AD-A156 227

FINAL REPORT

REVIEW OF ARMY ANALYSIS EXTENDED (RAAEX)

VOLUME II—TASK REPORTS

MARCH 1985

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:

Office, Chief of Staff of the Army
Department of Army
ATTN: DACS-DMO
Washington, D.C. 20310

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

THIS DOCUMENT CONTAINED
BLANK PAGES THAT HAVE
BEEN DELETED

REVIEW OF ARMY ANALYSIS EXTENDED

(RAAEX)

VOLUME II - TASK REPORTS AND APPENDICES

1 MARCH 1985

RAAEX Special Study Group
Department of the Army (SAUS-OR-RAAEX)
Washington,DC 20310

A-1

CONTENTS

SECTION I - EXECUTIVE SUMMARY (VOLUME I)

SECTION II - TASK REPORTS AND APPENDICES

		Page
CHAPTER 1	- Definition of Studies and Analysis	1-1
2	- Implementation of 1978 Review of Army Analysis	2-1
3	- Program Focus	3-1
4	- Quality Assurance and Research	4-1
5	- Treatment of Countermeasures and Counter-countermeasures	5-1
6	- Analytical Support of Functional Areas	6-1
7	- Acquistion and Training of Army Analysts	7-1
8	- Analysis Mission and Resources & Army Model Improvement Program	8-1
9	- Inter-Relationship of Analysis and Testing	9-1
10	- Inter-Relationship of Analysis and Intelligence	10-1
11	- Inter-Relationship of Analysis and Costing	11-1
12	- Manpower and Personnel Analysis	12-1
13	- Logistics Analysis	13-1
14	- Production of Lethality and Vulnerability Input Data	14-1
15	- Interface With External Analysis Activities	15-1
16	- Analysis Support to the Army in the Field	16-1
Appendix A	- Tasking Letter	A-1
B	- Terms of Reference	B-1

CHAPTER 1

DEFINITION OF STUDIES AND ANALYSIS

TASK DESCRIPTION

- THE PURPOSE WAS TO:
  - Help scope the work of the RAAEX task force
  - Help facilitate the management of Army studies

- THE SCOPE OF THE TASK WAS TO:
  - Provide a definition
  - Show its implications
  - Give some background to help understand the problem and show possible implementation of recommendations

- SOME ASSUMPTIONS ABOUT THE DEFINITION SOUGHT;
  - Not just to scope the RAAEX study, but also to serve as basis for recommendations about oversight of studies and analysis
  - Need narrow definition for intensive management and funding purposes but a broad definition for quality assurance and oversight

- OUR CRITERIA FOR A GOOD DEFINITION WERE:
  - Responsive to Congressional concerns
  - Accomodates (or influences) OSD definition
  - Compatible with PB 21 and DD 350 categories
  - Consistent across Army functions and activities
  - Unambiguous enough to minimize misuse
  - Comprehensive enough to consider all problem solving "analyses"
  - Practical enough to minimize management burden
  - Logical - not just based on accounting or organizational distinctions

RAA
EX

TASK - Define the term "study"

PROBLEM STATEMENT

- CONGRESSIONAL AND OSD INTEREST AND CONCERNS IN STUDIES:
  - Cover a wide spectrum of types of analytic activities including R&D, management support, consulting, and studies
  - Concerns expressed with: sole source contracting, studies as an extension of staff, shell game with funding cuts, failure to use the Defense Technical Information Center (DTIC), failure to use analysis products, inadequate planning, poor records, incomplete costing, etc.
  - Congressional and OSD criticisms imply the need for better visibility and accounting for a wide spectrum of analytic activities in the Army

- CONFUSION IN DEFINITION - Besides differences between organizations and overlapping terminology, there is an overlap in the four required budget reporting categories:
  - CONSULTANTS AND EXPERTS - PB21 includes personnel appointments and contracted consultants, while DD 350 has no code for consulting. With respect to a definition of studies, consultants might better be thought of as a resource that can perform any kind of study or analysis, rather than as a category of study
  - STUDIES AND ANALYSIS - PB21 employs the current OSD definition of study, which is very broad and makes no distinction between studies, analyses, and other analytic support
  - PROFESSIONAL AND MANAGEMENT SUPPORT SERVICES - PB21 definition includes: program and project management support, policy/program review and development, specification development, logistics support services, public affairs/advertising, technology sharing and utilization, and technical data collection (including technical evaluation and simulation and modeling of performance). DOD Directive 350 includes similar activities plus: operations research services, intelligence services, engineering technical services, and systems engineering
  - SYSTEMS ENGINEERING AND ENGINEERING SERVICES has now been changed to PB25, but when it was under PB 21, it was a further example of overlap in definitions because it included services essential to maintain required levels of performance, safety and reliability and to investigate, evaluate and assess technical, scientific or engineering problems, concepts and performance of hardware or software and to develop and evaluate feasible solutions to those problems by designing, prototyping and testing proposed hardware and software. Engineering technical services are defined as furnishing of technical assistance, instruction, and training in the installation, operation, and maintenance of weapons, equipment and systems

- NEED FOR ARMY OVERSIGHT - In addition to the management of studies as defined by AR 5-5, need is evidenced by the Congressional and OSD interests and concerns and also by the Army experience of a wide variation in quality in those analyses falling outside the currently defined studies.

PROBLEM STATEMENT

Three reasons for reconsidering the definition of "studies and analysis":

- CONGRESSIONAL AND OSD INTEREST AND CONCERNS
  - Very broad definitions
  - Accounting for funding
  - Management

- CONFUSION IN DEFINITION
  - AUTHORITIES: Congress, OMB, GAO, OSD, HQDA, MACOM's, PM's, etc.
  - TERMINOLOGY: Study, analysis, review, consulting, support services, etc.
  - CONTRACT REPORTING CATEGORIES: PB 21, DD 350, PB 25

- NEED FOR ARMY OVERSIGHT
  - AR 5-5 Studies management
  - Other analyses

DISCUSSION

- STUDY - "AN ANALYSIS TO HELP WITH A DECISION"

  - Develop concepts for improved..... PEOPLE
  - Evaluate effectiveness of ..... THINGS
  - Determine the best allocation of..... INFORMATION
  - Determine requirements for..... TRAINING
    OPERATIONS

- ANALYSIS - "SYSTEMATIC EXAMINATION OF AN IDENTIFIED PROBLEM AREA WHOSE PRODUCT IS VERBAL OR MATHEMATICAL"

  - Reduce and organize data about ..... PEOPLE
  - Calculate performance characteristics of ..... THINGS
  - Calculate costs of ..... INFORMATION
  - Develop models/methods for costing, testing, or studying... TRAINING
    OPERATIONS

- OTHER - (NEITHER STUDY NOR ANALYSIS)

  - Basic research
  - Collection or generation of data (Conduct of tests, experiments, exercises, surveys)
  - Support services for management: Administrative (reviewing, auditing, scheduling,documenting) or engineering services (specification development, systems engineering, technology evaluation)

PROPOSED DEFINITIONS FOR "ANALYSIS" AND "STUDY":

STUDY	-	AN ANALYSIS TO HELP WITH A DECISION
ANALYSIS	-	SYSTEMATIC EXAMINATION OF AN IDENTIFIED PROBLEM AREA WHOSE PRODUCT IS VERBAL OR MATHEMATICAL
OTHER	-	(NEITHER STUDY NOR ANALYSIS) - CONDUCT OF BASIC PESEARCH, DATA COLLECTION, ADMINISTRATIVE OR ENGINEERING SUPPORT OF MANAGEMENT

FINDINGS

Applying the narrow definition of "study" proposed and the broad definition of "analysis", and keeping in mind the exclusions from either definition, the categorization of commonly conducted Army problem solving activities appears to be:

	STUDY	ANALYSIS	OTHER
PLANS AND OPERATIONS	*STRATEGIC STUDY *OPERATIONS EFFECTIVENESS STUDY *INTERNATIONAL SECURITY STUDY *CONTINGENCY ANALYSIS	*DATA BASE DEVELOPMENT *METHODS DEVELOPMENT OPERATIONS PLANS ANALYSIS DEVELOPMENT OF PLANS DEPLOYMENT CALCULATIONS	STAFF ACTIONS
TRAINING	*EVAL OF ALTERNATE PROGRAMS *TRAINING EFFECTIVENESS ANALYSIS DEVELOPMENT OF TRAINING REQUIREMENTS	*DATA BASE DEVELOPMENT *METHODS DEVELOPMENT DATA REDUCTION CONSOLIDATION OF RECORDS	CONSTRUCTION OF TRAINER-SIMULATOR CONDUCT OF EXERCISES SCHOOL INSTRUCTIONS RECORD KEEPING
FORCE DESIGN & STRUCTURE	*FORCE MIX EVALUATION CAPABILITY STUDY *HISTORICAL RESULTS EXAMINATION	*DATA BASE DEVELOPMENT *DEVELOPMENT OF MODELS, GAMES, & SIMULATIONS EVALUATION OF TESTS & EXPERIMENTS WORKLOAD FACTORS MEASURES	OPERATIONS RECORD KEEPING HISTORICAL NARRATIVE FORCE DEVELOPMENT TESTS AND EXPERIMENTS CPX's AND FTX's
COMBAT DEVELOPMENTS	*DOCTRINE & TACTICS STUDY *MATERIEL REQUIREMENTS STUDY MISSION AREA ANALYSIS	*DATA BASE DEVELOPMENT EVALUATION OF TESTS & EXPERIMENTS	FORCE DEVELOPMENT TESTS & EXPERIMENTS CPX's AND FTX's
MATERIEL ACQUISITION (RDA)	*CONCEPT ANALYSIS *COEA *MAA *REQUIREMENTS STUDY IER (AR 70-10) SOURCE SELECTION STUDY VULNERABILITY STUDY HMPT ANALYSIS (AR 602-1)	*DATA BASE DEVELOPMENT *MODEL DEVELOPMENT *T&E METHODOLOGY *TEST DESIGN ANALYSIS DESIGN OF TEST ITEM LEVEL PERFORMANCE BALLISTICS CALCULATIONS LETHALITY CALCULATIONS RELIABILITY SIMULATIONS MATERIEL SIMULATIONS HUMAN FACTORS ENGINEERING MARKET SURVEY (NDI) PLANNING OF SDC"s	BASIC RESEARCH ENGINEERING DESIGN CONDUCT OF TEST COLLECTION OF COST DATA CONDUCT OF SDC'S PROGRAM SCHEDULING PROGRAM BUDGETING SOURCE SELECTION

*Currently defined as AR 5-5 Studies

APPLICATION OF THE PROPOSED DEFINITIONS OF "STUDY" AND "ANALYSIS" WOULD CATEGORIZE EXAMPLE EFFORTS AS FOLLOWS:

	STUDY	ANALYSIS	OTHER
PLANS AND OPERATIONS	Operations effectiveness study	Deployment calculations	Staff actions
TRAINING	Training effectiveness analysis	Data base development	School instruction
FORCE DESIGN & STRUCTURE	Force mix evaluation	Development of model	Force development test
COMBAT DEVELOPMENTS	Doctrinal study	Evaluation of test or experiment	CPX's and FTX's
MATERIEL ACQUISITION	Cost-operational effectiveness analysis	Test design analysis	Basic research

FINDINGS, (continued)

	STUDY	ANALYSIS	OTHER
LOGISTICS	*LOGISTIC CONCEPT EVALUATION *REQUIREMENTS STUDY *EXAMINATION OF METHODS FOR OPERATION OF LOGISTICS ACTIVITIES LOGISTIC SUPPORT READINESS ASSESSMENT	*MODEL DEVELOPMENT *DATA BASE DEVELOPMENT CALCULATIONS OF USE RATES TRANSPORTABILITY ANALYSIS (AR 55-80)	RECORD KEEPING CONDUCT OF TESTS CONDUCT OF SCD's
INTELLIGENCE	*EFFECTIVENESS EVALUATION OF INTELLIGENCE MEANS	*DATA BASE DEVELOPMENT *RED-BLUE NET ASSESSMENT *THREAT ANALYSIS METHODOLOGY *THREAT CAPABILITY EVALUATION *THREAT PROJECTION AREA REPORTS TECHNOLOGY ASSESSMENT	INTELLIGENCE COLLECTION
PERSONNEL & MANPOWER	*COMPARISON OF ORGANIZATIONAL ALTERNATIVES *EFFECTIVENESS EVALUATION OF PERSONNEL METHODS & POLICIES PPT ANALYSIS (AR 70-8)	*DATA BASE DEVELOPMENT *METHODOLOGY DEVELOPMENT TOE DEVELOPMENT MANPOWER COMPUTATIONS SURVEY DATA REDUCTION	BASIC RESEARCH RECORD KEEPING PERSONNEL ADMINISTRATION CONDUCT OF SURVEYS HUMAN FACTORS EXPERIMENTS
COSTING & PROGRAMING	*ECONOMIC ANALYSIS (AR 11-28) *COST-BENEFIT ANALYSIS	BASELINE COST ESTIMATE INDEPENDENT COST ESTIMATE COST ANALYSIS BRIEF	COST DATA COLLECTION
MANAGEMENT	*ALLOCATION OF RESOURCES *EVALUATION OF ALTERNATIVES *RISK ANALYSIS POLICY ANALYSIS MIS STUDY (AR 18-1)	*DATA BASE DEVELOPMENT REVIEWS OF STUDIES INFORMATION SYSTEM STRUCTURING OE ANALYSIS	CONDUCT OF SURVEY PROJECT SCHEDULING POLICY REVIEW AUDITS & INSPECTIONS STAFF ACTIONS OE DEVELOPMENT
OTHERS	BASE CLOSURE STUDIES(AR 5-10) SAFETY STUDY (AR 50-4) ENVIRONMENTAL IMPACT STATEMENT	HFE PROGRAM (AR 602-1) TRAFFIC ENGINEERING (AR 5-4)	

FINDINGS (CONTINUED)

LOGISTICS	Logistic support readiness assessment	Calculations of use rates	Sample data collection
INTELLIGENCE	Effectiveness evaluation	Red-Blue net assessment	Intelligence collection
PERSONNEL & MANPOWER	Manpower, personnel training study	Survey data [illegible]uction	Record keeping
COSTING & PROGRAMING	Cost-benefit analysis	Baseline Cost estimate	Cost data collection
MANAGEMENT	Risk analysis	Information system structuring	Project scheduling
OTHERS	Environmental impact statement	Traffic engineering	Staff actions

RECOMMENDATIONS

- ADOPT PROPOSED DEFINITIONS - Change AR 5-5 to define both studies and analyses in the Army, but factored into the two components for management and oversight purposes. Define studies comparatively narrowly for intensive management and define analyses very broadly for general oversight. Establish an oversight procedure based on reporting of completion of quality reviews. At the same time, exploit the opportunity to merge AR 5-14 into the expanded AR 5-5.

- PROPOSE DEFINITIONS TO OSD - Agree to very broad definition of "studies and analyses" collectively, but make a distinction between them, and in the case of:

  - PB 21 -
    - Change the definition of "studies and analyses" to the Army proposal
    - Narrow the definition of "Professional Management Services by Contract" to administrative-type services
    - Make "consultants and experts" a subcategory under other appropriate categories such as "studies" or "management services"
  - FPDS - Redefine "Special studies and analyses" in the Federal Procurement Data System (FPDS) like the Army proposal
  - DODD 5010.22 - Change definition of studies to focus on decision support

RECOMMENDATONS

- Adopt the proposed definitions of "study" ano "anal/sis" in the Army

- Propcse to OSD che Army defiritions of "studies and analysis" for PB 21, the FPDS, and DODD 5010.22.

RAA
EX

IMPLEMENTATION OF 1978 REVIEW OF ARMY ANALYSIS

TASK DESCRIPTION

- The objective was to assess the extent to which the actions taken as a consequence of the prior review have improved the contribution made by analysis to illumination of issues of interest to the Army and solution of Army problems.

- The task was carried out by reviewing all actions proposed by the earlier review and determining which actions were implemented as proposed, which were modified and implemented, which were not implemented and the reasons for not implementing, and the changes resulting from the implementations.

- BACKGROUND

  - The "Review of Army Analysis" was published in 1979 as a result of "A Basic Review of Army Analysis Resources, Organizations and Procedures..." carried out by a "Special Study Group Assembled by the DCSOPS [and] Chaired by the Deputy Under Secretary of the Army...." The study group consisted of representatives from OCSA, ODCSOPS, ODCSPER, OCOA, HQ TRADOC, HQ DARCOM, CAA, CACDA, TRASANA, and AMSAA. Other Army organizations provided part-time help.

  - An abstract of the study reads: "The study recommends actions required to improve the quality, focus and efficiency of Army analysis. The central thrust, philosophy and goals of the study were approved for implementation by the VCSA on 22 March 1979. All study recommendations were approved except for those related to the proposed Army Study Council and the numbers of and transfer of personnel resources."

