(11) Upon completion of the study, the sponsor evaluates the results, and acts on approved study recommendations. The sponsor communicates the result to all those affected and implements the decisions, or documents the rationale for nonimplementation.

(12) Individual study projects are reported to the Defense Documentation Center (DDC) on DD Form 1498. The DD Form 1498 is first submitted when a study effort is approved in the annual study program. The form is resubmitted upon initiation, change, termination, and completion of the study. A final 1498, after implementation of study recommendations, includes an evaluation of the results and uses of the study.

(13) Copies of the final study document, upon approval, are forwarded to DDC and the Army Library, Pentagon. Copies of logistics studies are provided to the Defense Logistics Studies Information Exchange (DLSIE).

f. Program Evaluation. Army study program evaluation consists of the following two activities.

(1) Results and Use Analysis

(a) Each fiscal year, during the fourth quarter, an analysis is conducted by the Study Management Office of the results and uses of completed studies (all studies completed during a selected

12- to 18-month time period). This consists of a desk audit of the results and uses of each completed study as reported by the study-doing organization. At the end of each individual study, the sponsor has completed a DD Form 1498 and recorded the extent to which the study met its original objectives. The sponsor also recorded the uses made (the implementation) of the study results (recommendations, conclusions, etc.).

(b) The Study Management Office reviews each of the individual DD Forms 1498, and accumulates observations and statistics about the success and utility of the many studies. This analysis is printed in a results and use document and provided to top Army management, and to the MACOMs and DA Staff agencies. Any areas of study management which appear to need correction as a result of this analysis are given special attention by the Study Management Office and the Study Coordinators.

(2) Priority Problem Area Evaluation. As indicated in paragraph 2d above, each PPA in the annual SPG is assigned to a HQDA Staff agency. That agency serves as "Project Manager" to develop a set of studies and other actions designed to solve the PPA. The PPA studies are included in the draft agency and MACOM study programs. When the programs are reviewed at HQDA during development of the TASP, an evaluation is made to determine how well the PPAs have been resolved and which PPAs need additional study effort. This evaluation is conducted by the ODUSA(OR). Results of this evaluation are used in determining whether PPAs need to be continued and republished in next year's SPG.

E-3. BUDGET, DEVELOPMENT AND IMPLEMENTATION. a. General. Budgeting for Army studies and analyses is decentralized. Each MACOM and major Army headquarters develops its own budget requirements and includes these amounts in its annual Command Operating Budget Estimate (COBE). Funds for studies and analyses may be expended from every Army appropriation. The funds are expended for maintenance of full-time in-house Army study organizations, for support of ad hoc study groups, for consultants, and for study contracts with non-DOD study organizations (think tanks).

b. In-house Study Organizations. Budgets for study and analysis organizations are prepared at the local level and are included in the COBEs of their parent organizations. Funds requested in these budgets include amounts for civilian pay, for computer support, travel, security, and all other housekeeping expenses. These organizations are usually funded from OMA or RDTE appropriations. The budget requests are defended routinely up through channels during the annual budget review process. Usually, no special budget defense is required before OSD, or the Congress.

When Congress does single out a particular organization, a special defense is prepared, consisting of special justification materials and witnesses before the Congressional staffers or Committee members. It should be noted that in-house study organizations may receive funds from other Army and DOD organizations for the conduct of special study projects.

c. Ad Hoc Groups. The Army uses specially formed ad hoc study groups extensively. These groups vary in size from 3 to 20 analysts and administrative support personnel. They work part-time and full-time. They belong to a single parent organization, or they may be borrowed (assembled) from various organizations. Requirements for ad hoc studies are not usually known very far in advance, and budgets are not included in the annual COBEs. Consequently, funds to support the ad hoc groups must be found from within the currently available funds of the local operating budget. Analysts and administrative personnel are paid their regular salaries by their parent organizations. TDY funds are often provided by the parent organization, but may be provided by the organization sponsoring the study. Administrative support (office space and supplies) is provided by the study sponsor from his operating accounts.

d. Consultants. Consultants are hired to bring highly specialized expertise needed by the Army for relatively short periods of time. The consultants are hired in accordance with civilian personnel regulations (CPA A-9, Employment of Experts and Consultants). Each consultant is paid on a per diem basis for the duration of the special study or analysis project. Local civilian personnel salary funds are used to pay the consultants. Funds may, or may not have been specially included in the civilian pay budget. If not, the local comptroller uses slack (money for currently vacant civilian positions) to pay the consultants.

e. Contracts and Grants

(1) Study and analysis contracts are performed by non-DOD commercial organizations (think tanks) and by Federal Contract Research Centers (FCRCs) of the other military services. Study and analysis projects are also performed by means of grants to either individuals or institutions (i.e., universities).

(2) Budgets for contract studies are usually included (sometimes invisible) in local COBs. In a few cases contract funds are budgeted at program elements specifically for contract studies. These few program elements are visible in the Army budget.

(3) Planning for study funds begins about 20 months before the year of execution when approximate amounts are recorded in the Army Program Objective Memorandum (POM). About 14 months before execution, budget review committees begin a series of reviews wherein questions are asked about the needs of the study program. About 12 months before execution, a detailed listing of proposed contract studies is prepared for support of the few visible program element budget lines. This information includes title, brief statement of the problem to be addressed, description of expected results, and the contract cost. At the same time, a comprehensive listing of titles is prepared for all planned in-house studies. In November of each year, information on planned contracts for the few visible budget lines and on all planned in-house studies is provided to the authorizations and appropriations committees of the Congress.

(4) The requirement to provide detailed information about planned studies for the budget year grew out of the difficult experience with the FY 79 study budget. In years prior to FY 79, the Army had merely prepared Congressional Descriptive Summaries of study budget needs (again in the few program element budget lines). Congress approved a "bucket" of funds for each program element which the Army spent on contract and in-house studies in any manner that seemed appropriate. Congress became dissatisfied with what appeared to be poor study management throughout DOD, and cut the study funds in the FY 79 budget lines. In order to preclude this happening again, the Army is preparing the detailed listings described above for presentation to the Congressional Committees prior to the time of the FY 80 budget markups. In this manner, it is hoped that the staffers and committee members will be sold on the importance of the study efforts and will not cut the budget reflected in the few program element study lines.

(5) In the past, the few specific study program element lines have been routinely defended by Army representatives testifying before the Congressional Committees. This method worked satisfactorily until the FY 79 budget request. Special appearances were made by officials of the Army Secretariat and HQDA Staff to defend the FY 79 budget request.

(6) During approval of the FY 78 and FY 79 Army budgets, Congress also made general, across-the-board cuts to the OMA budget, reducing study funds for HQDA and the commands. Here too, it is hoped that the advance lists of contract and in-house studies to be presented to Congressional Committees will justify the study funds requested in the FY 80 budget.

(7) There is an annual requirement to provide to OSD, during the budget formulation process, a report of funds being budgeted for studies and analyses (Exhibit PB-21). To this date, only funds for studies monitored in the AR 5-5 study system have been reported to OSD. This report is prepared by each MACOM and DA Staff agency, and assembled by the Study Management Office, OCSA. The report covers the previous, current and budget year. For example, the current report being prepared covers FY 78, FY 79, and FY 80. Because AR 5-5 does not cover all Army studies and analyses, the Exhibit PB-21 does not provide a comprehensive Army total for Army studies and analyses.

E-4. EVALUATION OF THE ARMY STUDY SYSTEM (TASS). a. Introduction. The previous section described the Army Study System as it is intended to be by AR 5-5 and DA Pamphlet 5-5. In some respects it does not live up to these intentions. Furthermore, even the system as intended does not meet some of the requirements stated or implied in OSD and Congressional guidance. This section describes the ways in which TASS does not meet Army, OSD or Congressional requirements and the measures that could be taken to improve the system in these ways. First, however, it is appropriate to review what the Army, OSD and Congress have indicated are "requirements" for TASS.

b. Army Requirements. The Army wants a system that will facilitate the conduct of studies to help research, development, and management decisions at various levels. More specifically, the system should:

(1) Make efficient use of study resources by procuring high-quality products, at reasonable cost, in a timely way and without undesired redundancy.

(2) Assure that information about Army studies and their results is available to persons needing that information.

(4) Provide guidance to study sponsors about key problem areas facing the Army.

(4) Assure a logical planning of the study program toward problem solutions.

c. OSD Requirements. Most of the specific rules used by the Army to make the system conform to these requirements are, in fact, the same as those spelled out in DODD 5010.22:

(1) An annual study program.

- (2) A designated official to monitor the program.
- (3) A written plan for each study.
- (4) DD Form 1498 for each study filed in DDC.
- (5) Copy of each study report filed in DDC.
- (6) A manager for each study.
- (7) Responsible approval to initiate each study.
- (8) Responsible approval of completed study.
- (9) Written evaluation at the end of the study.

d. Congressional Requirements. Congress' expectations with regard to studies are expressed in special committee reports and in budget mark-ups. They imply that the system should:

- (1) Maintain a complete record of the subject, cost, performing organization and benefits of each study.
- (2) Prevent undesired duplication of study effort.
- (3) Assure the use of correct contracting procedures.
- (4) Be consistent with other DOD study management.

e. Shortcomings in Current System

(1) The Army Study System falls short of Army expectations essentially in:

(a) Not providing the means of processing contract resources rapidly, and

(b) Not providing a coherent program that focuses on the most important problems, assures that new studies will build on what has been learned in past studies, and helps in anticipating future decision problems.

(2) The Army Study System apparently satisfies OSD requirements in all respects except that:

(a) It is not complete according to OSD definition of studies and analyses. In particular, certain projects done under AR 70-1 and AR 70-8 are studies according to OSD definition but are not included in the Army Study Program (TASP).

(b) It does not provide the centralized program and quality control implied by the DOD directive.

(c) It is unable to show the benefits resulting from use of study resources.

(3) Congress seems to be most dissatisfied because the Army Study System:

(a) Does not know the total costs of their studies, exactly where the money comes from, nor whether the benefits are commensurate with the costs;

(b) Does not prevent abuses of contract procurement rules;

(c) Is not consistent with other DOD study systems;

(d) Apparently cannot prevent the conduct of trivial, foolish or redundant studies; and

(e) Does not guarantee appropriate use and dissemination of study information.

E-5. ELEMENTS OF A GOOD STUDY PROGRAM DEVELOPMENT PROCESS. To be effective, the process must:

a. Enunciate clearly the Army's priority problems. Further, the Army's problem identification process should be structured so that successive levels below CSA can further amplify these problems so as to lead to specific problem statements.

b. Provide clear instructions for the program preparation phase. This will permit each MACOM to readily determine how best it can apply its analytical resources to the identified problems. Even though the guidance is from the top down, the total process should allow additional priority efforts to surface from the bottom to the top.

c. Require a strong MACOM review. It is at this first level of consolidation that the proposed study efforts can be reviewed in terms of study approach, efficient use of resources, existence of an adequate data base, interfaces and supporting requirements, etc. This review should answer the who, what and how questions. Only well-prepared plans should go forward.

d. Provide a consolidated draft for DA level review. The total input should be categorized in a number of ways so that the DA review bodies can assess the program in terms of proper balance,

content and responsiveness. As a minimum, the resources planned for studies should be presented by:

- (1) PPA.
- (2) Categories described in AR 5-5.
- (3) Appropriation and budget programs.
- (4) Long-range, mid-term, and short-range.
- (5) Dollar value, highest to lowest.
- (6) Each MACOM against above groupings.

e. Permit high level Army review. This review would be to approve a small set of high priority individual studies and to insure the proper content and balance. This review should answer the why and when questions as well as establish priorities of approved efforts.

f. Present a responsive, coherent, and well-coordinated study program as budget input. The program that survives these successive reviews should be inherently defensible. DA should only sponsor as many studies as they can actively track.

g. Permit the feedback of "lessons learned" and modified guidance as it develops from the several levels of review and in the execution of the program formulation process. Obviously those persons involved in steps (c), (d), and (e) above would be well equipped to offer changes to the guidance.

h. Provide for adjustment of programs in accordance with priorities as urgent requirements are injected following program formulation.

E-6. IMPROVEMENTS IN THE ARMY STUDY SYSTEM (TASS). a. General. Changes in TASS to meet the above problems could range from mostly procedural to basic and organizational. In addressing this the Study Group sought the views of three separate organizations: the current Study Management Office, the Engineer Studies Center (ESC), and the System Research and Analysis Office (SRAO) of ODCSRDA. The solutions independently proposed by these organizations spanned the range from minor modifications to the current system (proposed by the current SMO) to a highly centralized system of control (proposed by ESC and documented in detail in Appendix F). SRAO proposed an intermediate kind of solution which somewhat increased centralized control but retained decentralized program development and execution.

b. An Improved Decentralized System

(1) Even a minimally improved system needs to be consistent with OSD's definition of studies (which is apparently also Congress' definition) and needs to be able to account for funds used for those studies. Thus, this system would require reporting of all studies to OCSA, both for the annual program and when studies are approved after assembly of the program. This feature applies to all alternatives considered.

(2) Also, this system would include Study Planning Guidance prepared in coordination with the Staff and MACOMs. Certain studies, perhaps about 40 in number, would be designated as PPA studies and would be monitored by the OCSA on an exception basis. These studies would normally be initiated at HQDA and, if not, at least staffed at DA for consistency with other PPA studies.

(3) Contract studies would also receive special attention at MACOM or DA level with sole source studies requiring special approval (this feature also applies to all other alternatives considered). Other studies would be approved and initiated at Staff agency, MACOM or sub-MACOM levels.

(4) Thus, in sum, the principal changes necessary to create this kind of study system are:

- (a) Implementation of a broad definition of studies.
- (b) Require reporting of all new studies to OCSA on DA Form 1498, including specific PE fund source.
- (c) Provide a few additional resources in the OCSA and in MACOMs for planning and monitoring PPA studies.
- (d) Require specific approval of all sole-source contracts at MACOM or DA level, depending on study cost.

c. A Highly Centralized System

(1) As a separate substudy to the review, the Engineer Studies Center (ESC) was asked to examine the HQDA management of the Army study programs. The ESC task team conducted a wide-ranging management analysis (the full report of the ESC study is Appendix F of the Review Report). It considered the classic management functions of planning, organizing, staffing, directing, controlling, coordinating, and evaluating. (Because of requirements for analysis visibility and funding dependence on OSD and Congress, "reporting" was added to the list of management

functions.) The team considered analysis resources to include people, equipment, models, and data.

(2) Before answering the question "Who should manage?" the team had to consider the specific system to be managed, the system's purpose, and how well that purpose is being met. Then, from a broad perspective of the study system, the team was able to examine in more detail the study system's components, requirements, resources, and capabilities. Mismatches between requirements and capabilities implied possible management functional needs. Consideration of the managerial needs then led to practical design and assignment of management responsibilities. Finally, organization and structure were developed to meet those responsibilities.

(3) The task team reviewed the numerous criticisms of OR/S&A made over the years from many sources. The team also studied the many attempts the Army has made to improve OR/S&A performance and reporting/accounting. The features of those attempts that worked well and not so well were examined.

(4) Given the many concerns about OR/S&A (especially from high levels), the task team assumed that there probably was some sort of serious OR/S&A management problem. This working assumption did not automatically force more centralized management of OR/S&A activities. On the contrary, the management questions remained open. Is more or less management needed and at what levels? Are one-time or continuing actions needed? Must all or just a few of management's functions be strengthened (or weakened)?

(5) To correct the noted OR/S&A management weaknesses, the team recommends a management cell at HQDA greatly strengthening and centralizing the performance of the program planning, executing (directing and controlling), and evaluating functions. The cell contains no study-performing element; the cell's job is management in the program sense and precludes involvement or participation in individual studies. Its role for program evaluation may involve some special evaluations of selected, individual studies, but the main focus for evaluation is the total program, not individual studies. The cell is recommended as a separate element/office with a two-star director reporting to the Director of the Army Staff (DAS). "Next best" choice is an element within one of the Directorates under the DAS. However, the team recommends against adding the cell to Director, Program Analysis and Evaluation (DPA&E), where the cell's management functions would soon become subordinated to the direct performance of POM-supporting studies, and analyses, and actions. Structure of the proposed cell is shown and discussed in the Main Report. There the purpose of the cell is stated in more detail in terms of missions, roles, and

critical functions. The implementing and operating concept is given in terms of tasks and interfaces with other Army elements and processes.

d. A system of Intermediate Level of Centralization. This organizational concept includes a council of top management officials to provide direction, a committee of top study managers to exercise control, a review subcommittee of technically qualified analysts to provide quality control, and a small study management office to facilitate the process of centralized control and decentralized execution. Studies would be performed by the appropriate agencies under the same types of control now exercised, including guidance by SAG, internal review at agency and MACOM levels, and DA review by the staff proponent. Existing elements which provide Army Staff analytical support would be retained. The proposed concept is illustrated at Table E-1. Members of the Army Study Program Review Council (ASPRC), the Study Program Allocation Committee (SPAC), and the Study Quality Assessment Subcommittee (SQAC) are suggested in Table E-1.

(1) The ASPRC would assess the consistency of current programming with the previous year's guidance and would issue re-guidance. New areas needing study would be identified, based on a review of OSD consolidated guidance, "out-of-court" POM settlements, CG Study Plan, other analysis demands, and input from study users. The council would issue guidance regarding the approximate emphasis of analysis efforts by functional area. For example, in February 1979, the ASPRC would update the FY 80 guidance (originally issued during the previous 80-84 POM cycle) and would provide study guidance for the 81-85 POM cycle.

(2) The guidance would be consolidated by the Study Management Office (SMO) and transmitted to the study-doing agencies. These agencies would draft study programs responsive to the guidance and submit these to the SMO. The SMO would synthesize groups of study programs into manageable bites.

(3) The SPAC, upon receipt of the groups of proposed programs from SMO, would adjust the programs as required and allocate resources for their execution. Changes to the previous year's program would also be reviewed and approved. A series of meetings probably would be required in order to handle the volume of work.

(4) Studies would be performed by the appropriate agencies under the same types of control now exercised. Selected studies would be submitted through the SMO for assessment of quality.

Table E-1. Top Management Group

Study Program Review Council		Study Program Allocation Committee	Study Quality Assessment Subcommittee
VCSA - Chairman	DUSA(OR) ASA(MRA)	DAS - Chairman	DUSA(OR)
DAS - Vice Chairman	ASA (ILFM)	DM - Vice Chairman	Dir, SRAO
DCSPER	ASA(RDA)	TRADOC	Tech Adv, ODCSOPS
DCSRDA	COA	DARCOM	Others as, appropriate, e.g. Consultants, Contractors, Other Services.
DCSOPS	COE	ODCSPER	
CDR, TRADOC	TSG	ODCSLOG	
CDR, DARCOM	ACSI	ODCSOPS	
	ACSAC	ODCSRDA	
	DPAE	DACSI	
	OM	OCCOA	
	CDR, OTEA	OCCOE	
		OPAE	

(5) The SQAC or other ad hoc committees would review studies selected at random or because of suspected problems. Contracted experts might be utilized. Results would be fed back to the study doer. This quality control function would be in addition to the current review process for individual studies, which is not only directed at answering the question: "Does this study satisfy the objectives?" but would attempt to assess the accuracy and completeness of the selected studies. These assessments, when reviewed by the study managers, would be used as one basis for determining the degree of competence and professionalism of analysis agencies and even key analysts within these agencies.

(6) The SMO would serve as an ASPRC secretariat, would have more authority than vested in the current office and might have to be enlarged. The director might be a supergrade, and should report to the Director of Management. The SMO would support the ASPRC and SPAC, challenge programs proposed by study agencies, coordinate budget formulation and defense for all studies, and propose quality control initiatives. Procedurally the office would disseminate the ASPRC annual guidance, synthesize the agencies' proposed study programs, including initial allocation of resources, provide an independent assessment of the resultant overall study program and of individual projects, and prepare information books and presentations for the SPAC. The SMO would also provide budget defense, before the Budget Review Committee (BRC) and Select Committee (SELCOM), of the study program approved at the SPAC meetings. Feedback would also be provided as necessary to the study agencies. These functions would require personnel experienced in doing and evaluating studies as well as expertise in a range of military areas. A mix of civilian and military analysts and administrators is indicated. The manning level needs further investigation but could comprise about 6-10 professionals. Some of these, say four, could be permanently assigned liaison personnel designated by major study agencies.

APPENDIX F

SUBSTUDY ON MANAGING THE ARMY STUDY PROGRAM

The substudy following was prepared by the Engineer Studies Center as one of three views sought concerning means of improving management of the Army Study Program.

**MANAGING THE ARMY STUDY PROGRAM
FOR EFFECTIVENESS**

**Prepared by
US Army Engineer Studies Center
6500 Brookes Lane
Washington, D. C. 20315**

October 1978

ACKNOWLEDGMENTS

This report was developed by the Engineer Studies Center (ESC) as a special task for the DA study, "Review of Army Analysis." The ESC team consisted of Mr. Dean E. Considine, Mr. Gerald E. Cooper, Mr. Lyle G. Surprise, CPT Larry C. Merkl, and CPT William K. Gay.

This report was prepared for publication by Mrs. Sally B. Blake, Mrs. Estelle C. Coleman, Mrs. Sandra J. Grossman, and Mrs. Jean A. Lamroux under the supervision of Mrs. Doreen A. Myers. The graphics were prepared by Mr. Christopher Lew, assisted by Mrs. Eva G. Allen and Mr. Abell A. Norris III.

CONTENTS

<u>Section</u>		<u>Page</u>
	ACKNOWLEDGMENTS	iv
	CONTENTS	v
	ABSTRACT	vii
	SUMMARY	viii
	GLOSSARY	x
I	INTRODUCTION	
	Problem	1
	Product	1
	Scope and Organization of Paper	1
II	BACKGROUND	
	Army Expectations of OR/S&A	2
	TASS Definition	3
	Assessment of OR/S&A Management Today	5
III	THE MANAGEMENT JOB	
	General	9
	Program Development	12
	Program Execution	12
	Program Evaluation	17
	Reminder of What the Cell Is Not	26
IV	RECOMMENDATION	
	Proposed Organization and Structure	20
	Organizational Outline to Match "Management Job"	20
	Structural Spaces and Location	22
	Probable Points of Contention	24
	Bottom Line	25
<u>Figure</u>		
1	Chain of Relationship of Army Task to Identification of Study Issues and Requirements	6
2	OR/S&A Criticisms/Symptoms With Management Implications	7
3	Proposed Army Study Program Development Process	14
4	Management Cell's Role in Evaluation	18
5	Proposed Study Program Evaluation Concept	25

<u>Figure</u>		<u>Page</u>
6	Conceptual Match of Management Functions to Organization Outline	21
7	Structure--ASP Planning and Administration Office	22
TAB A--DEVELOPMENT AND ANALYSIS OF S&A MANAGEMENT ALTERNATIVES		27
TAB B--ANALYSIS OF RESPONSIBILITIES, FUNCTIONS, AND ROLES OF SECRETARIAT/HQDA OR/S&A-RELATED ELEMENTS		35
TAB C--SPECIAL TOPIC--PAST, PRESENT, AND FUTURE OF ODUSA(OR)		40
TAB D--RELATED TOPICS		46
TAB E--SOURCE MATERIAL		55

ABSTRACT

This report records the results of a special task performed within the DA study, "Review of Army Analysis." The task consisted of ascertaining those management of operations research, studies, and analysis functions best performed at Secretariat/HQDA level and the best organizational structure to support them. A management cell at HQDA greatly strengthening and centralizing the performance of Army Study Program planning, execution, and evaluation is recommended. The report identifies the cell's responsibilities and resources but leaves development of specific policies and procedures as early tasks of the cell itself.

SUMMARY

Within "Review of Army Analysis," one task was to ascertain those management of OR/S&A functions best performed at the Secretariat/HQDA level and the best organizational structure to support them. This task was considered equivalent to answering the question, "What strategy, policies, and organization at Secretariat/HQDA level are appropriate for management of OR/S&A resources to ensure that the same (or lower) level of resources does a better job Army wide?"

The task team conducted a wide-ranging management analysis. It considered the classic management functions of planning, organizing, staffing, directing, controlling, coordinating, and evaluating. (Because of requirements for OR/S&A visibility at and funding dependence on OSD and Congress, "reporting" was added to the list of management functions.) The team considered OR/S&A resources to include people, equipment, models, and data.

Before answering the question "Who should manage?" the team had to consider the specific system to be managed, the system's purpose, and how well that purpose is being met. Then from a broad perspective of the study system, the team was able to examine in more detail the study system's components, requirements, resources, and capabilities. Mismatches between requirements and capabilities implied possible management functional needs. Considerations of the managerial needs then led to practical design and assignment of management responsibilities. And finally, organization and structure were developed to meet those responsibilities.

In broad terms, the OR/S&A purpose is to answer questions, explore and illuminate issues, and solve problems that arise in DA's performance of its major functions: setting objectives, acquiring and allocating resources, building forces, and operating forces. Decisions in these areas lead to the commitment and expenditure of resources--dollars in peacetime plus unfortunately some lives in wartime. The intent is that Army OR/S&A activity produce quality, forward-looking, and usable results in a timely, efficient manner to support DA decisionmaking. It is also intended that OR/S&A effort be distributed in some balanced sense across all those DA functions, avoiding both overlap and underlap.

The task team reviewed the numerous criticisms of OR/S&A made over the years from many sources. The team also studied the many attempts the Army has made to improve OR/S&A performance and reporting/accounting. The features of those attempts that worked well and not so well were examined.

Given the many concerns about OR/S&A (especially from high levels), the task team assumed that there probably was some sort of serious OR/S&A management problem. This working assumption did not automatically force more centralized management of OR/S&A activities. On the contrary, the management questions remained open. Is more or less management needed and at what levels? Are one-time or continuing actions needed? Must all or just a few of management's functions be strengthened (or weakened)?

To correct the noted OR/S&A management weaknesses, the team recommends a management cell at HQDA greatly strengthening and centralizing the performance of the program planning, executing (directing and controlling), and evaluating functions. The cell contains no study-performing element; the cell's job is management in the program sense and precludes involvement or participation in individual studies. Its role for program evaluation may involve some special evaluations of selected, individual studies, but the main focus for evaluation is the total program, not individual studies. The cell is recommended as a separate element/office with a two-star director reporting to the DAS. (A "next best" choice is an element within one of the directorates under the DAS. However, the team recommends against adding the cell to DP&E, where the cell's management functions would soon become subordinated to the d. . . performance of PCM-supporting studies, analyses, and actions.) Structure of the proposed cell is shown and discussed in the Main Paper. There the purpose of the cell is stated in more detail in terms of missions, roles, and critical functions. The implementing and operating concept is given in terms of tasks and interfaces with other Army elements and processes. (The strengths and weaknesses of alternatives to the proposed cell are covered in Tab A.)

Early on the proposed cell will have to adopt and enforce a much more comprehensive, much more workable definition of "studies and analysis." One such definition particularly favored by the task team is referenced at paragraph 5b of the Main Paper. (A separate task team will propose a new definition as part of this "Review of Army Analysis." Regardless of how good that definition seems to be, the new S&A management cell should give definition of "study" early and continued attention. Some word other than "study" may even be adopted as the name of the new universe; but throughout this paper, "study," "studies and analysis," and "OR/S&A" are retained as acceptable terms.) The cell's execution of the study program must include careful accounting of activity, costs, and benefits to OSD and Congress. That task can be met most quickly and easily. Full and clearer accounting will entail risk in the short run before the weakest parts of the study program become stronger. In the longer run, the improved linkages to Army planning, especially long-range planning, should strengthen all parts of the program. Total study program evaluation related directly to the study program's better defined purpose will provide constructive feedback, further strengthen the program, and add substance to the Army's reporting of study activity to higher authority.

GLOSSARY

AAA	Army Audit Agency
ACSI	Assistant Chief of Staff for Intelligence
ADP	automatic data processing
APPGM	Army Planning and Programing Guidance Memorandum
ARI	Army Research Institute
ASA	Army Strategic Appraisal
ASAC/WASAC	Army Study Advisory Committee/Working Army Study Advisory Committee
ASA(IL&FM)	Assistant Secretary of the Army (Installations, Logistics and Financial Management)
ASARC/DSARC	Army System Acquisition Review Council/Defense System Acquisition Review Council
ASA(RDA)	Assistant Secretary of the Army (Research, Development and Acquisition)
ASP	Army Study Program
ASPG	Army Study Program Guidance
ASPTAO	Army Study Program Planning and Administrative Office
AVCSA	Assistant Vice Chief of Staff, US Army
BRC	Budget Review Committee
CAA	United States Army Concepts Analysis Agency
CAR	Chief of Army Reserve
CDR	commander
CNG&	Chief, National Guard Bureau
COA	Comptroller of the Army
COBE	Command Operating Budget Estimate
COE	Chief of Engineers
CSA	Chief of Staff, Army
CSR	Chief of Staff Regulations
DAA	Director of Army Automation
DAB	Director of Army Budget
DACS (DMO)	Study Management Office, Management Directorate, Office, Chief of Staff, US Army
DARCOM	United States Army Materiel Development and Readiness Command
DAS	Director of the Army Staff
DCDR	deputy commander
DCSLOG	Deputy Chief of Staff for Logistics
DCSOPS	Deputy Chief of Staff for Operations and Plans

DCSPER	Deputy Chief of Staff for Personnel
DCSRDA	Deputy Chief of Staff for Research, Development and Acquisition
DCSRM	Deputy Chief of Staff for Resource Management
DDC	Defense Documentation Center for Scientific and Technical Information
LG	Defense Guidance
DM	Director of Management
DOD	Department of Defense
DPA&E	Director of Program Analysis and Evaluation
DUSA(OR)	Deputy Under Secretary of the Army (Operations Research)
FOA	field operating agency
FORSCOM	United States Army Forces Command
HQDA	Headquarters, Department of the Army
IG	Inspector General
JCS	Joint Chiefs of Staff
JISOP	Joint Strategic Objectives Plan
JSPD	Joint Strategic Planning Document
JSPS	Joint Strategic Planning System
LEA	Logistics Evaluation Agency
LSSG	Logistics Studies Steering Group
MACOM	major Army command
MENS	Mission Element Need Statement
CAVCSA	Office of the Assistant Vice Chief of Staff, US Army
OCA	Office, Comptroller of the Army
OCSA	Office, Chief of Staff, US Army
ODCSLOG	Office, Deputy Chief of Staff for Logistics
ODCSOPS	Office, Deputy Chief of Staff for Operations and Plans
ODUSPER	Office, Deputy Chief of Staff for Personnel
ODCSRDA	Office, Deputy Chief of Staff for Research, Development and Acquisition

ODUSA(OR)	Office, Deputy Under Secretary of the Army (Operations and Research)
OMA	operation and maintenance, Army
OMB	Office of Management and Budget
OMNIBUS	Operational Readiness Analysis
OR/S&A	operations research, studies and analysis
OSA	Office, Secretary of the Army
OSD(SA)	Office of the Secretary of Defense (Systems Analysis)
OTEA	Operational Test and Evaluation Agency
PACOM	Pacific Command
PAED	Program Analysis and Evaluation Directorate
PAPPGM	Preliminary Army Planning and Programing Guidance Memorandum
PARR	Program Analysis and Resource Review
PGRC	Program Guidance and Review Committee
POC	Point of Contact
POM	program objectives memorandum
PPB	planning, programing and budgeting
PPBS	planning, programing and budgeting system
RACS	request for approval of contractual support
RDTE	research, development, test and evaluation
SA	Secretary of the Army
S&A	studies and analysis
SAG	Study Advisory Group
SELCOM	select committee
SMO	Study Management Office
SPC	Strategic Planning Committee
SPG	Study Planning Guidance
SPM	study program manager
SSAG	Strategic Study Management Office
SSI	Strategic Studies Institute
TASP	The Army Study Program
TASS	The Army Study System
TRADOC	United States Army Training and Doctrine Command
USAREUR	United States Army, Europe
VCSA	Vice Chief of Staff, US Army

MANAGING THE ARMY STUDY PROGRAM FOR EFFECTIVENESS

I. INTRODUCTION

1. Problem.

- a. The given task was to....

Ascertain those [management for OR/S&A] functions best performed at the Secretariat/HQDA level and the organizational structure to support them.

- b. The team restated the task as a question....

What strategy, policies, and organization at Secretariat/HQDA level are appropriate for management of OR/S&A resources to ensure that the same (or lower) level of resources does a better job Army wide?

2. Product.

- a. From among many alternatives, the team set out to develop a management and organizational concept including:

(1) A management structure showing location and spaces for the structure (but without recommendation of specific current spaces or individuals from which to fill the new spaces).

(2) An organizational purpose clearly stated in terms of missions, roles, and critical functions.

(3) An implementing and operating concept in terms of prioritized tasks.

- b. This paper includes a frank appraisal of the strengths and weaknesses of all alternatives, including the one finally recommended.

3. Scope and Organization of Paper.

- a. The Main Paper is limited to the mainstream analysis and development leading to the recommended approach to OR/S&A management. Several tabs support this development in greater detail.

b. Tab A explains the team's approach to management analysis. In this sense it parallels the Main Paper in leading to a proposal for OR/S&A management. However, it goes beyond the Main Paper to identify all management alternatives considered with their strengths and weaknesses. Then as a check, it adds a comparison of the desirable features of alternatives against the background of unsuccessful precedents.

c. Tab B presents an assessment of the responsibilities, functions, and roles of current Secretariat/HQDA OR/S&A-related elements. Actual execution roles are compared with assigned responsibilities. The tab includes an estimate of possible sources of spaces to fill management requirements.

d. Tab C considers the ODUSA(OR) beyond its OR/S&A managerial aspects. At the request of the DUSA(OR) himself, the team gave a wider, extra hard look at this office. That special assessment is reported in Tab C.

e. Tab D is a catchall. It collects a variety of comments, bits of philosophy, and special topics that lie off the mainstream of analysis but seem worthy of consideration as relevant fringe items.

f. Tab E lists the main sources of printed material used in this analysis. The tab does not include other numerous sources, including individuals, that contributed.

II. BACKGROUND

4. Army Expectations of OR/S&A.

a. The Army is a major decisionmaker and expends vast resources as an outcome of decisions. In peacetime, the focus is on the expenditure of money. In wartime, the expenditures include loss of lives. The Army's peacetime and wartime decisions have results and implications for the nation and the world. Given the probable continued squeeze on resources, decisionmaking is tougher than ever. Can OR/S&A help?

b. In broadest terms, DA performs four major functions.

- (1) Setting objectives (strategy).
- (2) Acquiring and allocating resources.

(3) Building forces.

(4) Operating forces.

c. Questions, issues, and problems tend to arise during DA's performance of these functions. OR/S&A exists to underpin decisions as needed. Thus, OR/S&A must be integrated into the decisionmaking process. It is the responsibility of the decisionmakers and of OR/S&A to ensure that OR/S&A activities are in phase and at the right level. The Army seeks to maintain OR/S&A resources within the Staff and in separate S&A agencies to support its decisionmaking with responsive, fresh, high-quality, and usable information and recommendations.

d. It is reasonable for the Army to expect OR/S&A activity to be directed at questions of Army resource use and at priority issues. It is also reasonable for the Army to expect OR/S&A resources to be directed at the performance of tasks which are beyond the capability of other staff. It is reasonable to expect OR/S&A activity to be linked to the decisionmaking process in peacetime and wartime. And, it is reasonable to expect balanced contribution from analysts of many disciplines both hard and soft. The products of OR/S&A must "blend" constructively with military and managerial judgments. OR/S&A must not suffer the pretense or the appearance of being or becoming the decisionmaker.

e. There seems to be a tendency for the rest of the Army to pay attention to the study program only to the extent of the direct cost of that program. Attention should be based on a comparison of study cost and study impact. Admittedly some studies have little impact. But, some single study may impact an Army decision involving millions or billions of dollars, perhaps to save money, perhaps to make better use of money spent. Although a few good studies may more than pay for the entire study program and often do, the Army should strive to exploit study resources more productively and draw full potential from those resources.

5. TASS Definition.

a. The Army Study System (TASS) includes only those activities so defined by AR 5-5. Attempts have been made over the years to narrow or broaden the definition. Practical definition is complicated by varied guidance, by tendencies to protect institutional territories and prerogatives, by funding requirements, and by the rivalries among different kinds of "analysts." Efforts to preserve distinctions between research and study, between "hard" and "soft," or between study-like and staff-like have always left gaps and ambiguities. Whatever the categories,

some activities and resources fall "in between." Even what an individual does may vary from one category to another or fall between.

b. The task team feels strongly that there is a larger class of resources and activities that must be brought within a common or joint framework. (The definition of the OR/S&A universe is the responsibility of another task team. But their best definition now should be subject to review from time to time.) This task team assumes that the accepted definition will be much broader than AR 5-5's terms. At this time the task team favors, from among known attempts, the definition proposed by Lester, Dunn, and Gripkey in their undated, unpublished paper, "Review of Army Study Definition and Management." A positive suggestion is to generalize in such a way that no current activity or resource loses identity, is absorbed, or disappears. Study is no more a subset of research than is research a subset of study. Similarly, neither "soft" nor "hard" is an absorbable subset of the other.

c. Whatever the "real" OR/S&A and related universe (possibly renamed), that universe can be sliced/categorized in many ways: vertically, horizontally, functionally, methodologically, and so on. But, finally that entire universe must be managed with the focus on the purpose of the system, not on the incidental internal categories. As always, the means should not overwhelm the ends. And although exact definition must strongly influence the details of program management, there are many needed management features that transcend study categorization.

d. As noted before, the system is to support Army decision-making. Those decisions focus on the acquisition and allocation of resources (money, manpower, materiel) and the employment of those resources. The "system" must be supportive of these via corresponding linkages to PPBS. In general, the principal players apply somewhat different perspectives. HQDA manages from a more strategic, longer term viewpoint. The MACOMs manage from operational, shorter range viewpoints. Both levels feed into and receive from PPBS. The different and sometimes conflicting viewpoints are supposed to be reconciled within the PPBS framework. Reconciliation is here a synonym for tough decision-making. An effective TASS also draws from and feeds the reconciliation process. The TASS examines and sometimes generates alternatives, perhaps to the point of recommending some over others. In doing so, the TASS is supportive of but not a substitute for Army decisionmaking. The distinction may be delicate but must be preserved. The historical record suggests that over-eager analysts have on occasion overstepped the line. Perhaps worse, at times OR/S&A has not been used effectively in making key decisions--and the results have been disastrous for the Army.

e. Figure 1 summarizes these broad relationships among Army functional responsibilities, differing managerial perspectives, and required linkages with PPBS and to a supportive TASP. The important roles of "issue/study requirements identifiers" are partially filled now by direct links for programing and budgeting to high levels at DA Staff and the MACOMs. What is lacking is a nearly equal player corresponding to Army planning and the longer term strategic viewpoint. That player should be involved in study program management and possess the rank/grade to have appropriate impact inside and outside the study community. It is notable that, if necessary study management functions are spread across Secretariat/HQDA, no single study program management cell will be large enough to make it acceptable for or to high-rank directorship.

6. Assessment of OR/S&A Management Today.

a. The team's assessment of OR/S&A management today is based on two approaches. The first approach starts with the notions of management functions and system purpose. It assesses strengths and weaknesses from this idealized, impersonal viewpoint. The other approach begins from all-source criticisms of the studies and analysis system. By blending the theoretical and practical, the team sought to develop a sound, balanced assessment.

b. Figure 2 lists some of the charges and challenges--some old, some new--some from outsiders, some from insiders. Whether outwardly more managerially or more technically slanted, all are properly topics for consideration under "OR/S&A management."

c. By its own admission, the Army cannot account quickly, accurately, and comprehensively to outside authorities about study-like activities. And outsiders confess to puzzlement at what the Army includes and excludes as "studies."

d. Currently, the study program is undefined beyond 2 years. And too much of the program is vague within that 2 years. Even with allowance for the differences between times of decision and times of effect, the shortness of the study program's own planning seems too shortsighted. To be sure, there is much for the study program to do on short notice and with short focus. As many reviews of the study process have argued before, "What the study process does, it does fairly well with relatively little duplication and repetition." The usual concern is that what is done be done better. Often missed is the probably more important point that there are matters that should be addressed but are left untouched by the program. Some Army functions do not get enough

CHAIN OF RELATIONSHIP OF ARMY TASK TO IDENTIFICATION
OF STUDY ISSUES AND REQUIREMENTS

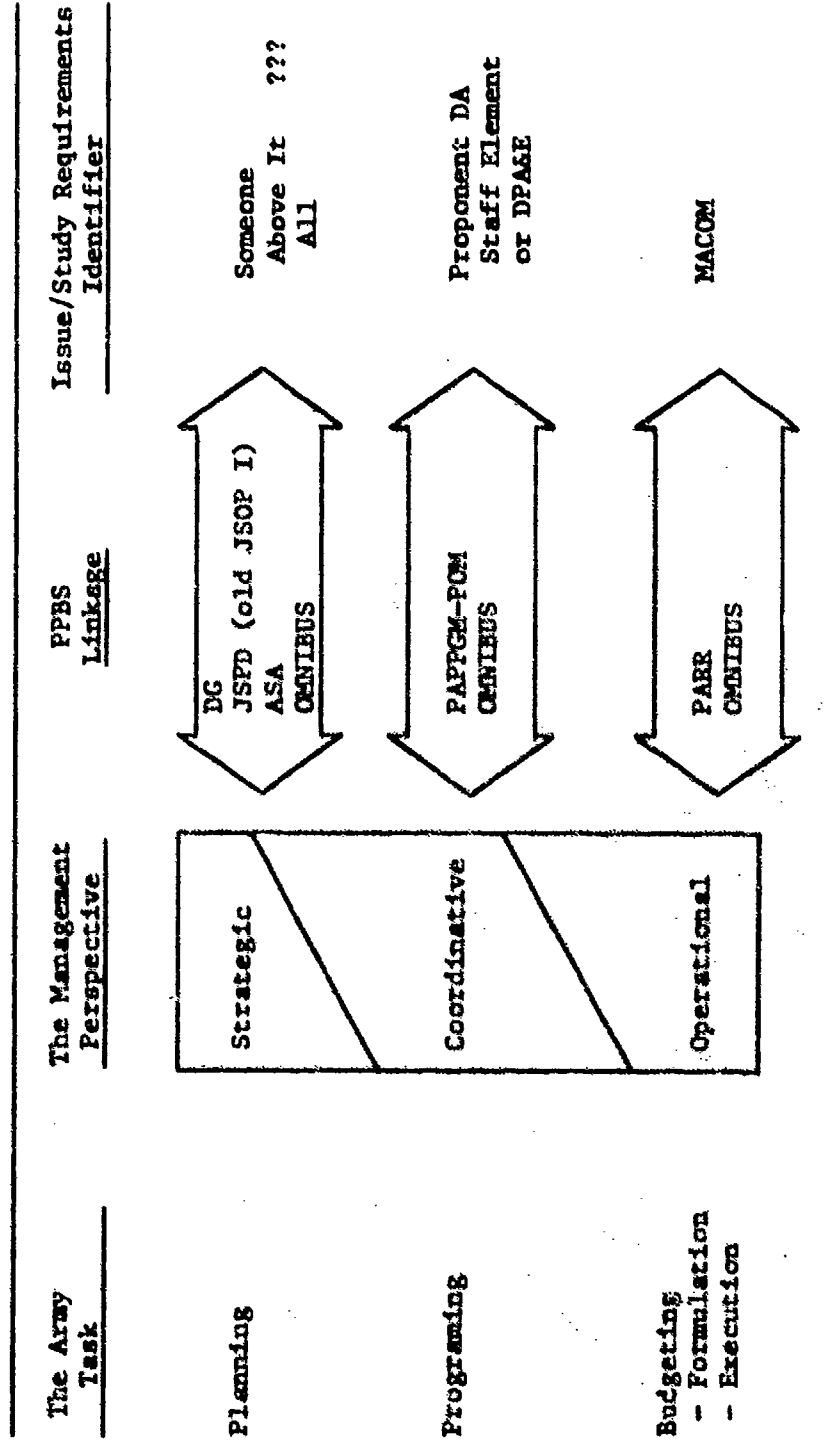


Figure 1

OR/S&A CRITICISMS/SYMPTOMS WITH MANAGEMENT IMPLICATIONS
Figure 2

- . Too much of OR/S&A is "too far off line" relative to the key Army decision processes.
- . Too much of OR/S&A resources is devoted to untimely response to relatively unimportant questions, issues, and problems.
- . Interfunctional problems do not receive enough attention.
- . Quantitative and qualitative specialists do not have sufficient respect for each other's capabilities and contributions to bring the best of both to bear on problems requiring the efforts of both. Not enough interdisciplinary approach.
- . The focus of OR is too often too narrow.
- . OR analysts have a natural career stream in studies and analysis. However, other disciplines run the risk of becoming outcasts from the mainstream of career advancement. Engineers are a case in point; their commitment to S&A makes it hard for them to return to conventional engineering. They also often see their advancement in the OR/S&A community limited by dominance by OR analysts.
- . A larger fraction of the Army study program should be identifiable farther in advance. The anticipation of questions, issues, and problems should be such better.
- . OSD, Congress, and others are malinformed about Army OR/S&A.
- . Study and analysis products too often remain unused and too quickly become forgotten.
- . Too many studies simply begot further study.
- . The quality of analysts should be higher.
- . The quality of study products should be higher.
- . The quality of producing studies should be lower.
- . Methods and results should be better documented.
- . The OR/S&A community does not allocate enough effort to developing new evidence (data). While claiming openness and objectivity, it bases more on faith than evidence and too often relies on old data or no data at all.
- . Past efforts to manage OR/S&A activity have applied too narrow a definition of studies and analysis. The efforts have ignored some of the standard functions of management.
- . The charters of high-level and/or centralized OR/S&A "management" elements have been too narrow with regard to management functions and too liberal in letting "managers" become study doctors. Some of these managers also viewed themselves as much more than study managers. They tried and often did extend their roles too far into decisionmaking on the questions, issues, and problems they were supposed to view with an analyst's detachment.
- . The OR/S&A community is too willing to claim it has the wherewithal to address questions, issues, and problems in areas for which no appropriate methods or relevant data exist.

attention. Difficult questions about the relation among functions (interfunctional issues) are often left unaddressed and unanswered. And, too much of OR/S&A effort seems to be absorbed in looking at issues in the too short time frame.

e. The task team perceives several requirements.

(1) There are needs for more control, monitoring, accounting, and policy-setting of the study program. There is also the need for fuller dissemination and exchange of information about the study program--certainly to OSD and Congress but also within the Army itself. The task team considers that all these requirements can be met easily and quickly and then on a continuing basis. There will be some grief in admitting to some inefficiencies and shortsightedness. But program credibility should improve quickly with real benefit to the Army.

(2) There is a large, more complex requirement. The study program must be given a longer focus. It must be linked much better to the Army's long-range planning for both peacetime and wartime processes. It will take longer to satisfy this requirement--partly because it is difficult to translate given longer-term objectives into an OR/S&A program, but partly too because the Army's longer term objectives must be better developed and stated. The payoff in meeting this requirement is not simply greater OR/S&A credibility, but much greater contribution to the Army. If OR/S&A does achieve a quality, longer range focus, one result should be a reduced requirement for OR/S&A to engage in unplanned, expedient "studies."

f. Many of the theoretical and practical aspects of assessment come together in an analysis of the responsibilities, functions, and roles of current Secretariat/NOAA OR/S&A-related elements. This part of the assessment appears in Tab B of this paper. There the primary assigned responsibilities have been collected from corresponding orders, regulations, and mission statements. Some recent outsider criticisms of the study process are noted. The team's own comparison of responsibility versus execution is described for each element. And finally, an estimate is given of where spaces may be made available for dedicated management functions. The thrust of the tab is that purely administrative aspects seem to be receiving more and better attention than are the more forward-looking and more directive functions. The ODUSA(OR) is identified as an element with broad management responsibility and apparently special license. However, the ODUSA(OR) has so many other obligations that the office cannot do everything asked of it.

g. The task team was encouraged to give an extra hard look at the ODUSA(OR) by the chairman of this "Review of Army Analysis," the DUSA(OR) himself. The look was to extend beyond the team's main focus on study management. The special license was accepted with both relish and trepidation--certainly by the team and maybe by the DUSA(OR). Nevertheless, the team has subjected the ODUSA(OR) to special assessment as reported in Tab C, "Special Topic--Past, Present, and Future of ODUSA(OR)."

h. In summary, the team's net assessment of the requirements and capabilities by management function revealed current weaknesses in planning, executing (directing and controlling), and evaluating the OR/S&A program. These weaknesses are serious enough to require correction. Some program management functions have been given too little attention in the past, perhaps partly in the hope that "coordinating" would do it all. Some functions have been split among several Secretariat/HQDA elements, leaving unresolved ambiguities. Part of the difficulty has been inherent in the application of a too narrow definition of studies or study-like activities. Perhaps worst, some elements have had their responsibilities mixed between study program management and conduct of individual studies and special analyses. Planning of the study program has not been linked closely enough to Army objectives and longer range planning--leading sometimes to countercharges of lack of OR/S&A responsiveness and lack of executive interest. Individual study evaluation was sometimes confused with total program evaluation. And some attempts at program evaluation seem to have lost sight of the purpose of the program--support to Army decisionmaking processes. Some changes have been made recently to correct some specific faults. The team, however, senses that these will prove insufficient. For example, a new effort to involve senior Army management in Study Planning Guidance remains too passive; involvement comes too much after the fact; it is still too much from "bottom up," not "top down."

III. THE MANAGEMENT JOB

7. General.

a. The foregoing sections have set the stage for identifying those management functions which must be performed to make the study system effective and then keep it effective. In particular, the challenge is to strengthen planning, execution, and evaluation of the study program. Among the specific goals of strengthened management are:

(1) Better and more operable definition of studies and analysis.

- (2) Assurance of quality products.
- (3) Assurance of use of products.
- (4) Assurance of efficient use of OR/S&A resources.
- (5) Extension of time frame of OR/S&A planning in terms of subjects to be addressed and the nature of OR/S&A resources to be available.
- (6) Removal of the "off-line" stigma. Press for greater OR/S&A access to "on-line" decision processes.
- (7) Provision of sense of direction and priorities to OR/S&A program and participants.
- (8) Portrayal of sense of common direction and priorities to OSD, OMB, and Congress.
- (9) Assurance that quantitatively and qualitatively skilled members of OR/S&A community all participate and cooperate. Assure that all feel that they are equal partners, equal players.

b. The rest of this section presents program development (planning), execution (direction and control), and evaluation, in turn. Concepts are stated and explained. The discussion at this stage does not involve the specific organization and structure for management proposed in the next section. The intent here is that any acceptable management structure must perform all of the management job as outlined. Here it is fair to note that, although the team could accept some variation to the organization, structure, leadership, and location of its final "best" proposal, the team cannot give any ground at all on the nature of the management job to be performed. In the meantime, the as-yet-to-be-revealed organization is referred to here simply as a "management cell" without prejudice to a final unicellular or multicellular proposal.

c. The management cell must combine strong managerial and technical skills. The mix might lie in the range 60-40 percent to 40-60 percent. Often the cell will be required to make decisions about the study program based on the technical merits of questions, issues, and problems raised and of the capabilities of study and analysis resources. The cell might have to face questions as follows:

- (1) Can OR/S&A contribute to the decisionmaking process by addressing specific question, issue, or problem?

- (2) What degree of approximation is needed?
- (3) What degree of approximation is achievable:
 - (a) For different levels and durations of effort?
 - (b) Using existing skills, methods, and data?
 - (c) With development of individual skills?
 - (d) With development of improved or new methods?
 - (e) With generation, collection, and interpretation of new data?
- (4) What standards are applicable to quality of individual studies?
- (5) What standards are applicable to families of related studies? To an entire study program?
- (6) What standards are applicable to individual analysts? To teams of analysts? To entire agencies?
- (7) What balance is appropriate in coming years among:
 - (a) Individual analysts?
 - (b) Teams?
 - (c) Agencies?
 - (d) Methods?
 - (e) Models?
 - (f) Data?
- (8) What level of resource commitment is appropriate (in an era of diminishing resources) to achieve the above?

d. More often than not the cell should be able to settle such matters quickly on its own. But obviously no cell will possess infinite wisdom. The cell must have authority to convene special committees or

teams to advise on especially difficult matters. Although some such matters may be permanently resolved by policy or procedure, the cell will frequently have to make real-time, one-time decisions based on technical merits.

8. Program Development.

a. The study program is to be supportive of Army decision-making. The products of the study program are to be timely and usable. Given the breadth and depth of DA functional responsibilities, the study program must generally provide equal breadth and depth. The development of that program requires the best efforts of many Army elements.

b. A proposed Army study program development process is sketched in Figure 3. Figure 3 contains no "time axis." However, the intent is that the study program be tied closely to Army objectives and long-range planning. The quality of the study program can be no greater than the quality of Army objectives and planning.

c. A number of HQDA elements and committees surfaced as possible contributors to Army objectives and planning. The task team by consideration of governing regulations and phone contact with some participants reviewed actual contributions. This survey is summarized in Figure A-2 of Tab A. There is some risk that this proposed link to Army objectives and planning may have to be supplemented in some way. One possible supplement (admittedly beyond the given scope of this task) is offered for consideration in paragraph 3 of Tab D.

9. Program Execution.

a. Program execution includes the management functions of direction and control applied primarily to the total study program with intervention below that level only on an exception basis. Here "execute" means "execute the program," not "do studies."

b. The subfunctions to be performed as part of program execution are:

- (1) Setting policy.
- (2) Program and budget control.
- (3) Reporting to higher authority.
- (4) Tasking high-priority DA-level issues and efforts.

c. The subfunctions are considered in turn in the following paragraphs. Special attention is given to clarify the license and limitations on program and budget control by a high-level cell within/over what is still mostly a decentralized community of study-performing resources and first-line and middle management. Admittedly the description is largely conceptual. The development of exact procedures must be an early task of any new management cell.

(1) Setting policy. Policy must be developed for administering the study system and assuring quality performance. The cell must assure system compliance with OSD and Congressional requirements on the one hand, while influencing development and application of methods on the other. The intent is that as little policy be developed as necessary. Over time, compliance is to be reviewed by the cell. If more policy is need, more is to be developed. If policy alone proves insufficient, the cell then must develop procedures. On a continuing basis, the cell will have to judge policy and procedural overkill and underkill. This is difficult, of course. But given the cell's other requirements and responsibilities, the cell should acquire sufficient information to make timely judgments. Although everyone would like to settle on a perfect definition of "study" once and for all, it is to be expected that study definition will have to be given continued attention; good definition is one of the more critical policy issues for which the cell must be responsible.

(2) Program and budget control.

(a) It is suggested that the study program be given program element(s) status. The intent is not that all the study "program" be collected into a single program/appropriation. However, it is intended that study activity corresponding to an existing major program be given separate program element status within that program, perhaps two or more elements within some program. Hence, the study program would be spread over many separate program elements. Each such element would account only for study activity, but no one element would include all study activity.

(b) Study program elements provide the basis for developing a cost benefits perspective of study activity. Simultaneously they permit focus--not just on studies--but on corresponding parent programs and fit better into zero-based budgeting practices.

(c) The program elements approach certainly increases visibility of study activity. This visibility is demanded by OSD and Congress. Admittedly such visibility makes weak parts of the study

- 1 SELCOM and committees establish long-range Army goals and critical objectives. S&A Management Cell supports process by providing feedback on how adequately related issues are addressed by the study program. (See evaluation concept in Figure 5.)
- 2 S&A Management Cell translates SELCOM guidance into goals, objectives, and critical tasks for the Army Study Program.
- 3 S&A Management Cell through PAED includes Army Study Program Guidance in APPGM. Critical high-priority studies are specifically tasked through proponent staff agencies. Remainder of guidance has a major impact on DA Staff and a lesser impact on MACOMs because the focus of their respective programs shifts from strategic to operational questions.
- 4 Proponent staffs and MACOM commanders assisted by study program managers develop remaining study guidance into appropriate issues, questions, or problems and programs study resources. S&A Management Cell affects this process through policy and, if necessary, procedures to ensure proposed studies service priority issues.
- 5 MACOMs present study program proposals with COBE. Cost and subject are identifiable within program element. (Study programs would also be included in PARR.)
- 6 DA-level program directors and appropriation directors integrate MACOM and DA-level study programs. S&A Management Cell and PAED working together ensure the planning and programing guidance were met and that Army S&A resources are logically applied to critical areas. Effort redirection is accomplished through program or budget decision.
- 7 Secretariat review, as needed, is possible through the program element window used by S&A Management Cell/PAED.
- 8 Appropriate level Army FOAs and contracts do the studies.

a/ Feedback from evaluation activities at all levels must impact this process with each iteration. (See Figure 5.)

b/ For emphasis, the DAS should be designated the Army Study Program Manager with the S&A Management Cell as executive agent. Similarly the deputy of each HQDA Staff element and the deputy MACOM commanders should be designated as the POC for their respective subprograms using their study program managers as executive agents.

program highly vulnerable, but deservedly so. The visibility is needed by the OR/S&A management cell for it to exercise its program and budget control and to make program developers conscious of where and why they commit resources. Although the cell is not to approve/disapprove individual studies within MACOM study programs, the cell would exercise broad study budget authority. The cell would make yearly adjustments to study funding reflective of changing study needs and of past and projected study benefits.

(d) A management cell's authority over MACOM and agency study programs may, at first, seem paradoxical. MACOMs and agencies, on the one hand, retain considerable control over their programs. (Most S&A resources remain decentralized.) On the other hand, the HQDA management cell controls funding on the basis of total study program objectives and plans, and of the known performance of existing OR/S&A resources. In general the cell does not approve/disapprove individual MACOM and agency studies. The cell is intended to discipline program development through policy. The cell can direct a limited amount of study activity to respond to critical Army issues. It is always in the position of providing "guidance." The cell's program evaluation activities, in part, are to assure that MACOM programs logically relate to Army and MACOM goals. If evaluation reveals shortfalls, the cell has authority to redirect offending parts of a MACOM study program. The cell will not be doing its job if it does not "squeeze" nonperformers or substandard performers. The cell is just as responsible for sensing program underlap as it is for detecting overlap. Critical underlap is to be met by the cell's program and budget decision to redirect resources devoted to less important (in the total Army sense) issues.

(e) The cell then does have equally powerful ways to encourage and reward responsive, efficient study performance and to discourage and penalize weak performance. The cell does have "carrot and stick" powers over MACOM agency study programs. The current "system" permits free and easy approval of programs (nearly automatic carrots), but only nit-picking harassment as the counterforce (twigs instead of sticks).

(f) Through its analyst career advisory role, the cell should be perceived as giving the first real integrative focus to the broad spectrum of "analysts." Designation of the top civilian position in the cell as "Senior Analysts of the Army" should also give more individuals the desired sense of belonging. To the extent that this image can be formed in the minds of enough individuals, they will also develop reinforcing group, agency, and MACOM attitudes.

d. Reporting to higher authority. The management cell is to be the focus point for all study program matters reported to OSD, OMB, and Congress. To the degree that a broader, more workable definition of "study" is developed and that the study community abides by policy, reporting to higher authority should become more routine with time. Indeed, to the extent the study community cooperates (recall that the cell is to be given the means to assure cooperation) in following program and guidance, the study program will develop a stronger sense of common, balanced direction. Admittedly the accounting of more broadly defined study activity implies a larger accounting job. But here too, the cell's power to set policy and develop procedures as necessary and to control program and budget will help make the physical accounting chore more efficient.

e. Tasking high-priority DA-level issues and efforts. It is assumed that most OR/S&A resources will continue to be devoted to functional matters. Hence, most effort will continue to reflect the functional responsibilities of separate MACOMs and agencies. To the extent that MACOM and agency study programs reflect the corresponding responsibilities, the management cell need not intervene. However, the cell will intervene to assure that resources are committed to high-priority DA-level issues and efforts that otherwise would drop through "interfunctional cracks." The cell will have tasking authority for such issues. However, it is foreseen that MACOMs and agencies would rarely be obligated to commit more than 10-15 percent of the resources via such tasking. The percentage is sensitive to whether some central study performing agency is created and to the degree to which OR/S&A resources remain decentralized.

10. Program Evaluation. A major responsibility of the management cell is to assure constructive program evaluation. Overall evaluation, of course, extends from total program down to individual studies and up again. The management cell must assure that all kinds of evaluation occur. However, the cell's role ranges from active to passive as suggested in Figure 4. Evaluation must occur at every level within the S&A community. For the MACOMs this is accomplished actively through the Command's IGs and Study Program Managers. The Secretariat/HQDA OR/S&A management cell is passively involved at this level through monitorship of reports. At the DA Staff level the cell is actively responsible for "total program evaluation." Individual studies are evaluated at this level only on a priority, case-by-case basis. This concept for study program evaluation is outlined at greater length in Figure 5.

MANAGEMENT CELL'S ROLE IN EVALUATION

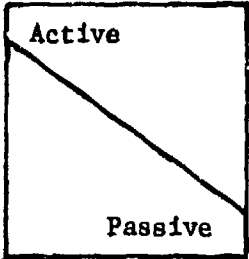
Cell's Type Involvement	Evaluation Level
	Total Study Program
	Program Element Support
	Agency
	Individual Study (except priority issue)

Figure 4

11. Reminder of What the Cell Is Not. Some may find loopholes in the preceding description of what the HQDA OR/S&A management cell is to do. The description of what is to be done may seem to leave too much room for the cell to do unintended things. This paragraph helps close the loopholes by noting what the cell is not to do.

- a. The cell does not set Army planning objectives.
- b. The cell does not perform studies.
- c. The cell does not routinely critique individual studies.
- d. The cell does not provide members/observers to sit on every SAG.
- e. The cell does not usurp DA Staff or MACOMs on the use of their OR/S&A assets beyond directing that some small fraction of assets be committed to special, high-priority questions, issues, and problems unless program evaluation reveals irrelevant or substandard study performance.

PROPOSED STUDY PROGRAM EVALUATION CONCEPT

Focus	Evaluation Policy Unit:			Addressing
	Requires	MOQA Years/AMA Mgr	BY Years/AMA MGR/IC Agency	
Q	Individual Study Evaluation		Years/AMA IC	<ul style="list-style-type: none"> Competence (e.g., primary method used, sensitivity analysis, coherence, completeness, creativity, true alternative evaluation, experimentation) Compliance (e.g., use of correct threat(s), models, assumptions, documentation) Usability (e.g., level of specificity, decision environment assessment, implementation proposals, ADP transferability) Durability (e.g., traceable logic, multiscenario solutions matrix) Responsibility (e.g., "big picture" perspective, interagency cooperation, personnel development) Efficiency (e.g., resource economy, waiting schedules) Innovation (e.g., pushing the state-of-the-art) Compliance (e.g., accounting, DDC reporting, information exchange)
U				
A				
L				
I				
T	Study Agency Evaluation	Years/Study Prog Mgr	Years/Proposal Staff Agency	
Y				

B	Major Programs Element Support Evaluation	Study Prog Mgr/ MOQA SAA Mgr Cell	Proposal Staff Agency/ Study Prog Mgr	<ul style="list-style-type: none"> Effectiveness (e.g., initial issue coverage, appropriate verification) Implementation (e.g., "cost-benefit" perspective, disciplined use (or rejection) by sponsor, exploitation of basic study and associated insights) Followthrough (e.g., use of quality focused evaluations to improve types of studies, agencies, or overall process) Efficiency (e.g., logical plans for gross level distribution of study resources, demonstrated use of studies to support decisionmaking process) Progress (e.g., demonstrated resolution of critical issues) Followthrough (e.g., improved process discipline (planning to "doing") by policy and procedure changes)
E				
H				
K				
F	Total Study Program Evaluation	MOQA SAA Mgr Cell/ PAID	Study Prog Mgr/DECISION & MOQA SAA Mgr Cell	
I				
T				

g/ MOQA-level SAA Mgr Cell involvement: Is positive through report review. Exception action can be taken through budget or program approval actions.

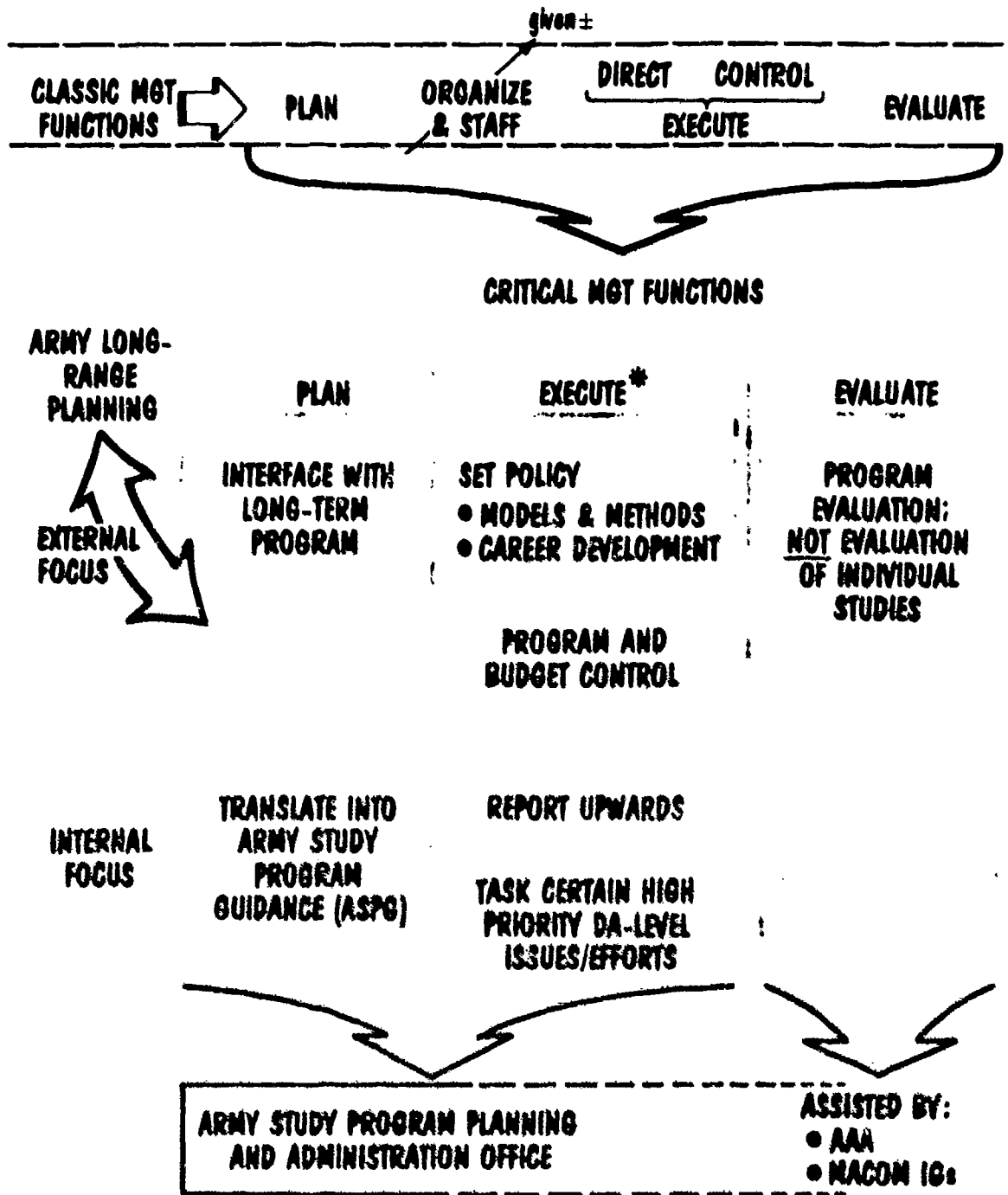
Figure 5

IV. RECOMMENDATION

12. Proposed Organization and Structure. This section consists of three major subsections. The first outlines an organization designed to fulfill the management job specified in the preceding section. The second subsection proposes a minimum assignment of spaces to the organization design; it completes the cell's structure. The last subsection notes probable points of contention about the proposal. The proposed organization and structure reflect the task team's effort to devise a practical compromise management approach. The team does not claim that the proposal would produce perfection after implementation. However, the team believes implementation of the proposal would lead to large, needed improvements in all the critical areas identified in the foregoing sections. The proposed organization was not the only one considered. Alternatives were also examined. Their strengths and weaknesses are discussed in Tab A. One of the alternatives, the status quo, was further assessed as reported in Tab B.

13. Organizational Outline to Match "Management Job." Figure 6 serves as a bridge between the preceding section on the management job and the key part of this section on structure and staffing of a proposed management cell. The top of Figure 6 reminds us that the function of organizing and staffing of the largely decentralized OR/S&A universe remains essentially the same. Planning, execution, and evaluation do come down as functions to be performed by the cell. These three functions suggest three elements for the proposed cell, the Army Study Program Planning and Administration Office (ASPPAO). [A best name for the cell may depend on the finally adopted definition of "study."] Subfunctions are identified for each major function, all corresponding to those introduced in the preceding section. The planning or program development function must be linked to the setters of Army objectives and long-range planners. Within the cell, the external issues, questions, and problems are translated into Army Study Program Guidance. Program execution includes the setting of policy on study program matters, program and budget control, reporting upwards, and the tasking of special studies. Program evaluation is left partially suspended to suggest the proposal that the management cell can and should obtain needed evaluation assistance of AAA, MACOM IGs, and probably others. Thus, actual evaluation activity lies partly inside and partly outside the cell. However, the cell is intended to have full responsibility for assuring that program evaluation is performed and the results of that evaluation fed into the other management functions as needed.

CONCEPTUAL MATCH OF MANAGEMENT FUNCTIONS TO ORGANIZATION OUTLINE



* "EXECUTE" MEANS "EXECUTE THE PROGRAM", NOT "DO STUDIES."

Figure 6
F-21

14. Structural Spaces and Location.

a. Figure 7 presents the structure and professional staffing of the proposed ASPPAO). The ASPPAO is headed by a military director and civilian deputy. Both are required to possess exceptional managerial and technical capabilities. Additionally, the Deputy's title is suggested to be "Deputy and Senior Analyst of the Army." This special title is intended to convey a notion of "analyst" in the very general sense without special reference to a unique specialty. The civilian deputy is intended to provide the continuity otherwise lost by frequent military reassignment. It is recommended that the ASPPAO report directly to the DAS. The task team feels that this is the lowest level consistent with the cell's management job and with necessary interfaces inside and outside the study community. (A "next best" location is raised in the next subsection, "Probable Points of Contention.")

b. The program development function is served by a major ASPPAO element, a "Long-Range Program Development and Review Team." The most logical division of responsibilities within that team is along lines paralleling POM development responsibilities in DPA&E.

c. Program execution is the responsibility of a "Policy, Programs, and Budget Team." The team includes a policy section with separate team members responsible for policy (and procedure as necessary) development for the study system in general and for assuring steady improvement in the quality of models and methods development, application, and documentation. A "Program and Budget Section" handles the probably very heavy administrative burden of controlling and tracking study activity from the program perspective. The section compiles the resource commitment information demanded by OSD, OMB, and Congress.

d. The Policy, Programs, and Budget Team includes a "Career Development Advisor." The advisor has several roles. One is to work with the program developers to determine what kinds of "analyst skills" will be needed in near and distant futures. This projection is to be made available to specialist career managers. Another role of the advisor is to assure steps be taken to make all analysts "belong" to an important single community as perceived in their own minds and in the minds of the rest of the Army.

e. The program evaluation element is a small one of only two spaces. The key here is to involve other resources in program evaluation... not just to reduce the burden on the team, but rather to bring other appropriate attention and viewpoints to bear on the study program.