4. TASKS: The overall task is to assess the Army's current analysis system and its uses and to propose specific improvements in policy, procedure, programs, and organizations. Specific parts subordinate to this overall task include evaluation of the following:

a. Degree of implementation and impact of the recommendations of the 1978 Review of Army Analysis.

b. Adequacy of policy and procedures for focusing analysis on Army priority problems.

c. Adequacy of policy and procedures for insuring high quality of Army analyses.

d. Adequacy of the treatment of countermeasures and counter-countermeasures in Army analyses.

e. Adequacy and distribution of analytical resources among efforts addressing PPBS, combat developments, systems acquisition, operations, training, planning, logistics, personnel, and other functional areas.

f. Adequacy of resources invested in research, development and improvement of Army analytical capability to include adequacy of facilities and utilization of inter-agency networking. This should include consideration of the need for a combat simulation research center.

g. Extent to which analyst acquistion and training programs are sufficient for satisfying requirements for military and civilian analysts and managers and the extent to which there are valid professional development plans for analysts and managers.

h. Appropriateness of assignment of analytical mission responsibilities to Army analytical activities and the adequacy of associated resources. This should include an examination of the status and future of the Army Model Improvement Program and Army Model Managment Office and consideration of alternate organizational arrangements.

i. Adequacy of policy, procedures, and programs for providing support to the conduct of and the evaluation of the results of development and operational testing.

j. Adequacy of policies, procedures, and programs for developing test and experimental data upon which to base Army analyses.

k. Adequacy of intelligence support to the analytical community and the adequacy of operations research support to intelligence analysis.

l. Adequacy of costing support to the analytical community and the adequacy of operations research support to cost analysis.

m. Adequacy of analytical support to the manpower and personnel functional area.

n. Adequacy of analytical support to the logistics functional area.

o. Adequacy of DARCOM and OACSI support to the analysis community in providing critical lethality and vulnerability input data.

p. Adequacy of interfaces with analysis activities external to Department of the Army (e.g., OSD, other services, OMB.)

q. Adequacy of policy, procedures, and programs to provide analytical support to the Army in the Field in training, planning, and operations.

TASK DESCRIPTION

RAA EX

TASK: DETERMINE THE DEGREE OF IMPLEMENTATION AND IMPACT OF THE RECOMMENDED ACTIONS RESULTING FROM THE 1978 REVIEW OF ARMY ANALYSIS

THERE WERE 39 ACTIONS DISTRIBUTED AS:

• ARMY STUDY PROGRAM AND STUDY SYSTEM	4
• STUDIES OF FORCES AND CERTAIN FORCE-WIDE ISSUES	2
• STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS--BRIGADES, DIVISIONS, AND CORPS	4
• STUDIES OF FUNCTIONAL SYSTEMS, UNITS, AND REQUIREMENTS FOR ITEM SYSTEMS	5
• STUDIES OF ITEM LEVEL SYSTEMS	5
• MODELS, DATA, AND DATA BASES	6
• PERSONNEL QUALIFICATIONS	4
• QUALITY ASSURANCE	8
• USE OF OPERATIONS RESEARCH IN OPERATIONAL COMMANDS	1

ANALYSIS PROCESS

All actions proposed by the original review were tracked through the implementation process starting with the "Tasker" and concluding with implementation steps taken in the recent past. Documents reviewed included summary reports of implementation steps and responses to tasker assignments. The written information was supplemented with interviews with key members of HQDA staff, MACOMS, and analytical organizations.

The report material is organized in the sequence of the original review "ACTIONS" with headings as provided by the original review report. Each action proposed by the original review is presented with its implementation steps and resulting impact. Coupled with the description of implementation and impact is backup information indicating:

RAA RECOMMENDATION: As described in "Review of Army Analysis," Chapter 15 PROPOSED ACTIONS

TASKER: HQDA Ltr. 5-79-3, Subj: Review of Army Analysis-Implementation Instructions, 23 July 1979, Inclosure 3: IMPLEMENTING ACTIONS

ACTIONS TAKEN: Update reports provided by SPMO to describe implementing actions and completed tasks, dated: 6 Sept 1979; 5 Nov 1979; 17 March 1980, 1 Oct 1980; 29 April 1982.

ELEMENTS OF ANALYSIS

- EXTENT TO WHICH RECOMMENDATIONS WERE IMPLEMENTED (FULLY, PARTIALLY, OR NOT AT ALL)
- REASONS FOR PARTIAL OR NO IMPLEMENTATION
- IMPACT OF CHANGES RESULTING FROM IMPLEMENTATION
- UNINTENDED CONSEQUENCES OF CHANGES

SECTION I: ARMY STUDY PROGRAM AND STUDY SYSTEM

RAA RECOMMENDATION: A. Establish an Army Study Council to review and approve study guidance and programs. Council should be chaired by VCSA and be composed of HQDA principals, TRADOC and DARCOM commanders, and representatives of other MACOMs.

TASKER: None. Joint SELCOM (augmented) will review and approve study guidance and programs.

ACTION TAKEN: Completed by SELCOM decision; no action required. Joint SELCOM (augmented) considers study program policy matters as required. Seldom, if ever, called on to do so. VCSA approves Study Plan as recommended by SPCC.

ARMY STUDY PROGRAM AND STUDY SYSTEM (FIRST OF 4 ACTIONS)

- ACTION - ESTABLISH AN ARMY STUDY COUNCIL
- IMPLEMENTATION - MODIFIED. JOINT SELCOM (AUGMENTED) ASSIGNED ITSELF RESPONSIBILITY FOR PROGRAM REVIEW AND APPROVAL.
- IMPACT - JOINT SELCOM NOT ACTIVE IN DETERMINING CRITICAL ISSUES FOR ARMY ANALYSIS; ANTICIPATED DIRECTION OF ARMY STUDY COUNCIL NEVER ACHIEVED.

SECTION I: ARMY STUDY PROGRAM AND STUDY SYSTEM

RAA RECOMMENDATION: B. Establish a Study Program Allocation Committee to review and balance programs and recommend to Army Study Council. The Committee should be chaired by Director of Management (OCSA) with appropriate HQDA and MACOM representation.

TASKER: Establish Study Program Coordination Committee (SPCC).

ACTION TAKEN: In operation by September 1979. Has continued to meet at least once a year to review and recommend forwarding next FY's AR 5-5 Study Program.

TASKER: Publish SPCC Charter in CSR.

ACTION TAKEN: Completed by publication of CSR 15-9, October 1979. MACOM representatives included by invitation.

ARMY STUDY PROGRAM AND STUDY SYSTEM
(SECOND OF 4 ACTIONS)

- ACTION - ESTABLISH A STUDY PROGRAM ALLOCATION COMMITTEE
- IMPLEMENTATION - MODIFIED. STUDY PROGRAM COORDINATION COMMITTEE ESTABLISHED TO REVIEW PROGRAM, MAKE RECOMMENDATIONS TO SELCOM AND PROGRAM/BUDGET COMMITTEE, AND COORDINATE UNPROGRAMED STUDIES.
- IMPACT - IN PRACTICE, IS NOT USED TO BALANCE PROGRAMS OR TO PROPOSE GUIDANCE. HAS HAD LIMITED IMPACT.

SECTION I: ARMY STUDY PROGRAM AND STUDY SYSTEM

RAA RECOMMENDATION: C. Expand the mission and resources of the current Study Management Office (SMO) to form a Study Program Management Office (SPMO).

(1) Increase the office size to 6 to 10 professionals from the present 3. The office should have a super grade chief reporting to the Director of Management.

(2) SPMO should execute all current SMO functions plus assist in development of guidance, serve as secretariat for Study Council and Program Allocation Committee, and serve as functional program manager.

TASKER: Establish Study Program Management Office (SPMO).

ACTION TAKEN: Completed August 1979. CAA liaison added.

TASKER: Develop mission and functions.

ACTION TAKEN: Completed by November 1979. HQDA letter 10-79-5, Subj: Organization of Study Program Management Office (SPMO). Also see CSR 10-10.

TASKER: Provide additional manpower spaces.

ACTION TAKEN: Five additional spaces provided including an SES.

TASKER: Revise AR 5-5 to reflect approved changes in Army Study System.

ACTION TAKEN: Revised AR 5-5, Army Studies and Analyses, published. Revised DA PAM 5-5 published.

ARMY STUDY PROGRAM AND STUDY SYSTEM (THIRD OF 4 ACTIONS)

- ACTION - EXPAND MISSION AND RESOURCES OF THE STUDY MANAGEMENT OFFICE.
- IMPLEMENTATION - PARTIALLY IMPLEMENTED
- IMPACT - CENTRALIZED GUIDANCE PROVIDED STUDY PROGRAM BUT WITHOUT AUTHORITY TO INFLUENCE PROGRAM DIRECTION. ROLE AS FUNCTIONAL PROGRAM MANAGER NOT COMPLETELY FULFILLED.