STRUCTURE--ASP PLANNING AND ADMINISTRATION OFFICE

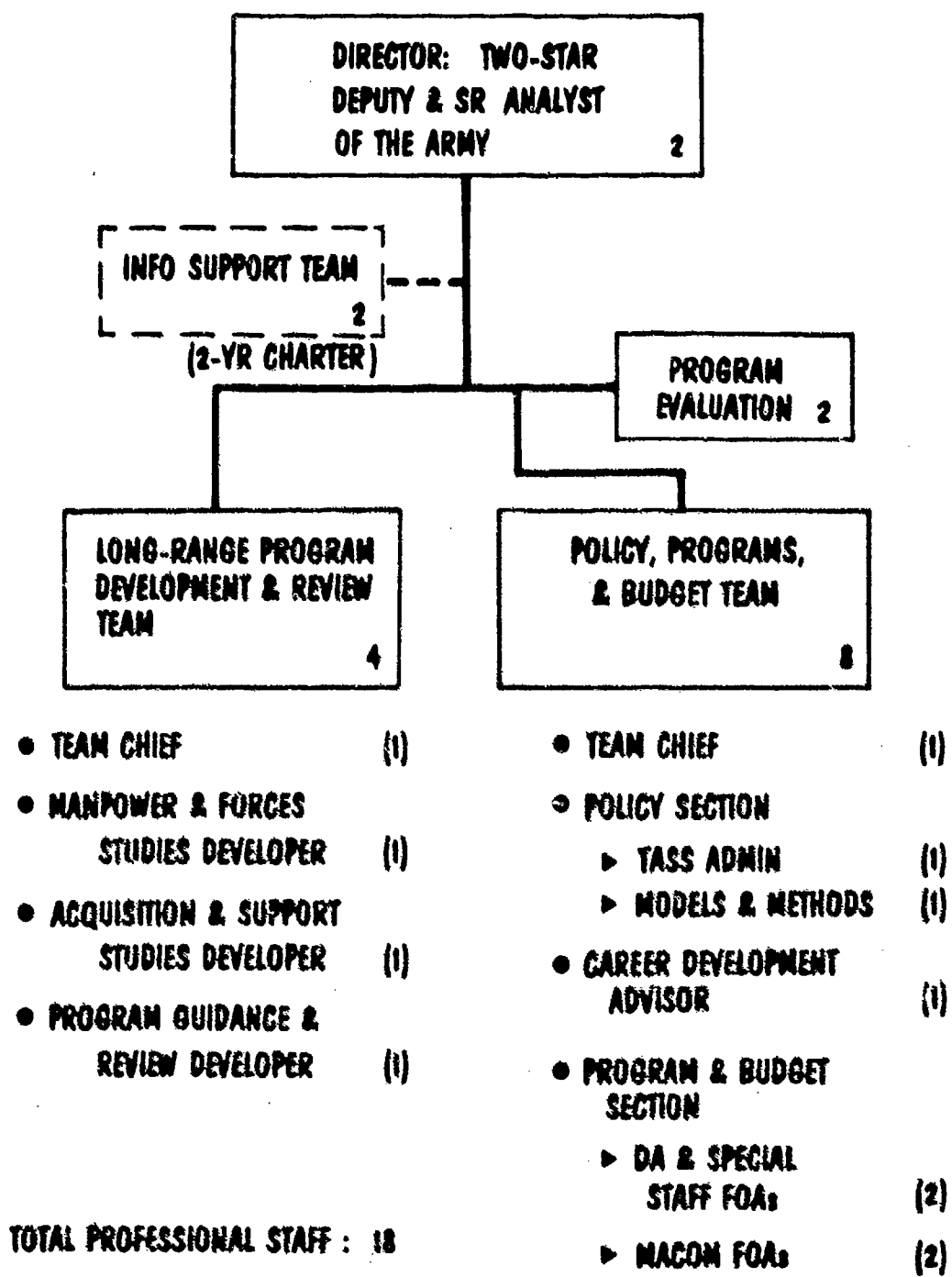


Figure 7

f. The proposed management cell includes a two-person "Information Support Team" at least temporarily. A 2-year charter is suggested. The team is intended to assure that necessary software exists or is developed to support the management cell. Such software includes interfaces to existing, usable systems. The total effort for which the team becomes responsible depends on the adopted definition of "study" and whether or not the study program itself is accorded program element(s) status within PPBS. It is expected that other members of the team will have sufficiently strong technical backgrounds to make effective use of the Information Support Team, and vice versa.

g. The proposed cell contains a total of 18 professionals. Review of current OR/S&A spaces at Secretariat/HQDA (reported in Tab B) suggested that spaces can be drawn from several existing elements while leaving sufficient study-performing spaces in place or for other application. One premise is that better study program management will reduce the need for Secretariat/HQDA analysts to resort to time-consuming micro-management. A second premise is that the contribution of spaces from several elements avoids the appearance or fact of capture of the ASPPAO by an existing study element. The ASPPAO is to build on what is already sound, but it deserves "fresh start" status.

15. Probable Points of Contention. The recommended cell faces many obstacles to its implementation and operation.

a. Rank/grade of director. The cell may seem small to merit a two-star director. (The recommended minimum strength of the cell is 18 spaces.) The requirement for a senior director is not simply a matter of internal element size. The cell and hence its director are expected to interface directly with all levels inside and outside the study community. The study community itself will consist of from 2,000 to 5,000 persons depending on the finally selected definition of "study." The cell is to have broad budget authority over the community. But the importance and responsibility of the cell is much greater than simply the direct "cost" of the study community. The impact of study activity, by design, is supportive of the full range of Army decisionmaking involving billions of dollars and hundreds of thousands of people. Although few individual studies impact all Army resources directly, the total study program at any one time concerns very much of the Army's total resources in one way or another.

b. Size of cell. The cell's recommended strength of 18 spaces is large in comparison to most current Secretariat/HQDA study-like elements. And those current elements include many who are in the study-doing business. People dedicated entirely to one or more study program

management functions are few in number now. And outside the study area, many elements at Secretariat/HQDA are relatively small despite broad responsibilities for large programs. Spaces are indeed a very scarce resource at Secretariat and HQDA. Despite the obvious pressures for a very small cell and the competition for spaces, the team felt it could not go below the "bare bones" level as recommended. In fact, the team's concern is that a much broader definition of "study program" might increase the management workload beyond the capabilities of the 18-man cell! Recall that the cell is to have real management authority in practice, not just theory. The cell will have more responsibility over more functions than has ever been practiced before. No "study and analysis" predecessor at Secretariat/HQDA has ever exercised this kind and degree of study program management. Other elements have had small responsibilities or authority or both. At best they focused on only part of the management job. At worst they chose to give their attention to "doing studies" at the expense of letting too much of study program management slide or drop through cracks. Study program management is a big job with big payoff if the job is done well.

c. Location of cell. The cell must be placed high enough to have the visibility to assure that input to and output of the study program involve key Army managers and planners. It must also have the clout to control what is still a largely decentralized community, many of whose members report to and are protected by senior commanders. High coequal location requires a coequal director; positions of that rank/grade are hard to justify on any basis, especially if a space of equal rank/grade must be given up elsewhere. The team felt that the cell should report directly to the DAS. That location seemed best for visibility and authority reasons. Admittedly, many people would perceive that location as a threat to their own authority over study matters. And to a degree that is an intended perception. Also the creation of a cell reporting directly to the DAS might produce a span of control strain on the DAS. This is a real concern of the team and the strongest reason for the team's next best recommendation of cell location within an existing directorate under the DAS. (But as explained elsewhere in this paper, not within DPA&E.) Apart from the reasons for high-level location benefiting the Army internally, there is the practical point that high-level location should help convince OSD and Congress that the Army is serious about making the best possible use of its study and analysis resources. If the Army really wants to defend those resources, location of the cell and the rank of its leader are measures of both intended and real clout.

16. Bottom Line. This recommendation for study program management runs the risk of many earlier, equally well-intentioned efforts. Several

times in recent years, people have met to make recommendations for improvement of all or part of the study program. Many good ideas have been surfaced and then been ignored or weakened, if applied at all. This paper, to the team's knowledge, recommends the broadest range of changes focused directly on study program management. The recommended management cell would have far-ranging responsibilities for program management. This paper has identified these responsibilities and given the cell the raw materials necessary. Early on the cell would have to develop detailed policies and procedures to assure its own effectiveness in fulfilling its responsibilities. The breadth and depth of the policies and procedures to be developed and applied over time will depend on the definition of "study" and on the outcomes of successive study program evaluations. The team believes that it is time for the Army to adopt the entire management cell given the powers of persuasion and compulsion. The sad record of the past should be sufficient to show that partial or half-hearted approaches achieve little or less.

TAB A

DEVELOPMENT AND ANALYSIS OF S&A MANAGEMENT ALTERNATIVES

1. Purpose. This tab "ties up the loose ends" of the management analysis presented in the Main Paper by:

a. Identifying the candidate organizational structures (both existing and proposed) for performing the studies management job as outlined in Section III of Main Paper.

b. Assessing the relative merits (pro and con) of the alternatives.

c. Comparing the "selectable" alternative(s) against the background of previous failures.

2. Approach. The S&A management cell recommended in the Main Paper is the result of a carefully developed, logical approach to management analysis, as outlined in Figure A-1.

a. Step I--the development of a "systems" perspective consists of identifying and describing the studies system, its purpose, and whether it meets that purpose. Necessary modifications are proposed which, in consideration of resource constraints, are kept "reasonable."

b. Step II--the identification of the management job focuses on the process of management. The classic management functions (planning, organizing, staffing, directing, controlling, and evaluating) are analyzed to determine those key management tasks which must be performed to:

(1) Make the system effective--one of the first critical objectives of implementation.

(2) Keep the system effective.

c. With the process of management defined, Step III focuses on the organizational structure to best perform the management job. Existing organizations/elements are identified and considered; their capabilities assessed; and where shortfalls exist, new organizational alternatives are developed and analyzed. Before development of a final recommendation, past efforts at managing the studies system are considered to avoid fatal duplication of prior failures.

THE ARMY STUDIES SYSTEM-APPROACH TO MANAGEMENT ANALYSIS

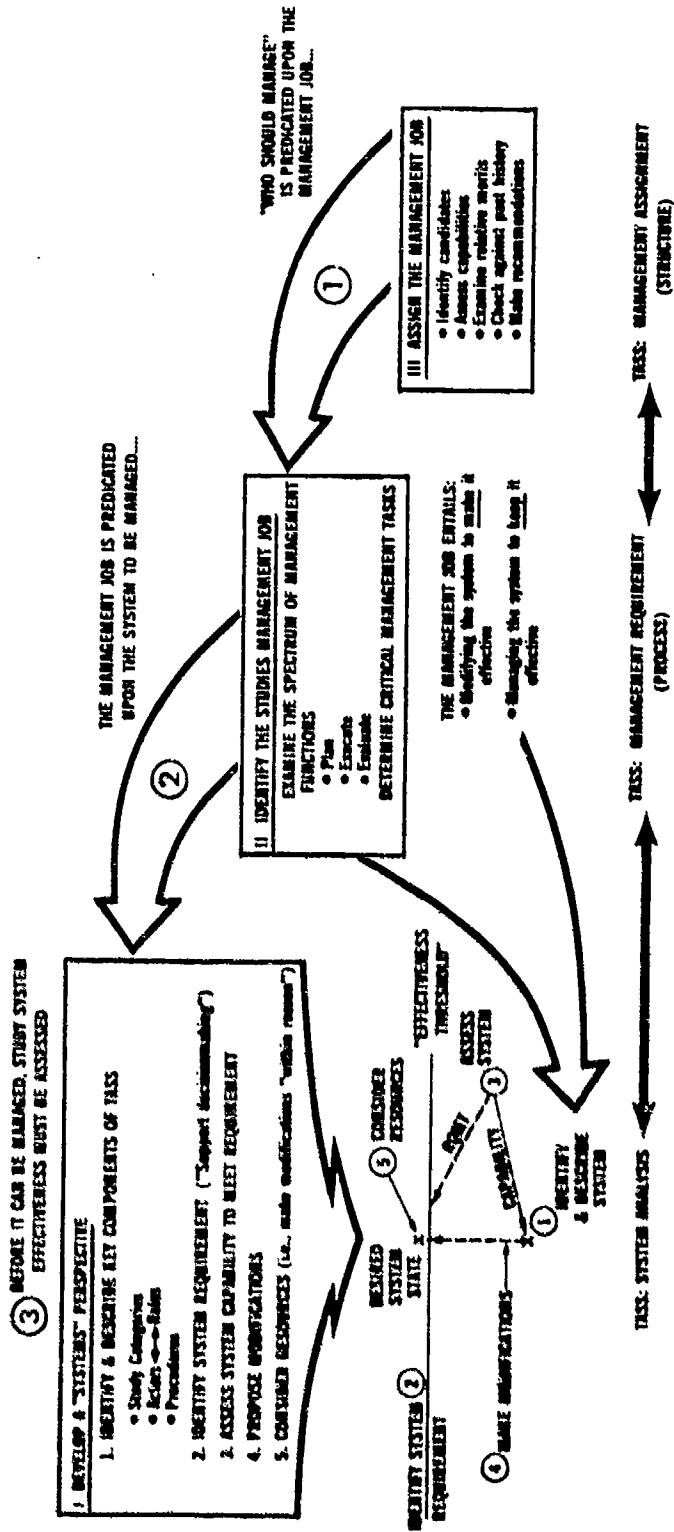


Figure A-1

3. Discussion.

a. The three-step approach to management analysis outlined above inherently structures the alternatives generation process. As opposed to starting with a collection of structural possibilities which are then analyzed, the three-step process focuses on the system to be managed and the identification of the management job to be performed, followed by the crystallization of a required (and realistic) management structure to perform the job. The set of existing organizational elements is then examined to determine those which are potentially suitable (i.e., can be modified, either singly or in combination). When none can be modified (or conversely, when such modification to accomplish the "new" management job creates a void elsewhere), then new management structures are required.

b. The analysis presented in the Main Paper points to a significant shortfall in centralized management of TASS at the Secretariat/HQDA level, particularly in the areas of interface with the decisionmaking process to support effective study program development, administration, and evaluation. To fill this gap, a new management cell has been proposed. The following paragraphs highlight the shortcomings of other suggested alternatives, and assess the relative merits of various organizational positions for placement of the new structure.

4. Alternatives--Management Structure Development. Draft ESC Memorandum for Record of 18 August 1978 (subject: Recap of Meeting Between DUSA(OR) and Acting Director, ESC) lists four organizational alternatives for studies management.

a. Status quo: Study Management Office and DUSA(OR) as currently configured. ["Leave the system alone."]

b. HQDA organization left unchanged, but with a coordination forum similar to the old ASAC/WASAC. ["Leave the structure alone, but coordinate better."]

c. Combination of existing HQDA S&A management assets, with DUSA(OR) left unchanged. ["Modify the HQDA structure, but don't touch DUSA(OR)."]

d. Combination of existing HQDA S&A management assets to include DUSA(OR). ["Modify the entire structure."]

e. During the course of the analysis, no additional alternatives were discerned. The four stated above proved general enough to be "all-inclusive."

5. Assessment. In light of the management job developed in the Main Paper, Alternative 4 (Modification of the Entire Secretariat/HQDA S&A Structure) proved necessary because of significant shortfalls in the other three alternatives. These are outlined below.

a. Alternative 1. Status quo. Conclusion: Unacceptable.

(1) At HQDA level, Study Management Office:

(a) Is grossly understaffed to perform, even the administrative functions required, let alone the essential program planning and evaluation functions.

(b) Is organizationally misplaced to effectively perform the program development, direction, and control functions.

(c) Has purview over only a subset (AR 5-5) of the studies universe.

(2) At the Secretariat level, DUSA(OR):

(a) Has the necessary "muscle" to provide centralized direction and control to the study program.

(b) But is:

1. Understaffed to both manage the study program and provide analytic support to the Secretariat.

2. Not mainstream to the decision process which the studies system must support.

b. Alternative 2. Current organization with a coordination forum similar to previous ASAC/WASAC. Conclusion: Unacceptable.

(1) Considerations are the same as those outlined for Alternative 1, but...

(2) The unacceptability of Alternative 1 cannot be overcome by a coordinative body alone, especially an informal committee with no permanent staff. In fact, as displayed in Figure 6 (Main Paper), the management job entails much more than coordination. It involves program development, administration, and evaluation, with the requisite muscle to carry out these functions.

c. Alternative 3. Reorganization of HQDA S&A management assets with Secretariat S&A assets left intact. Conclusion: workable, however...

(1) As currently configured, the charter of DUSA(OR) duplicates that required to perform the S&A management job .

(2) But as outlined above (Alternative 1), DUSA(OR):

(a) Is not mainstream to the HQDA/MACOM decisionmaking process (rather, it operates at a more "overview" level of management).

(b) Performs more in an analytic support role to the Secretariat than as a manager of the study program.

(c) Is not adequately staffed to both manage studies and perform studies.

Tab B and C suggest that DUSA(OR) should be disestablished, and its "manager" spaces transferred to the new ASPPAO. Analytic spaces in support of the Secretariat should be transferred elsewhere in the Secretariat. This is in line with Alternative 4, reorganization of the entire Secretariat/HQDA S&A management structure.

6. Alternatives--Organizational Location Development. Like the above discussion of structure, location of the new ASPPAO must consider the requirements of the management job. Given the requirements for "teeth" and visibility, the role as study program integrator above the functional staff, and the responsibility for interfacing directly with the Army's strategic planning process, a "high" organizational position is necessitated. Alternatives considered included:

a. Reporting directly to VCSA.

b. DAS level, either

(1) Coequal with PAED, DM, DAA or...

(2) As a subelement of one of these DAS components.

7. Assessment of Location. Within the alternatives outlined in paragraph 6, the ASPPAO should be located at the lowest organizational level consistent with the requirements for effective study program management. It does not seem necessary for the ASPPAO to report directly to VCSA. Due to the required interface with Army strategic planning and the PPBS, the ASPPAO should be located at DAS level as a coequal of

DPA&E. Although the ASPPAO should be aligned with DPA&E, it would be a mistake to integrate the ASPPAO into the DPA&E itself. There study program management would almost certainly become lost in the programing environment. The element would probably become captive to the short-fuse analysis requirements associated with annual preparation of the POM. The "next best" location of ASPPAO is as an element of the Director of Army Management. This "lower" location is probably feasible. It would maintain necessary separation from DPA&E, thereby avoiding absorption into purely analysis-performing roles. The lower location, however, does sacrifice both visibility and muscle. Although the staff of the Director of Army Management already includes the Study Management Office, which provides a precedent for some study management functions at that level, the task team feels that the new ASPPAO should have a new, fresh start. A new location avoids the appearance of capture of all management functions by a single older management function.

8. Contributors to Setting Army Objectives and Planning. Candidates possibly contributing to setting Army objectives and planning were surveyed as part of the job of determining necessary study program linkages. A summary of that informal survey is presented in Figure A-2. As noted at several points elsewhere in this paper, linkage of the study program to Army objectives and planning is critical to the program and the Army. The titles of many elements suggest that the Army recognizes the importance of setting objectives and planning. The team's survey, though, found that there is not much in a name. Those elements most involved are not directly linked to the study program. Several other elements have narrower foci (in terms of subjects and time) than their names first suggested to the task team. It is also troublesome that high-level involvement in Study Planning Guidance seems limited to passive approval. Guidance seems to grow from the "bottom up," not from the "top down." The kind and degree of linkage are not as healthy as they need be for the Army to make the best use of its study resources. "Study responsiveness" and "executive disinterest" are dangerous countercharges; both sides must do more to overcome these and other obstacles to useful linkage in both directions. It is noted elsewhere that the study community should not set Army objectives. However, the study community may be able to help; though outside the assigned task, a comment along these lines is offered in paragraph 3 of Tab D.

9. The Final Check--A Look at History. There is nothing in recent history to prove what will work for study program management. Rather, history provides examples of what does not work. The team's recommendation does include many features included in past, less than completely successful efforts. In each case, the team considered features taken together and has been careful to avoid past mistakes. The mistakes

SUMMARY OF SHEET OF POSSIBLE CONTRIBUTORS TO ARMY OBJECTIVES AND PLANNING

Candidate	Current Functions/Numbers	Report To	Headed/Chaired By	Evaluation
SELCON	<ul style="list-style-type: none"> Army "Board of Directors" <ul style="list-style-type: none"> VCSA Chairman DAS, DCSOPS, DCSFEX, DCSLOG, DCSMDA COM, ACSI, COE, CMCA, CAS Makes strategy & planning recommendations to SELCON ADCSOPS Chairman DRAME DOB Planning directors from all staff elements 	CSA	VCSA	<ul style="list-style-type: none"> * By definition its their job • Easy, big
SPC (Strategy & Plan Com)	<ul style="list-style-type: none"> Makes strategy & planning recommendations to SELCON ADCSOPS Chairman DRAME DOB Planning directors from all staff elements 	SELCON	DCSOPS	<ul style="list-style-type: none"> • Has the real workers • Link to study system through own staff element • Passive review of ASFG
DCSOPS Army Planners	<ul style="list-style-type: none"> Coordinates all DA/JCS Staff interfaces MC Garrity & four colonels (5 spaces) 	DCSOPS	Member of DCSOPS Executive Block (**)	<ul style="list-style-type: none"> • Reactive, not initiative • Three vulnerable spaces
Army Initiatives Op	<ul style="list-style-type: none"> Reacts to DCSOPS direction (3 spaces) 	DCSOPS	06	<ul style="list-style-type: none"> • Has both general/regional focus • Has no link to study system except SSI and contract • SSAG has not met CY 78
Strategic Plans & Policy Div, Dir of Strategic Plans & Policy	<ul style="list-style-type: none"> Tasks SSI for Army Strategic Appraisal (ASA) & other studies Army POC for DG, JSPS documents Can directly contract studies Chairs Strategic Studies Advisory Group (SSAG) Trying new to gain spaces for long-range planning cell (11 spaces) 	Dir within DCSOPS	06	
Program Guidance & Review Committee (PGRC)	<ul style="list-style-type: none"> Review & refine programs for final SELCON decision Director PAB Chairman All program directors 	SELCON	Director PAB (**)	<ul style="list-style-type: none"> • Too tied up with programming • Focus too narrow • Busy
Budget Review Com (BRC)	<ul style="list-style-type: none"> Budget formulation/execution DAB Chairman Appropriation & CMA program directors 	SELCON	DAB	• Ditto

have been to accept too narrow a definition of study, to confer some power of persuasion with too little power compulsion, and to consider too few of the functions of management. Paragraph 2 of Tab D provides an only slightly exaggerated checklist of how not to manage a study program. Precedent efforts have almost all been liable to one or more of the errors of omission and commission listed in Figure D-1 of Tab D. Unlike the former Coordinator of Army Studies, the ASPPAO would be much stronger than a passive "coordinator." ASPPAO would have "teeth" and directive authority over key DA-level study efforts. Unlike the current SMO, the ASPPAO would be adequately staffed to handle not only program administration but also program development and evaluation. Nor would ASPPAO become a "doer" of studies as was the former AVCSA or as the ASPPAO itself would if it were attached to DPA&E. Some of the source materials listed in Tab E recount some precedent efforts.

TAB B

ANALYSIS OF RESPONSIBILITIES, FUNCTIONS, AND
ROLES OF SECRETARIAT/HQDA OR/S&A-RELATED ELEMENTS

1. Introduction.

a. Purpose. This tab examines the responsibilities, functions, and roles of key Secretariat and staff elements as pertains to current management of studies and analysis activities at HQDA and to indicate potential sources for staffing the proposed management alternative.

b. Scope. Only study and analysis program/system management functions are addressed. That is, roles, functions, and responsibilities for TASS and TASP. Capability or capacity to actually do studies within the Secretariat and staff is not addressed, except as it might influence or impinge on the execution of management functions.

c. Objective. The objective of this tab is to summarize the current organization for study program/system management. The objective is not to critique previous functional analysis; i.e., the 1977 Functional Working Group on Studies and Analysis report which was part of the 1977 HQDA Staff Reduction Exercise. Nor is this tab intended to be the analysis of function/responsibility data acquired by questionnaire early in this "Review of Army Analysis."

2. Primary Assigned Responsibilities. HQDA General Order No. 12, AR 10-5, and AR 5-5 assign responsibilities for the Army Study Program. Various CSRs and mission and function statements break out the major assigned responsibilities into specific activities and actions for the respective TASS players. Key management responsibilities (as opposed to procedural requirements) are:

a. DUSA(OR): Per General Order No. 12, is responsible for the study program, program direction for OR/S&A analysis activities, and guiding the Military Officer OR education program.

b. Director of the Army Staff: AR 10-5 specifies that DAS provide the principal adviser to the Chief of Staff on management of Army studies and the coordinator for execution of the study program.

c. DCSOPS: Per AR 10-5, is responsible for development and coordination of the strategic studies program and for force development-related models.

d. AR 5-5 specifies responsibilities for all agencies and MACOMs in considerable detail, the great bulk of which are procedural. In terms of TASS management, universal responsibilities include:

- (1) Designation of agency/MACOM study coordinators.
- (2) Development of agency/MACOM study programs.
- (3) Validation/justification of individual study need (within agency/MACOM programs).
- (4) Plan, program, and budget for agency/MACOM study program.

e. Study planning guidance is also introduced in AR 5-5, and publishing responsibilities are assigned. Responsibilities for reviewing certain groupings or categories of studies are also assigned by AR 5-5 (i.e., ODCSOPS reviews all study proposals related to development, modification, or application of models in specific areas; ODCSLOG reviews all logistics-related studies).

f. Except for the three main players, ODUSA(OR), DACS(DMO), and ODCSOPS (plus ODCSLOG in the logistics area), all other agencies and MACOMs participate in the study system management through their designated study coordinators. These individuals perform primarily an advisory role on procedural and reporting requirements of the study system.

3. Accomplishing the Management Functions. Studies in the recent and distant past regarding the Army Study System have one thing in common: each has found essentially the same things wrong with the system. Most recently, House Appropriations Committee and DOD reports have reinforced the need for more intensive management in the broadest sense. Critical weaknesses in the current TASS management cited include:

- a. Study planning and programing as evidenced by high numbers of unprogramed studies annually and weak justification in terms of critical problems to be addressed.
- b. Failure to comply with DOD directives and Army regulations applicable to study programing and execution.
- c. Less than adequate integration of agency/MACOM study programs into a purposeful single study program.
- d. Inability to account fully for resources committed to the study program.

e. Inability to identify a consistent and complete set of activities which are to be managed by the study system.

f. Questionable effectiveness of study coordinators to accomplish other than administrative functions.

4. Responsibility Versus Execution. AR 5-5 has practically been under constant revision since 1974. The essence of the revisions has been to specify operating procedures, mainly to control the data gathering and reporting for individual studies and agency/MACOM study programs. Assignment of basic responsibilities has not changed.

a. Per General Order No. 12, ODUSA(OR) is clearly responsible for the study program. In early paragraphs of that General Order, responsibility is defined to mean the "exercise of direction and supervision over matters pertaining to the formulation, execution, and review of policies, plans, and programs within their respective functional areas, including the establishment of objectives and appraisal of performance." For reasons best known to the DUSA(OR), exercise of this responsibility has been incomplete. In particular, the establishment of objectives and plans and overall direction have been cursory. There is a general agreement that study system management should be mainstream to the decisionmaking processes that studies support. ODUSA(OR) is not mainstream to the PPB actions and decisions which characterize the staff side of the house. Thus the study program responsibilities of ODUSA(OR) are misplaced. Implications are discussed at Tab A and Tab C.

b. The Study Management Office, Management Directorate, OCSA, has responsibilities that are almost exclusively administrative. Execution of these responsibilities has little direct effect on program content or on fundamental goals, objectives, and policies. The Study Management Office did not seek to expand its role into the classical management functions, possibly reluctant to tread on ODUSA(OR) territory.

c. There is no evidence to suggest that ODCSOPS responsibilities in the strategic studies and models area has had any influence on the content, direction, or resource balance of the overall study program. Activity in these areas has not produced the desired coherence and focus keyed to overall study program completeness and direction.

d. Study coordinators, by and large, are mainly responsive to the administrative requirements of AR 5-5 and the Study Management Office. They play a relatively minor role in the overall study program management. Within their own agencies/MACOMs, study coordinators advise and assist study sponsors. Rarely do they play a significant role in establishing

agency/MACOM study program content nor do they have the authority to make decisions relative to program objectives, execution, and resource allocation.

e. Study Planning Guidance is the glue which is supposed to bind the study system into an entity with purpose focussed on critical Army problems. The manner by which Study Planning Guidance is developed has changed from year to year reflecting efforts to make the guidance more effective in giving direction to the collective study programs. The Study Management Office publishes the Study Planning Guidance. Development of the Study Planning Guidance is not prescribed in terms of interfaces with the PPBS except in vague references to a basis in the POM. No one element is clearly responsible for formulation of the guidance: ODUSA(OR), the Study Management Office, and the agencies/MACOMs have all played lead roles in recent years. Interpretation of the ODUSA(OR) responsibilities leads to the conclusion that study program planning should originate there. Unfortunately, ODUSA(OR) is not directly linked to the PPB process, actions, and decisions which characterize the Staff. The SPG link to Army planning in a formal sense is missing.

5. Organization for TASS Management. The various offices involved in TASS management are not, in general, set up only for executing management responsibilities. The only exception is the Study Management Office within the Management Directorate. Others often conduct studies and fulfill other analytic roles for their respective heads. Analytic resource data (i.e., people count) acquired for this "Review of Army Analysis" tracked primarily study doers and did not map spaces to management directly. The proposal to bring together all TASS management except for study coordinators in a single cell at HQDA level can be supported by resources "freed" in the consolidation.

a. Exact numbers can be debated. Recent counts by the Technical Advisors Office, ODCSOPS resulted in 26 analysts being attributed to HQDA--doers of studies. Examination of organization charts and data from studies and analysis questionnaires indicates that approximately 146 spaces are performing either an analysis function (in the context of the working definition for this review) or are involved, at least part-time, in performing one or more of the management functions.

b. Figure B-1 shows the spaces which are believed to be the minimum base from which TASS management proposals can be staffed--with no increase in current manpower levels at HQDA. The "freed" spaces indicate an estimate of those resources which currently are responsible for or are involved in some facet of study system management. For example, all of the Study Management Office is freed since all of their

current functions are rolled up in the proposed cell. The cell would also perform the ODCSOPS current management responsibilities in the areas of strategic studies, models, and career development. Similar rationale is used for the other elements. (ODUSA(OR) is discussed at Tab C.) Acceptance of the proposal to establish the S&A management cell will necessitate decisions as to actual sources of spaces. ESC has only identified possible sources. The Director of Management must make these decisions. It is not our intent to arbitrarily suggest cuts in strength--full consideration must be given to legitimate functions of the various candidate offices that are not related to study system management.

POSSIBLE SOURCES OF SPACES TO BUILD
OR/S&A MANAGEMENT CELL

Office	Analyst/ Mgt	"Freed"
ODUSA(OR)	7	7
DACS(DMO)	3	3
ODCSOPS		
Technical Advisory Office	7	2
Army Initiatives Group	3	3
Strategy, Plans, Policy Div	7	1
ODCSRDA		
Systems Review & Analysis Ofc	15	2
OCA		
Cost Analysis	46	--
P&E	47	--
ODCSLOG (LEA (LSSG) Executed)	6	1
ODCSPER		
Research Office	<u>5</u>	<u>1</u>
Total	146	20

Figure B-1

c. Other portions of this "Review of Army Analysis" are likely to propose actions which could increase the size of the "staffing pool." The nature of the preferred alternative for other substudies and their implications are unknown.

TAB C

SPECIAL TOPIC--PAST, PRESENT, AND FUTURE OF ODUSA(OR)

1. During the 1960s, S&A had the benefit of high visibility throughout DOD. The establishment of the OSD Systems Analysis Office contributed much to that visibility. At that time, the Army's in-house S&A resources were much fewer than today; most Army S&A activity was performed on contract. Some study execution became centralized within DA Staff in the OAVCSA. That office also achieved a limited degree of centralization of some management functions over S&A. In 1968 the post of DUSA(OR) was established. The responsibilities of the DUSA(OR) included establishing policy guidance and monitoring operations research activities within the US Army: initiating, conducting, reviewing, and monitoring studies and analytical reports which lead to judgments and justifications of Army requirements and programs. The DUSA(OR) and AVCSA involvement in S&A activity provided, in part, Army counterbalance to OSD(SA).

2. During the early 1970s, the trend toward centralized S&A execution and management reversed. Increased emphasis was placed on performance and management of S&A at the lowest possible level. The OSD(SA) and AVCSA were disestablished. The MACOMs, and especially TRADOC, were asked to take on increased S&A responsibilities. Despite these major changes in S&A organizations and management philosophy, the ODUSA(OR) remained essentially unchanged. It continued to perform functions similar to those it had performed in the past. Extracts from key governing statements and regulations are reproduced as Figures C-1 through C-4.

3. Major environmental changes external to ODUSA(OR) and essentially no changes internal to ODUSA(OR) prompt one to ask several questions. For example, should the ODUSA(OR) be changed to more closely conform to the external changes that have occurred? Should certain functions now performed by ODUSA(OR) be transferred to other offices and the ODUSA(OR) charter modified accordingly? Or, should all functions the ODUSA(OR) now performs be transferred to other offices and the ODUSA(OR) be disestablished?

4. When viewed in isolation, the ODUSA(OR) appears to be performing desirable, useful, and necessary functions. As part of a larger DA Staff/OSD organization, however, the ODUSA(OR) appears to be both an enigma and an anachronism. It appears to be performing some functions that should probably not be performed at all and other functions that should more logically be performed by others. For example, detailed model development and data generation should probably not be performed at all within ODUSA(OR). Also, participation as members of an almost infinite number of SAGs should probably be left to representatives from subordinate elements.

AUTHORITY AND RESPONSIBILITY OF THE DUSA(OR)
PER GENERAL ORDER 12, 30 JUNE 1978

2. Authority of the Under and Assistant Secretaries of the Army, General Counsel, The Administrative Assistant, Deputy Under Secretaries of the Army, Chief of Legislative Liaison, and Chief of Public Affairs. Subject to the direction and control of the Secretary of the Army, the Under Secretary of the Army, Assistant Secretaries of the Army, General Counsel, The Administrative Assistant, Deputy Under Secretaries of the Army, Chief of Legislative Liaison, and Chief of Public Affairs are hereby authorized and directed to act for the Secretary of the Army within their respective fields of responsibility as set forth herein, and as further directed by the Secretary. This authority extends not only to actions within the Department of the Army, but also to relationships and transactions with the Congress and other governmental and nongovernmental organizations and individuals. These officials are responsible for the exercise of direction and supervision over matters pertaining to the formulation, execution, and review of policies, plans, and programs within their respective functional areas, including the establishment of objectives and appraisal of performance. Officers of the Army shall report to the Under Secretary of the Army, Assistant Secretaries of the Army, General Counsel, The Administrative Assistant, Deputy Under Secretaries of the Army, Chief of Legislative Liaison, and Chief of Public Affairs regarding matters within their respective fields of responsibility as herein assigned.

11. Deputy Under Secretary of the Army (Operations Research). The Deputy Under Secretary of the Army (Operations Research) is hereby assigned the following fields of responsibility:

- a. The Army Study Program.
- b. Policy formulation and program direction of operations research/systems analysis activities related to—
 - (1) Net threat and technical assessments.
 - (2) Army plans, programs and budgets.
 - (3) Force structure requirements and readiness.
 - (4) Materiel items in all life-cycle phases.
 - (5) Logistics.
 - (6) Tests and evaluations, and field experimentation of materiel items, units, and forces.
- c. Support the systems acquisition review committees (ASARC/DSARC).
- d. Staffing of Mission Element Need Statements (MENS) in the Army Secretariat and coordination with OSD.
- e. Guide the Army Officer Operations Research Education Program.
- f. As directed, conduct studies and analyses in support of the Army Secretariat.

Figure C-1

THE DUSA(OR) PER AR 10-5, 1 APRIL 1975

2-13. The Deputy Under Secretary of the Army (Operations Research). The Deputy Under Secretary of the Army (Operations Research) is responsible for the formulation of policies and recommendations in the areas of operations research and systems analysis, and for the Army Study Program. He advises on all significant aspects of—

- a. Application of operations research to—
 - (1) Weapons systems.
 - (2) Research and development.
 - (3) Test, evaluation, and field experimentation.
 - (4) Force structuring.
 - (5) Logistics.
 - (6) Readiness.
 - (7) The planning, programing, and budgeting cycle.
 - (8) Systems acquisition review committees (ASARC/DSARC) matters.
 - (9) Net threat and technical assessments.
- b. The Army Study Program.

Figure C-2

THE DUSA(OR) PER "THE DEPARTMENT OF THE ARMY," JANUARY 1977

DEPUTY UNDER SECRETARY OF THE ARMY (OPERATIONS RESEARCH)

The Deputy Under Secretary of the Army (Operations Research) is assigned the following fields of responsibility:

The Army Study Program.

Policy formulation and program direction of operations research/systems analysis activities related to:

Net threat and technical assessments.

Army plans, programs, and budgets.

Force structure requirements and readiness.

Materiel items in all life-cycle phases.

Logistics.

Test and evaluations, and field experimentation of materiel items, units, and forces.

Support the systems acquisition review committees (ASARC/DSARC).

Guide the Army Officer Operations Research Education Program.

As directed, conduct studies and analyses in support of the Army Secretariat.

RESPONSIBILITIES OF THE DUSA(OR) PER AR 5-5, 15 APRIL 1978

1-7. Responsibilities. ★a. Secretary of the Army (SA). Secretary of the Army approval is required for all contract studies over \$200,000. The authority is delegated to the Assistant Secretary of the Army (Research, Development & Acquisition) (ASA (RDA)) for RDTE funded efforts and to the Assistant Secretary of the Army (Installations, Logistics, and Financial Management) (ASA (IL&FM)) for OMA funded efforts. Amendments to original contracts which result in a combined total cost (original contract and amendment) over \$200,000 will be treated the same as contract studies with an initial cost over \$200,000. Contract amendments which increase costs of contract studies which were approved at OSA level will also be submitted for OSA approval citing the original RACS and providing additional information required in order to obtain authorization for the increased funding.

b. Deputy Under Secretary of the Army for Operations Research (DUSA(OR)). The DUSA(OR) is responsible to the SA for the Army Study System.

Figure C-4

5. The decentralization of S&A activities and the simultaneous reduction of S&A management capabilities within DA Staff during the early 1970s caused the ODUSA(OR) to become more intimately involved in the study program. Rather than performing the more general oversight or monitoring function for which it was established, the ODUSA(OR) became more and more involved in the details of the study program. As a consequence, the ODUSA(OR) is not only performing the functions it was established to perform, but is also filling the void left by the disestablishment of S&A management capability within DA Staff. As such, the ODUSA(OR) not only deals with elements at DA Staff on general S&A matters but is also frequently involved in the details of individual studies at the MACOM and FOA level.

6. Although the ODUSA(OR) has very substantial S&A responsibilities, execution of those responsibilities must be done on a very selective basis. The ODUSA(OR), among other things, is assigned responsibility for the study program. (As many agree, study activity including study program management should be mainstream to the Army decisionmaking processes that studies support. However, the ODUSA(OR) is not mainstream in the sense of PPBS and the decisionmaking that characterizes the Staff side of the house. Hence, the study system responsibility of the DUSA(OR) appears to be misplaced.) Implicit in that responsibility is the need to plan, coordinate, and direct the Army study effort. Handicapped by a relatively small staff and distant organizational location, the ODUSA(OR) is not able to perform those functions very well. As a compromise, the ODUSA(OR) reviews, evaluates, and sometimes participates in the more critical studies on a selective basis. Many times this involvement begins too late to alter the direction or success of the study. Thus, the ODUSA(OR) participation/involvement/direction/management of the study program is often viewed as reactive rather than preconceived.

7. One informal function the DUSA(OR) is credited with performing is that of overwatching study technical matters and advising the SA on operations research or S&A-related matters. It is not at all clear why operations research or the S&A activities are so uniquely important as to require a DUSA. For example, why not a DUSA for economics, medicine, training, or doctrine? Nevertheless, it does seem that some sort of technical oversight (providing limited analytical capability and capacity) on behalf of the SA is appropriate, although at other than Deputy Under Secretary level and with some less restrictive, more descriptive title than "OR."

8. The DUSA(OR) has also been informally referred to as the SA's DCSOPS. In addition to his studies and analyses responsibilities, the DUSA(OR) has been credited with also being the SA's principal advisor on

Army plans and operations. Some people suggest that even if the studies and analyses responsibilities are removed from the Secretariat level, a DUSA might still be acquired. That office would simply be retitled DUSA (Operations).

9. The division of managerial responsibilities between the SA and the CSA is not in sync with the above viewpoint, however. There are certain responsibilities assigned to the SA without further delegation to the CSA. Examples include such matters as civil law and civil works. There are other matters for which the CSA has direct responsibility. Examples include plans and operations in support of the unified and specified commands. On these matters, the CSA has direct responsibility to the Secretary of Defense and the Joint Chiefs of Staff. A remnant DUSA(OR) organization with "DCSOPS"-related advisory responsibilities is therefore inconsistent with the SA's responsibilities. Thus, there appears to be no overriding need for the retention of ODUSA(OR).

10. If the new S&A management organization proposed in this report is adopted, what role should the DUSA(OR) play in that organization? The answer is probably none. This report recommends the transfer of all formally assigned S&A management responsibilities from DUSA(OR) to the new S&A management cell. Except for any informal/unwritten functions the ODUSA(OR) might perform, that office could probably be disestablished.

TAB D

RELATED TOPICS

1. Introduction. During the mainstream analysis of Secretariat/HQDA OR/S&A management, many related topics surfaced. The team felt that its ideas on matters perhaps only loosely related to the assigned task are relevant to the general subject, "Review of Army Analysis." This tab collects in one place the "extra" topics and thoughts. Few people will have the time, need, or interest to read this entire tab. However, everyone in and around study program management should consider the first topic carefully--"The Other Extreme." If the shoe fits,.... Otherwise, the topics are not presented in any special order.

2. The Other Extreme. At one point in the management analysis of OR/S&A, the team noted that it had a clearer understanding of how not to manage a study program than how to do it correctly. This revelation led to the listing of the "Seven Deadly Sins of Study Program Management." These are shown in Figure D-1. There is a message there, and it is not a facetious one. The outwardly negative statement of Figure D-1 proves to be a remarkably sharp template for checking one's own attitudes and any proposed study management alternative.

3. Giving Army Objectives Setters and Planners a Helping Hand.

a. But what if those now given responsibility for setting Army objectives and planning transfer to the OR/S&A management cell less than the cell needs to plan a great study program? The study program cannot be better than stated Army objectives and plans.

b. The study community must scrupulously avoid setting or appearing to set Army objectives. However, the community, if it is as bright as alleged, can help. The help should not come from within the study program management cell. Such helping would put part of the cell in the forbidden role of doing studies...studies on generating objectives and planning alternatives. However, the helpers should not be located so far down the study chain as to be liable to charges of (parent) institutional prejudice. If "objectives setting" becomes a problem, the team (going beyond its given charter) suggests serious consideration be given to creation of a small agency reporting to the cell but working closely with the major elements (e.g., Strategic Planning Committee) shown in Figure 3 of the Main Paper. Spaces for such an agency could be drawn from supposed strategy-oriented elements or agencies now lodged too far down in Army structure.

THE SEVEN DEADLY SINS OF STUDY PROGRAM MANAGEMENT

- . Put study-doing and study management responsibility together in the same element. Human analysts will inevitably gravitate from managing into doing studies, thereby soon achieving minimum management. (Non-human analysts have not been tested...yet, they may be the next to be given study management responsibility.)
- . Put the focus of total program so low organizationally that no one that matters can see it.
- . Split management functions among enough elements that no one will know what anyone else is doing or is supposed to be doing. Everyone will then have the guaranteed excuse: "that is not my job."
- . Never tell OSD, OMB, or Congress the same thing. Never tell anyone the same thing twice. Change definitions and estimates as often as possible. Make estimates jump back and forth so that no one may perceive a trend.
- . Completely decouple study planning and execution from Army objectives and long-range planning. That way anyone can do his own thing in his own time without friction.
- . Never evaluate the entire study program. It is too difficult anyway. But if you must evaluate, you have a choice.
 - . You can evaluate a few individual studies and pretend you have evaluated the program.
 - . You can evaluate the entire program without reference to the purpose of that program. Chances are that no one will notice. How can they if they don't know the purpose either?
- . Encourage the notion that some kinds of analysis are vastly superior to others and pump that idea into the belief that certain kinds of analysts are vastly superior. Promote unbridgeable splits among hard and soft, military and civilian, operational and policy analysts. Demolish all thought that cooperative, interdisciplinary approaches are ever needed. Print posters suggesting that the generalists know nothing about everything and that the specialists know everything about nothing. Never permit generalists and specialists to get together except to fight.

Figure D-1

4. Some Philosophy.

a. Partly as the result of threat developments and partly as the result of increased costs of almost everything the Army uses, everyone (?) agrees that the Army faces tougher decisions. The OR/S&A community accepts as a matter of faith that studies and analyses are much needed at such times to help clarify issues, answer questions, and provide bases for decisions. Others look longingly at the OR/S&A resources as a possible source of savings by the outright reduction of those very resources. The challenge is for the OR/S&A community to serve the Army well and make that performance known...to better justify its own existence and expense. The available evidence demonstrates that much OR/S&A has been done well, some things could have been done better, and the activity is often misunderstood inside and outside the community.

b. Critics inside and outside the Army OR/S&A community allege that the community suffers a number of weaknesses, some minor and some major. Some criticisms have persisted for so long without convincing replies that a few people probably now believe that the underlying problems are not correctible. There may be and probably are some unavoidable faults. However, a much more positive approach is to lay known weaknesses at OR/S&A management's doorstep and declare them OR/S&A management problems. It is then for OR/S&A management, with advice from many sources, to determine whether more or less management is needed and at what levels...and also to determine whether one-time and/or continuing actions are necessary for the study program to become and then continue to be more effective.

c. Some alleged weaknesses almost certainly extend beyond the OR/S&A community itself. Short of becoming or seeming arrogant, OR/S&A management must work to see that some changes also occur outside the OR/S&A community. Before that, however, it is appropriate for OR/S&A to do much more to assure others that it's own house is or is being put in order.

d. The OR/S&A community itself now faces tough decisions: whether to devote a larger portion of its own resources to study execution, to middle management of studies, or to high-level management of studies. Can more managers or more performers of studies make the greater contribution within a community of fixed or reduced size?

e. The assigned task was to consider OR/S&A management at Secretariat/HQDA level, high up the OR/S&A chain. The task is necessarily related to other, broader questions of management of Army-wide OR/S&A and related study-like activities. Is there too much or too

little management? Is management applied at the right level and right time? Is it applied at too many or too few levels? Are one-time fixes or continuing actions needed?

f. By design the Army's total OR/S&A and other study-like resources are largely decentralized and subject to little central, high-level management. Even within Secretariat/HQDA, the limited OR/S&A resources are spread among many elements and are subject to little central management. OR/S&A practitioners have long argued that independence, objectivity, and creativity are essential to quality OR/S&A and that over-management soon erodes such attributes. By various definitions, the OR/S&A community consists of from 2,000 to 5,000 persons. To be sure, these people are subject to first-line and middle management. However, it is almost certainly too much to expect that several thousand analysts can spontaneously pursue a program balanced across the Army's short and longer term objectives, between study execution and methods development, and between reliance on "old data" and generation of "new data."

5. The Five Commandments.

a. The focus of the assigned task is management of the study program, not the performance of individual studies.

b. Management of the study program is considered in the context of the usual classic functions of management: planning, organizing, staffing, directing, controlling, and evaluating. In answer to the question of whether too much or too little of these functions is applied at Secretariat/HQDA level, the team found.

(1) Planning. The planning function is relatively weak. The study program is not linked to Army objectives and long-range planning well enough, nor is the program linked to the Army decision process well enough.

(2) Organizing and staffing. Given the Army's decision years ago to decentralize most study resources, Secretariat/HQDA OR/S&A management was left little continuing role in organizing and staffing community-wide. The Secretariat/HQDA, of course, reserved its right to intervene again at some later time if necessary.

(3) Directing and controlling = executing. (Here "execute" is taken to mean "execute the program," not "do studies.") Program execution is incomplete, sound in some respects, but weak in others. Program definition is too narrow; hence, administration within the too narrow

definition is also incomplete. Reporting upwards does not give full visibility nor convey a sense of program direction. Meaningful standards for models and methods do not exist. If the standards did exist, too many methods and models would rank substandard. No one has conferred enough sense of belonging to enough of the OR/S&A community. The human resources of OR/S&A need more constructive attention.

(3) Evaluating. Program evaluation is weak. In part the weakness is due to the too narrow definition of "studies." In part there has been a tendency to suppose that limited evaluation of some individual studies provided sufficient program evaluation. High marks for individual studies may be necessary for a good program, but they are not sufficient in the total program sense. Another difficulty in evaluation has been the tendency to underplay the purpose of the study program: evaluation makes sense only in relation to purpose.

c. The task team finds fault with management of the study program. Some needed management functions have not been assigned to anyone. Assigned functions have been split. And perhaps worse, some management functions have been assigned to those with study-performing responsibilities. This double-duty responsibility may be the most fatal flaw of all. Whenever given a chance, a study program manager lapses into the possibly easier, possibly more enjoyable role of study doer.

(1) Hence, the first commandment of study program management should be....

KEEP STUDY PROGRAM MANAGEMENT AND STUDY-DOING
PERMANENTLY SEPARATED.

(2) Second commandment should be....

ASSURE PROGRAM VISIBILITY AND SENSE OF DIRECTION
TO OSD, OMB, AND CONGRESS.

(3) Third commandment should be....

COUPLE STUDY PROGRAM PLANNING AND EXECUTION TO
ARMY OBJECTIVES AND LONG-RANGE PLANNING AND TO
THE ARMY DECISIONMAKING (PPBS) PROCESS.

(4) Fourth commandment....

EVALUATE THE PROGRAM IN A TOTAL PROGRAM SENSE...
IN RELATION TO PROGRAM PURPOSE.

(5) Fifth commandment....

MINIMIZE COUNTERPRODUCTIVE SCHISMS IN THE OR/S&A COMMUNITY. DEVELOP A BROADER, EQUITABLE DEFINITION OF STUDY. DEVELOP A BROAD EQUITABLE DEFINITION OF ANALYST AND PROMOTE PROFESSIONALISM AND CAREERISM IN STUDIES AND ANALYSIS.

6. Army Objectives...Then What?

a. If Army objectives setting were done well, then a practical interface to the OR/S&A community might have to do no more than translate those objectives to define corresponding parts of the study program. But, most people inside and outside the OR/S&A community agree that now more than a translator is needed because some Army objective seems to be missing or poorly stated. Such observations produce few friends and less cooperation.

b. The OR/S&A idealist will argue that OR/S&A management need never become much more involved than this. Analysts are usually so convinced of their own competence, motivation, and objectivity that they believe that they will march ahead efficiently to solve problems simply because they are there. How these delusions of adequacy persist in the face of history is bewildering. Not all problems are equally important. Left alone too many analysts will work on what interests them apart from importance to the Army. Typically more analysts than necessary will work on some problems, and they will work longer than the time necessary or available. And for some, working on a problem is sufficient; actually solving it is only secondary.

c. Although many analysts take pride in being problem-oriented, remarkably many analysts seem much more involved in methods development than in problem solving. Certainly the available methods leave much to be desired. But there is little evidence of a coordinated methods development program. Methods and models are redeveloped and rediscovered with little attention to compatibility with other methods and models or with available data...and with little advance of the state-of-the-art of study. The rules of evidence to be applied in matters of choice are too often abused or simply ignored. No one should claim that the conduct of conscientious OR/S&A can ever be easy. Indeed, a useful characterization of OR/S&A might be that it is the art and science of making do with largely insufficient evidence. (Many managers and decisionmakers might characterize decisionmaking in the same way.) The OR practitioners often claim to represent the more scientific part of the community; they too often look with disdain on other kinds of analysts.

d. Analysts may not like to admit it, but they are people too and need some degree of management. The Army's commitment to extensive decentralization of so many functions has placed a heavy burden on middle and lower echelon OR/S&A management. Army objectives have not been stated or translated well enough for the lower levels of management and the analysts to cover questions, issues, and problems in an orderly, timely fashion matched to even broad priorities. And unfortunately the quite limited amounts of study duplication and repetition have tended to distract attention from the more serious matters of "underlap." Some functions do not get sufficient attention. But more importantly, no consistent mechanism exists for identifying and addressing interfunctional problems.

e. The S&A system, though, is unusual among Army activities. Historically and currently it is among the least centrally managed of the Army's many activities. Just why this is so is not clear. Analysts dislike being closely managed. Some claim that close management gains less overall than it loses through suppression of creativity. Occasionally an argument surfaces to the effect that analysts as scientists need only be turned loose on a problem and they will manage themselves; hence, one assumption is that S&A need not be managed at all. An equally popular thesis is that S&A is inherently unmanageable; hence, efforts at S&A management are wasteful. A variation on this theme is that S&A is manageable in theory but that highest level S&A managers do not exist and are unproducible!

7. Ad Hoc Study-like Activities.

a. Not all studies and analyses have been performed by the full-time members of the OR/S&A community. The Army often convenes special groups to address special questions, issues, or problems. The report of such a group is often described as a study report. Indeed, inspection of such a report often reveals that the producing group did do everything usually considered proper in study and analysis. This need surprise no one if the group included OR/S&A representatives. Sometimes an ad hoc group contains no one from the usually understood OR/S&A community and still produces a fine study. What, if anything, does the latter case prove? Would study by the usual study community have fallen short in timing, subject, or method? Was the regular OR/S&A community, as large as it is, already fully booked? Did anyone check first whether the regular community was capable and available? Some analysts probably feel insulted whenever they are left out. And many nonanalysts feel insulted whenever they are examined by an analyst, just as the OR/S&A community would feel insulted to have someone else conduct a "Review of Army Analysis." However, there are many just reasons for having nonanalysts

perform some studies and analyses. It is an American tradition to allow a troubled group to try first to put its own house in order...perhaps involving some self-study. (There may already be an OR/S&A credibility gap. Many people believe that the OR/S&A house is not in order. They are bemused whenever an OR/S&A resident insists that he knows how to put everyone else's house in order. Remember one famous description: an analyst is someone who cannot tie his own shoe laces but is ready to tell everyone else how to run the world. Of course, this is also often alleged to have been said of management scientists, Congressman, consumer protectionists, etc.)

b. The conscientious analyst suspects that each question, issue, and problem may be special until proven otherwise. Hence, he is reluctant to advise a standard approach until he knows that a problem is standard. Likewise, he admits to the need for special approaches to special problems. The OR/S&A community should go only as far as to insist that each question, issue, and problem be brought to the attention of management for consideration and with input from others determine who, where, when and how to address the problem. Sometimes the ad hoc approach by nonanalysts will be necessary and sufficient although any analyst finds it hard to imagine that he has no useful contribution to make.

8. How Much Can A Cell Do?

a. Everyone agreed that members of the cell cannot be doers of studies. The cell must manage rather than do. And the cell must manage in the total program sense, not in the individual study sense. It is clear that the director of the cell must possess outstanding management skills. That manager must also possess considerable knowledge of study methods and subjects studied. Members of the cell must present enough information about subjects and methods to the director so that he can make correct decisions about the study program and its short- and long-range impacts.

b. The limits of what can be achieved through study and analysis are not well understood and are sometimes misrepresented. The claims of what has been achieved and what can be achieved are too often exaggerated. The claims for achievement without any empirical foundation are especially remarkable.

c. It is probably too much to expect that a small HQDA cell itself would possess or soon develop sufficient wisdom to make fundamental decisions about what can and cannot be done, about how much accuracy and precision are necessary and sufficient, about whether to devote more or less effort to methods development, and whether to rush ahead using available data or to trigger the generation and collection of new empirical

data. These kinds of choices are important and difficult. It is unlikely that the wisdom of a few will be sufficient. And to judge from the past, the wisdom of many may also be insufficient. Nevertheless, reliance on the wisdom of many is likely to be more popular and safer. A management cell, then, should find a way to better exploit the general wisdom and should not simply invoke its own will. A competent, egoless director must convene special committees and councils to complement formidable but finite in-cell expertise and wisdom.

9. A Riddle.

HQDA S&A

Can point to their "results" but not their studies.

Other S&A

Can point to their studies but not their results.

If indeed the most senior analysts are at HQDA, what examples do they have to offer of their methods and applications in a form to be examined/read/adopted by others? Pacesetters or pacemakers?

TAB E

SOURCE MATERIAL

1. Department of Defense, Deputy Under Secretary of Defense for Research and Engineering, DOD Directive 5010.22, The Management and Conduct of Studies and Analyses. Washington, D. C., 22 November 1976.
2. Department of the Army, Deputy Chief of Staff for Research, Development, and Acquisition, Systems Review and Analysis Office, Memorandum for Chairman, Support Group on Studies and Analysis, Report of Functional Work Group on Studies and Analysis. Washington, D. C., 22 August 1977.
3. Department of the Army, Headquarters, AR 5-5, The Army Study Systems. Washington, D. C., 5 July 1977 with change 1 dated 15 April 1978.
4. _____, AR 10-5, Organizations and Functions, Department of the Army. Washington, D. C., 1 April 1975.
5. _____, General Order Number 12, Assignment of Duties and Responsibilities Within the Office, Secretary of the Army. Washington, D. C., 30 June 1978.
6. Department of the Army, Headquarters, Office of the Chief of Staff, The Army Study System (Bonesteel Report). Washington, D. C., 18 May 1964.
7. Department of the Army, Office of the Deputy Chief of Staff for Operations and Plans, Technical Advisor, Memorandum for Mr. Vandiver, Trends in Staffing and Levels of Army Study Activity. Washington, D. C., 21 April 1978.
8. Department of the Army, US Army Engineer Studies Center (formerly Engineer Studies Group), Additional Insights as Supplement to Study: Results and Use of Army Studies. Washington, D. C., July 1976.
9. _____, Study: Results and Use of Army Studies. Washington, D. C., August 1976.
10. Department of the Army, US Army War College, Army Command and Management Theory and Practice--A Reference Text for Department of Command and Management. Carlisle Barracks, Pennsylvania, 1978-79.

11. Lester, D. M., et. al., Review of Army Study Definition and Management. Washington, D. C., undated.

MISCELLANEOUS

12. Department of the Army, Headquarters, Chief of Staff Regulations, 10-series. Washington, D. C.
13. Unofficial Organization Charts and Staff Directives for Headquarters, Department of the Army Chiefs and Executives; Office of the Deputy Chief of Staff for Operations and Plans; Office of the Deputy Chief of Staff for Logistics; Director of the Army Staff; Office of the Deputy Chief of Staff for Personnel; Office of the Deputy Chief of Staff for Research, Development, and Acquisition; Program Analysis and Evaluation Directorate; and the Office of the Comptroller.

APPENDIX G

BUDGET STRATEGY

G-1. INTRODUCTION. a. Background

(1) The 95th Congress has become increasingly critical of the Army's management--indeed, of DOD's management--of the Studies and Analysis Program. In general, the Congress perceives that Army use of contracts amounts to another aspect of the double-dipping problem by providing additional money to retired military officers and that the Army is not articulating what the requested money will buy and how the results will be used. Specific concerns expressed in the 1978 Report of the House Appropriations Committee (HAC) and reiterated in the 1979 report are summarized in Table G-1.

(2) The HAC made a general reduction of \$10M in each of the Services FY 79 O&M accounts for contract studies and analyses, management support, and consultation service. The 1979 report further states:*

"The Committee expects that the reduction will be applied to these activities . . .

"If the Committee finds that these reductions have not been applied against the service support contract efforts and studies and analyses and management support efforts in particular, the Committee expects to make direct reductions in headquarters staffing levels in the future.

"The Committee expects that future budget justifications will include detailed lists of the subjects proposed for study each budget year.

"The Committee expects that 75 percent of the studies requested for funding will be definitized and that no more than 25 percent of the money will be available for studies as required."

*US Congress, House of Representatives, Committee on Appropriations, "Department of Defense Appropriation Bill, 1979," HR 95-1398, p. 159.

Table G-1. Summary of Concerns Expressed by 95th Congress on Contract Studies and Analysis*

Congressional Concern		
Item	Subject	
1	Total Cost	"There are so many of these studies of various types funded in the DOD budget that no one even has an accurate estimate of the total cost."
2	Use of DDC	"Many study sponsors do not interrogate the system to learn about previous efforts already paid for by the DOD."
3	Contracting procedure	"More than 85 percent of the DOD contract studies reviewed by the investigative staff were noncompetitive."
4	Results	"Reliance on 'unsolicited' proposals tends to permit contractors ... to drive a program ... (and) often results in inadequate work statements." "Many of these studies tend to be self-perpetuating often resulting in incomplete efforts and recommendations for further study."

b. Purpose. This appendix explores alternatives to determine how procedures for requesting, justifying, and defending funds for Army studies and analyses can be improved.

c. Approach. The next paragraph describes the current budget formulation and defense process giving an estimate of the dollar magnitude of the Army Studies and Analysis Program, as defined elsewhere in this report, and points out weaknesses in the current process. Succeeding paragraphs analyze Congressional actions on the FY 79 studies and analysis budget request and define and discuss some alternative approaches. The final paragraph presents conclusions.

*US Congress, House of Representatives, Committee on Appropriations, "Department of Defense Appropriation Bill, 1978" HR-95-451, p. 135.

G-2. THE CURRENT BUDGET FORMULATION AND DEFENSE PROCESS. a. General. Army studies and analyses, including in-house and contract studies, are normally funded by the OMA, MPA and RDTE Appropriations depending on which appropriation finances the organization responsible for the study, or in the case of contract studies, whether or not the study supports R&D activities. Exceptions to these general provisions include: 1) funding is authorized from the procurement appropriations in instances where a system has reached the procurement stage and a study directly related to a specific item of equipment being procured is required; 2) HQDA contract studies related to R&D activities are funded by a separate program element; and 3) TRADOC contract studies related to R&D activities other than support of user testing are funded by a separate program element. Use of separate program elements to fund HQDA and TRADOC contract studies related to R&D activities appears to be a carryover from previous funding arrangements for studies performed by Army-sponsored Federal Contract Research Centers (FCRC).

b. Description of the Army Studies and Analysis Program by FYDP Program Element. For purposes of discussing the budget formulation process, it is necessary to first define the program in terms of FYDP program elements, i.e., by the budget activity funding the program. AR 37-100-79 and CSR 11-5 were used as source documents for this purpose.

(2) Columns 1 and 2 of Table G-1-1 of Annex I show program element titles including the financed organization or activity grouped by major categories (e.g., HQDA and study agencies) and program element numbers, respectively, for Army study and analysis activities. Of the 31 program elements shown, only four are entirely studies and analysis activities. These four program elements are further identified in Table G-2.

Table G-2. Army Studies and Analysis Program Elements

Title	Number
Studies and Analyses	65101A
TRADOC Studies and Analyses	65102A
Materiel System Analyses	65706A
Battlefield System Integration	65713A

(3) The projected outlay (funding requested minus Congressional reductions plus customer funding) for Army Studies and Analyses in FY 79 is estimated at \$132.6M, representing approximately five percent of the total funding for the 32 program elements identified that finance studies and analysis activities (see Columns 3, 4, 11, 12 and 13, Table G-I-1, Annex I). This outlay amount differs significantly from the amount furnished Congress as part of the FY 79 budget justification (see Annex II).

(4) Funding requested by appropriation is estimated at \$19.5M, \$56.6M and \$66.9M for MPA, OMA and RDTE, respectively. (See Columns 5 to 7 and 13, Table G-I-1, Annex I). Use of RDTE funding, 48 percent of the FY 79 request, is expected to decrease in future years (see Annex III).

(5) Funding requested for contract studies and analyses in FY 79 is estimated at \$35M, representing 25 percent of the total requested. (See Columns 4 and 9, Table G-I-1, Annex I). The projected outlay for contract studies and analyses is significantly less--only \$16.3M or 12 percent--because of heavy Congressional reductions (see Columns 9 and 11, Table G-I-1, Annex I).

c. POM Development and Budget Formulation

(1) Funds for Army studies and analyses are programed and budgeted for as part of the normal Army program and budget process, i.e., requirements are presented, defended and included in successively higher echelon program and budget requests. The process does not, however, currently include the mechanisms necessary to generate total studies and analysis resource requirements. Indeed, most of the programing and budgeting actions specifically related to studies and analyses are directed toward the Army studies and analysis lines of the RDTE appropriation identified in Table G-2.

(2) MACOM and other activities submitting COBE to HQDA are required by AR 5-5 to include a special analysis of proposed study programs covering in-house and contract studies. Information required on the former includes PMY of study effort while information on the latter includes estimated costs by appropriation. There is no requirement for a list of subjects proposed for study or a tabulation of resources committed to studies and analyses in terms of manpower and money. In view of the Congressional concerns quoted in Table G-1, the AR 5-5 requirement is incomplete. Further, it has not been effectively implemented. It was not included, for instance, in the instructions for preparation and submission of the FY 79/80 COBE distributed to the field in February 1978.*

(3) At HQDA, the Study Management Office (SMO) provides information on approved contract studies to program directors for use in POM development and budget formulation.

d. Budget Justification Material

(1) DODM 7110-1-M requires the preparation and submission of a special exhibit as part of the budget justification back-up data with the 30 September budget submissions (see Annex IV). This is a relatively new requirement having been effected with the FY 79 budget submission as a result of a 1977 Congressional mandate. The Army's efforts at preparation of this exhibit have thus far been off-line and apart from the budgeting process. In other words, instead of requiring sufficient data to accompany the COBE, the SMO has prepared the exhibit based on separate MACOM and Staff Agency inputs.

(2) Appropriation Directors submit justification materials to Congress generally to program element level of detail. For instance, Congressional Descriptive Summaries are submitted for each program element of the RDT&E request. In that there are only four explicit studies and analysis program elements, specific studies and analysis justification material has been limited.

(3) Other justification materials have not been consistent. Volume I of the OMA Justification Book for the FY 79 estimates, for instance, while showing the \$5M reduction imposed for Contract Studies and Analyses during FY 78, indicated increases for other

*DACA-BUS Letter, 28 Feb 78, Subject: FY 1979/80 Command Operating Budget Estimate (COBE), RCS CSCAB-205.

studies totaling more than \$10M. The report to the Armed Services Committees, referenced in Annex II, contained a detailed list of subjects proposed for study whose cost exceeded the amount reported elsewhere in the report.

e. Defense of the Budget Request. Special appearances by Army representatives before the Congressional committees to defend the studies and analysis request were not routinely made prior to defense of the FY 79 budget request. In prior years, then, defense of studies and analysis requests was limited to the four explicit program elements in the RDTE request.

G-3. ANALYSIS OF CONGRESSIONAL ACTIONS ON THE FY 78 AND FY 79 STUDIES AND ANALYSIS BUDGET REQUESTS. a. Congressional Reductions in Explicit Studies and Analysis Requests. Table G-3 shows Congressional reductions to the explicit studies and analysis budget requests for FY 78 and FY 79 by appropriation and service. Note the magnitude of the reductions to the four Army RDTE studies and analysis lines. Detail on reductions to the 32 program elements that finance Army studies and analyses is shown in Columns 10 to 12 of Table G-1-1, Annex I. Specific reductions were made to the RDTE program elements while a general reduction was made in the O&M accounts. The four explicit RDTE studies and analysis lines are as identified earlier (see Table G-2).

b. Analysis of Reductions

(1) The data in table G-3 may be misleading if interpreted as representative of reductions in the services overall studies and analysis programs. The different services have differing organizations, work programs and management philosophies. For example, discussion of these reductions with the Navy Study Management Office indicates the Navy incurred severe reductions in other program elements that finance studies and analyses. Such is not the case with the Army's budget request.

(2) The data in Table G-3 clearly reflect that the concerns of the HAC, quoted in Table G-1, have resulted in reductions in funds requested for contract studies and analyses. The data further indicate better justification and defense of the explicit studies and analysis program elements by the other services.

Table G-3. Reductions in Explicit Studies and Analysis Requests for FY 78 and FY 79 by Appropriation and Service (\$K)

Appropriation/ Service ROTEs	Budget Request In-House Contract		Reduction in Authorizations Bill In-House Contract		Reduction in Appropriations Bill In-House Contract	
	FY 78	FY 79	FY 78	FY 79	FY 78	FY 79
Army ^a	11,527	12,233	-400	-7,260	-400	-7,360
Navy(4) ^b	3,236	14,065	0	-215	0	-215
Air Force(1) ^c	--	9,800	--	-300	--	-500
0404						
Army					-5,000	-7,500
Navy					-5,000	-7,500
Air Force					-5,000	-7,500

Numbers in parenthesis are the numbers of explicit studies and analysis lines in Appropriation. Amounts apportioned to contract effort from studies and analysis support lines are 60% of total. Remainder of contract effort is for Navy F2HC (CMA).

^aAir Force F2HC (Rand Corp).

^bAmounts requested not available.

(3) In view of the weakness pointed out in paragraph G-2 above, analysis of the reductions leads to a realization that the Army was not able to justify and defend the FY 79 Studies and Analysis Program because it did not develop the information necessary to do so. As a result, the Army has tended to budget at a "level of effort" for contract studies "as required." One reason for this deficiency--an inability to definitize and prioritize subjects to be studied--is addressed elsewhere in this report. Others, such as the weaknesses in the budgetary process, will be discussed under analysis of alternatives in paragraph G-5 of this appendix.

c. Criteria for Improved Studies and Analysis Budget Justification. Prior to listing and defining the alternatives, some criteria for improved justification material are apparent. To satisfy the Congressional concerns and to insure detailed information is included in future budget justifications, Army studies and analysis budget justification materials should contain the following information for the previous, current, and budget years (see Table G-2 and paragraph G-1a(2) above).

(1) Total resource requirements in terms of manpower and money by program element, method of performance, and study subject.

(2) For proposed studies, whether or not a document search has been conducted and if previous studies on the same subject have been conducted, why another study is necessary.

(3) For contract efforts, whether or not contract was awarded competitively and, if not, why awarded noncompetitively.

(4) How results from previous/proposed studies have been used/will be used.

G-4. ALTERNATIVES. Alternatives to improve Army studies and analysis budget justification and defense are listed below. The alternatives explore methods to correct deficiencies in the budget formulation and defense process, and were logically developed by consideration of such variables as initiative, adoption of criteria for improved justification, budget defense posture, budget justification development mechanics, and program structure and management. See Figure G-1 for the logical development of the alternatives.

QUESTIONS

1. Should proactive action be taken?
2. Should the criteria be adopted?
3. Should an active defense posture be adopted?
4. Should budget justification materials be developed on-line or off-line?
5. Should a functional studies and analyses program be established?
6. Should the program structure be changed?
7. Should the program be displayed in separate program elements or embedded in other program elements?