SECTION I: ARMY STUDY PROGRAM AND STUDY SYSTEM

RAA RECOMMENDATION: D. Require the budget process to capture study data on-line. Eliminate program elements for HQDA and TRADOC studies and include these funds in budgets of operating agencies. Revise AR 5-5 to align definition of studies with OSD and Congressional requirements.

TASKER: Implement revised program/budget procedures.

ACTION TAKEN: Completed by March 1980. Contract study budgets now received on COBs from MACOMs, and incorporated in PB-21 budget display for OSD, OMB, and Congress.

TASKER: Establish Chief SPMO membership on HQDA program and budget committees.

ACTION TAKEN: Attempted to get membership on RDAC, PPRC, PBC, SPC, & TSARC. As of FY 1984: observer at TSARC; not able to get membership on PBC or SPC; RDAC & PPRC no longer active.

TASKER: Delete TRADOC study program element (subordinate to other program element).

ACTION TAKEN: Not implemented. ODCSRDA and TRADOC recommended retention of the TRADOC budget line. Approved by VCSA in June 1980.

TASKER: Provide contract funds (formerly HQDA) to CAA.

ACTION TAKEN: SPMO budget records provided to CAA in August 1979. Subsequently, Sec Army Admin Assistant nonconcurred with transferring funds to CAA operating account. HQDA funds now centrally managed by SPMO. For FY 1984, management of some contracts for projects having some relationship with their in-house efforts transferred to CAA.

ARMY STUDY PROGRAM AND STUDY SYSTEM
(FOURTH OF 4 ACTIONS)

- ACTION -
  - CAPTURE STUDY DATA ON-LINE IN BUDGET PROCESS.
  - INCLUDE HQDA AND TRADOC CONTRACT STUDY FUNDS IN BUDGETS OF OPERATING AGENCIES.
  - ALIGN DEFINITION OF STUDIES WITH OSD AND CONGRESS.
- IMPLEMENTATION -
  - DEDICATED SYSTEM DESIGNED TO CAPTURE STUDY DATA.
  - RDT&E ELEMENTS FOR HQDA STUDIES ELIMINATED; TRADOC'S RDT&E PROGRAM ELEMENT RETAINED.
  - DEFINITION OF AR 5-5 STUDIES ALIGNED WITH OSD STUDIES IN DODD 5010.22.
  - PARTICIPATION IN SUBSTANTIVE BUDGET PROCESS LIMITED BECAUSE OF LOW MONETARY VALUE OF STUDIES.
- IMPACT -
  - INCREASED CONGRESSIONAL VISIBILITY FOR CONTRACT STUDIES.
  - DEFINITIONAL PROBLEMS CONTINUE TO PLAGUE PROGRAM.

SECTION II: STUDIES OF FORCES AND CERTAIN FORCE-WIDE ISSUES

RAA RECOMMENDATION: A. Define integrated family of strategic and force level studies and the interface with combat developments studies. Require that the studies be performed and the results provided in form suitable for use in a hierarchy of studies using a hierarchy of models.

TASKER: Define a hierarchy of analyses, studies, models, training simulations and relationships.

ACTION TAKEN: ODCSOPS defined family of strategic and force level studies in support of HQDA.

STUDIES OF FORCES AND CERTAIN FORCE-WIDE ISSUES (FIRST OF 2 ACTIONS)

- ACTION -
  - DEFINE INTEGRATED STRATEGIC AND FORCE LEVEL STUDIES TO INTERFACE WITH COMBAT DEVELOPMENTS STUDIES.
  - DEVELOP HIERARCHY OF STUDIES USING HIERARCHY OF MODELS.
- IMPLEMENTATION -
  - DEFINITION OF HIERARCHY OF STUDIES PARTIALLY COMPLETED.
  - HIERARCHY OF STUDIES NOT DEVELOPED PENDING DEVELOPMENT OF HIERARCHY OF MODELS.
- IMPACT -

  SOMEWHAT BETTER ALLOCATION OF STUDY ASSETS TO FORCE LEVEL STUDIES. FULL ASSESSMENT MUST AWAIT COMPLETION OF MODEL HIERARCHY.

SECTION II. STUDIES OF FORCES AND CERTAIN FORCE-WIDE ISSUES

RAA RECOMMENDATION: B. Increase CAA capability to analyze all aspects of forces (e.g., operations, structure, logistics, manpower, personnel) and to support all elements of HQDA, especially in conducting analysis of Army-wide manpower and personnel issues. Add personnel and contract resources to CAA. Assign Commander, CAA, to Director of Army Staff. Provide HQDA principals a "line of credit" to CAA capability.

TASKER: Assign CAA to DAS.

ACTION TAKEN: Completed August 1979.

TASKER: Provide HQDA agencies "line of credit" with CAA.

ACTION TAKEN: Annual "lines of credit" recommended by SPCC and approved by DAS.

TASKER: Determine additional manpower spaces to be provided to CAA.

ACTION TAKEN: CAA given 8 additional analytical spaces. See HQDA letter 5-79-8, October 1979, subj: Review of Army Analysis-Implementation Manpower Spaces.

TASKER: Transfer manpower space authorizations to CAA.

ACTION TAKEN: 8 spaces transferred to CAA in October 1979. Positions established; recruitment completed by October 1980.

RAA
EX

STUDIES OF FORCES AND CERTAIN FORCE-WIDE ISSUES
(SECOND OF 2 ACTIONS)

- ACTION - INCREASE CAPABILITY OF THE CONCEPTS ANALYSIS AGENCY (CAA) TO SUPPORT ALL ELEMENTS OF HQDA. ADD PERSONNEL SPACES AND CONTRACT RESOURCES TO CAA.
- IMPLEMENTATION - MISSION EXPANDED TO SUPPORT OTHER ELEMENTS WITHIN ARMY HEADQUARTERS. CAA ASSIGNED TO DAS. EIGHT PERSONNEL SPACES PROVIDED. MANAGEMENT OF SOME HQDA CONTRACTS ATTEMPTED.
- IMPACT - CAA PROGRAM SUPPORT OF PRINCIPAL HQDA AGENCIES HAS HAD GENERALLY POSITIVE EFFECTS. CAA SUPPORT TO ODCSOPS PROPORTIONALLY AND SIGNIFICANTLY REDUCED.

SECTION III. STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS--BRIGADES, DIVISIONS AND CORPS.

RAA RECOMMENDATION: A. Increase analytical spaces at CACDA to about 150 professionals. The Study Group recommends these be concentrated in a TRASANA field office in direct support to CACDA.

TASKER: Organize centralized study activity at CAC.

ACTION TAKEN: Completed by March 1980.

TASKER: Determine additional CAC manpower spaces and resources needed.

ACTION TAKEN: Completed by November 1979.

TASKER: Transfer manpower space authorizations to CAC.

ACTION TAKEN: Completed by March 1980. 28 spaces provided to TRADOC for CACDA. Analyst positions established. Recruitment commenced. SES position requested and denied. Reorganization of TRASANA and CAORA under umbrella of TORA was final stage of implementation.

TASKER: Develop plan to implement new organization at CAC.

ACTION TAKEN: Completed by September 1979.

STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS-- BRIGADES, DIVISIONS AND CORPS (FIRST OF 4 ACTIONS)

- ACTION - INCREASE ANALYTICAL SPACES AT CACDA TO ABOUT 150 PROFESSIONALS.
- IMPLEMENTATION - 28 NEW POSITIONS WERE CREATED AND FILLED. SUBSEQUENT CREATION OF CAORA BY CONSOLIDATION SIGNIFICANTLY INCREASED SIZE OF ANALYSIS ELEMENT AT FT. LEAVENWORTH.
- IMPACT - IMPROVED CAPABILITY TO SUPPORT COMBINED ARMS AND SUPPORT ORGANIZATIONS BUT NOT YET TO THE EXTENT REQUIRED.

SECTION III: STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS--BRIGADES, DIVISIONS, AND CORPS

RAA RECOMMENDATION: B. Initiate development of techniques suitable to analyze the design of alternative brigades, divisions and corps.

ACTION TAKEN: Initiated CORDIVEM as part of the hierarchy of Army models.

RAA
EX

STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS-- BRIGADES, DIVISIONS AND CORPS (SECOND OF 4 ACTIONS)

- ACTION - INITIATE DEVELOPMENT OF TECHNIQUES TO ANALYZE DESIGN OF ALTERNATIVE BRIGADES, DIVISIONS AND CORPS.
- IMPLEMENTATION - PARTIALLY ACCOMPLISHED WITH CORDIVEM.
- IMPACT - INABILITY TO BE SUFFICIENTLY RESPONSIVE IN ANALYSES OF BRIGADES, DIVISIONS AND CORPS UNTIL SYSTEMIC VERSION OF CURRENT MAN-IN-THE-LOOP MODEL HAS BEEN DEVELOPED.

SECTION III. STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS--BRIGADES, DIVISIONS, AND CORPS

RAA RECOMMENDATION: C. Establish actual interface of CACDA with TRADOC centers and schools, TRASANA, and CAA. This is essential to provide the linkages necessary to mission accomplishment of these agencies.

ACTION TAKEN: Linkages established in accordance with design of hierarchy of Army models.

STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS-- BRIGADES, DIVISIONS AND CORPS (THIRD OF 4 ACTIONS)

- ACTION - ESTABLISH INTERFACE AMONG CACDA, TRADOC CENTERS AND SCHOOLS, TRASANA, AND CAA.
- IMPLEMENTATION - AGENCIES ROUTINELY SHARE DATA, DATA BASES. PLANS FOR INCREASED INTERACTION THROUGH TELENETWORKING UNDERWAY. TORA CREATED. TECHNICAL INTERFACE BETWEEN TRASANA AND CAURA ON CORDIVEM.
- IMPACT - FACILITATES MODEL DEVELOPMENT AND CONDUCT OF ANALYSES. INCREASED UTILITY OF STUDIES AND INFORMATION GENERATED. HOWEVER, IMPACT MUCH WEAKER THAN DESIRED.

SECTION III. STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS--BRIGADES, DIVISIONS, AND CORPS

RAA RECOMMENDATION: D. Require development and use of major organization models be coordinated with hierarchy of Army models. Require that command group training simulations be part of the hierarchy.

TASKER: Define a hierarchy of analysis, studies, models, training simulations and relationships.

ACTION TAKEN: ODUSA(OR) prepared definition of hierarchy, and draft master plan for development of hierarchy of models. Army Model Improvement Program (AMIP) initiated. AMIP management assigned to CAC. Overall efforts guided by Army Models Committee (AMC).

TASKER: Establish Army Model Committee, Model Resources Groups (at CAA, CAC, TRASANA & AMSAA), Data Base Management Group, and publish AR to define authority and responsibilities.

ACTION TAKEN: Charter for Army Model Committee, Model Resource Groups and Data Base Management Groups published in October 1979. AR 5-11, "Army Model Improvement Program" published in July 1981.

STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS-- BRIGADES, DIVISIONS AND CORPS (FOURTH OF 4 ACTIONS)

- ACTION - REQUIRE DEVELOPMENT AND USE OF MAJOR ORGANIZATION MODELS TO BE COORDINATED WITH HIERARCHY OF ARMY MODELS.
- IMPLEMENTATION - GUIDANCE CREATED FOR DEVELOPMENT OF HIERARCHY OF ARMY MODELS AND MANAGEMENT STRUCTURE FOR IMPLEMENTATION ESTABLISHED. DEVELOPMENT OF CORDIVEM NOT FULLY IN STEP WITH HIERARCHY DESIGN.
- IMPACT - OBSTRUCTED IMPLEMENTATION OF OTHER RECOMMENDATIONS. BROAD RANGE OF ARMY ANALYSES NEGATIVELY AFFECTED. UTILITY OF MODELS IMPAIRED. DEVELOPMENT OF CORDIVEM AS "MAN-IN-THE-LOOP" WAR GAME ADDED BOTTLENECK IN HIERARCHY.

SECTION IV: STUDIES OF FUNCTIONAL SYSTEMS, UNITS, AND REQUIREMENTS FOR ITEM SYSTEMS

RAA RECOMMENDATION: A. Fill the SC 49 authorized positions in TRADOC schools and centers with qualified SC 49 officers. Plans should be developed for improving the quantity and utilization of SC 49 officers.

TASKER: Develop improved procedures for determining requirements, qualifications and utilization for SC 49 officers.

ACTION TAKEN: New two-tier structure explored by ODCSOPS/MILPERCEN, but not adopted. Proponency for SC 49 transferred to TRADOC by April 1982.

TASKER: Develop program to improve fill of SC 49 officer positions within Army analytical community, particularly at TRADOC schools.

ACTION TAKEN: ODCSPER revised officer distribution plan (ODP) by March 1980. Fill at TRADOC schools somewhat improved.

RAA
EX

STUDIES OF FUNCTIONAL SYSTEMS, UNITS AND REQUIREMENTS FOR ITEM SYSTEMS (FIRST OF 5 ACTIONS)

- ACTION - FILL SC 49 AUTHORIZED POSITIONS WITH QUALIFIED SC 49 OFFICERS
- IMPLEMENTATION - REVISED OFFICER DISTRIBUTION PLAN (ODCSPER). ODP HAS NOT SUPPORTED FILLING SPACES AT TRADOC SCHOOLS.
- IMPACT - STUDIES AND ANALYSES PROGRAMS NOT FULLY SUPPORTED.

SECTION IV: STUDIES OF FUNCTIONAL SYSTEMS, UNITS AND REQUIREMENTS FOR ITEM SYSTEMS

RAA RECOMMENDATION: B. Place more emphasis on analysis of the control functional area.

TASKER: Develop study guidance and study programs to emphasize:
2. C^3I functional areas and systems.

ACTION TAKEN: Emphasized in Study Planning Guidance published as integral part of Army Guidance. TRADOC, AMC, INSCOM charged with further implementation.

STUDIES OF FUNCTIONAL SYSTEMS, UNITS AND REQUIREMENTS FOR ITEM SYSTEMS (SECOND OF 5 ACTIONS)

- ACTION - EMPHASIZE ANALYSIS OF CONTROL FUNCTIONAL AREA.
- IMPLEMENTATION - CONTROL FUNCTIONAL AREA EMPHASIS INCREASED AT SOME ANALYSIS ORGANIZATIONS.
- IMPACT - STILL LITTLE UNDERSTANDING OF HOW CONTROL FUNTIONS QUANTITATIVELY AFFECT ARMY OPERATIONS.

SECTION IV: STUDIES OF COMBINED ARMS AND SUPPORT ORGANIZATIONS--BRIGADES, DIVISIONS, AND CORPS

RAA RECOMMENDATION: C. Establish a continuing study program in each functional area to underpin item level system requirements.

TASKER: Develop study guidance and study programs to emphasize:
3. Functional area inputs to item level system requirements analyses.

ACTION TAKEN: Emphasized in Study Planning Guidance published as integral part of Army Guidance. TRADOC charged with implementation and implemented Concept Based Requirement System and the Mission Area Analysis.

RAA
EX

STUDIES OF FUNCTIONAL SYSTEMS, UNITS AND REQUIREMENTS FOR ITEM SYSTEMS (THIRD OF 5 ACTIONS)

- ACTION - ESTABLISH CONTINUING STUDY PROGRAM IN EACH FUNCTIONAL AREA TO UNDERPIN ITEM LEVEL SYSTEM REQUIREMENTS.
- IMPLEMENTATION - TRADOC MAA SYSTEM UNDER CONCEPT BASED REQUIREMENTS SYSTEM.
- IMPACT - VARIABLE. DEPENDS ON QUALITY OF SPECIFIC MAA.

SECTION IV: STUDIES OF FUNCTIONAL SYSTEMS, UNITS AND REQUIREMENTS FOR ITEM SYSTEMS

RAA RECOMMENDATION: D. Increase the portion of TRADOC analysis resources that are applied to analysis of training. Reduce effort on COEA.

TASKER: Develop study guidance and study programs to emphasize:
4. Training analyses.
5. Reduction of effort on COEAs.

ACTION TAKEN: Recommendation emphasized in Study Planning Guidance published as integral part of Army Guidance. TRADOC implemented in accordance with guidance.

STUDIES OF FUNCTIONAL SYSTEMS, UNITS AND REQUIREMENTS FOR ITEM. SYSTEMS (FOURTH OF 5 ACTIONS)

- ACTION - INCREASE TRADOC RESOURCES FOR ANALYSES OF TRAINING AND REDUCE PORTION OF ANALYSIS EFFORT ON COEA.
- IMPLEMENTATION - INCREASED EMPHASIS ON TRAINING EFFECTIVENESS. EFFORT ON COEAs REDUCED.
- IMPACT - IMPROVEMENT OF ASSESSMENT OF DIFFERENT METHODS OF TRAINING. SOME RESISTANCE TO IMPLEMENTATION BECAUSE COEAs SUPPORT SYSTEMS ACQUISITION PROCESS.

SECTION IV: STUDIES OF FUNCTIONAL SYSTEMS, UNITS AND REQUIREMENTS FOR ITEM SYSTEMS

RAA RECOMMENDATION: E. Require development and use of models of functional systems to be coordinated with Army hierarchy of models.