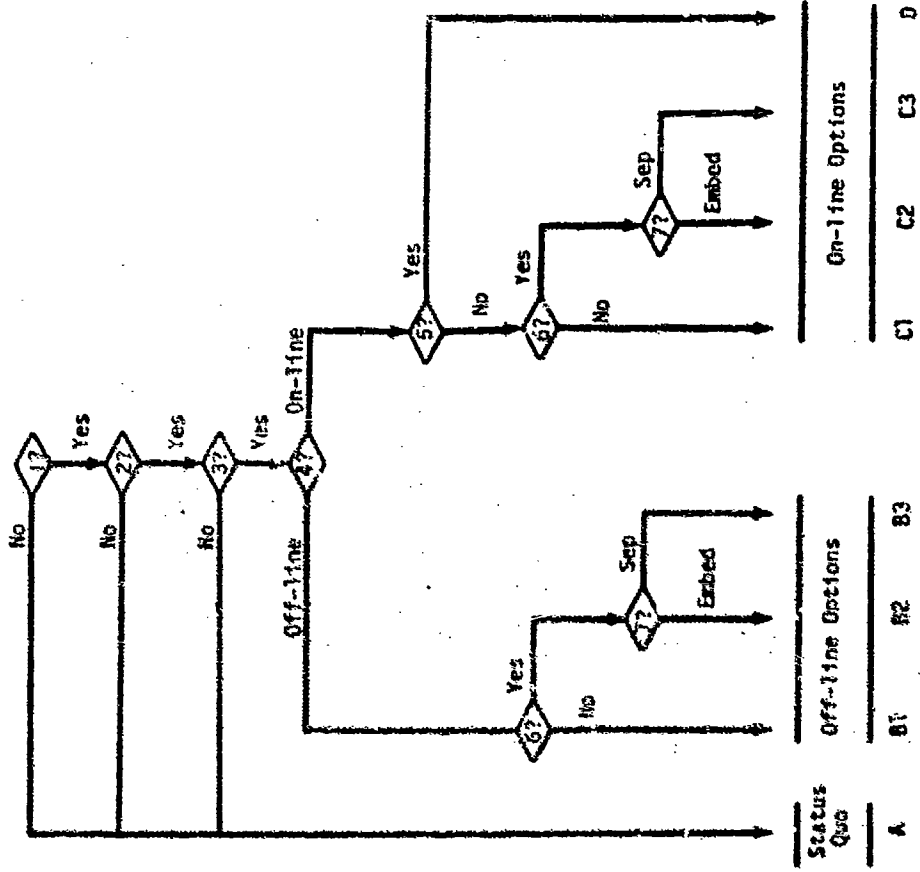


Figure G-1. Logical Development of the Alternatives

a. Alternative A: Status Quo. Do not take proactive Army action to improve justification and defense of the Army studies and analysis budget. Do not adopt criteria for improved budget justification. Maintain passive budget defense posture. Prepare and submit Exhibit PB-21 off-line. Make no change in program structure.

b. Alternative B: Off-Line Options. Take proactive Army action to improve justification and defense of the Army studies and analysis budget. Adopt criteria for improved budget justification. Adopt active budget defense posture. Prepare and submit Exhibit PB-21 off-line, and:

- (1) Make no change in program structure; or
- (2) Further embed the program in other program elements; or
- (3) Establish separate program elements for study agencies and activities not included in management headquarters.

c. Alternative C: On-Line Options. Take proactive Army action to improve justification and defense of the Army studies and analysis budget. Adopt criteria for improved budget justification. Adopt active budget defense posture. Prepare and submit Exhibit PB-21 on-line; and:

- (1) Make no change in program structure; or
- (2) Further embed the program in other program elements; or
- (3) Establish separate program elements for study agencies and activities not included in management headquarters.

d. Alternative D: Functional Program. These alternatives are special cases of Alternatives C(1)-(3). CSR 11-5 defines a functional program as a special activity, managed or reviewed as an entity, that may cross FYDP program element lines. CSR 11-5 also assigns responsibilities to functional program managers. Actions to implement these alternatives include those listed in paragraph G-4c above, and, in addition, establishment of a functional studies and analysis program; and:

- (1) Make no change in program structure; or
- (2) Further embed the program in other program elements; or
- (3) Establish separate program elements for study agencies and activities not included in management headquarters.

G-5. ANALYSIS OF ALTERNATIVES. a. Alternative A. The status quo, i.e., the procedure used for FY 79 budget request, is not a good alternative because it defies the Congressional mandate to include detailed lists of the subjects proposed in future budget justifications.

b. Alternatives B(1)-(3)

(1) The off-line alternatives weakly conform with the Congressional mandate and are less costly than the on-line alternatives. They implicitly recognize that the pressure for more information on studies and analyses is but another demand for information with which to micromanage the Army and that the problem may go away. However, the off-line alternatives do not provide any assurance that total resource requirements for studies and analyses can be determined. There would also be no assurance that resource requirements, once determined and provided to Congress, match resources included in the budget estimates, because they would be based on information solicited and reported separate and apart from the budget process. Indeed, the present justification process is off-line and has these faults.

(2) Alternative B1 is roughly the approach being followed in preparation of justification material for the FY 80 studies and analysis budget. Exhibit PB-21, being developed off-line, will include neither total resource requirements nor detailed lists of subjects to be studied. The former will not be developed while the latter will be developed from yet another Staff Agency and MACOM submission (see Annex V for instructions from the SMO concerning these submissions). There is no change to program structure in this alternative although an ongoing initiative to shift more of the contract effort to OMA funding will effectively zero out these lines (see Annex III). The advantage in not changing the program structure is that the present structure provides some flexibility in meeting unknown future requirements for studies and analyses. If, for example, the HQDA and TRADOC RDTE studies and analysis lines are eliminated and definitized requirements for studies and analyses supporting R&D funded elsewhere, a new requirement would have to be deferred or handled by a reprogramming action. The present flexibility of letting a contract to cover the requirement would be lost.

(3) Alternative B2 makes RDTE funds for studies less visible in the budget request in that the HQDA and TRADOC RDTE studies and analysis lines would be eliminated. Funds for any studies and analyses required to support R&D activities would be included in funds requested for the activity. OMA funds for studies would continue to be included in the program element financing the organization requiring the study. Adoption of this alternative would almost completely embed the studies and analysis program in other programs. The advantage of this alternative is that it would further obscure sources of funds for studies and analyses in the budget request--a disadvantage if the budget request is not accompanied by detailed justification material (some observers believe "the more it's hidden, the more it'll be cut"). A disadvantage, more serious than the loss of flexibility mentioned above, is that embedding makes off-line development of justification material more difficult. Only two of the Army's program elements would be entirely studies and analyses. How much of the remainder to include would depend largely on precision in defining Army studies and analyses and consistent interpretation of that definition by the agencies and MACOMs.

(4) Alternative B3 makes OMA funds for studies more visible in the budget request while retaining the present structure for RDTE funds. Separate program elements would be established in Programs 2 and/or 9 to finance study agencies. All OMA-funded contract studies and analyses would be financed by a separate account in Program 9. Adoption of this alternative would consolidate the bulk of the studies and analysis program in four RDTE program elements and two or more OMA program elements. Advantages of this alternative are that it facilitates development of budget justification material by largely overcoming the definitional problem mentioned above and it clearly identifies funds for studies and analyses in the budget.

c. Alternative C

(1) The on-line alternatives strongly conform with the Congressional mandate but are more costly than the off-line alternatives in terms of resources expended in development of budget estimates and justification materials. These alternatives provide a mechanism to capture total resource requirements and offer high assurance that resources identified for studies and analyses match those included in the budget.

(2) Adoption of Alternative C1 would overcome the weaknesses pointed out above in the process being followed for preparation of justification material for the FY 80 studies and analysis budget. The advantage to not changing the program structure discussed under Alternative B1 is the same for this alternative (see paragraph G-5b(2) above).

(3) Development of justification material under Alternative C2 would be greatly facilitated when compared to the off-line option. Otherwise, advantages and disadvantages are the same as discussed under Alternative B2 (see paragraph G-5b(3) above).

(4) Development of justification material under Alternative C3 would also be facilitated when compared to the off-line option. Otherwise advantages and disadvantages are the same as discussed under Alternative B3 (see paragraph G-5b(4) above).

d. Alternatives D. In addition to the advantages of the on-line alternative, these alternatives offer a significant advantage in development of justification material and defense of the budget. Establishment of a functional program would provide the capability to exercise continuous control over studies and analysis resources, thus, offsetting a common deficiency of the present approach and other alternatives considered--the study program and the resources required to implement it tend to be snapshots in time that become quickly outdated as new requirements are identified. There are, however, several disadvantages. This alternative would require the most resources to implement. Also, functional programs tend to be unwieldy and are hard to integrate into the other programs they cross. Finally, lines of authority are not clearly defined. Changes to the program structure were also considered under this alternative. Advantages and disadvantages of the options outlined in paragraph G-4d(1)-(3) above were discussed in paragraph G-5c above.

G-6. CONCLUSIONS. a. The Army should take proactive action to improve studies and analysis budget justification and defense.

b. The Army should adopt the criteria derived from Congressional concerns quoted in Table G-1 as a basis for development of improved studies and analysis budget justification materials.

c. The Army should assume an active studies and analysis budget defense posture.

d. Development of justification material as part of the budgetary process, i.e., one of the on-line alternatives offers the best chance to improve studies and analysis budget justification and defense.

e. The magnitude of the Army Studies and Analysis Program and the nature of the concerns expressed by the Congress (while the primary focus is on contract efforts, they clearly desire more detailed information) warrant establishment of a functional studies and analysis program.

f. There is no clear advantage in retaining the HQDA and TRADOC RDTE studies and analysis lines.

g. Alternative D2 should be adopted, i.e., a functional studies and analysis program should be established and the studies program should be further embedded in other FYDP program elements by eliminating the HQDA and TRADOC RDTE studies and analysis lines of the budget. Table G-4 compares the current process and the preferred alternative.

Table G-4. Comparison of Current Process and Preferred Alternative

VARIABLE	CURRENT PROCESS	PREFERRED ALTERNATIVE
INITIATIVE	REACTIVE TO OSD	PROACTIVE ARMY ACTION
CRITERIA FOR JUSTIFICATION MATERIALS	LISTS OF STUDY SUBJECTS EST. CONTRACT COSTS EST. IN-HOUSE RESOURCES IN PHY OF EFFORT	RESOURCES BY PROGRAM ELEMENT, METHOD OF PERFORMANCE, AND STUDY SUBJECT RESULTS OF DOCUMENT SEARCHES REASONS FOR NON COMPETITIVE CONTRACTS HOW RESULTS USED
MECHANICS TO DEVELOP JUSTIFICATION MATERIALS	OFF-LINE, I.E., SEPARATE AND APART FROM BUDGET FORMULATION PROCESS FROM MACOM TO HQDA IN STUDY MGT CHANNELS	ON-LINE, I.E., AN INTEGRAL PART OF BUDGET FORMULATION PROCESS FROM MACOM TO HQDA IN BUDGET FORMULATION CHANNELS
DEFENSE POSTURE	PASSIVE	ACTIVE
FUNCTIONAL PROGRAM	NO	YES
PROGRAM STRUCTURE	FOUR SEPARATE PROGRAM ELEMENTS. REMAINDER EMBEDDED.	TWO SEPARATE PROGRAM ELEMENTS. REMAINDER EMBEDDED.

APPENDIX G
BUDGET STRATEGY
ANNEX I
DETAILED BUDGET DATA

This annex contains detailed data for and Congressional actions on the FY 79 Army Studies and Analysis budget request.

APPENDIX G

BUDGET STRATEGY

ANNEX II

SELECTED FY 79 STUDIES AND ANALYSIS BUDGET JUSTIFICATION MATERIAL

This annex contains a copy of the display on planned FY 79 Army Studies and Analysis Program, by program element, part of TAB C of the "Report to the Senate/House Armed Services Committee on DOD Proposed Studies and Analyses Programs for FY 79," forwarded to the Chairmen of the House and Senate Armed Services Committees by OSD on 3 April 1978.

PLANNED FY 1979 ARMY STUDIES AND ANALYSES
PROGRAM, BY PROGRAM ELEMENT

1. Contract Studies--Studies programmed for completion using the contract method of performance require the use of RDT&E and/or OMA funds.

a. RDT&E Current Estimated Program

<u>Organization</u>	<u>Program Element</u>	<u>Amount</u>
HQDA	65101A	\$ 4,460,000
TRADOC	65102A	2,600,000
DARCOM	62709A	60,000
	63706A	160,000
	65713A	2,768,000
	65801A	80,000
	TOTAL	\$10,128,000

b. OMA Current Estimated Program

<u>Organization</u>	<u>Program Element</u>	<u>Amount</u>
HQDA	951212.9	\$1,000,000
TRADOC	208015	1,050,000
INSCOM	381021	1,625,000
ACC	393111	444,000
DARCOM	Not available at this time	1,096,000
	TOTAL	\$5,215,000

2. In-house studies -- Studies programmed for completion using the in-house method of performance require the use of both military and civilian personnel. No estimate of the actual mix of personnel to be working on a specific study is available; therefore, exact allocation of specific funds/program elements is not available. Military personnel are paid from Military Personnel Army (MPA) funds and civilian personnel are paid using OMA and/or RDTE funds; depending on the funding procedures for the individual headquarters/organization.

<u>Organization</u>	<u>PMY</u>	<u>\$ Equivalent*</u>	<u>Military</u>	<u>Civilian</u>
HQDA Staff	360.66	\$18,033,000	MPA	OMA/952398
TRADOC	575.5	28,775,000	MPA	OMA/819725
ACC	1.0	50,000	MPA	OMA/393111
MTMC	7.5	375,000	MPA	OMA/728010
HSC	11.0	550,000	MPA	OMA/841932
INSCOM	13.0	650,000	MPA	OMA/381021
DARCOM	195.2	9,760,000	MPA	OMA/RDTE(see note)
TOTAL	1163.86	\$58,193,000		

* 1 PMY is equivalent to \$50,000.

NOTE: DARCOM in-house studies require both OMA and RDTE funds to pay for civilian personnel; exact program elements depend on the type of funds supporting the specific headquarters/organization. Information concerning the specific correlation to individual program elements is not available at this time.

APPENDIX G
BUDGET STRATEGY
ANNEX III
RDTE FUNDING OF STUDIES AND ANALYSES

This annex contains a copy of current guidance to HQDA Staff Agencies and MACOMs on use of RDTE funds for studies and analyses.



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON, D.C. 20310

DACS-DMO

31 MAR 1978

SUBJECT: RDTE Funding of Studies and Analyses

SEE DISTRIBUTION

1. DOD Directive 5010.22, dated 22 Nov 76, subject: The Management and Conduct of Studies and Analyses, contained new budget guidance for studies and analyses beginning with FY 79. Basically, the guidance stated that all studies and analyses to be funded from RDTE funds must be in support of R&D projects; if a clear determination of the R&D project to be supported is not possible, then RDTE funding is permitted for organizations that are a part of the R&D community in the military department or R&D Staff headquarters levels. All other studies and analyses will be programed and budgeted in O&M. An extract of that portion of the directive is at Inclosure.
2. In December 1977, the Office of the Army General Counsel ruled that studies and analyses must comply with the DOD guidance beginning with FY 79. Essentially this ruling means that a study RACS must substantiate its direct support of a particular R&D project. If there is any doubt on a study's funding, another recourse is to fund in accordance with the type of headquarters; e.g., an R&D activity could RDTE fund its study. However, that rationale should be included in the RACS.
3. On 2 March 1978, the Study Management Office (SMO) took action to initiate a transfer of FY 79 funds (decrement RDTE funding and increase OMA funding accordingly) for the HQDA agencies and TRADOC -- the two known activities/commands that have studies and analyses line items in the RDTE budget. SMO has also taken action to change funding for HQDA studies and analyses for FY 80 - 84 IAW the DOD directive. TRADOC will have to initiate its own budget changes for their POM years.
4. The DOD directive has received many interpretations concerning funding since its publication. However, the Army General Counsel ruling provides definitive, and somewhat final guidance. Since all study RACS of over \$100,000 require D&Fs, they will receive Army General Counsel scrutiny; HQDA agencies and MACOMs should be prepared for ASA(RDA) disapproval

DACS-DMO

SUBJECT: RDTE Funding of Studies and Analyses

31 MAR 1976

If the RACS do not coincide with the DOD directive as interpreted by the General Counsel. For those studies of \$100,000 or less, such determinations will be made, after the fact in most cases, by procurement inspectors during the conduct of procurement management reviews, and by The Inspector General. To preclude an unfavorable finding of illegal funding, study sponsors should adhere to the guidance of the DOD directive as included herein.

5. It is recommended that study coordinators give this matter widest dissemination within their commands/agencies, especially to command procurement offices.

BY DIRECTION OF THE CHIEF OF STAFF:



F. PAUL DUNN

Chief, Study Management Office
Management Directorate

Incl
as

DISTRIBUTION:

HQDA, DAMO-ZD
HQDA, DAPE-PBR
HQDA, DALO-PLF
HQDA, DAMA-PPM-M
HQDA, DACA-MP
HQDA, DAMI-ZC
HQDA, DAEN-SG
HQDA, DASG-RMP
HQDA, DACH-PPI
HQDA, DAJA-CL
NGB-ARC-M
HQDA, DAAR-RAO

Commander-in-Chief
U.S. Army and Seventh Army (ATTN: AEAGF-P)

Commanders
U.S. Army Training and Doctrine Command (ATTN: ATCD-PRMD)
U.S. Army Forces Command (ATTN: AFOP-DA)
U.S. Army Materiel Development & Readiness Command (ATTN: DRCPA-S)
U.S. Army Communications Command (ATTN: ACC-OPS-P)
Military Traffic Management Command (ATTN: MT-PLO)

DACS-DMO

8 1 MAR 1978

SUBJECT: RDTE Funding of Studies and Analyses

DISTRIBUTION: (Con't)

Commanders

U. S. Army Criminal Investigation Command (ATTN: CIAC-RM)

U. S. Army Military District of Washington (ATTN: ANCOM)

U. S. Army Health Services Command (ATTN: HSA-CDH)

U. S. Army Intelligence & Security Command (ATTN: IACS-P)

U. S. Army Concepts Analysis Agency (ATTN: MOCA-PPO)

CF:

SAUS-OR

SAPA

DACS-BMO

DACS-DIP

DACS-DPA

CSTE-ZS

VIII. PROGRAMING AND BUDGETING PROCEDURES

A. Those studies and analyses that support Research and Development activities, such as research, technology exploration and development, systems and equipment analyses, and development effort including development and test of initial tactics and doctrine will be programed and budgeted in RDT&E. In those cases where a clear determination is not possible based on the above, then the guideline will be to fund such studies and analyses in RDT&E if the sponsoring organization is a part of the R&D community at the ASD level, in the Military Departments, Defense Agencies, or R&D staff headquarters levels. All other studies and analyses will be programed and budgeted in O&M,

B. The annual budget submissions of the DOD Components will include a special analysis of proposed studies programs, regardless of the appropriation in which the study funds are budgeted.

APPENDIX G

BUDGET STRATEGY

ANNEX IV

EXTRACT OF DODM 7110-1-M

This annex contains an extract of DODM 7110-1-M showing the requirement and format for preparation and submission of budget justification material for the studies and analysis program.

2 Incl

1. Part II - Budget Formulation, Section 10 - Special Analysis, Chapter 2B8 - Special Interest Areas, DODM 7110-1-M (p 2B8-11).
2. Format for exhibit PB-21, Studies and Analysis Program, DODM 7110-1-M, (p 2B8-6).

PART II - BUDGET FORMULATION

Section 10 - Special Analyses

Chapter 2B8 - Special Interest Areas

2B8.1 Purpose

This chapter prescribes instructions for the preparation and submission of budget justification back-up data for special areas in which the Congress or OMB has expressed interest. Most of these requirements affect more than a single appropriation.

2B8.2 Submission Requirements

A. Data in the attached exhibit formats are required for the following program areas:

- PB-18 Foreign Currency Exchange Data
- PB-19 Costs of Services Provided by the United States Postal Service
- PB-20 Public Affairs Activities
- PB-21 Studies and Analysis Program
- PB-22 Headquarters Operation and Administration
- PB-23 Service Support Contracts
- PB-24 Aircraft Operations - Active Aircraft Inventory
- PB-25 Aircraft Operations - Aircraft Flying Hours
- PB-26 Aircraft Operations - O&M Funds for POL
- PB-27 Real Property Maintenance Activities
- PB-28 Civilian Employee Training Data
- PB-29 Computation of Per Diem Increase Costs

B. Definitions are to be identical to those used in furnishing data to the Congress during the Fiscal Year 1977 review.

C. Four copies of each exhibit are required with the 30 September submission.

D. Budget justification data concerning Legislative Affairs Activities will be prepared and submitted in accordance with a separate memorandum issued by the OATSD(LA).

STUDIES AND ANALYSIS PROGRAMS
DOD COMPONENT
(\$ in Thousands)

Appropriation

FY 19PY FY 19CY FY 19BY

IN-HOUSE
CONTRACT

A separate exhibit will be prepared for each financing appropriation subdivided by Contractor and In-House effort with a further sub-breakdown by the definitions listed in DOD Directive 5010.22, Subject: "The Management and Conduct of Studies and Analysis." To the extent feasible, individual planned studies by title may be listed under those definitions.

APPENDIX G
BUDGET STRATEGY

ANNEX V

PREPARATION OF BUDGET JUSTIFICATION MATERIALS FOR THE FY 80
STUDIES AND ANALYSIS BUDGET REQUEST

This annex contains copies of guidance to HQDA and MACOM on preparation of budget justification materials for the FY 80 Studies and Analysis Budget request.

2 Incl

1. DACS-DMO Letter, 14 Aug 78, subject: Exhibit PB-21 for Studies and Analyses.
2. DACS-DMO Letter, 18 Aug 78, subject: Preparation of Studies and Analyses for FY 80 Budget Submission.



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON, D.C. 20310

S: 15 September 1978

14 AUG 1978

DACS-DMO

SUBJECT: Exhibit PB 21 for Studies and Analyses

SEE DISTRIBUTION

1. Due to the Congressional interest in DOD studies and analyses, detailed knowledge of AR 5-5 studies' expenditures is required to be submitted with the budget. As a result, the Budget Formulation Guidance, Office of the Comptroller of the Army (OCA), requires the submission of a report entitled: Exhibit PB 21, Special Study Budget Analysis. This report was first required in modified form for the FY79 budget submission.
2. The report is compiled by the Study Management Office, OCSA, and will be provided to OCA by 29 September 1978 for incorporation into the FY80 budget submission. The report consists of 3 sections, one section for each fiscal year: previous FY(FY78), present FY (FY79), and budget FY(FY80). The data provided will consist of the number of studies in progress for the previous fiscal year or planned for the present and budget FY, and the resources (OMA or RDTE funds and professional manyears (PMY)) used or planned to be used for each category of studies. Since the report is due as of 30 Sep 78 (the end of FY78), data for the last few days of the fiscal year will have to be estimated. The format of each section is at Incl 1 and special instructions are at Incl 2.
3. Request that the study coordinator of each HQDA Staff agency and MACOM provide the required information to this office NLT 15 Sep 78. POC is LTC LeClere, AVN 227-0026. Telephonic reports will be accepted; negative reports are required.

BY DIRECTION OF THE CHIEF OF STAFF:

2 Incls
as


F. PAUL DUNN

G-27 Chief, Study Management Office
Management Directorate

DACS-DMO

SUBJECT: Exhibit PB 21 for Studies and Analyses

DISTRIBUTION:

HQDA, DAMO-ZD
HQDA, DAPE-PBR
HQDA, DALO-PLF
HQDA, DAMA-PPM-M
HQDA, DACA-MP
HQDA, DAMI-ZC
HQDA, DAEN-ESC
HQDA, DASG-RMP
HQDA, DACH-PPI
HQDA, DAJA-CL
NGB-ARC-M
HQDA, DAAR-RAO
HQDA, DAAG-PLN

COMMANDER-IN-CHIEF

US ARMY EUROPE & SEVENTH ARMY (ATTN: AEAGF-P)

COMMANDERS

U. S. ARMY TRAINING & DOCTRINE COMMAND (ATTN: ATCD-PRMD)
U. S. ARMY FORCES COMMAND (ATTN: AFOP-CD)
U. S. ARMY MATERIEL DEVELOPMENT & READINESS COMMAND
(ATTN: DRCPA-S)
U. S. ARMY COMMUNICATIONS COMMAND (ATTN ACC-OPS-P)
MILITARY TRAFFIC MANAGEMENT COMMAND (ATTN: MT-PLO)
U. S. ARMY CRIMINAL INVESTIGATION COMMAND (ATTN: CIAC-RM)
U. S. ARMY MILITARY DISTRICT OF WASHINGTON (ATTN: ANCOM)
U. S. ARMY HEALTH SERVICES COMMAND (ATTN: HSA-CDC)
U. S. ARMY INTELLIGENCE & SECURITY COMMAND (IACS-P)

CF:

SAUS-OR
SAPA
DACS-BMO
CSTE-ZS
DACS-DI
DACS-DP

**EXHIBIT PB 21
STUDIES AND ANALYSES PROGRAM**

(MACOM or HQDA Staff Agency)

Category	FY	Number of Studies		Prepared by (Name, Ofc Symbol, Telephone number)	Resources		
		Ongoing	New In-House		Contract	OMA RDTE (\$000) (\$000)	
1. Manpower and Personnel							
2. Concepts and Plans							
3. Operations and Force Structure							
4. Installations and Logistics							
5. Science, Technology, Systems and Equipment							
6. Management							
7. Intelligence							
8. International Security							
9. NATO Interoperability							
TOTAL							

Incl 1

INSTRUCTION FOR EXHIBIT PB 21

1. Provided data should apply to studies and analyses accomplished within the authority or guidance of AR 5-5.
2. A separate report should be submitted for FY78 (previous FY), FY79 (present FY), and FY80 (budget FY).
3. Identify the HQDA Staff agency or MACOM on each submission.
4. Provide the name, office symbol, and AUTOVON number of the individual preparing the report.
5. The data must be reported by one of the study categories listed on the format.
6. Provide the number of "ongoing" studies from the previous fiscal year. The number of "new" studies consists of those started in the fiscal year of each report.
7. In-house studies are those accomplished by the study organization or another DOD organization where there is no use of funds or where no transfer of funds was or will be initiated to specifically do the study. If there is an expenditure of funds for outside contractor support or funds were/will be transferred to another DOD activity for the study, the study must be counted as a contract effort.
8. For FY79 and FY80, ongoing studies include those that were started in FY78 or FY79, respectively; e.g., a study to be started in FY79 and not to be completed until FY80, will be listed under the FY79 submission as a new study and under FY80 as an ongoing effort.
9. Resource requirements should be listed as those OMA or RDTE funds and professional manyears (PMY) that will be expended in the specific fiscal year. PMY should only be listed for in-house studies. If a study is to be accomplished by both contract and in-house efforts, it should be listed, or counted, as 2 separate studies.
10. Funds will be listed in thousands; "\$200,000" will be listed as "200." PMY will be listed by actual number.

11. NATO Interoperability is a new study category beginning with FY79.

12. The use of RDTE funds for studies and analyses will be quite restrictive beginning with FY79. Study coordinators should check HQDA letter, DACS-DMO, dated 31 Mar 78, subject: RDTE Funding for Studies and Analyses. Thus, there should be a significant shift from RDTE funding to OMA funding for non-RDTE funded commands.



DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF STAFF
WASHINGTON, D.C. 20315

S: 9 October 1978

DACS-DMO

18 AUG 1978

SUBJECT: Preparation of Studies and Analyses for FY80 Budget
Submission

SEE DISTRIBUTION

1. HQDA is presently required to provide a list of AR 5-5 contract and in-house studies with the yearly budget request. This is a significant departure from previous budget submissions -- specific sums were requested without providing the details of the planned studies. Congressional markups indicate that funds will not be provided unless more definitive information on each study is made available to the committees.

2. The Study Management Office (SMO) will prepare the FY80 document based on input from the HQDA Staff agencies and MACOMs. Three study lists for FY80 are required: RDTE contract studies, OMA contract studies, and in-house studies. The RDTE contract study report is required from HQDA Staff agencies, TRADOC, and DARGOM; the remaining two reports apply to all Staff agencies and MACOMs. Sample format with preparation instructions for contract studies is at Incl 1 and for in-house studies is at Incl 2. Submissions should not contain any classified information.

3. POC is LTC LeClerc, AVN 227-0026. Request that the required information be provided to this office NLT 9 October 1978.

BY DIRECTION OF THE CHIEF OF STAFF:

F. PAUL DUNN
Chief, Study Management Office
Management Directorate

Incls
as

DISTRIBUTION:
HQDA, DAMO-2A
HQDA, DAPE-2A
HQDA, DALO-2A
HQDA, DAMA-2A
HQDA, DACA-2A
HQDA, DAMI-2A
HQDA, DAEN-2A

G-32

18 AUG 1978

DACS-DMO

SUBJECT: Preparation of Studies and Analyses for FY80 Budget
Submission

DISTRIBUTION (con't)

HQDA, DASG-ZA

HQDA, DACH-ZA

HQDA, DAJA-ZA

NGB-ZA

HQDA, DAAR-ZA

HQDA, DAAG-ZA

Commander-In-Chief

U. S. Army Europe & Seventh Army, ATTN:

Commanders

U. S. Army Training and Doctrine Command

U. S. Army Forces Command

U. S. Army Materiel Readiness & Development Command

U. S. Army Communications Command

Military Traffic Management Command

U. S. Army Criminal Investigation Command

U. S. Army Military District of Washington

U. S. Army Health Services Command

U. S. Army Intelligence & Security Command

U. S. Army Concepts Analysis Agency

CF:

SAUS-OR

SAPA

DACS-BMZ-A

CSTE-ZA

DACS-DIZ-A

DACS-DPZ-A

SAMPLE FORMAT
FY80 RDTE CONTRACT STUDIES
TRADOC

(HQDA Staff agency or MACOM)

1. Title: Electronic Warfare (EW) Vulnerability Assessment of Theater Nuclear Forces (TNF) (Category 3)

a. Problem: It is necessary to determine the capability of theater nuclear forces (Corps level and below) to accomplish their missions in a hostile electronic warfare environment and to develop appropriate courses of action that would neutralize this threat.

b. Expected Results: The development of an electronic warfare threat data base to formulate and evaluate potential electronic warfare defense improvements.

c. Expected Cost: \$50,000.

2. Title: Radiological Defense for Theater Nuclear Force Survivability (Category 5)

a. Problem: To determine the capability and adequacy of radiation protection of an Army division to operate on a nuclear battlefield with respect to the current and potential enemy nuclear threat. The last evaluation was accomplished over 20 years ago.

b. Expected Results: A valid assessment of radiological detection equipment, protection materials, doctrine and training required to effectively operate in a nuclear environment.

c. Expected Cost: \$75,000; completion of FY79 funded effort.

3.

4.

NOTES:

1. Study category should be listed after the title.
2. RDTE funded studies must be in direct support of an R&D project.

Incl 1

Some commands that are RDTE funded can support studies with RDTE funds. It is suggested that HQDA letter, DACS-DMO, dated 31 Mar 78, subject: RDTE Funding for Studies and Analyses, be referred to for further guidance.

3. Studies should be listed in priority of funding importance.
4. It is suggested that studies that are incrementally funded -- to be partially funded in FY79 and FY80 -- be noted in subparagraph c of each listed study as "completion of FY79 funded effort."
5. Problem and expected results statements should be clear, concise, and easily understood by disinterested individuals that may not have an intimate knowledge of the subject area.
6. OMA funded studies should be listed on a separate submission; ensure title reflects "FY80 OMA contract studies."
7. Study descriptions should be written to exclude classified information. The submissions pertaining to contract studies will be controlled as "FOR OFFICIAL USE ONLY" because they are contractor sensitive.
8. The RDTE contract study report is required from HQDA Staff agencies, TRADOC and DARCOM.

SAMPLE FORMAT
 FY80 ARMY IN-HOUSE STUDIES
ODCSOPS
 (HQDA Staff agency or MACOM)

CATEGORY 1

<u>TITLE</u>	<u>PMY</u>
1. Association Between Skill Qualification Test (SQT) and External Job Performance Indicators	0.50
2. Medium Lift Helicopter Cost and Training Effectiveness Analysis	1.50
3. Remotely Monitored Battlefield Sensor System -- Cost and Training Effectiveness Analysis	2.50

CATEGORY 2

1. Army Battlefield Interface Concept on the Corps Battlefield	1.00
*2. Army Command and Control Master Plan	18.00
3. Concept Formulation Package for the Advanced Scout Helicopter	25.80
4. Concepts of Employment of Aviation Against Enemy Air Mobile Assault to the Rear	6.00
5. Corps Communication Support Requirements	4.00
6. Countering Armed Helicopters	2.00

CATEGORY 3 (Etc.)

NOTES:

1. In-house studies should be listed by categories as defined in AR 5-5.

Incls

2. Only title and professional manyears (PMY) required to accomplish the study must be listed.
3. If a study is both a contract and an in-house effort, place an asterisk to the left of the number of the study.
4. Study descriptions should be written to exclude classified information.

APPENDIX H

CONTRACT SUPPORT OF ARMY ANALYSIS

H-1. PURPOSE. This appendix examines the Army's use of contract studies and analyses to see if changes in the in/out-house balance of study effort are warranted or desirable. A corollary purpose is to compare the manner in which contract studies currently are obtained with some alternate ways.

H-2. OBJECTIVES. a. Evaluation of the current balance of in/out-house analyses to determine if a shift in the balance would be advantageous to the Army.

b. Identification of alternative ways for obtaining contract support of studies and analyses.

c. Description of the alternatives and their respective features in sufficient detail to permit assessment of their relative merits.

H-3. THE IN-HOUSE/OUT-OF-HOUSE BALANCE. a. Perceptions. There are no established criteria for determining the in/out-house balance of study effort which will serve the Army best. There are, however, two sources of information which can be helpful in evaluating the balance. One source is the assorted historical data showing the trends and levels of in/out mixes for the Army and for other sponsors of studies and analyses. The other source is the collected opinions and judgments of those with broad personal experience, both in performing and in sponsoring studies and analyses. The opinions of several dozen senior officials were solicited by interview. Their perceptions have been organized to provide institutional viewpoints.

(1) OSD. Officials ranging in position from Assistant Secretaries through Division Chiefs indicated a strong consensus that the Army has an in/out imbalance, and that a greater share of work should be performed out-of-house. Most of the officials readily endorsed Federal Contract Research Centers (FCRC) as a good way to expand the out-of-house fraction, but pointed out that other contractual arrangements would also work.

(2) Army Secretariat. Officials at the ASA and Deputy ASA level) divided about evenly with part holding no strong opinion on the subject, and the others supporting more out-of-house in general and FCRCs in particular.

(3) Army Staff. Most officials interviewed reflected no strong feelings either way or no opinion at all. It should be noted, though, that much of the Army Staff has a limited historical perspective on the in/out-house question.

b. Fact. A major portion of Army study activity is performed by the six or seven most prominent analytical agencies. There is an internally consistent body of data spanning the past decade (1969-1978) which provides a good profile of the 10-year trends for both in-house and out-of-house levels of effort. Note, however, that the data are for a set of activities similar but not identical to those on which data were collected during the review and here the levels of effort shown differ from the survey data.

(1) In-House. In spite of major reorganizations in 1973 and 1974, the level of effort, as measured by the number of in-house professionals, has been highly stable--growing at an average rate of one percent per year. The organizations and their professional strengths are tabulated below for FY 1969 and FY 1978.

1969		1978	
ACTIVITY	NO.	ACTIVITY	NO.
COMBAT DEV. CMD (SAG, ILC and elements of INCS Group)	445	TRADOC (TRASANA) elements of CACDA)	393
AMSAA	196	AMSAA	335
LEA	153	LEA	119
STAG	98	CAA	215
ESC	68	ESC	53
SSI	30	SSI	39
HQDA	63	HQDA	26
	1,053		1,180

More noteworthy than the overall growth of about 10 percent is the shift in the mix of military and civilian professionals. In 1969 the military numbered 465 (44.2%). By 1978 the military component was reduced to 360 (30.0%).

(2) Out-of-House. In contrast to the modest growth of in-house resources, the out-of-house portion of the mix has diminished continuously and sharply over the same period. There has been a compound reduction consisting of cuts in the budget for contract studies, and continuing erosion in the dollar's professional man-year (PMY) purchasing power. This is shown in Table H-1 and Figure H-1.

Table H-1. Contract Study Effort

	AMT (\$MIL)	AVE. PMY ^a COST (\$THOUS)	EQUIV. PMY	% OF TOTAL PMY
FY 69	27.6	44	627	37
70	19.3	47	411	28
71	17.5	51	343	20
72	15.2	53	287	18
73	14.3	57	250	20
74	15.0	60	250	20
75	13.7	65	211	16
76	9.8	68	144	12
77	7.5	71	106	08
78	8.7	75	116	09

^aEstimated PMY cost data based on Army Contract Work Program experience and checked with HDL.

As shown, the out-of-house component of the in/out balance has slipped from 37 percent of the total in FY 69 to less than 10 percent currently. On its own scale, the drop from 627 to 116 contractor PMYs is a reduction of over 80 percent in the level of contractor study activity.