TASKER: Define a hierarchy of analyses, studies, models, training simulations and relationships.

ACTION TAKEN: Army Model Improvement Program (AMIP) initiated. Functional area models not yet integrated intc hierarchy except for Intelligence Electronic Warfare Process Model.

STUDIES OF FUNCTIONAL SYSTEMS, UNITS AND REQUIREMENTS FOR ITEM SYSTEMS (FIFTH OF 5 ACTIONS)

- **ACTION** - REQUIRE COORDINATION OF MODELS OF FUNCTIONAL SYSTEMS WITH ARMY HIERARCHY OF MODELS.
- **IMPLEMENTATION** - DELIBERATELY DELAYED SO AS NOT TO DETRACT RESOURCES FROM DEVELOPMENT OF HIERARCHY OF MODELS.
- **IMPACT** - FUNCTIONAL AREA MODELS OF VARYING QUALITY. POTENTIAL FOR INCONSISTENCIES. NO MODELS FOR SOME FUNCTIONAL AREAS. ONLY INTELLIGENCE ELECTRONIC WARFARE (IEW) PROCESS MODEL COORDINATED WITH HIERARCHY OF MODELS.

SECTION V: STUDIES OF ITEM LEVEL SYSTEMS

RAA RECOMMENDATION: A. TRADOC should describe and define a full set of conditions of usage, incorporate them into requirements documents. HQDA should incorporate into DCPs as they are updated.

TASKER: Define full set of conditions of usage for item level systems:
1. Incorporate in requirements documents.

ACTION TAKEN: Reported that conditions of usage were being included in ROCs. See Joint DARCOM/TRADOC Materiel Acquisition Handbook, January 1980. Requirement for specifying full set of conditions of usage included in AR 71-9, 15 Jul 84.

TASKER: 2. Incorporate in DCPs as they are updated.

ACTION TAKEN: Conditions of usage reported being included in Integrated Program Summary (IPS). Instructions published in AR 1000-1, May 1981.

STUDIES OF ITEM LEVEL SYSTEMS
(FIRST OF 5 ACTIONS)

- ACTION - TRADOC SHOULD DESCRIBE A FULL SET OF CONDITIONS OF USAGE FOR REQUIREMENTS DOCUMENTS.
- IMPLEMENTATION - ACTION HAS BEEN FULLY IMPLEMENTED AND CONDITIONS ARE NOW SPECIFIED IN REQUIREMENTS DOCUMENTS.
- IMPACT - PROVIDES DEVELOPER WITH FULL SET OF CONDITIONS OF USE. STILL SOME DIFFICULTIES IN TRANSLATING OPERATIONAL REQUIREMENTS INTO TECHNICAL SPECIFICATIONS.

SECTION V: STUDIES OF ITEM LEVEL SYSTEMS

RAA RECOMMENDATION: B. DARCOM should develop data regarding the performance of systems under the real conditions of usage.

TASKER: Develop study guidance and study programs to emphasize:
7. Real-use performance data.

ACTION TAKEN: Recommendation emphasized in Study Planning Guidance and published as integral part of Army Guidance. AMC has nominated development tests for Test Schedule and Review Committee Planning and taken other measures generally in conformance with guidance.

STUDIES OF ITEM LEVEL SYSTEMS
(SECOND OF 5 ACTIONS)

- ACTION - DARCOM SHOULD DEVELOP DATA ON PERFORMANCE OF SYSTEMS UNDER REAL CONDITIONS OF USAGE.
- IMPLEMENTATION - AMC HAS INCREASED ACTIVITY IN THIS AREA BY NOMINATING DEVELOPMENT TESTS FOR TSARC (TEST SCHEDULE AND REVIEW COMMITTEE) PLANNING, USING TROOPS IN TEST, APPLICATION OF PM SMOKE, COUNTER MEASURES, COUNTER-COUNTER MEASURES.
- IMPACT - MORE REALISTIC DATA ON CONDITIONS OF USE FOR SYSTEMS.

SECTION V: STUDIES OF ITEM LEVEL SYSTEMS

RAA RECOMMENDATION: C. DARCOM, especially AMSAA, should develop capability to analyze C^3I systems.

TASKER: Develop study guidance and study programs to emphasize:
6. Conditions of use of item systems.

ACTION TAKEN: Study Planning Guidance emphasized r..ommendation and published as integral part of Army Guidance. Consonant with guidance, AMSAA has developed data to meet this requirement.

RAA
EX

STUDIES OF ITEM LEVEL SYSTEMS
(THIRD OF 5 ACTIONS)

- ACTION - DARCOM, ESPECIALLY AMSAA, SHOULD DEVELOP DATA ON PERFORMANCE OF C^3I SYSTEMS UNDER EXPECTED CONDITIONS OF USAGE.
- IMPLEMENTATION - AMC HAS BEEN FOLLOWING GUIDANCE AND HAS DEVELOPED DATA.
- IMPACT - ABLE TO ASSESS PERFORMANCE OF SYSTEMS UNDER WIDE RANGE OF CONDITIONS. NEGATIVE EFFECT ON SOME AREAS, E.G. FIREPOWER, DUE TO TRANSFER OF RESOURCES.

SECTION V: STUDIES OF ITEM LEVEL SYSTEMS

RAA RECOMMENDATION: D. DARCOM should monitor efficiency of ongoing efforts to remedy problems in developing vulnerability data and take appropriate action.

TASKER: Develop study guidance and study programs to emphasize:
9. Vulnerability data.

ACTION TAKEN: No action has been taken beyond emphasizing this recommendation as part of the Army Guidance in the Study Planning Guidance.

STUDIES OF ITEM LEVEL SYSTEMS
(FOURTH OF 5 ACTIONS)

- ACTION - DARCOM SHOULD MONITOR EFFORTS TO REMEDY PROBLEMS IN DEVELOPING VULNERABILITY DATA AND TAKE NECESSARY ACTION.
- IMPLEMENTATION - NONE.
- IMPACT - CUSTOMER FUNDING REMAINS A PROBLEM. BECAUSE BRL VLD MUST WORK ON PROBLEMS PAID FOR, IT CANNOT FULLY MEET ITS PRIMARY MISSION OF PROVIDING OBJECTIVE, INDEPENDENT VULNERABILITY DATA FOR ASSESSMENT AND DECISIONMAKING. FURTHER DETAIL CONTAINED IN RAAEX CHAPTER 14.

SECTION V: STUDIES OF ITEM LEVEL SYSTEMS

RAA RECOMMENDATION: E. DARCOM should develop data regarding the manpower/personnel ramifications of item systems.

TASKER: Develop study guidance and study programs to emphasize:
10. Item system requirements for manpower/personnel.

ACTION TAKEN: Guidance published semiannually in The Army Study Plan. QQPRI fulfills this function but not developed by AMC and not as a direct result of proposed action.

STUDIES OF ITEM LEVEL SYSTEMS
(FIFTH OF 5 ACTIONS)

- ACTION - DARCOM SHOULD DEVELOP DATA RE MANPOWER/PERSONNEL RAMIFICATIONS OF ITEM SYSTEMS
- IMPLEMENTATION - DONE SOMEWHAT IN CONJUNCTION WITH PREPARATION OF QUALITATIVE AND QUANTITATIVE PERSONNEL REQUIREMENTS INFORMATION (QQPRI).
- IMPACT - DIFFICULT TO MEASURE AT PRESENT. ADOPTION OF HARDMAN METHODOLOGY TO PROVIDE DATA SHOULD HAVE EFFECT IN FUTURE.

SECTION VI: MODELS, DATA AND DATA BASES

RAA RECOMMENDATION: A. TRADOC should continue efforts to produce statements of requirements which fully characterize the conditions of use of systems.

ACTION TAKEN: Recommendation implemented by TRADOC in Basic Requirements System.

RAA
EX

MODELS, DATA AND DATA BASES
(FIRST OF 6 ACTIONS)

- ACTION - TRADOC SHOULD CONTINUE TO FULLY CHARACTERIZE CONDITIONS OF USE OF SYSTEMS.
- IMPLEMENTATION - ACCOMPLISHED WITH THE BASIC REQUIREMENTS SYSTEM.
- IMPACT - FACILITATE DEVELOPMENT OF VALID MODELS.

SECTION VI: MODELS, DATA AND DATA BASES

RAA RECOMMENDATION: B. Require that threat trends be analyzed to project threat systems characteristics and performance.

TASKER: Improve analysis of trends in threat system characteristics and performance.

ACTION TAKEN: Review of intelligence study community included as part of current Intelligence Organization and Stationing Study (IOSS). INSCOM (ITAC) conducted projects to improve capability for conduct of threat analysis (e.g. participation in AMIP). Consolidation of Army intelligence production under proposed Army Intelligence Agency should assist in this task.

MODELS, DATA AND DATA BASES.
(SECOND OF 6 ACTIONS)

- ACTION - REQUIRE THAT THREAT TRENDS BE ANALYZED TO PROJECT THREAT SYSTEMS CHARACTERISTICS AND PERFORMANCE.
- IMPLEMENTATION - NOT DONE ON ROUTINE BASIS BECAUSE OF TIME; DONE AT PROPONENT'S REQUEST BASED ON ACQUISITION PRIORITIES.
- IMPACT - UNCLEAR PICTURE OF PERFORMANCE OF NEW US SYSTEMS. FOR FURTHER DETAILS SEE RAAEX CHAPTER 10.

SECTION VI: MODELS, DATA AND DATA BASES

RAA RECOMMENDATION: C. Require the assessment of system capabilities/limitations, vulnerability, and lethality to be made over the full range of conditions of use.

TASKER: Develop study guidance and study programs to emphasize:
8. System assessments over full range of conditions of use.

ACTION TAKEN: Emphasized in Study Planning Guidance published as integral part of Army Guidance. Guidance followed in AMC establishing policy and forming joint working group with TRADOC.

RAA
EX

MODELS, DATA AND DATA BASES
(THIRD OF 6 ACTIONS)

- ACTION - ASSESS SYSTEM CAPABILITIES/LIMITATIONS, VULNERABILITY, LETHALITY OVER FULL RANGE OF CONDITIONS OF USE.
- IMPLEMENTATION - POLICY ESTABLISHED AND OFTEN FOLLOWED.
- IMPACT - INCREASED RELIABILITY OF MODELS AND SIMULATIONS DUE TO IMPROVED DATA BASES.

SECTION VI: MODELS, DATA AND DATA BASES

RAA RECOMMENDATION: D. A hierarchy of Army models and supporting integrated data bases should be developed as follows:

(1) On an interin basis, establish:
  (a) An Army Model Committee with a draft statement of purpose and objectives.
  (b) Model Resource Groups at CAA, CACDA, TRASANA and AMSAA

(2) Begin a series of meetings to establish the structure and interfaces of an hierarchical set of models.

(3) Draft an Army model management instrument which formally establishes and defines the authority and responsibilities of:
  (a) The Army Model Committee
  (b) The Model Resources Groups (for each level of analysis)
  (c) The Data Base Management Group.

TASKER: Define a hierarchy of analyses, studies, models, training simulations and relationships.

ACTION TAKEN: Army Model Improvement Program (AMIP) initiated. AMIP management assigned to CAC. Overall effort guided by Army Models Committee.

TASKER: Establish Army Models Committee, Model Resources Group, (at CAA, CAC, TRASANA and AMSAA), Data Base Management Group and publish AR to define authority and responsibilities.

ACTION TAKEN: Charter for Army Models Committee, Model Resource Groups and Data Base Management Groups published in October 1979. AR 5-11, "Army Model Improvement Program" published in July 1981. As a result, model groups were formed, hierarchical framework established and models were developed.

MODELS, DATA AND DATA BASES
(FOURTH OF 6 ACTIONS)

- ACTION - DEVELOP A HIERARCHY OF ARMY MODELS AND SUPPORTING INTEGRATED DATA BASE.
- IMPLEMENTATION - DEVELOPED DESIGN OF MODEL HIERARCHY AND ESTABLISHED MANAGEMENT STRUCTURE FOR IMPLEMENTATION
  MODELS DEVELOPED, IMPLEMENTED AND BEGINNING TO BE USED.
  LINKAGE NOT FULLY IMPLEMENTED.
  SYSTEM PERFORMANCE DATA BASE BEING DEVELOPED.
- IMPACT - LACK OF ALL LINKAGES BETWEEN MODELS PREVENTS MEETING OBJECTIVE OF CONSISTENCY ACROSS ALL LEVELS.

SECTION VI: MODELS, DATA AND DATA BASES

RAA RECOMMENDATION: E. Maintain and improve the current models until replaced.

TASKER: Define a hierarchy of models.

ACTION TAKEN: AMIP initiated. Existing models have been maintained and improved while the AMIP family of models are under development.

MODELS, DATA AND DATA BASES
(FIFTH OF 6 ACTIONS)

- ACTION - MAINTAIN AND IMPROVE CURRENT MODELS UNTIL REPLACED.
- IMPLEMENTATION - HAS BEEN DONE.
- IMPACT - ALLOWED WORK TO CONTINUE DURING TRANSITION.

SECTION VI: MODELS, DATA AND DATA BASES

RAA RECOMMENDATION: F. Support the ongoing computer procurement action aimed at placing compatible, large state-of-the-art mainframes at CAA, TRASANA and CACDA by 1980, study the feasibility of internetting the DPIs at the earliest practicable date and assess the feasibility of including AMSAA in any internetting arrangement.

TASKER: Upgrade computer networks; conduct special study to determine need for internetting.

ACTION TAKEN: Need for internetting established as part of AMIP. Computers upgraded at CAA, TRASANA and AMSAA. Technical Analysis and Cost Estimate for networking CAA, TRASANA, CAORA and AMSAA completed May 84. DUSA directed that action proceed June 84. Action assigned to DAIM.

MODELS, DATA AND DATA BASES
(SIXTH OF 6 ACTIONS)

- ACTION -
  - PLACE COMPATIBLE MAINFRAMES AT MAJOR ANALYSIS AGENCIES.
  - ASSESS FEASIBILITY OF INTERNETTING.
- IMPLEMENTATION -
  - COMPATIBLE MAINFRAMES IN PLACE.
  - NETWORK FEASIBILITY STUDY CONDUCTED FOR CAA, AMSAA, CAORA, AND TRASANA.
- IMPACT -
  - FACILITATES SHARING OF DATA AND INFORMATION. FULL ENHANCEMENT OF ANALYSIS CAPABILITY CANNOT BE ACHIEVED UNTIL NETWORK INSTALLED.

SECTION VII: PERSONNEL QUALIFICATIONS

RAA RECOMMENDATION: A. When staff vacancies occur, analysis agencies should seek first-rate candidates having relevant advanced degrees, and strong efforts should be made to insure proper balance of skills within each agency.

TASKER: Publish guidance for upgrading professional staff of analytical community, to include:

1. Balance of skills.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter. Also included in PAM 5-5. Limited action taken to implement due to difficulties inherent in the personnel systems.

PERSONNEL QUALIFICATIONS
(FIRST OF 4 ACTIONS)

- ACTION - AGENCIES SHOULD SEEK CANDIDATES WITH ADVANCED DEGREES TO FILL VACANCIES AND INSURE A BALANCE OF SKILLS
- IMPLEMENTATION - POLICY LETTER TO AGENCY HEADS
- IMPACT - DIFFICULT FOR MANAGERS TO FIND QUALIFIED CANDIDATES. PROCESS FOR HIRING THEM IS CUMBERSOME. CAN'T COMPETE WITH INDUSTRY RATES AT SOME LEVELS AND FIELDS. FOR FURTHER DETAIL SEE RAAEX CHAPTER 7.

SECTION VII: PERSONNEL QUALIFICATIONS

RAA RECOMMENDATION: B. Each analysis organization should encourage each member of its professional staff to continue to grow and maintain currency of knowledge. To the extent permitted by policies and fund availability, agencies should assist the staffs by helping with the costs of continuing education.

TASKER: Publish guidance for upgrading professional staff of analytical community, to include:

2. Continuing education program.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter. No Army-wide procedure directed specifically to analytical community.

PERSONNEL QUALIFICATIONS
(SECOND OF 4 ACTIONS)

- ACTION - AGENCIES SHOULD ASSIST WITH COSTS OF CONTINUING EDUCATION TO HELP STAFF GROW AND IMPROVE KNOWLEDGE.
- IMPLEMENTATION - SOME AGENCIES HAVE IMPLEMENTED FULLY.
- IMPACT - IMPROVED MORALE AND SKILLS. REDUCED TIME ON JOB. IMPACT ON ANALYSIS COMMUNITY AS A WHOLE IS DIFFICULT TO MEASURE BUT BELIEVED TO BE POSITIVE. FOR FURTHER DETAIL SEE RAAEX CHAPTER 7.

SECTION VII: PERSONNEL QUALIFICATIONS

RAA RECOMMENDATION: C. Each of the analysis organizations being staffed by professionals has a high potential for and should explore "bootstrap" practices which can be very beneficial to members of its analysis staff. Internal courses, seminars, colloquia and invited guest speaker programs are but a few of the possibilities.

TASKER: Publish guidance for upgrading professional staff of analytical community, to include:

2. Continuing education program.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter. Need overall army-wide program to implement guidance.