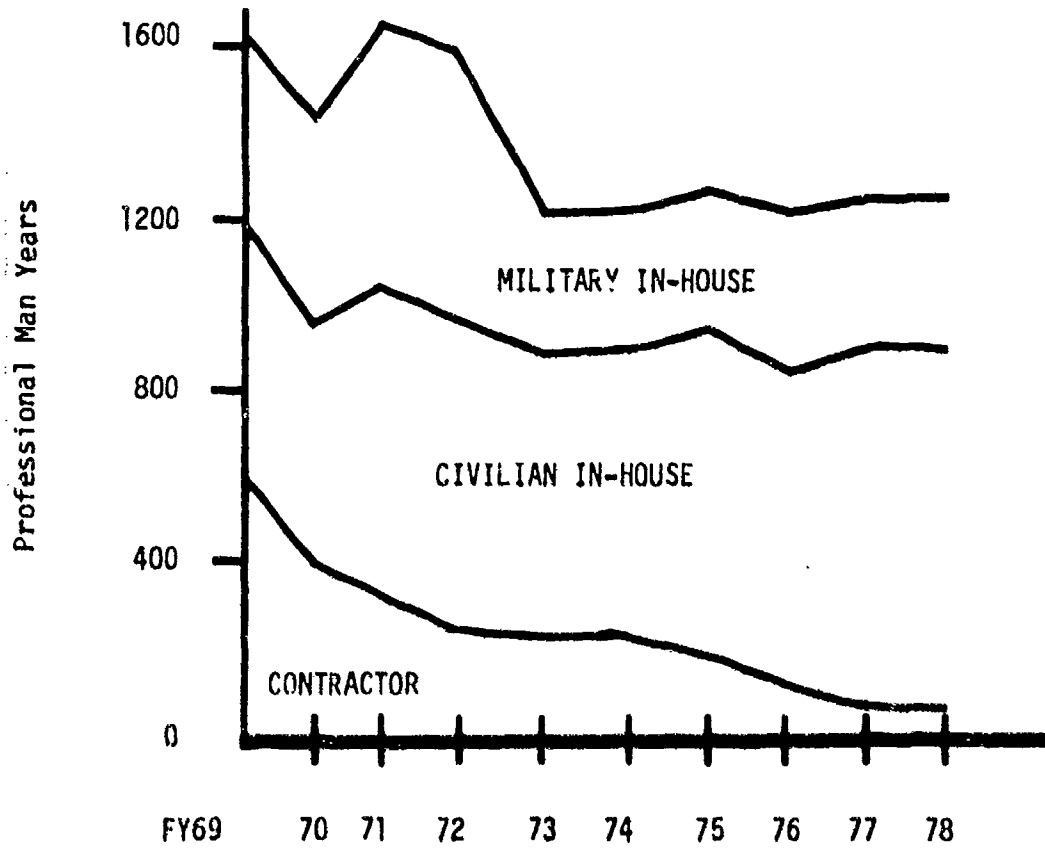


Figure H-1. Profile of PMY Mix

(3) Planned In/Out Balance for FY 1979. Elsewhere in this report are data detailing two different projections for Army studies in FY 79. The in-house/out-of-house mix from each is highlighted here to permit comparison of Army proposals with the historical trendline.

(a) Appendix G, Annex II contains a display of the Army's planned FY 79 studies and analysis program. The program described in the display is consistent with the scope of AR 5-5 and the data shown earlier. The projected level of in-house performance is 1,164 PMY. The planned level of funding for contract studies is \$4,873M. At an estimated \$80,000/PMY for FY 79, this amounts to about 61 PMY by contractors, and a mix of 95 percent in-house, 5 percent out-of-house.

(b) Annex I of Appendix D details information obtained from an Army-wide survey of plans for FY 79 studies and analyses. The survey, conducted in August 1978, allowed a broader assortment of activities under "Study and Analysis" than is usual under AR 5-5. As a result, the planned out-of-house work amounted to \$29.6M. Major components of this sum were \$4.5M for HQDA, \$4.5M for TRADOC, \$6.5M for DARCOM (mostly for Battlefield Systems Integration), and \$12.3M for a wide assortment of consulting agreements, management support contracts, and studies sponsored by other Army activities. The same broader definition of studies and analyses also expanded the measurement of in-house effort by more than 100 percent. Activities contributing to the expanded in-house count included DAPCOM BSI, part of the Ballistics Research Laboratory, and the Army Research Institute. The projected in/out balance of this survey data is 83 percent in-house, 17 percent contract.

c. Assessment of In/Out Balance

(1) In spite of the Army's planning factors of 14 to 17 percent for out-of-house work in FY 79, the Congress has cut study funds to the extent that contract effort will reach record lows, well below FY 78's 9 percent share of the total study and analysis program.

(2) The historical profile shows the out-of-house fraction coming down from an era of 30-40 percent contractor effort a decade ago to less than 10 percent currently. Midway, there was a four-year period when the out-of-house share stabilized at around 20 percent.

(3) This shift in the out-of-house share of the study effort should be appreciated not only as a change in mix or balance, but

also should be recognized as a significant quantitative cut. While in-house strength was growing by 127, the contractor PMY contribution decreased by over 500.

(4) Navy and Air Force Staff officials continue sponsoring FCRCs and express their satisfaction with overall contractor efforts of more than 50 percent of their study programs.

(5) The qualitative advantages typically associated with contractor efforts include:

(a) Responsiveness--capability to react quickly and to address urgent issues promptly.

(b) Innovation--capability to suggest new approaches to long term challenges.

(c) Hard-to-get skills--provide for contributions from, or access to, diversified skills and outstanding specialists in specific fields.

(d) Independent views--free from bias and less susceptible to pressures.

(6) In view of the drastic reduction in contractor effort in recent years, and the judgment and perceptions of both Defense officials and other services, it is apparent that the in-house/out-of-house ratio has become imbalanced. The out-of-house portion should be increased.

H-4. METHODS FOR OBTAINING CONTRACT SUPPORT. a. Current Procedures

(1) The current procedure for obtaining contract studies is characterized by decentralized program development with execution on a contract-by-contract basis.

(2) Ideally, the studies should be programmed and budgeted well in advance by the HQDA agencies and MACOMs (budget year and first outyear draft study programs must be submitted five months before start of budget year). Unprogramed studies may be initiated later if resources can be identified.

(3) To begin a contract study the prospective sponsor must:

(a) Establish the need for the study.

(b) Coordinate the requirement among interested agencies and MACOMs.

(c) Determine and validate the non-availability of in-house resources to perform the study.

(d) Prepare and obtain approval of the Request for Approval of Contract Support (RACS).

(e) Prepare and obtain approval of the Determination and Findings (D&F) if the contract will be an RDT&E negotiated procurement of \$100,000 or more.

(f) Prepare a Request for Proposal (RFP) package for use by a contracting office to solicit proposals.

(g) Perform technical evaluation of proposals and award contract.

(4) According to the HDL Procurement Office, the nominal elapsed time to accomplish the above actions is close to 30 weeks. This time period provides about 4 weeks for the bidders to prepare their proposals, but accounts for none of the time prior to preparation of the RACS. A sole source award should take about 5 weeks less than a competitive procurement. A contract for less than \$100,000 should save another 9 weeks. In practice, the full process has stretched out to an average of 45 weeks when pursued on a routine basis (based on a sample of 10 recent contract study awards).

(5) Given these mandated procedural steps and the time to perform them, it may be of interest to identify the dimension of the typical study contract effort obtained as a result. An August 1976 ESG report, "Results and Use of Army Studies," identified 157 contract studies initiated during FY 74 and FY 75. The average cost was \$248,000. At PMY costs for those years (see Table H-1) the average study contract secured 4.0 PMY of effort. A group of 26 study contracts in FY 78 averaged \$282,000, or about 3.75 PMY at current rates. With the typical distribution about this average it is obvious that many contracts represent very modest levels of professional activity. These data illustrate trends in study activity from still another perspective. As recently as FY 74-75 new study contracts were initiated at a rate of 75-80 per year. The effects of inflation and budget cuts are only moderately reflected in study contract manpower levels, but instead are largely accounted for by a reduction of new study contracts to only 30-35 per year.

(6) The current method for obtaining study contracts has many difficulties. Potential sponsors of contract studies, aware of the red tape and time delays, tend to either seize sole source

options that exist or they are dissuaded altogether from initiating some of the study contracts that would be helpful to them. Furthermore, when the contract study process is undertaken it is usually done inefficiently because the responsible action officer is going through the procedure for the first time. Under most circumstances the experience he gains is then almost never applied to a second study contract.

b. Current System Improved

(1) A logical and straightforward alternative to the current procedure is to search for ways to facilitate the process of making study contract awards quicker and simpler. Actions identified to expedite HQDA study contracts include:

(a) Process contracts through Defense Supply Service - Washington (DSS-W) in place of HDL. Collocation of HQDA and DSS-W promises more expeditious processing. This will, in fact, be done beginning FY 79.

(b) Convert from RDT&E to OMA funding for the bulk of the study program. This will also allow the Army to comply with stricter interpretation by the General Counsel on the use of RDT&E funds.

(c) Keep contracts small and tidy. Avoid the complicated, the interconnected or the very large efforts when packaging the study.

(d) Refuse to accept routine processing times. Expedite through handcarrying all documents, and maintain sponsor pressure throughout.

(2) These actions and others will be recommended very soon in correspondence from both the ASA (RDA) and the Director of the Army Staff. Both offices have the objectives of reducing the time to make study contract awards, and of increasing the ratio of competitive to sole source awards.

c. The OMNIBUS Contract

(1) "OMNIBUS" describes a contractual arrangement whereby the sponsor (Army Command or Agency) can have multiple study tasks performed by a single contractor without repeating the contracting process for each study. Features of the OMNIBUS type contract include:

(a) Selection of contractor by competitive award.

(b) Initial contract performance period of one year (for example) with government retaining options to renew for two additional years.

(c) Contract imposes an upper limit on annual contract spending, but gives contractor no minimum guarantee.

(d) Study tasks still require sponsor's work statement, and are individually negotiated to establish performance period and level of effort.

(e) The individual study efforts may all be in a single area of study, or may cover several related areas (e.g., combined arms studies).

(2) The OMNIBUS contract can appear very attractive to a sponsor in need of help because of the advantages it offers:

(a) Shortens the contracting process significantly for individual study tasks.

(b) Similarly, paperwork requirements are greatly reduced. (One "class D&F" and one RFP does all.)

(c) Sponsor obtains dedicated talent and precommitted effort in support of his study program.

(d) The contractor works as an extension of the Army sponsor. His work on multiple study projects can be redirected with little effort to satisfy changing priorities.

(3) Experience has taught that OMNIBUS contracts carry several actual or potential problems.

(a) Decreased management control and greater administrative complexity characterize the OMNIBUS contract. The smaller study projects do not get HQDA review as they might when proposed for an individual contract effort. The multiplicity of Contracting Officers' Representatives (CORs) (usually a different COR for each task) can seriously complicate the required liaison between the Army contracting office and the contractor. The administration involved in monitoring payments under an OMNIBUS arrangement is extremely difficult.

(b) The contractor's capacity for quick reaction can easily be overtaxed. The sponsor finds that it is a useful capability and then begins to impose more demands for urgent responses than can be handled.

(c) The arrangement gives the appearance of a scheme to provide continuing study efforts to a favored contractor. The contractor is often provided office space within the sponsor's organization, and his personnel can learn much about the Army's methods and study needs from both the day-to-day contacts and the opportunities for "official" visits and travel. Through this superior knowledge, the contractor is perceived as having an advantage in bidding for other contracts and for renewal of the OMNIBUS contract. Other contractors resent this advantage and complain to the authorities.

(d) Under the multiyear OMNIBUS contract, the contractor's personnel tend to gain seniority over the sponsor's. This leads to increased influence to the point where the contractor can take over the momentum for creativity in one sponsoring organization's study program.

(4) The Army's most prominent OMNIBUS arrangement has been at Ft. Leavenworth, where CACDA and its predecessor agencies were supported by a series of contractors throughout most of the 1960s and 1970s. The last competitive award was made in mid-1973. After three annual renewals the contract was allowed to expire. The Army contracting office (HDL) applied much of the pressure for terminating the OMNIBUS arrangement.

(5) Even with today's reduced contract study funding, an OMNIBUS contract similar to the Ft. Leavenworth program would account for only a small share of the total program. A review of that contract for FY 74 and 75 shows that new study tasks were assigned at an average rate of one per month, and that they averaged about \$100,000 each while ranging from \$9,000 to \$300,000. At these levels, adoption of one (or even two) such OMNIBUS contracts would mean a mixture of the current system and OMNIBUS, with the bulk of the study program still handled under the contract-by-contract process.

d. A New Army FCRC. Another alternative to the current process would be to establish a new (Study and Analysis) FCRC under Army sponsorship.

(1) FCRCs are sponsored by agencies' because of the need for.

(a) Objectivity and freedom from conflicts of interest.

(b) Intimate familiarity with the sponsoring agencies activities and needs.

(c) A high degree of expertise and interdisciplinary capability.

(d) A capacity to provide a quick response to the sponsor's needs.

(2) FCRCs typically have a special interdependent and continuing relationship (usually five years or more) with the sponsoring agency.

(3) The Army terminated its FCRC relationship with Research Analysis Corp (RAC) in 1972, after nearly a quarter of a century of sponsoring RAC (1961-72) and its predecessor, the Johns Hopkins University Operations Research Office (ORO) (1948-61). Termination occurred for a combination of reasons, including:

(a) Congressional cuts in funding with resultant reductions in RAC staff.

(b) Army's announced intention to build up in-house capability to handle 50 percent of work performed by RAC.

(c) Industrial pressure to spread study contracts to outside contractors.

(4) An FCRC contractor must be a certain size in order to address the full scope of problems encountered by its sponsor. OSD estimates that 40 to 50 dedicated professionals would be the minimum size that could perform an FCRC role for a major headquarters organization. In the mid-1960s the Army's RAC work program amounted to 250 PMY/year, and represented about 30 percent of the out-of-house effort at the time. A minimum size FCRC of 50 professionals currently would cost roughly \$4.0 million/year.

(5) In order to adopt this FCRC alternative, the Army would have to accomplish the following:

(a) Develop justification that the FCRC is needed because neither the private sector (other than an FCRC) nor in-house facilities can meet its requirements.

(b) Convince OSD, OMB and Congress of the validity of the proposal.

(c) Locate and successfully negotiate with a suitable administrator (preferably, university or other non-profit) who can demonstrate a potential ability to fulfill the Army's requirements.

e. Existing FCRCs. A seemingly plausible and simpler idea than establishing a new FCRC would be to use existing DOD sponsored FCRCs to perform a portion of the Army's study program.

(1) A similar practice is well established, with the FCRC System Engineering Centers and Laboratories supporting selected Army programs. These are typically hardware related programs such as operation of the Kwajalian Missile Range, and other elements of the Ballistic Missile Defense (BMD) program. The proposed FY 79 use of these FCRC accounts is as follows:

FCRC	\$(THOUS)
Aerospace	2,850
MITRE	4,600
Lincoln Laboratory	13,760
Army Total	\$21,210

The Army is responsible for funding this FCRC work within its own budget. Other examples of this type of work include system engineering of NATO communications and the extensive evaluation in the field of PERSHING survivability.

(2) The possibility of adopting a similar arrangement to permit Army use of the existing Study and Analysis FCRCs was reviewed with OSD. The possibility of accomplishing this is not considered good either by OSD authorities or by the HQDA (ODCSRDA) liaison to Defense R&E. Some of the major reasons:

(a) Army would have to gain appropriation for increased study and analysis activity.

(b) FCRCs (S&A) would need to have their ceilings lifted or the sponsors would have to agree to give up a share of their FCRC support. The latter seems unlikely since all have been severely reduced in recent years.

(c) The experience and background of the surviving FCRCs is not well matched to the problems and challenges in the Army study program.

H-5. FINDINGS. a. The In/Out-House Balance. The statistics of the past decade show a 10 percent gain for the Army's in-house analytical effort, and an 80 percent reduction in amount of contract support. The combined effect of these changes has been a

shift from an out-of-house share of more than 30 percent of the total study effort to less than 10 percent currently. This drastic shift from an historical balance that seemed to work well could, alone, support the view that the in/out-house ratio has become imbalanced. When this view is combined with the consensus of perceptions throughout DOD that there is too little contractor effort on Army studies and other considerations, the argument to change the current balance is enhanced. The remedy would be to restore some of the more than 500 professional man-years of contractor support that have been lost to the Army's annual contractor study effort since 1969.

b. Assessment of Contract Support Alternatives

(1) The current method for obtaining contract support is characterized by excessive time spent in making a contract award, and by a commonly perceived inefficiency in terms of the amount of effort required for documentation and staff work in contrast to the amount of contractor effort obtained. Improvements to the current system are clearly worthwhile under any circumstances, and all of the ideas for expediting the process deserve serious consideration.

(2) The Army could enter into an OMNIBUS type contract whenever it feels the advantages outweigh the disadvantages. However, if it were patterned after the recent Ft. Leavenworth arrangement, it would still be only a small part of the total program which would be largely unchanged from the current system.

(3) An attractive option to the Army for enhancing the responsiveness, quality and effectiveness of contract support would be the establishment of a new Army-sponsored analytical FCRC. Some of the more important considerations of the FCRC alternative are noted below.

(a) The Army is alone in not sponsoring a study and analysis FCRC. The Navy, Air Force, and OSD continue their dedicated FCRC arrangements, all at a level of 100 to 150 PMY. FCRCs are still well regarded in the technical community. In 1976 the Defense Science Board reviewed FCRCs (again) and endorsed their continued use by DOD and the Services. Also in 1976 the DDR&E argued strongly that the Army needed an FCRC. Clearly, many OSD officials still agree.

(b) There will be Congressional difficulties with starting a new FCRC. Uncertain year-to-year funding is one potential problem. Beyond that, Congress has been critical of FCRCs for some years and has consistently sought funding cuts to limit what some

regard as unwarranted growth, excessive salaries and fringe benefits, and high corporate costs.

(c) An even earlier obstacle to establishing a new FCRC could be the general policies of the Government on Research and Development Acquisitions. A draft OMB policy document, based on the National Science, Engineering and Technology Policy Act of 1976 (Public Law 94-282), and intended to be used in conjunction with OMB Circular No. A-109 proposes the following policy guidelines:

"Agencies will carefully consider other alternatives before establishing an FCRC. Preferred alternatives for obtaining support of agency requirements will be considered in the following order:

(1) Use of the private sector, including nonprofit organizations, other than FCRCs.

(2) Use of in-house agency capability or existing FCRCs.

(3) Establishment of a new FCRC."

(d) It has been seventeen years since the last time a DOD-sponsored FCRC was established.

(4) Use of existing study and analysis FCRCs would be severely hampered by the limitations on total programs (ceilings).

APPENDIX I

ANALYSIS OF ARMY MANPOWER/PERSONNEL STUDIES CAPABILITY

I-1. APPROACH. a. The approach to this analysis of manpower and personnel studies was essentially subjective. The types and sources of information were:

(1) Notes of interviews with members of Office, Assistant Secretary of the Army (Manpower and Reserve Affairs) and Office, Assistant Secretary of Defense (Manpower, Reserve Affairs and Logistics) made by the Study Group leaders.

(2) Interviews with members of Office, Assistant Secretary of the Army (M&RA), the Office, Deputy Chief of Staff for Personnel (ODCSPER), Headquarters, Department of the Army, and Directorate of Program Analysis and Evaluation (DPA&E), Office, Chief of Staff of the Army.

(3) Responses to the Study Group survey of the Army study and analysis community.

(4) Agency briefings to and discussions with the Study Group.

(5) Study Group members' personal knowledge of the operation of the ODCSPER study program and the program of the Army Research Institute for the Behavioral and Social Sciences (ARI).

b. The examination of manpower/personnel analytical capability began with a perception based on a(1) above, to the effect that existing capabilities and processes were inadequate to meet Army needs and requirements. It is the purpose of this appendix to describe current capabilities and procedures for analyses in the manpower/personnel area and to comment upon perceived deficiencies and omissions therein.

I-2. BACKGROUND. The ODCSPER has not had an in-house studies and analysis capability since the abolition of the Directorate of Personnel Studies and Research in December 1969. Following the disestablishment of that capability, the ODCSPER approach to studies and analyses was to embed the capability within each internal organizational element as required to perform the normal staff function of the element. In short, studies and analyses were viewed as an integral and continuing part of staff action rather than as intermittent external support. Studies of broader or more long-range issues were handled as normal staff actions, through ad hoc

Study Groups or through other mechanisms generally available outside ODCSPER. A small studies office continued to handle the ODCSPER portion of the Army Study System and feed ODCSPER requirements into that system. To that office in 1974 was added staff monitorship of the personnel and training research and development program conducted by the Army Research Institute for the Behavioral and Social Sciences (ARI).

I-3. CURRENT CAPABILITIES. a. At DA Headquarters level, requirements for manpower and/or personnel studies are most frequently generated from within Office, Deputy Chief of Staff for Personnel (ODCSPER) or are levied on ODCSPER. Depending upon the subject, expertise required, and time available, ODCSPER undertakes those matters that cannot be handled as normal staff actions in one of the following ways:

(1) Ad Hoc Study Group. A group of officers and/or civilians from appropriate sections of ODCSPER are assigned full- or part-time to address the problem. The study group is usually given tasking authority in order to get needed input from elements of ODCSPER and from field operating agencies. A completion date, usually short term, is assigned.

(2) Other Army Agencies. A study of large scope and short duration, requiring a sizeable number of people for a brief period, may be farmed out to TRADOC. If the subject is other than training, the resources of the Army Administration Center (ADMINCEN) are likely to be called upon. If the subject is training, the study will most likely be assigned to a TRADOC school. These elements are not included within the survey of Army analytical capabilities discussed earlier in this report. For study and analysis requirements not appropriate to the TRADOC mission, an effort is made to have another Army agency conduct the work. The Concepts Analysis Agency (CAA), the Engineer Study Center (ESC), and the Army War College have conducted studies for ODCSPER.

(3) Contract Study. If the required study resources exceed those available from within ODCSPER and time permits, those study requirements not referred to another Army agency are submitted under the provisions of AR 5-5 as candidates for the Army contract studies program.

b. Field Operating Agencies. Conforming to the practice of embedding analytical capability within functional elements, both the Military Personnel Center (MILPERCEN) and the US Army Recruiting Command (USAREC), Field Operating Agencies of ODCSPER, contain analysis elements in support of their mission and functions. These elements are included within the survey of Army analytical capabilities discussed earlier in this report.

c. Research and Development. If the problem or analytical requirement includes a sizeable demand for behavioral science expertise, human performance data, or an experimental approach, the effort may be included within the research and development program of ARI. In addition, ARI frequently and routinely furnishes scientific and technical support to Army and OSD staff, special study groups, and to Army field activities. The ARI is also included within the survey discussed earlier in this report.

I-4. DISCUSSION. a. Current Capabilities. The interviews within ODCSPER indicated no great groundswell of dissatisfaction with existing analysis capabilities and procedures. Areas for improvement were recognized and are discussed later in this section. The estimated level of ODCSPER study effort under AR 5-5 for the last five years shows the following pattern:

FY	In-house (PMY)	Contract (\$K)
74	54.2	1,012.6
75	47.1	1,285.2
76	117.8	449.9
77	24.1	403.3
78	29.5	438.0

The practice of embedding the analytical capability within the ODCSPER internal staff elements has the advantage of putting highly experienced analysts close to the real problems. Furthermore, they are in position to immediately apply analytical findings to operational problems. The practice has the disadvantage of fragmenting analytical capability, leaving no capability to address broader issues cutting across several functional areas. Successive staff reductions have hastened the well-known process by which operational urgency overcomes concern for future problems. The result is that the analysts have largely become the staff managers of the functions they analyze, thereby eliminating any capacity for addressing longer range issues. In one effort to counter this trend, the Human Resources Directorate of ODCSPER established a Human Resources Analysis Team. This two-man team provides a small analytical capability in support of the Directorate. Missing from the existing arrangements available in ODCSPER is a capability for quick reaction on analyses exceeding the capacity and competence of incumbent staff.

On the other hand, representatives of ASA(M&RA), DPA&E, and the ASD(MRA&L) perceived Army analysis capabilities as less than satisfactory in the manpower and personnel area. Examples given of topics in which Army analysis was not adequate to the need were in the Army reply to the report of the President's Commission on Military Compensation, Army aviator requirements, and the number of ROTC scholarships. The manpower models, ELIM/COMPLIP, and market analysis for recruiting were cited as strong points of current Army capabilities.

Study survey results show the following professional personnel engaged in analytic activity related to the manpower/personnel area:

Agency	No. of Professionals Doing Analysis
MILPERCEN	48
USAREC	10
ADMINCEN	38
Total	96

If to these we generously add seven spaces from within ODCSPER including overhead personnel, and further add the 241 professional personnel from ARI (most of whom are not engaged in what we would call studies and analyses), it could be asserted that as many as 334 of the total of 2,462 professionals in the Army analytic community are devoted to manpower and personnel analysis. This works out to approximately 14 percent. The survey also showed that approximately 10 percent of the total effort surveyed is related to training while 4 percent is related to personnel, for a total of 14 percent devoted to the "people" area in the broadest possible sense. Perhaps more enlightening is a breakout by agency of the fiscal year 1978 funding devoted to manpower and personnel.

Agency	FY 78 (\$ in thousands)
ADMINCEN	2,465
MILPERCEN	1,975
USAREC	552
Army Study Program	438
ARI	21,044
Total	26,474

Thus, of the \$139 million total effort included in the survey, \$26.5 million is directed at the manpower/personnel area. The critical point is that these survey figures show the grand total of the Army's resources committed to the scientific, technological, and analytical support of manpower and personnel. The total includes the research and development effort related to training, personnel testing, performance assessment, personnel management, and related topics. In short, this is all there is. In other areas of science and engineering, i.e., in the technologies of materiel development, the numerous laboratories of DARCOM, plus those of the Corps of Engineers, provide the Army with alternative sources of talent and considerable breadth and depth of technological resources. Comparable alternatives and depth of backup resources for addressing Army manpower/personnel problems do not exist.

b. Needed Improvements. From this all too limited review, one gains the impression that improvements in several areas would be useful in the conduct of the Army analysis program. One area for improvement is in the responsiveness of the analysis process to the interests of OASA(M&RA). Officials in that office perceived present practices as weak and inadequate for meeting current Army needs. The proposal made elsewhere in this report, to include OASA(M&RA) representation on the Study Program Review Council, would provide OASA(M&RA) more direct involvement in the improved Army study process recommended by this Study Group. Another area for improvement is to overcome the lack of an element vested with responsibility for forethought in formulating study guidance and for forecasting study requirements in the manpower and personnel studies areas. The present annual "dragnet" process acquires the specific problems of functional elements of the staff but does not elicit the broader, more far-reaching questions.

Still another area for improvement concerns those analyses needed to support Army requirements or positions in the context of the Planning, Programming and Budgeting System (PPBS). Examples of topics mentioned as needing analysis were military retirement, the size of the training base, personnel and manpower impacts of hardware, and force structure modernization. A related weakness was highlighted by recent emphasis on "affordability." Although guidance documents have long required attention to the qualitative and quantitative personnel requirements of new materiel and to determination of the training requirements associated therewith, in practice the attention is frequently insufficient or nonexistent. Furthermore, the conversion of information into manpower data, the aggregation of such data, and analysis thereof for projected impact on future force requirements needs considerably more emphasis. Analyses of the personnel and training implications of new

equipment items appear to fall within the purview of AMSAA and TRASANA, while analysis of the projected impact on future force requirements seems a proper concern of ODCSPER.

c. Alternatives

(1) One approach to enhancing Army study capability is to attempt to increase the output of the present system through internal organizational and procedural changes and an infusion of additional money with no increase in the total number of personnel spaces allocated to the effort. For example, it could be argued that the manpower/personnel analytical capability within ODCSPER and its Field Operating Agencies is overly fragmented and that some centralization would increase efficiency and effectiveness. A serious examination of that approach was not undertaken as part of this study. Such an approach must show that advantages gained in the change clearly outweigh the advantages lost. The consideration that ODCSPER and TRADOC are presently directing toward an expanded analytical capability at ADMINCEN is a realistic example of this approach.

(2) Another way to get more studies and analyses from current resources is to transfer resources from research and development into studies. This requires a conscious decision that the Army is conducting manpower/personnel related research and development that it needs less than it needs additional studies and analyses in the same field. Such an approach leads to the loss of research and development funding for the transferred resources, with support being picked up by OMA studies funding. Given the present attitude of Congress, the approach entails serious risk of net loss of funds for the manpower/personnel research and analyses combination. The point is that the risk should not be ignored, and subsequent Army actions should be designed to reduce the risk. One example of this approach would reduce funding and spaces from the research and development program of ARI and add spaces and new funding to the program of CAA for the purpose of performing manpower/personnel analyses. In practice, ODCSPER direct control over these former resources of ARI would convert to a "line-of-credit" guaranteeing ODCSPER access to CAA for manpower/personnel analyses.

A second illustration of this approach is to alter the mission of ARI to include manpower/personnel studies and analyses as well as behavioral sciences research and development. Such an action would again result in loss of RDT&E funding of the converted portion of ARI and the same risk of net loss of funds. Reducing personnel performance and training research and development by removing spaces and money from the ARI program and concurrently

adding a study/analysis mission to ARI represents a reduction in research and development that, as yet, has not been justified. The size of the implied resource transfer merits more complete and careful consideration of the actual losses and the potential gains involved.

(3) A third approach is to strengthen the Army manpower/personnel analysis capability through additional resources from outside the existing manpower/personnel community. Indeed, this can be interpreted as the thrust of some of the interviews with key officials. However, such an approach can be carried out only at the expense of some other area of Army endeavor. The Study Group did not believe that the manpower/personnel analysis merited strengthening at the expense of another area of study.

I-5. FINDINGS. a. In general, the study requirements which have been established by ODCSPER have been met effectively and efficiently. There is currently no backlog of validated study requirements other than those proposed for initiation in FY 79 and FY 80.

b. There is lacking a quick reaction capability to address Army manpower/personnel problems which exceed the capabilities of the incumbent ODCSPER staff.

c. Absent is an effective capability to pull together those analyses that cut across functional lines, to formulate study guidance, and to forecast analytical requirements on the broader and/or larger range issues related to manpower and personnel.

d. Analyses supporting Army manpower/personnel issues in the POM have not always been adequate.

e. There is no accessible capability to conduct the broader and longer range manpower/personnel analyses.

f. ODCSPER and TRADOC are exploring means to enhance capabilities at ADMINCEN Human Resources Development to achieve the goal of institutionalizing personnel management.

g. Personnel and training aspects of materiel item analysis need strong emphasis to support "affordability" and force structure analysis.

h. Manpower models ELIM/COMPLIP and market analysis for recruiting are seen as strong points of current Army capabilities.

APPENDIX J

MILITARY ANALYSTS

J-1. INTRODUCTION. Army studies and analyses represent the work of a group of personnel defined somewhat loosely and called analysts. The universe includes military and civilians with a variety of specialties and civilian series. The results of the study group survey indicate that 30 percent of the personnel working in analysis are Military OPMS Specialty 49, Operations Research/Systems Analysis. This appendix will address the management of this group of analysts.

J-2. CURRENT MANAGEMENT SYSTEM. Management of military personnel is centralized at US Army Military Personnel Center (MILPERCEN). MILPERCEN is responsible for the accession, training/education, development, and assignment of all officers except the special branches, e.g., medical, chaplain, etc. Prior to the implementation of the Officer Personnel Management System (OPMS) in 1975, military OR analysts were designated by the Military Occupational Specialty 8700. In addition, there was an Operations Research/Systems Analysis special career program established on a voluntary basis. With the introduction of OPMS, the ORSA career program and all others like it were discontinued.

a. Officer Personnel Management System (OPMS). OPMS was implemented in 1975 as a means of providing qualified officers to fill Army needs, particularly at the O-5/O-6 level. The "generalist" philosophy in developing officers often left the Army unable to fill highly specialized requirements with officers qualified by previous training and/or experience. OPMS was designed to overcome this shortcoming by assigning and training officers on a repetitive basis in two career fields called specialties. One specialty, called the primary specialty, is assigned upon entry to active duty and is normally related to the officer's branch. The second, alternate specialty, is assigned during the eighth year of service. The alternate specialty is normally one designated as an "advanced entry" specialty. Specialty 49, Operations Research/Systems Analysis (ORSA), is an advanced entry specialty. Only a few officers have ORSA as their primary specialty. The assignment philosophy of OPMS is that an officer becomes qualified in his primary specialty during his first eight years of service although he may have assignments in some other specialty area including his subsequently designated alternate specialty. After the eighth year of service, assignments ideally would alternate between the specialties. It is recognized that this ideal is not always possible due to specialty combinations which have differing

requirements at different grades, shortages in some specialties, and the requirements to fill positions which are not specialty related, i.e., ROTC instructor.

b. Specialty Qualification. Qualification requirements for the specialties are contained in AR 611-101. For ORSA, the qualifications required by the regulation are:

(1) Must have an academic background and/or experience in ORSA, economics, systems engineering, systems analysis, mathematics, logic, management, or possess a degree in engineering, physical science, or business when supported by a quantitative analytical background such as linear and dynamic programming, inventory theory, mathematical models, probability theory, queuing theory, statistical analysis, stochastic processes, and ADP.

(2) Must have accomplished one of the following:

a. One year experience or formal on-the-job training in ORSA.

b. Completed an appropriate short course in ORSA such as the ORSA Executive Course at USALMC.

The requirements for qualification are not strictly enforced.

c. Education. The preferred method of providing ORSA officers with the required skills has been and is still civil graduate education. Prior to 1977, the only other formal ORSA training was the ORSA Executive Course, taught at the Army Logistics Management Center. This three-week course was designed to provide managers with an appreciation of ORSA techniques and capabilities. In recent years, Congressionally imposed limitation on graduate education has severely reduced capability to educate ORSA officers. This reduction required the Army to utilize the available quotas carefully. Procedures were implemented which allocated quotas to academic disciplines based upon the ratio of the required number of officers to fill Army Education Review Board (AERB) validated positions (i.e., positions requiring graduate level education) to the total officers available within the discipline. Additionally, a policy was established that an officer should be in the upper third of his contemporaries for fully funded graduate education. During 1977, an in-house capability was developed at Army Logistics Management Center, consisting of a twelve-week course to provide ORSA training for the following categories of ORSA officers:

(1) Graduate degree in a discipline other than ORSA.

(2) Not qualified for graduate education.

(3) Not yet selected for graduate education (quota non-availability, not available for PCS but attend course TDY and return to station). The HQDA proponent for the specialty maintains that qualification in ORSA requires graduate education or the equivalent.

d. Assignment Policy. The assignment policy of the Army is to fill Army requirements and provide professional development. An officer is expected to be qualified in both of his assigned specialties with qualification in the primary specialty coming first chronologically (and, in reality, in importance). An officer is expected to be assigned in one of his two specialties; however, this is not always the case, as discussed in paragraph J-2a above.

(1) Requirements Determination. Authorization for military personnel is controlled by HQDA for aggregate requirements. Within their total authorization, an agency may designate the specialty for each position without constraint on total requirements for each specialty. Positions are designated by the principal position specialty code, a skill identifier within that code, and a secondary position specialty code (if applicable). Activities are supposed to use AR 611-101 to determine which specialty most closely matches the requirements of the position. Additional special qualifications can be specified by Additional Skill Identifiers (ASI).

(2) Priorities. Authorized spaces in the Army exceed the number of personnel available to fill them, creating the need to establish priorities. The priority for filling positions is based on the Department of the Army Master Priority List (DAMPL).

J-3. CURRENT STATUS OF ANALYSTS. a. Description of Inventory. There are 1616 officers who are assigned Specialty Code 49, ORSA. The overall quality of ORSA officers exceeds that of the total officer corps as evidenced by the quality indicators shown in Table J-1. The 27 percent average for master's degree for all officers is somewhat misleading as all officers assigned ORSA specialty have enough service to have had the time to obtain a graduate degree while the population of all officers includes many who have not. Another indication of quality is selection for promotion. Table J-2 provides a comparison of selection rates between ORSA officers and all officers.

Table J-1. Education Levels

	Civilian education		Military education	
	Master's	Bachelor's	SSC (COL/LTC)	CGSC (COL/LTC)
OPMD	27%	94%	21%	61%
ORSA	79%	100%	23%	75%

Table J-2. Promotion Selection Rates

	FY 77			FY 78		
	COL PZ ^a (1st time)/SZ ^b	LTC	MAJ	COL (PZ(1st time)/SZ)	LTC	MAJ
OPMD	44.4/2.1	67.1/4.8	76.3/2.5	Not published	59.5/4.9	74.5/5.1
ORSA	58.3/3.4	87.7/28.6	88.2/5.2		87.0/13.0	87.6/11.9

^aPZ is primary zone for selection.

^bSZ is secondary zone for selection.

Professional qualifications of ORSA officers are difficult to quantify. A considerable percentage has no training or experience. These are primarily in year groups which have recently had alternate specialties designated. The inventory includes officers with master's degrees in operations research (engineering or business), industrial engineering, or systems engineering. This represents the minimum number which have graduate education in ORSA. An additional unknown number of officers were given graduate education in ORSA, but their files reflect another discipline. This fact results from schools not having degrees in ORSA but awarding another graduate degree although the curriculum was ORSA. In some instances, personnel offices coded files based on diplomas or transcripts which reflected the degree rather than the curriculum. Other officers are qualified by experience and training rather than by graduate degrees. No estimate is available, but a reasonable assumption would be that all COL/LTC in the specialty are qualified (at 1st in MILPERCEN's view).

b. Distribution of Assets. MILPERCEN assigns officers to meet Army needs based on priorities established by the DAMPL which is approved by the Vice Chief of Staff. He also approves the designation of units/activities as "excepted units" which are to be filled at 100 percent of requirements. The assets remaining are distributed by means of the Personnel Priority Model (PPM), the results of which are published as the Officer Distribution Plan (ODP). The ODP is projected to permit the personnel system to react to the plan.

(1) Authorizations

(a) Table J-3 shows that the requirements for ORSA officers, as stated in authorization documents, is 732. The specialty is different from most in that requirements are concentrated in TRADOC and excepted units, mostly in the Washington area. TRADOC is authorized 44.4 percent (325), excepted units 39.8 percent (291), DARCOM 9.8 percent (72), and all others 6.0 percent (44).

(b) Many positions which are designated ORSA require minimal ORSA skills. There is currently no means of activities insuring that assigned officers have these skills without requesting an ORSA officer. The results are wasted resources and often unhappy ORSA officers. Surveys indicate many positions require skills in only probability and statistics. A survey made by an NPS student in research for his thesis indicated that 22 percent of incumbents in AERB positions spent less than 10 percent of their time in analysis work and 44 percent spent less than 20 percent.

(2) Current Fill. Current operating strengths are also shown in Table J-3. They represent MILPERCEN data base accounting by control specialty. Control specialty is the specialty in which an officer is supposed to be working as a result of assignment by MILPERCEN or MILPERCEN concurrence with activity putting an officer in a duty position with that specialty. There is no requirement that an officer's control specialty be either his primary or alternate. Table J-3 shows that more than one-fourth of all ORSA positions are unfilled. The fraction could be higher as this is based on control specialty rather than duty specialty. There is no reliable method of estimating the number who are qualified, but a survey earlier this year of all ORSA AERB positions revealed that of 328 incumbents contacted, 27 percent (87) did not have ORSA as a specialty. Only 54 percent (177) had ORSA degrees.

Table J-3. Distribution of ORSA Officers

Command	RQMT (PERSACS)	OPD	ODP/ RQMT	OPR STGTH	OPR/ RQMT	OPR/ ODP
Excepted Organizations	269	269	100%	224	83.3%	83.3%
Adjutant General	2	2	100	1	50	50
USAREC	6	6	100	6	100	100
BMDO	3	3	100	2	67	67
CSC	5	5	100	3	60	60
USMA	6	6	100	5	83	83
Europe	16	9	56	18	112	200
EUSA	1	0	0	1	100	--
FORSCOM	10	5	50	11	110	220
TRADOC	325	147	45	212	65	144
DARCOM	72	32	44	50	69	156
Other	17	9	53	7	41	78
Total	732	493	67.3%	540	73.8%	109.5%

(3) Analysis of Fill. Figure J-1 illustrates the shortages and suggests some possible solutions. The figure is normalized to the number of ORSA positions required for fill by Army officers. There are 732 positions to be filled with a population of 1616 officers giving an asset/requirement ratio of 2.2. The most generally accepted asset/requirement ratio to fill positions is 2.4 (used in determining graduate degree quotas). Using this ratio, an officer should have a utilization rate in each specialty of .42 (1/2.4). With this utilization rate the fill rate with our current population should be .92 (2.2 x .42). The actual fill rate is .74. The problem is even more severe in TRADOC and particularly in the schools where the fill rate is only .54. The concentration of shortages at TRADOC is a result of the high proportion of requirements being in excepted units--for every four ORSA officers not provided, three are for TRADOC.

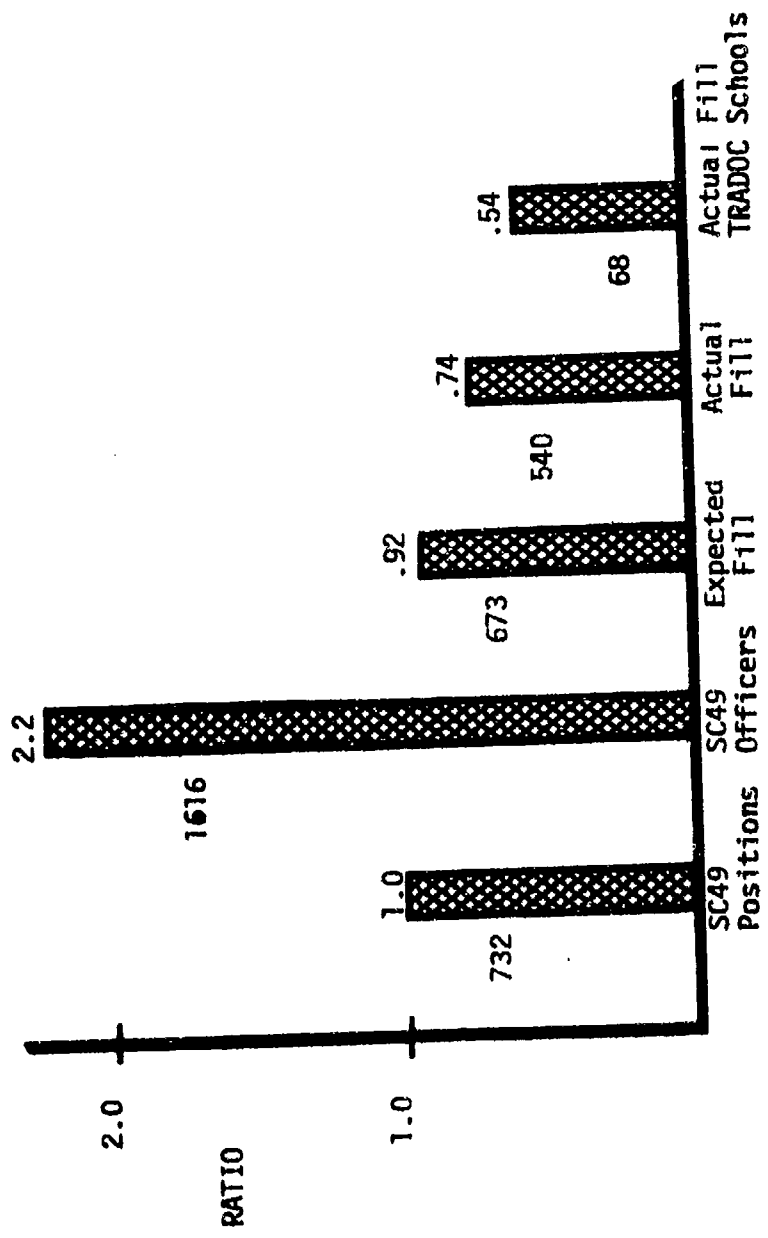


Figure J-1. ORSA Officer Utilization

(4) Solution Alternatives. There are always two alternatives in dealing with shortages--reducing demand or increasing supply. There may well be positions which do not require ORSA officers, but there is also considerable evidence that the analytical community needs more qualified people. Demand is thus unlikely to be reduced. Increasing the supply of ORSA officers can be accomplished by increasing the number of officers with the specialty, increasing utilization rate, or a combination of both. The more desirable alternative is to increase utilization rates because training of ORSA officers has limitations and because recurring utilization would improve expertise and lead to better analysis. The assignment of ORSA officers to third specialty positions (some of which are specialty immaterial) appears to be a significant contributor to the low fill rate. In the following analysis, we assume that all with ORSA control specialty are ORSA and that all officers in operational commands are in their primary specialty if not in ORSA. These assumptions lead to the most optimistic estimates for the number of officers in third specialties.

Total ORSA Officers		1616
Less ORSA control and school	540 203	743
Assigned to another specialty		873
Less assigned to OPM Cnds, not ORSA (Europe, EUSA, FORSCOM)		445
Remainder		428

It is recognized that some of the 428 are assigned to duties in their primary specialty, i.e., battalion commander or school battalion in TRADOC, and for legitimate professional development duties in the primary specialty (primary specialty is used to denote the other specialty since very few officers have ORSA as primary). Assignment to third specialty is particularly prejudicial to filling positions because of the priority now recognized in the primary specialty. An officer assigned to a third specialty after a tour in his primary is more likely to be assigned back in his primary rather than his alternate. The alternate thus gets only one tour in four rather than the ideal one of two. A contributing factor to assignments to third specialties is the high quality of ORSA officers. Many of the specialty immaterial positions require high quality and also have high priority, e.g., USMA and ROTC. Any solution which increases the utilization rate of ORSA officers will have to severely restrict assignments to third specialties.

(5) Officer Distribution Plan (ODP). The 4th quarter, FY 79 ODP does not reflect an improving situation. Overall support drops to 87 percent with support to TRADOC and DARCOM dropping to 44 to 45 percent.

c. Production of Analysts. Officers are assigned alternate specialties during the eighth year of service. ORSA designees range from 100 to 115 per year. A few of these are qualified by previous training or are currently in graduate school, but most have no qualifications except the prerequisite academic background for specialty designation. Analysts become qualified through graduate education, undergraduate education, ORSA MAC I at ALMC, on-the-job training, or a combination of the above. There is no standard for determining specialty qualification. The number of officers entering graduate school in ORSA averaged 37 during the years 1974 through 1977. Quotas for 1978 totaled 59. In addition to fully funded programs, the cooperative degree program at CGSC also produces 6 to 10 graduates each year. Some officers also pursue graduate degrees through off-duty study. There is no information available on the numbers involved. The ORSA MAC I course produced 44 graduates for the first two classes. Two classes are scheduled each year. Figure J-2 provides the recent history and projection of asset production.

J-4. FINDINGS. a. Acquisition/Production of Analysts

(1) The graduate degree method for training analysts is not available to all officers assigned the specialty.

(2) Quotas have not been sufficient to send all designees to graduate school.

(3) Graduate programs vary widely with no standard core curriculum established.

(4) There is minimal in-house capability to provide continuing specialty education/training.

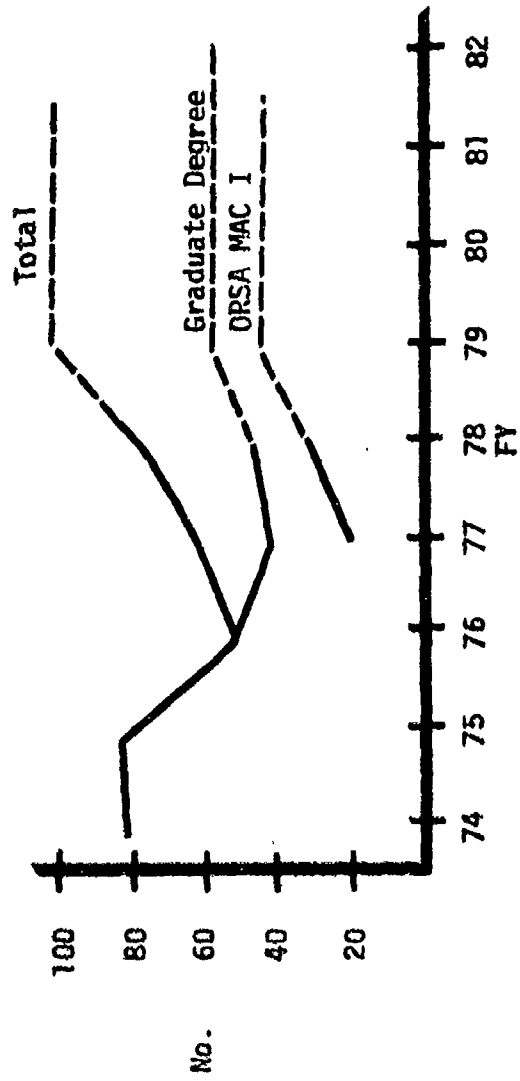


Figure J-2. Production of Military Analysts

b. Distribution of Assets

(1) There is no control exercised by any but the using activity on designating the specialty or series for positions. It is believed that some positions have been designated SC49 in order to enhance the chances of having top quality officers assigned.

(2) Many positions which are designated ORSA require minimal ORSA skills. There is currently no means or activities for insuring that assigned officers have these skills without requesting an ORSA officer.

(3) The Army has not been able to fill all requirements for ORSA officers.

APPENDIX K

MODELS, DATA, AND DATA BASE

K-1. PURPOSE. This appendix examines the analytical community's use of models, data, and data bases. Specific problem areas are identified and discussed. Solutions and/or actions required are included.

K-2. MODELS. a. Overview. Virtually every Army study makes use of some level of modeling. The uses of these tools range from the establishment of requirements for item level systems to assessing overall force structure.

(1) Types of Models. In order to support the design, development, acquisition, integration, and management of the men and materiel comprising an effective and flexible Army, the analysis community must use a variety of tools. In the modeling area, these tools can be categorized into several types (Table K-1). Types one through three are generally used by DARCOM agencies for system design and development. Types four and five are generally used by TRASANA and TRADOC centers and schools for small unit and functional system analyses. The combined arms combat models (type six) are generally used by major analysis organizations for weapons mix, force balance, and functional area tradeoff studies. The Command Group training models (type seven) are generally used by TRADOC centers and schools for training various levels of command staffs. Management models (type eight) are generally used by TRADOC and DA Staff agencies for Army force management. The real-time planning models (type nine) will be found throughout the Army and can be used for logistics, terrain, and scenario analyses. These models are adjuncts to the tactical planning and study process.

(2) Levels of Analysis. Army analysis falls into five general levels; the item system level, the small combined arms task force level (e.g., battalion task force), the functional system level, the major organizations level (e.g., corps, division), and the force level. The five levels of analysis must be sequentially carried out to provide a sound basis for decisions. The combined arms combat models are a primary force analysis tool and, as such, represent a key for disciplining and structuring major aspects of Army analysis. The major portion of this discussion centers on that group of models. Their relationship to other groups (particularly command group training models) is also discussed.

Table K-1. Classification of Army Models

Type	Example of use
1. Specialized engineering models for component design	Hydraulic system design
2. Component or weapons system performance models	Vulnerability calculations
3. Systems engineering models	Missile system design
4. Unit operations models	Artillery battery operation
5. Functional area or family of systems models	Air defense system Family of Systems Study (FOSS)
6. Combined arms combat models	Armored system COEA
7. Command Group training models	BN Command Group training
8. Management models	Logistic system inventory maintenance
9. Real-time planning models	Line-of-sight analysis

b. Combined Arms Combat Models

(1) Current Models. Table K-2 presents a selected listing of the combined arms combat simulations and war games currently in use or under development by four major Army analytic agencies. As can be seen, AMSAA, TRASANA, CACDA, and CAA each have simulations and war games addressing battalion through division level combat. In addition, each agency has at least one new simulation in some stage of development.

Table K-2. Combined Arms Combat Models

	CAA	CACDA	TRASANA	AMSAA
Theater	ATLAS CEM IV IDAGAM-II INWARS ^a			
Corps		Auto-Jiffy CBG ^a		
Division	DBM DIVOPS II COSAGE ^a	DIVWAG CBG ^a	DBM FOURC-E	DIVLEV
Bn Task Force	CARMONETTE	CARMONETTE BATTLE DYNTACS DYNTACS-X BLDM BONDER-IUA	CARMONETTE BATTLE TRACOM BESS ^a STAR ^b	AMSWAG AMSAA/RARDE ^a

^aUnder development.

^bUnder development at Naval Postgraduate School.

(2) Origin. The models in current use represent over 25 years of acquisition, accumulation, improvement, and modification usually carried out unilaterally to meet the analytic needs of specific groups. As a consequence, each model has a unique data base; is different from other models; and is essentially unverified either against other models or against empirical data.

(3) Linkages. There appears to be a lack of rational information flow among models run by the various agencies. Each agency has established a self-contained model inventory. CAA should be dealing with force questions pertaining to echelons above corps but uses models reaching down to the item level resolution. AMSAA, whose work deals primarily at the item level, uses models at the division level of combat. There is transfer of output information among the agencies, but it is not as well planned, orderly, and efficient as needed for productive use of analysis resources.

(4) Integration. The reason for the lack of integration is that the combat models grew by a process of evolution. The analysis community suboptimized operations at each agency. The fact that an agency has a model inventory that spans a number of combat echelons would not necessarily be a problem, provided those models were subject to configuration control and driven by a centralized data base. A coherent program of verification, sensitivity analyses, documentation, and data transfer would also be essential to good management.

c. Command Group Training Models

(1) Status. The Army has recently begun to address the area of Command Group training through the use of modeling. Springing from the current state-of-the-art board gaming, TRADOC has moved through small minicomputer and large mainframe-assisted games into player-assisted large minicomputer-supported wargaming. Table K-3 presents a selected listing of current and developmental training models. These games and models are designed as training devices which portray battlefield actions which place requirements on commanders and staffs. They are designed to be practical drills that require the application of combat, combat support, and combat service support procedures and doctrine to solve tactical situations. BATTLE, a high-resolution, 3-dimensional terrain board, small minicomputer-supported game, is also used for certain selected analyses tasks.

(2) Activities. A fundamental requirement of all games and models used for training is that they give students a realistic appreciation of both Red and Blue force capabilities under a variety of tactical situations. To this end, TRASANA has been charged with verifying the underlying methodology and data used in training models developed by TRADOC. The Army Training Battle Simulation System (ARTBASS), currently planned, will be a second generation of the Combined Arms Tactical Training Simulator (CATTS). ARTBASS is planned to be driven by a large minicomputer with color graphics displays of tactical situations. Once developed, copies will be made and distributed throughout the Army. This development effort has been proceeding apart from the Army Studies and Analysis Community.

Table K-3. Command Group Training Models

Currently used

BATTLE (co/bn)--small minicomputer-assisted terrain board game.

Long Thrust (bn)--board game

CAMMS (bn/bde)--mainframe-assisted map maneuver game.

CATTS (bde)--large minicomputer-driven, player assisted simulation.

Pegasus (bde)--board game.

First Battle (div)--board game.

War Eagle (corps)--board game

Under development

Army Training Battle Simulation System (ARTBASS)(bde)--CATTS follow-on.

Broad Sword (div)

d. Model Management Structure

(1) Need. Review of the current uses, developments underway, and growing proliferation of models indicates that there is a need for establishment of some sort of management structure if these vital tools are to be used effectively. The major difficulties with the current situation noted during the review involve the nature, design, operation, and management of the models. A summary of these difficulties is shown in Table K-4, which compares the current situation with that which is desired.

Table K-4. A System of Army Models

Attribute	Current situation	Desired situation
Nature	Autonomous Isolated Incompatible	Hierarchical Interdependent Compatible
Design	Unstructured Confused Opaque	Structured Coherent Transparent Progressive
Operation	Undisciplined Volatile	Disciplined Stable
Management	Decentralized Quasi-documented Partially unverified	Centralized Documented Verified Understood

(2) Desired System

(a) Structural Elements. A key to the solution of the current combat model situation is the realization that Army systems operations and evaluations can be structured into a hierarchy which addresses all battlefield functions. This is illustrated in Figure K-1. This hierarchy parallels a theater of operations and contains both the direct combat forces and the functional families of support systems. Paralleling this structure should be a hierarchical organization of analytical tools such as illustrated in Figure K-2. A major aspect of this hierarchy is the information and data flow between organizations and tools (in this case, the various models). Table K-5 illustrates an idealized information flow which could take place within the hierarchy.

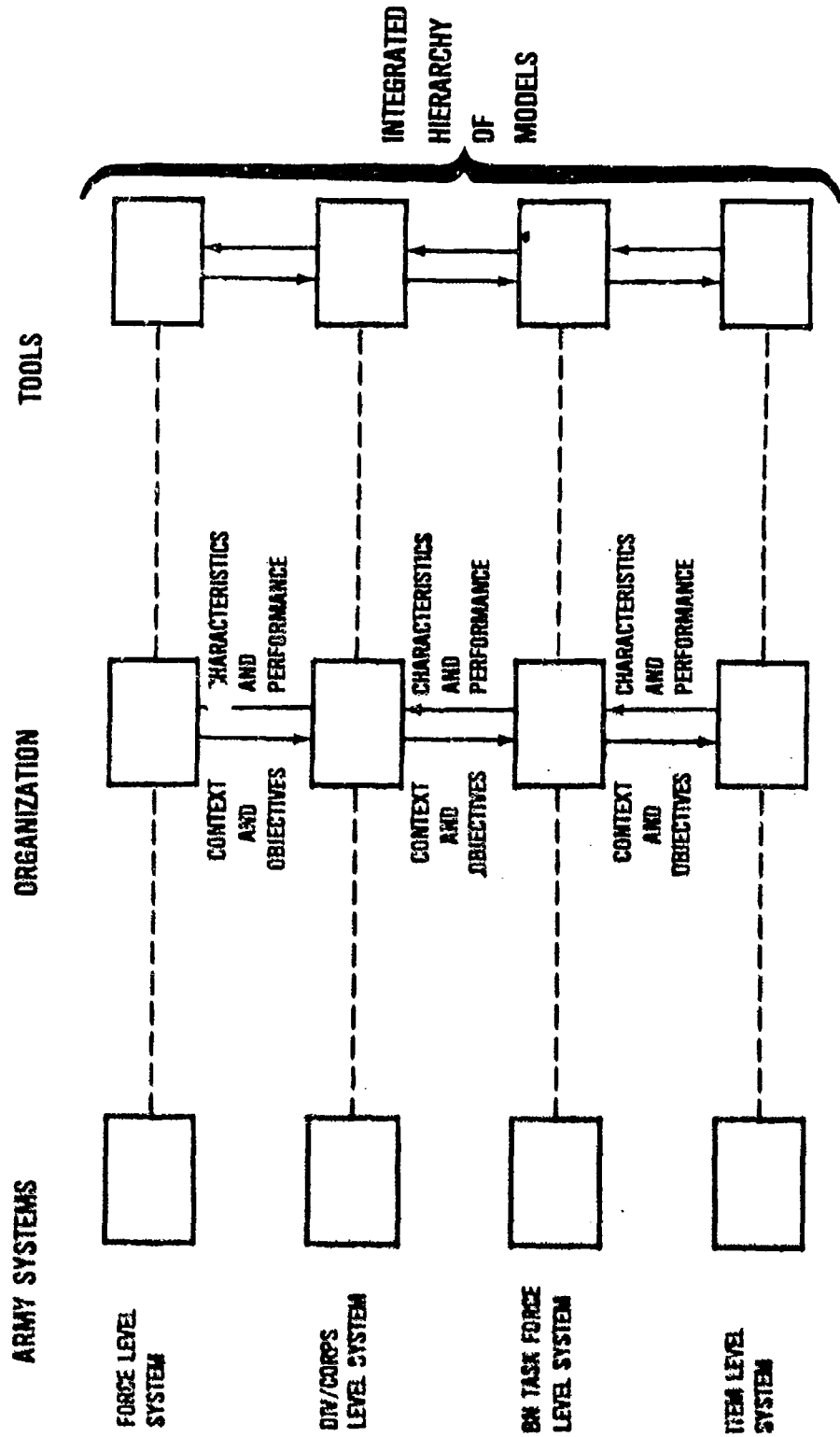


Figure K-2. A Hierarchical Organization of Army Analysis and Tools Which Can Effectively Integrate Army Analysis

Table K-5. Key Analysis Organization Interfaces

Level	Analysis organization	Down flow from	Up flow from
Force	CAA	HQDA	CACDA
Corps/div	CADCA w/LOG Center and ADMIN Center	CAA	Schools/TRASANA
Functional	Schools/TRASANA	CACDA	AMSAA
BN task force	Schools/TRASANA	CACDA	AMSAA
Item	AMSAA	Schools/TRASANA	DARCOM Commodity Commands

(b) Conceptual Approach

1. Emulation. The Army must deal with fundamental issues of organization, composition, and effectiveness. At each organization level from battalion through Army force, analytic tools are needed to address these fundamental issues. The models should be hierarchical in nature, emulating the overall system they are designed to represent. They should exhibit the same interdependences which exist among the various echelons of Army systems. They should be compatible and should be capable of representing critical characteristics of the Army echelon represented, including the environments in which each echelon must operate. The Army's analysis community can no longer afford fragmented analysis of critical issues or use of autonomous, isolated, incompatible models. An important element of increased productivity of the analysis community is an improved conceptual design of, and management of, a family of models.

2. Design. The design of a system of combat models which are hierarchical, interdependent, and compatible in nature can be best accomplished through a well-coordinated, broad-based effort on the part of the analysis community, especially AMSAA, TRASANA, CACDA, and CAA. Maximum advantage should be taken of advances in data processing equipment, software design, and programming languages. A top-down structured approach is required to insure that models in the system are mutually supportive and represent each functional area at proper levels of resolution. The structured programming approach should lead to coherency throughout the entire modeling system and allow a progressive framework to be

established which would lend itself to modular improvement. This approach would also allow the efficient use of higher-level programming languages, such as SIMSCRIPT, to be used to maximum advantage. Finally, a structured approach would allow a degree of transparency to be achieved which does not exist currently. Once operational, these models would be the basic tools for use at the battalion task force, division/corps, and Army force level. They would also be used to do analysis of functional systems such as those used to provide fire support. Figure K-3 presents the conceptual set of structured simulations, games, and analytic models which should be developed. The hierarchy includes basic stochastic simulation of combined arms combat at each of three force levels of organization. These simulations would replace many of the simulations currently being used.

3. Research Games. The research games would be interactive computer-supported war games. The complex doctrine, tactics, and equipments characteristic of modern warfare appears to require the use of an interactive game to explore combat and tactical processes so that the faster running, stand-alone event sequenced, stochastic computer simulation can be understood and programmed. The research games would provide a natural base for the interactive training games at each echelon. Designing the research games for operation on a large, state-of-the-art minicomputer would allow stand-alone operation and would also be in line with current concepts on minicomputer-based training games such as ARTBASS. The operation of the research games would be conducted at the agencies responsible for their development and maintenance (i.e., battalion task force games at TRASANA; division/corps games at CACDA; and theater games at CAA).

4. Simulations and Analytic Models. The stand-alone simulation would be implemented on the large computer mainframes available at each agency. The mainframes at TRASANA, CACDA, and CAA are expected to be the same or to be compatible by FY 1980, when the three agencies will replace current computer facilities. The smaller and much faster running analytic models would provide the primary interface between the echelons of combat models. The computer simulation and analytic models would be operated by those agencies having analytic requirements calling for their use. The operations would be disciplined from the standpoint that the proper standard model or simulation would be matched to the analytic task with no unilaterally initiated modifications. The tools would be stable in that necessary modifications and improvements would be carried out in a rational, structured manner.

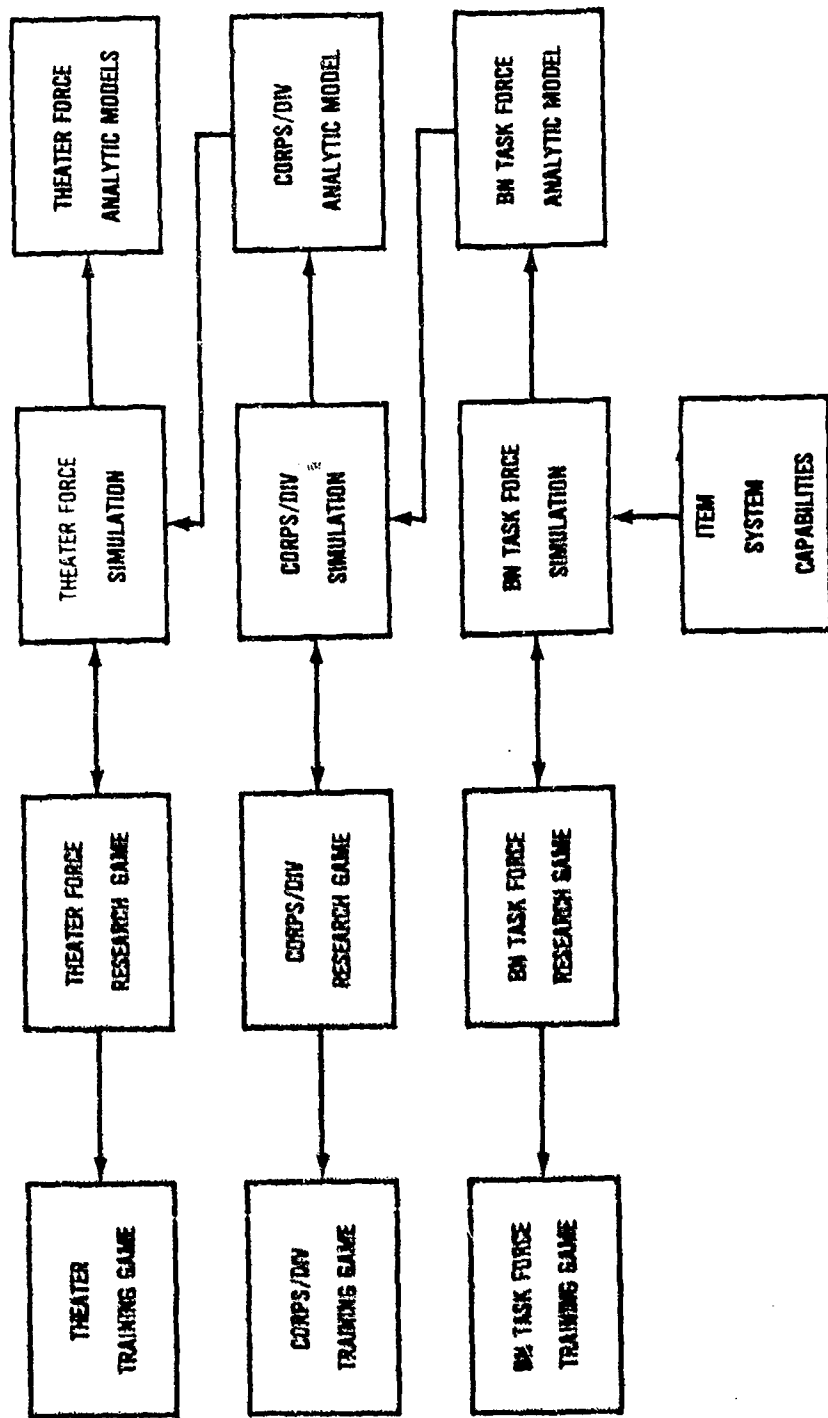


Figure K-3. A Conceptual Structured Set of Simulations, Games, and Analytic Models

(c) Management and Utilization

1. Factors Considered. Factors which must be considered in implementing a model management and utilization scheme are shown in Table K-6.

Table K-6. A System of Army Models -- Optional Factors of Organization and Implementation

1. Management
Decentralized
Centralized
2. Model Utilization
Single site
Multiple site
3. Oversight
Decentralized
by Interagency/Command Groups
by DA
by DA w/Interagency/Command Groups
4. Implementing Instrument
by Interagency/Command Agreements
by Army regulation

2. Centralization. Experience has shown that decentralized model management and configuration control on an agency-by-agency basis leads to proliferation of incompatible models. Consequently, some form of centralized control seems necessary.

3. Where Utilized. Model utilization currently is decentralized. As stated earlier, this is not necessarily detrimental. What is detrimental is the decentralized use of uncontrolled models. Decentralized operation of controlled models would appear the best approach. Restricting the use of certain models to specific agencies would place restrictions on the analysis questions which could be addressed by an agency. However, each analysis agency possibly should restrict model use to one level above and below its primary mission area of responsibility. This would have CAA work at division level and above, CACDA work at battalion task force through corps level, TRASANA work item systems through division levels, and AMSAA work at subsystems through task force levels.

4. Oversight. Oversight of modeling activities has been basically decentralized in the past and has not worked well. There has been no community-wide oversight. Decentralization of oversight, even when reinforced with intercommand or interagency agreements, is a relatively unstable management technique. Stability in the modeling area is essential. Development of a solid foundation in the tools of analysis must be continued. Oversight at the DA Staff level would provide a focal point of authority to which the analytic community, as a whole, would be responsive. Of course, no single person or small group can have the foresight and technical knowledge to administer the details of a comprehensive modeling program. A system of supporting groups, therefore, working in conjunction with the DA Staff, is needed to provide the necessary depth of knowledge and technical expertise. An Army Model Committee chaired by the DA Staff and supported by the various Model Resource Groups such as shown in Table K-7 would provide a logical method of operation. The Army Model Committee would set policies and develop the necessary guidance for the Model Resources Groups. The Model Resources Groups would report status and alternative courses of action to the committee as well as new ideas and methods. The committee should be made up of the commanders and directors of the major analytic and training development agencies as well as selected MACOM staff elements. The chairman must be someone of recognized analytic capability and have the respect of his peers.

5. Implementing Instrument. The implementing instrument of an Army model management system could take the form of interagency/command agreements or be required by an Army regulation. An Army regulation would probably provide the strong, long term impetus needed to establish the working relationships, policies, guidance, and authorities of all responsible parties and groups.

(3) Status

(a) Within TRADOC. The idea of a model hierarchy which deals with the battalion task force level and the division/corps level has been present within TRADOC for some time in connection with work on the new Battalion Engagement Stochastic Simulation (BESS) at TRASANA and the Central Battle Game (CBG) at CACDA. The DBM/COMAN-X/CARMONETTE Models have been retained as an interim hierarchy. DYN-TACS-X has been placed in an operational hold status with no personnel assigned for maintenance. BLDN has been discontinued at CACDA in favor of TRASANA's TRACOM analytic battalion model. DIVWAG and the automated Jiffy Game are being maintained in full operational status until they can be replaced by CBG.

Table K-7. Army Model Management

ARMY MODEL COMMITTEE

Principals DA--Chair
Dir AMSAA
Dir TRASANA
CDR CAA
DCDR CACDA
DCDR CATRADA

Advisory - Chairman of Model Resource Groups, Selected MACOM Staff Elements

MODEL RESOURCE GROUPS

BN Task Force

Principals TRASANA--Chair
AMSAA
CACDA

Advisory - TRADOC Centers/Schools

Division/Corps

Principals CACDA--Chair
TRASANA
CAA

Advisory - TRADOC Centers/Schools, AMSAA

Theater/Force

Principals CAA--Chair
CACDA

Advisory - AMSAA, TRASANA

FOURC-E is being maintained in operation at TRASANA. BATTLE is being distributed throughout the TRADOC schools for use as a training game and some limited use as a tool for analysis. CACDA is using CARMONETTE as configured by CAA for battalion-level analysis.

(b) Outside TRADOC. The TRADOC work on a battalion-through-corps hierarchy of models has not been closely linked with work on lower level models such as AMSAA/RARDE or higher level models such as INWARS. Similarly, the CAA work on CEM-IV and COSAGE is not linked to CACDA work.

(c) Build on Ongoing Efforts. It is evident that an effective management system to be associated with the hierarchical system of Army models would have to have an element of centralization. Each analytic echelon could be responsible for managing its tools within the framework of the entire system whose structure would have to be controlled by a central oversight group. Model Resource Groups have already been established and chartered through the TRADOC Model Review Committee for the battalion and division/corps models. A data base management group has also been chartered to develop data base structures to service the TRADOC hierarchy. The TRADOC model development effort could be used as the basis for an expanded analytical community effort. A theater/Army force model at CAA could be added. Indeed the INWARS work could be reoriented toward the hierarchy concept.

(d) During the Interim Period. The COSAGE development associated with WARRAMP will be continued as an interim replacement for the current AMMORATES methodology. Documentation will be completed on AMSAA-RARDE to preserve any concepts or methods which may prove useful elsewhere, e.g., BESS development. CACDA will maintain the automated Jiffy corps level war game and DIVWAG until suitable replacements can emerge from the division/corps development effort. Every effort should be made at all levels to decrease the number of existing models in use and refrain from initiating new unilateral development programs.

K-3. DATA. a. Overview. Data utilized by the Army's analytic community range from that describing a spectrum of limited visibility conditions on the battlefield to that describing item and functional area systems performance in a variety of natural and man-made tactical conditions. The primary sources of these data include: the various tests and experiments conducted during the materiel acquisition process (OT/DT), force development tests and experiments (FDTE), historical data, threat and intelligence assessments, and higher level guidance (AFPDA, FYDP, Consolidated Guidance, etc.).

b. Data Requirements and Uses. A review of the data requirements of the analytic community reveals a tremendous need which will not likely be met in the near future. The following data areas are of particular interest :

(1) Representation of Battlefield Environments. The most demanding new factor in the data arena is the "Kerwin Sends" message entitled "The use of realistic battlefield environmental conditions throughout the Army." Few occurrences have stirred the Army's awareness of its data shortage as much as this message. Attempts to comply with the direction given brought formal acknowledgment of the fact that data on hand were very sparse or nonexistent in areas such as battlefield obscuration and their effect on military operations. With few exceptions, current data address operations in a benign environment. The goal is to state the type of environments in which the Army system must operate and translate them into system requirements which will guide materiel developments and analysis. The environments which must be defined are those created by nature as well as those created tactically by man. Definition of these environments must begin with the user--TRADOC. The requirements of the Kerwin directive call for the development of definitive scenarios which include battlefield obscuration. Other elements of the battlefield environment must also be addressed, such as electronic countermeasures and counter-mobility, to name a couple. Interim guidance developed by TRADOC can provide a framework in which DARCOM and TRADOC can begin to work toward quantitative definitions. In addition, TRADOC should review current requirements documents to insure that they state the actual needs.

(2) Performance Data. Major US systems currently under development have performance boundaries which often far surpass those of their predecessors. In some cases, unique system capabilities demand performance estimates in areas not quantified before. Each new system also requires new and generally unique sets of data (e.g., C³, countermeasures, CCM, etc.). Both developmental systems and fielded systems require that performance data be developed for realistic battlefield environmental conditions. Added to these requirements are lethality, vulnerability, reliability and maintainability factors, human factors, which must be developed/validated on all systems, new and old. Another dimension is threat data. Because of the lack of definitive data on Red systems, it is often necessary to make estimates based on US systems. Most threat "packages" usually contain future systems for which no hard empirical data exist. Data developers/suppliers, such as the BRL, have to respond to immediate ad hoc projects. Much of the required item performance data must be developed for currently fielded item systems as well as those in development. Ways must be found to take advantage of each test and experiment for the production of needed data, consistent with limitations imposed by test instrumentation, sound experimental design, and data quality. The efficient use of existing test and experimentation facilities coupled with corresponding efforts to seek out and make

use of results of past tests and experiments, as well as historical data, is essential if the data needs of the community are to be met. Once data is acquired, from whatever source, and analyzed, the data and analysis results must be saved in such a way that the location is known and they are accessible when needed.

(3) Test and Experimentation. In addition to the above cited factors concerning the magnitude of the data requirement, the process of obtaining the data also presents problems. Test and experimental facilities, whether in the factory, proving ground, or major field activity, are scarce in relation to the demand for their services. Test and experimentation resources are committed to the developmental testing/operational testing (DT/OT) required to support the materiel acquisition process. Often, resources are committed to user testing, including joint testing with other services, which includes OT as well as the force development test and experimentation (FDTE) program. The DT/OTs and FDTE must produce much of the simulation data required by analysts. These tests and experiments can be used to obtain data required to model such combat subprocesses as visual detection, detection probabilities for elements in the near vicinity of a detected element, and velocities of attacking tank formations at various stages of battle. Tests and experiments can also be used to benchmark models against various tactical situations. To date, modelers have been gleaning usable data whenever they can find it, and they have also sponsored instrumented force-on-force field experiments designed to measure several facets of armored combat in some detail. Much remains to be done. The best way to proceed is to design and sponsor a number of small simple data collection experiments that can be conducted during the slack periods between major force-on-force at places such as CACDA and TCADA.

K-4. DATA BASES. a. Overview. The large number of combined arms combat models currently in use, each driven by its own unique and large data base, is a cause of confusion and frustration in the analytical community. The data base of a combat model requires a tremendous amount of data. Today's models usually require data ranging from detailed item system engineering and operational data to judgmental decision tables governing tactical disposition and maneuver of elements of forces, thousands of data elements per model. Data elements in one model are different from those in another model. Control of the primary combined arms combat models would allow control of the data bases. Control of the data bases would relieve much of the pressure being felt by data suppliers. Control of the data bases will also lead to identification of data voids. Clear statements of requirements for data would place more reasonable demands on the FDTE process.

Discipline and structure of the combined arms combat models is a key which would allow improvement. Models, data, and data bases are so closely related that it is impossible to address one without addressing the other two.

b. Problem. The current data base situation is similar to the current model situation. Two of the principal data suppliers, AMSAA/BRL, are repeatedly barraged with quick reaction requests and demands for lethality, vulnerability, accuracy, and system characteristics data on both old and new, Red and Blue weapon systems. Each request calls for basically the same type of information but with a different format and definition to fit a particular model's data base requirements. In addition, the Army analytical community could be more efficient in exploiting data represented by military history, after-action combat reports, past field experiment and test data, and even the results of earlier studies and analyses. A means of improving the situation should be developed to increase the quality and validity of study products.

c. Data Base Management Structure

(1) Need. For combined arms training developments and force level analytic activities within the Army, a comprehensive and internally consistent Army analysis and training development data base system is required. This data base system should contain, or have access to, all quantitative and qualitative data required to support combined arms training developments and the hierarchical system of Army models as well as studies and analyses conducted using functional or family of systems models and joint TRADOC-Air Force analytic efforts. In addition, this data base system should contain the results and findings of COEA, force level analyses, and functional area analyses conducted by AMSAA, TRADOC, and CAA and other selected analytic efforts, in enough detail to allow review and interstudy comparisons.

(2) Proposed System

(a) Purpose. The purpose of the data base system would be to provide management of data required for the hierarchical system of Army models, combined arms training device developments, functional area or family of system models, interstudy comparisons, and historical analyses.

(b) Objectives

1. Provide access to the latest available technical and operational data by the hierarchical system of Army models.

2. Provide access to verified technical and operational data required by Command Group training device developers.

3. Make technical and operational systems data available to functional area or family of systems models and joint Army/Air Force efforts.

4. Maintain data and information on relevant input/output parameters, assumptions, tactical context, findings, and conclusions on force level analyses, COEA's functional area studies, and other major analytic efforts conducted by CAA, TRASANA, CACDA, and AMSAA and selected analytic products of other agencies, such that audit trails, interstudy analysis, and product quality evaluations can be conducted.

5. Maintain active liaison and coordination with other Army and DOD data base managers, offices, and libraries containing quantitative and qualitative information and data on land combat systems and Army units.

6. Maintain test plans, experimental designs, data collection plans, collected data, and analyses on selected field tests and experiments.

7. Provide information on data voids and weaknesses discovered as a result of data collection and collation activities.

(c) Organization. The data base system must accommodate the needs of the analytic community for functional system analyses, COEAs, force design studies, and certain historical and quality assurance analyses. As such, it would be serving users at AMSAA, throughout TRADOC, CAA, and elements in DA. Since the system would contain study input as well as output data, each user would also be a provider of data. Table K-8 is an abbreviated listing of data types found in a typical combined arms combat model along with data suppliers. Figure K-4 presents a simplified schematic of the technical data interfaces existing between CAA, CACDA, TRASANA, and AMSAA and selected data sources. In general, AMSAA would provide the main interface between all users of item level system technical characteristics (both Ref and UIC) and the other analytic agencies. As can be seen, the TRADOC agencies, by virtue of their middle position in the Army analysis hierarchy, have the most involved network of interfaces. TRADOC also would have the heaviest concentration of potential users of the data base system. It therefore would be logical to establish the data base systems management office in TRADOC at TRASANA, with data base groups at AMSAA, CACDA, and CAA. With proper internetting of the computer centers servicing these agencies, the differentiated

types of automated data bases required could be distributed among the agencies, portions of each being drawn into a given computer center to meet a particular need of an agency as required. Figure K-5 presents interfaces as they might exist with the data base system.

(d) Functioning. The Army analysis and training developments data base system would be a distributed, centrally managed system. Central management would be carried out by the data base system manager at TRASANA in conjunction with submanagers at CAA, CACDA, and AMSAA. The management group would be responsible for structure, coordination, and security as well as providing access and up-to-date procedures, developing data guides and data element listings, and finding and establishing interfaces with other data base systems and libraries. The data base system would be service-oriented and, as such, would provide data and services as specified and required by the Army analytic community--primarily CAA, CACDA, TRASANA, and AMSAA.

Table K-8. Data Base Requirements and Sources

Data requirements	Data suppliers
Scenario	
Red doctrine/organization/tactics	ACSI/ITAD
Blue doctrine/organization/tactics	CACDA/centers-schools/CAA
Environment	
Topography	DMA/WW
Weather	MIRADCOM
Limited visibility	NVL/ASL
Item systems	
Red technical data	AMSAA, FSTC, MIA, DIA, BRL, NSA, ITAD
Red operational data	AMSAA, FSTC, MIA, DIA, BRL, NSA, ITAD
Blue technical data	AMSAA, TECOM, PM, BRL, NVL
Blue operational data	CDEC, TCATA, OTEA, HEL
Combat service support systems	
Red ISTA	AMSAA, FSTC, DIA, BRL, NSA, ITAD
Blue ISTA	AMSAA, BRL, TRADOC
Red logistics	ITAD, DIA
Blue logistics	Log Center, Admin Center
Red CM	AMSAA, FSTC, DIA, BRL, NSA, ITAD
Blue CM	AMSAA, USAICS
Force level systems	
Red BN	TRASANA
Blue BN	TRASANA
Red rgmt	CACDA/TRASANA
Blue bde	CACDA
Red div	CACDA
Blue div	CACDA
Red army	CACDA/CAA
Blue army	CAA

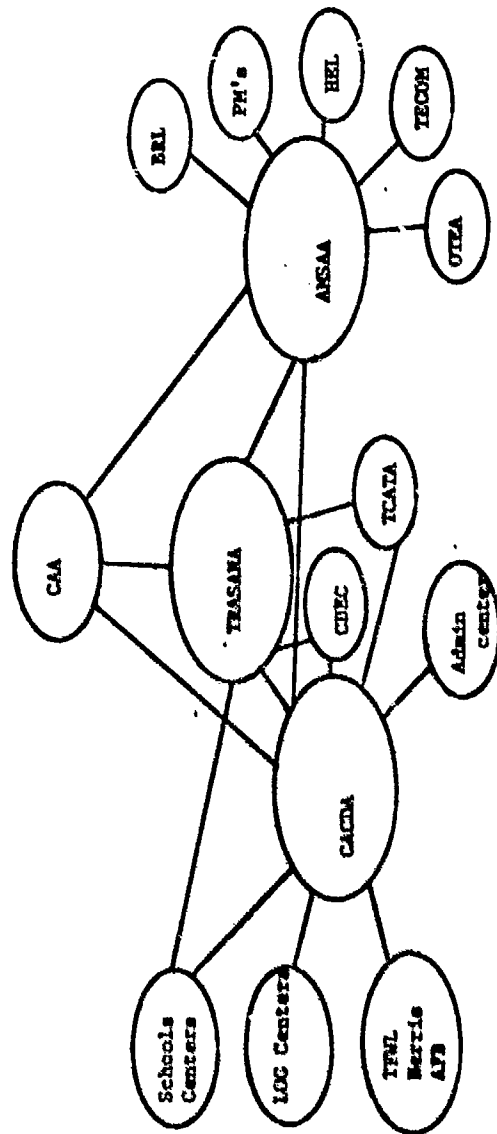


Figure K-4. Analytic Community Data Information Interfaces

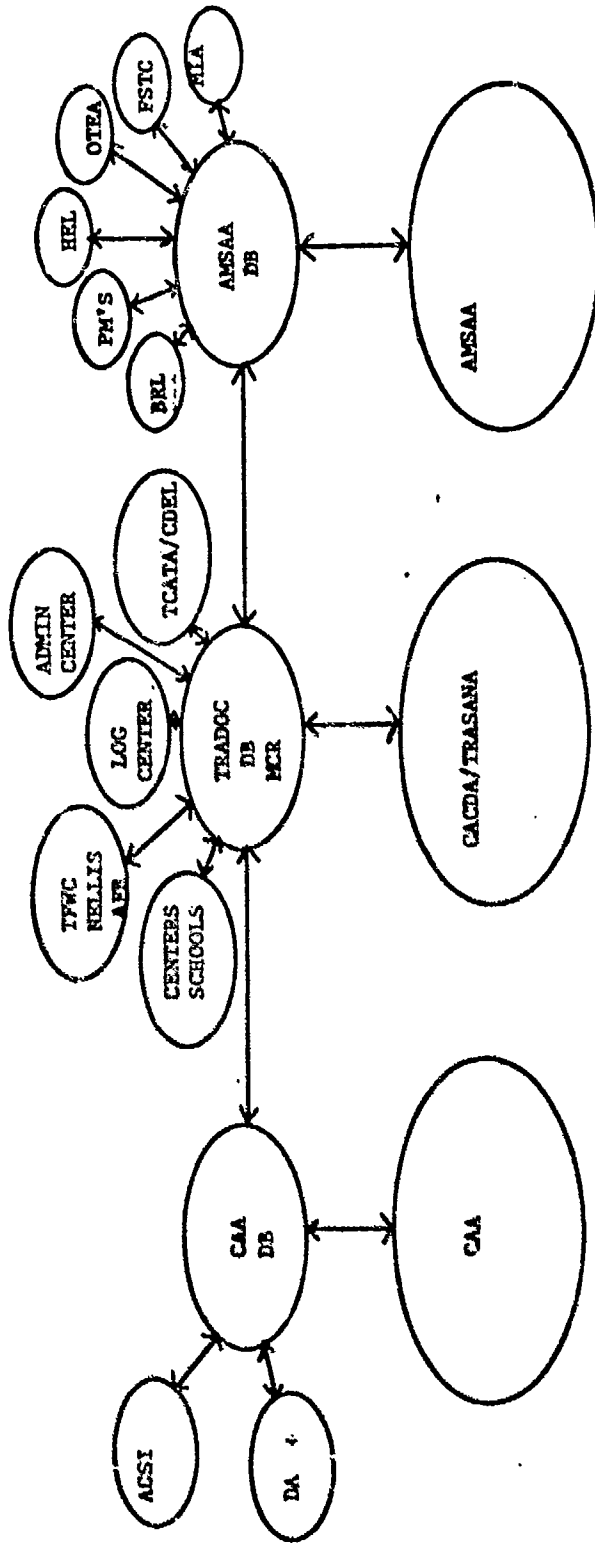


Figure K-5. Army Analysis and Training Developments Data Base Schematic

APPENDIX L

QUALITY ASSURANCE

THE PROBLEM. The quality of work conducted by some activities in the Army Operations Research/Systems Analysis (ORSA) community has received criticism. It is perceived that this in-house effort has been below the quality of that produced by the better contractors. Inconsistent assumptions, tailoring the threat, suppressed alternatives, overly doctrinaire assumptions, failure to consider out-year cost, and a lack of peer review of products are but a few that have been heard. On the other side of the coin, the Army ORSA community perceives that some study sponsors seek industrial analytical organizations because they may be able to exercise more control over the product. Some of these products are perceived as professionally packaged literature searches which pass for analyses. Both perceptions may be true with regard to the worst of both worlds; however, these perceptions are sufficiently on target to require a concerted effort at quality assurance.

a. Quality and Quality Assurance. The Army ORSA community is a complex, diverse, multifunctional body of analysts and analytical organizations who provide through scientific examination (operations research/systems analysis) objective assessments of problems, processes, systems, and resources to form a basis for decision (choice) and/or understanding of the relative merits (effectiveness, cost, feasibility, etc.) of various alternatives. This definition of the functions implies the desired nature (or quality) of the analytical product. Such analyses are expected to be unbiased, comprehensive, technically correct, methodologically sound, and devoid of hidden assumptions.

b. Factors Influencing Quality. A number of factors influence the quality of the analytical product: an adequate definition and understanding of the problem, the adequacy of the data base, the time allotted for the analysis, the suitability of the tools/techniques available, the competency and integrity of the analyst(s), and finally the process by which the product is reviewed. Quality assurance is the process of verifying and maintaining a desired level of quality. A quality assurance program should, therefore, define desired standards, establish impartial product evaluation and feedback processes, and provide for the long term development and maintenance of high standards of performance.

c. General Guidelines and Standards. The ORSA community is not unlike the Chaplains in that they must serve two masters. On

a very practical level, the community must be responsive to the decisionmaking process by the production of practical solutions/alternatives to difficult and complex problems of the real world. On another level, the community must accomplish the practical with honesty, integrity, and conscience in spite of short deadlines, limited data, pressure to support a priori positions, and the uncertainties associated with any research. The following paragraphs delineate some general guidelines and professional standards for operations researchers/systems analysts:

(1) The basic purpose of operations research/systems analysis is to provide the sponsor a meaningful basis for decisionmaking. This analysis should not only answer questions, but sometimes ask them. The analysis should not only solve problems, but sometimes identify them. The analysis should illuminate issues and sometimes define them. But above all, the analysis should increase understanding and not decide.

(2) The analyst should attempt to uncover and examine all feasible alternatives. The analyst should not yield to pressures to support a prior decision or position. Also, the analyst should avoid at all costs taking the position of an advocate or adversary of a particular system or program.

(3) The analyst should expose all constraints and significant externalities. The analysis should be conducted in an open, explicit, and verifiable manner. The analyst must concentrate on the adequacy of the data, the visibility of the assumptions, the completeness of the evaluation, the quality of the analysis, and the objectivity of the conclusions.

(4) The analyst should be attuned to the timeliness of his effort to the decisionmaker's needs. In doing so, the analyst should point out the limitations, shortcomings, and data gaps in his analysis and should make an assessment of the impact (sensitivity) of the shortfalls on the results of the study.

(5) The analyst should present the results of the analysis in a clear and concise manner. The analyst should develop alternative courses of action pointing out the advantages and disadvantages of each alternative. When conclusions are drawn, those resulting directly from the analysis should be distinguished from those that are interpretations based upon judgment and past experience.

(6) The sponsor should be advised when it appears from the analysis that a previous decision was made incorrectly or that the results of the analysis conflict with an existing policy or position.

(7) The analyst should acknowledge the contributions of other researchers and should give appropriate credit or reference in the report.

d. Quality Assurance (DA/DARCOM/TRADOC)

(1) HQDA. Policies are established for the conduct and evaluation of Army studies by AR 5-5, The Army Study System. The regulation provides guidelines for the initiation, validation, development, conduct, and application of results of individual studies under the purview of the study program. AR 5-5 provides guidance for the establishment of a Study Advisory Group (SAG) to assure that the project remains oriented on the requirement, to provide technical guidance and advice, and to facilitate coordination. The SAG can be an important vehicle for assisting the study sponsor in the attainment of a quality product. DA Pam 5-5 provides detailed guidance for study sponsors and SAGs. Study sponsors are required by AR 5-5 to report the results of studies, their use, their implementation, and the degree to which study objectives were met (DD 1498). The degree to which these procedures are followed and the thoroughness and objectivity with which the merits of the studies are evaluated have a bearing on study quality.

Additional policies and guidance relative to other aspects of the study process are provided in: AR 70-31, Standards for Technical Reporting; AR 71-9, Materiel Objectives and Requirements (Conduct of COEA); and AR 381-11, Threat Analysis.

(2) HQ, DARCOM. The principal DARCOM ORSA resources are in the independent analysis activities (e.g., AMSAA, ALMC, IRO, LSO, LCA, and AMETA) and in the systems analysis divisions of the major subordinate commands. The latter serve the needs of and are responsive to the commanders they serve. Quality assurance for these groups is the responsibility of their respective commanders. Often these systems analysis groups function for the commander to provide a quality review of work coming out of that command. Further, DARCOM periodically sponsors command-wide systems analysis conferences to bring together the various systems analysis groups to discuss common problems/issues and to share methodologies.

(a) The separate analysis activities have established internal quality assurance programs for studies and analyses which they conduct. (AMSAA's procedures are provided as an example later in this chapter.)

(b) Studies conducted for HQ, DARCOM are monitored by the responsible staff element through study tasking, in-process reviews, and completion reviews. Study advisory groups are designated

for major studies or those studies which may require inputs or coordination by several staff elements or subordinate commands.

(c) DARCOM analysis activities frequently participate in major studies that are sponsored by other commands/agencies. In these instances, HQ, DARCOM usually participates with a SAG member to coordinate the quality and timeliness of data and analyses provided in support of the study effort.

(3) TRADOC. Review of study conduct with emphasis on analysis is a matter whose importance is recognized by HQ, TRADOC in DCSCD Policy #17 which charges Analysis Directorate with this function.

(a) The analytical review is a continuing process from the time a study is initiated until it is forwarded to DA. AR 5-5 and for COEA, ODCSOPS LOI furnished guidance under which these reviews are conducted. The framework of directives, study plans, milestone schedule, and final report lay out the phases for review.

(b) Within each TRADOC echelon, there is a positive program of review, illustrated by the following table:

Level of Review	Vehicle of Review				
	Field Board	Work	SAG	Staff Review	Chain of Command
School/Agency	X		X	X	X
Int Center	X		X	X	X
HQ		X	X	X	X

(c) In general, the review process goes from left to right. The "doing" agency, having completed the study, places it before a review board ("murder" board) before final publication. Since HQ TRADOC is not a "doer" but a receiver, a board is not used. Instead, liaison is maintained by HQ TRADOC action personnel with the proponent agency by a series of field reviews. A field review occurs anywhere within the process. In it, representatives of the proponent, the analysis agency, and HQ TRADOC sit down together and go over in detail all work done to that point to reach a consensus.

(d) The sequence--board, field work, SAG--is repeated until the study is completed. It is drawn here one time to keep the chart concise. This sequence of reviews is followed by a detailed staff review and finally presentation to the CG or Deputy Commander who approves the study for forwarding to HQDA.

e. Quality Assurance/Review Procedures

(1) CAA. CAA's quality assurance program places emphasis in three basic areas: methodological process and data; review of analysis for technical content; and documenting the results of the analysis.

(a) Under the methodological process and data, the Agency has an active program for insuring that data inputs are valid and consistent, that models and methodologies used for Agency studies are appropriate, and that study results are based on effective analysis. A major quality assurance project has been the development of an Integrated Data Base and a system for management of data. On a quarterly basis, all quality assurance activities are reviewed by the Agency Technical Review Board.

(b) The technical content of all ongoing or planned Agency tasks is also reviewed by the Technical Review Board, which is a permanent body established for the purpose of providing guidance and direction. The board reviews each project at significant milestones, i.e., study plan, pre-SAG review, completion of analysis, etc. In addition to this internal review process, most analyses are reviewed by a SAG, an IPR, or in some cases, by a General Officer Steering Group.

(c) Final written reports are given intensive review by an ad hoc Product Review Board consisting of three CAA members. The chairman of the board is from a directorate other than the proponent directorate. Areas considered for review include everything from, "Are the objectives clearly stated?" to "Were sensitivity analyses performed and were the results clearly identified?"

(2) AMSAA. AMSAA's quality assurance program is based upon a series of reviews whose extent and formality are contingent upon the subject matter, the intended audience, and/or completion deadlines. AMSAA reports the results of its studies and analyses in two types of documents: the Interim Note and the Technical Report.

(a) The Interim Notes are published with the approval of the responsible division chief and the degree of review given to the study is dictated by that division chief. As the name implies, Interim Notes are a vehicle to provide analytical results

quickly with only that review necessary to assure the adequacy of technical content. Interim Notes are normally limited in distribution to the contributors, the sponsors, and interested organizations within DARCOM.

(b) The AMSAA Technical Reports are published only by the approval of the Director or Deputy Director. Upon completion, a Technical Report is assigned to an analyst of equal professional standing (peer review) from another division for review of methodology, technical content, and adequacy of presentation. After peer review, the Technical Report is circulated to all Division/Office Chiefs, who are given the opportunity to review and comment on the work prior to publication. Only after these two levels of review is the report submitted to the Director or Deputy Director for publication approval. With this more stringent review, AMSAA Technical Reports are distributed to interested government activities within the Department of Defense without restriction. The Technical Report is provided to the Defense Documentation Center (DDC) and the Defense Logistics Studies Information Exchange (DLSIE).

(c) In addition, major projects receive an intensive review by a "murder" board consisting of the Director, Deputy Director, Division/Office Chiefs and interested senior analysts at the planning stage and prior to the results being presented outside AMSAA. In-process reviews are scheduled as appropriate.

(3) CACDA. The focal point for quality control of ORSA activities at CACDA is the Methodology and Quality Assurance (MQA) Branch of the Analysis Division of the Combat Operations Analysis Directorate. The MQA Branch evaluates each request for ORSA support and determines if the request is appropriate and whether or not resources are available when the request is determined appropriate. As the ORSA effort progresses, the MQA Branch monitors the performance of the project in relation to the original concepts. In addition, a Project Review Board, which consists of directorate level members and other senior analysts, holds periodic reviews to approve progress and status. Following final approval by the Project Review Board, the final project report is submitted to the study proponent for his approval.

(4) TRASANA. The TRASANA Technical Review Board was formed in April 1976 as a direct result of a management objective to establish consistent, responsive, and activity-wide practices for quality assurance of technical products. The controls placed on the Board were designed to insure its maximum effectiveness without adversely affecting large quantity production, product timeliness, and customer acceptance.

(a) The Technical Review Board is a standing body of senior Technical Staff personnel (GS-15, 14 and 05) chaired by the Deputy Director for Administration and Evaluation (06). It functions on all COEA, CTEA, Mission Area Analysis (MAA), and other projects/tasks as designated by the Deputy Director for Technical Operations. Tasking of the Board directed that emphasis be placed on quality assurance of the study approach (planning), study conduct, and study products while maintaining responsible cognizance of cost and schedule factors. The Board meets to examine the study plan and also the final product. Special in-process reviews are also scheduled if there is perceived to be a problem or at any other time specified by the Deputy Director for Technical Operations.

(b) The Board is sectionalized into the following areas of endeavor: Air Defense, Antiarmor, Aviation, Battlefield Logistics and Repair, Combat Vehicles, Command and Control, Communications, Engineer, Field Artillery, Infantry, Intelligence, Surveillance, and Electronic Warfare and Special Interest. Each member is expected to act in a responsible, independent evaluator capacity. His selection is predicated on both background and current assignment within the Activity. Active, useful participation in the proceedings is necessary for continued membership. The Chairman, the Special Assistant for Evaluation, and the Assistant Deputy Director for Technical Operations are active members at all board meetings. Each area of endeavor has five permanent members, and no member is assigned to more than two subject area boards.

(c) The Special Interest Area is unique in that these subjects are addressed by special session of the Technical Staff convened by the Deputy Director for Technical Operations.

(d) There are two aspects of the Technical Review Board process which make it an effective activity management tool. Both aspects are part of a concept known as "institutional memory." The first aspect is the direct influence on a product by persons expert in their field and reinforced through participation in past projects. This resource is tapped without that person being assigned to the current project full time. The second aspect is feedback. Each board member gleans, from his participation of the review process, information which can be used by him and his division on their own specific projects.

f. Proposed Practices to Assure Quality Studies

(1) In order to encourage intellectual independence within ORSA activities, higher headquarters should:

(a) Assure that a reasonable portion (at least 15 percent) of the activities' work program is self-initiated.

(b) Assure that a reasonable portion (at least 10 percent) of the activities' work program is used to upgrade methodologies, develop tools and techniques, etc.

(c) Preserve the integrity of reports of analysis if sub-merged within a larger study or analysis.

(d) Set specific goals for sponsorship of experiments to generate empirical data and provide validation checks. This would point the analysis community in the direction of being more scientific and less mathematically oriented. Additionally, study agencies should exploit all data sources to include military history and combat data.

(2) In order to assure that the studies and analyses best address the proper issues:

(a) The analyst should have complete access to the background and purpose of the study. This will help to insure that the analyst's perception of the problem is not different from the original intent, that misdirections are not taken, and inappropriate assumptions are not made which could undermine the entire study.

(b) Provisions should be made to assure a full range of potential enemy threats. Data are not only required about the existing threat but about a realistic projection of the threat, for the timeframes of the analysis. Continual underestimation of the threat erodes confidence in the conclusions of the study. In addition to a projection of the threat, a concerted effort must be made to estimate the possible threat resulting from an enemy effort to counter US actions. These threats must not only be developed carefully, but they must be consistent among study efforts. A process needs to be developed which establishes a clear trail with explanation from generation of threat data through changes in threat data between studies.

(c) The study should treat the spectrum of environmental conditions of use. Army systems must be capable of being employed in a wide range of battlefield environments. Within Central Europe alone there are wide variations in terrain, weather, light conditions, and other aspects of the natural environment. This can be further compounded by the induced environment such as

smoke, mines, and EW. Yet many of our studies are an in-depth examination of one tactical operation on a single piece of terrain, usually in the Fulda Gap, and a single set of environmental conditions, usually benign. Additionally, when environmental limitations are considered, they frequently differ from study to study, causing them to be disturbingly inconsistent.

(d) The study should consider all meaningful alternatives. Alternatives in the sense of truly different ways of doing something or solving a problem should be clearly exposed and objectively analyzed. In all cases, meaningful alternatives should never be suppressed.

(e) The analyst must make completely transparent the impact of the input assumptions and data on the study results. Formal review of critical input assumptions and data as well as the study methodology early in the analysis is essential.

(f) The analysis methodology--particularly models--should be subjected to peer review and concurrence. For those models central to the hierarchy of models that support major studies, there must be provisions for model configuration control and management.

(g) The analyst should show proper respect for the fact that few issues of importance have a single solution which in every respect is superior to all alternative solutions, and the fact that few studies can quantitatively and objectively analyze all factors relevant to determination of which of the solution alternatives is best. A good approach is for the analysis to be carried as far as it can be carried objectively and then to stop well short of the point where the subjective appraisals and judgments of importance must be applied to infer the preferred alternative, given the set of attributes associated with each. Or, put bluntly, the analyst should analyze but not try to decide.

(3) To encourage agency acceptance of its responsibilities for the quality of work produced, each agency should:

(a) Assure that the agency's institutional label is affixed to the product resulting from its work program.

(b) Follow the practice of indicating the principal authors and significant contributors to the study products. By these means, the performing agency and the responsible individuals will take more pride in their products.

(4) In order to assure quality reports on a continuing basis:

(a) Prepublication peer review should be carried out at the agency level.

(b) On a sample basis, a reasonable portion (e.g., 10 percent) of agencies' products should be subjected to detailed technical review by external peer agencies.

(c) Study sponsors should provide timely feedback to the study doers on study strengths, weaknesses, utility, and uses.

(5) Periodic agency/activity reviews should be conducted by a distinguished board of visitors outside the chain of command. Such reviews would provide the commander/director a fresh perspective on and an unbiased critique of agency goals, initiatives, and programs.

(6) There should be a semi-annual meeting of the directors/ commanders of CAA, CACDA, TRASANSA and AMSAA with the DUSA(OR) and other ORSA elements. These meetings would discuss mutual programs and emerging priorities. Additionally, better use should be made of the Army Operations Research Symposia to exchange methodologies, studies, and mutual problems.

APPENDIX M
STUDY DIRECTIVE



DEPARTMENT OF THE ARMY
OFFICE OF THE UNDER SECRETARY
WASHINGTON, D.C. 20310

11 July 1978

MEMORANDUM FOR: DIRECTOR OF THE ARMY STAFF

SUBJECT: Review of Army Analysis

Analysis is of continuing high importance to the Army. It contributes to our understanding of a wide variety of issues--threat characteristics, equipment performance, effectiveness of units, costs of systems, and capabilities of forces, to name but a few. We have only limited resources to do Army analyses. We must be sure that they are used to work on the right problems, that they are properly organized, and that their activities are coordinated for maximum efficiency. I believe that it may be possible to improve the contribution that our analytical community currently makes to solution of Army problems. Therefore I would like for you to make a basic review of our Army analysis resources, organizations, and procedures. A draft of the Terms of Reference for the proposed review is provided at Inclosure 1. The review should produce specific recommendations for improvement of Army analysis.

I am willing to make Mr. Hardison of my office available to participate in the review, or to lead it if you desire. As a planning goal, I suggest that the study be completed by 1 October 1978.

Handwritten signature of Walter B. LaBerge.

Walter B. LaBerge
Under Secretary of the Army

1 Incl
as

RECEIVED

Under Secretary of the Army

10 JUL 1978

United States Army

M-1

TERMS OF REFERENCE - Review of Army Analysis

1. **PURPOSE:** The purpose of this review of Army analysis is to improve the contribution made by analysis to illumination of issues of interest to the Army and to the solution of Army problems.

2. **OBJECTIVES:** The objective of the review is to identify any practicable actions which would improve the following:

a. **Problems Selected for Study and Analysis** - The Army analysis community should work mainly on important issues in need of illumination and on problems whose solutions would be of high benefit to the Army.

b. **Quality of Work** - Army analyses should be pertinent, consistent, valid, and credible.

c. **Productivity** - Army analyses should be efficiently conducted and resources should be at least adequate to minimal needs.

d. **Organizational Arrangements** - The Army analysis community should be organized to facilitate efficient conduct of an integrated program of studies, to provide proper guidance and control of studies and analyses, to encourage coordination of related study activities and to minimize analysis gaps and needless overlaps.

3. **SCOPE:** The scope of the review is as follows:

a. **Types of Analysis** - All analyses defined as studies in AR 5-5. Other operations research/systems analysis activities of the Army.

b. **Organizations** - Primary attention will be given to those elements of the Army Secretariat, HQDA Staff, HQ DARCOM, HQ TRADOC, ARI, SSI, ESC, LEA, CAA, ANSAA, TRASANA, and CACDA which are involved directly.

in Army studies and analyses. Parts of other organizations, such as elements of BRL, TRADOC Logistic Center, HQ FORSCOM, etc., will be included as appropriate to the objectives of the review.

4. TASKS: The overall task is to assess the Army's current analysis system and to propose specific improvements in policy, procedure, programs, and organizations. Specific parts subordinate to this overall task include consideration of the following:

- a. Policy and procedures for focusing analysis on Army priority problems.
- b. Extent to which current analysis efforts are focused on priority problems.
- c. The distribution of analytical resources among efforts addressing FPBS, combat developments, operations and training.
- d. Policies, procedures and programs which establish standards of performance and controls for ensuring valid study results.
- e. Policies, procedures and programs for developing test and experimental data upon which to base Army analysis.
- f. Extent to which data bases, modeling efforts and products of analysis are integrated, coordinated and consistent.
- g. Policies, procedures and programs which provide for integrating and coordinating Army analysis.
- h. Adequacy of resources invested in research, development and improvement of Army analytical capability.
- i. Extent to which analyst acquisition and training programs are sufficient for satisfying requirements for military and civilian analysts and managers.

j. The assignment of analytical mission responsibilities and associated resources. Consider alternate organizational arrangements.

k. The interfaces with analysis activities external to Department of the Army (e.g., OSD, other Services, OMB).

l. The balance of in-house and contract analytical effort. Assess the need for an Army analytical FCRC.

m. The policies, procedures and programs which provide for a progressive analytical capability.