PERSONNEL QUALIFICATIONS
(THIRD OF 4 ACTIONS)

- ACTION - AGENCIES SHOULD EXPLORE USE OF INTERNAL COURSES, SEMINARS, ETC. TO BENEFIT PROFESSIONALS.
- IMPLEMENTATION - SUME AGENCIES HAVE IMPLEMENTED.
- IMPACT - VERY BENEFICIAL WHERE IMPLEMENTED. IN-HOUSE TRAINING MUST OFTEN COMPETE WITH CONFLICTING DEMANDS FROM WORKSITE.
  FOR FURTHER DETAIL SEE RAAEX CHAPTER 7.

SECTION VII: PERSONNEL QUALIFICATIONS

KAA RECOMMENDATION: D. Each analytical organization should participate in an intern program either by support of a local program or, in the case of smaller activities, by cooperative programs with larger organizations such as TRASANA and AMSAA which do train interns.

TASKER: Publish guidance for upgrading professional staff of analytical community, to include:

3. Intern program.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter.

PERSONNEL QUALIFICATIONS
(FOURTH OF 4 ACTIONS)

- ACTION - AGENCIES SHOULD PARTICIPATE IN EITHER LOCAL OR COOPERATIVE INTERN PROGRAMS FOR STAFF.
- IMPLEMENTATION - AVAILABLE AT SOME AGENCIES. OTHERS DO NOT SUPPORT.
- IMPACT - SOME GOOD RESULTS.
  FOR FURTHER DETAIL SEE RAAEX CHAPTER 7.

SECTION VIII: QUALITY ASSURANCE

RAA RECOMMENDATION: A. Agencies and MACOMs should insure that programs are partly self-initiated (at least 10 percent) and provide adequate resources (at least 15 percent of program) for methodology development.

TASKER: Publish policy for agency-level program of self-initiated work and methodological development in general "analytical community" regulation.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter, in AR 5-5 and in PAM 5-5.

QUALITY ASSURANCE
(FIRST OF 8 ACTIONS)

- ACTION - AGENCIES SHOULD INSURE THAT AT LEAST 10% OF PROGRAMS ARE SELF-INITIATED AND 15% ARE FOR METHODOLOGY.
- IMPLEMENTATION - DONE BY SOME AGENCIES
- IMPACT - ENABLES AGENCIES TO PROVIDE NECESSARY SUPPORT TO ARMY IN AREAS THAT MAY NOT BE OBVIOUS TO SPONSORS.
  DIFFICULT IN AGENCIES WHOSE WORK PROGRAM IS HIGHLY UNPREDICTABLE.
  FOR FURTHER DETAILS SEE RAAEX CHAPTER 4.

SECTION VIII: QUALITY ASSURANCE

RAA RECOMMENDATION: B. Assure that agency/activity label is affixed to study reports and that principal authors and significant contributors are identified by name on the reports.

TASKER: Develop, publish and implement procedures to ensure the high quality of products of the analytical community, to include:

1. Recognition of study agency/activity, authors and significant contributors.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter to heads of study agencies and their HQDA/MACOM sponsors. Guidance also distributed to selected GOs and SESs.

RAA
EX

QUALITY ASSURANCE
(SECOND OF 8 ACTIONS)

- ACTION - ASSURE THAT AGENCY/ACTIVITY LABEL AND PRINCIPAL AUTHOR ARE AFFIXED TO REPORTS.
- IMPLEMENTATION - COMPLETELY IMPLEMENTED
- IMPACT - IMPACT ON QUALITY OF STUDIES DIFFICULT TO MEASURE WITHOUT FORMAL EFFORT.

SECTION VIII: QUALITY ASSURANCE

RAA RECOMMENDATION: C. Continue (or initiate) prepublication internal peer reviews.

TASKER: Develop, publish and implement procedures to ensure the high quality of products of the analytical community, to include:

3. Prepublication internal peer reviews.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter to heads of study agencies and their HQDA/MACOM sponsors. Guidance also distributed to select GOs and SESs.

QUALITY ASSURANCE
(THIRD OF 8 ACTIONS)

- ACTION - CONTINUE (OR INITIATE) PREPUBLICATION INTERNAL PEER REVIEW.
- IMPLEMENTATION - DONE BY MOST ANALYSIS ACTIVITIES.
- IMPACT - IMPACT ON RESOURCES REQUIRED FOR OTHER WORK. SOMETIMES CONDUCTED IN A SUPERFICIAL MANNER.
  FOR FURTHER DETAILS SEE RAAEX CHAPTER 4.

SECTION VIII: QUALITY ASSURANCE

RAA RECOMMENDATION: D. Institute program of sampled, external peer review. SPMO should administer.

TASKER: Develop, publish and implement procedures to ensure the high quality of products ot the analytical community, to include:

4. Postpublication external peer reviews.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter to heads of study agencies and to their HQDA/MACOM sponsors. Guidance also distributed to selected GOs and SESs.

QUALITY ASSURANCE
(FOURTH OF 8 ACTIONS)

- ACTION - SPMO SHOULD ADMINISTER A PROGRAM OF EXTERNAL PEER REVIEW.
- IMPLEMENTATION - PEER REVIEW PANEL WAS SELECTED AND REVIEWED NINE STUDIES IN THREE YEARS.
- IMPACT - MEMBERS OF ANALYSIS ORGANIZATIONS ARE AWARE OF POSSIBILITY OF SELECTION FOR REVIEW. DIFFICULT TO ESTIMATE EFFECT ON QUALITY OF PRODUCTS BUT PERCEIVED TO BE GENERALLY POSITIVE.
  FOR FURTHER DETAILS SEE RAAEX CHAPTER 4.

SECTION VIII: QUALITY ASSURANCE

RAA RECOMMENDATIONS: E. Institute measures for study sponsor to feedback to study doer information on strengths, weaknesses, utility of study products.

TASKER: Develop, publish and implement procedures to ensure the high quality of products of the analytical community, to include:

2. Sponsor feedback to authors and agencies.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter to heads of study agencies and to their HQDA/MACOM sponsors. Guidance also distributed to selected GOs and SESs.

QUALITY ASSURANCE
(FIFTH OF 8 ACTIONS)

- ACTION - INSTITUTE MEASURES FOR SPONSOR TO PROVIDE FEEDBACK TO STUDY DOER ON STRENGTHS, UTILITY, ETC. OF STUDY.
- IMPLEMENTATION - INSTITUTIONALIZED IN MANY ANALYSIS ACTIVITIES.
- IMPACT - LIMITED EFFECTIVENESS. FEEDBACK OFTEN OF SUPERFICIAL NATURE. SPONSORS RELUCTANT TO BE CRITICAL OR DEVOTE TIME TO TASK. MAY BE MORE EFFECTIVE IN INFORMAL SETTING.
  FOR FURTHER DETAILS SEE RAAEX CHAPTER 4.

SECTION VIII: QUALITY ASSURANCE

RAA RECOMMENDATION: F. Each major analytical organization should make use of a distinguished Board of Visitors, with members from both within and outside the Army to periodically review its work program and operations.

TASKER: Develop, publish and implement procedures to ensure the high quality of products of the analytical community, to include:

5. Board of Visitors reviews.

ACTION TAKEN: Guidance published in July 1981 Guidance Letter to heads of study agencies and to their HQDA/MACOM sponsors. Guidance also distributed to selected GOs and SESs.

QUALITY ASSURANCE
(SIXTH OF 8 ACTIONS)

- ACTION - STUDIES SHOULD BE REVIEWED BY DISTINGUISHED BOARD OF VISITORS FROM WITHIN AND OUTSIDE OF ARMY.
- IMPLEMENTATION - PROVISIONS MADE FOR ARMY SCIENCE BOARD REVIEW OF STUDIES FOR TORA. BROADER IMPLEMENTATION HAS BEEN IMPAIRED BY PUBLIC LAW REQUIREMENTS; E.G., SUNSHINE ACT.
- IMPACT - LITTLE EFFECT ON QUALITY OF ANALYSIS DUE TO LIMITED IMPLEMENTATION.

SECTION VIII: QUALITY ASSURANCE

RAA RECOMMENDATION: G. Hold periodic conferences of the senior members of the Army analytical community to identify problems within the community and suggest corrective action.

TASKER: Plan semi-annual analytical agency commander/director conferences.

ACTION TAKEN: Implemented. First meeting held Nov. 1979; subsequent meetings have been held at irregular intervals, but several times a year since then.

QUALITY ASSURANCE
(SEVENTH OF 8 ACTIONS)

- ACTION - HOLD PERIODIC CONFERENCES OF THE SENIOR MEMBERS OF ANALYTIC COMMUNITY TO IDENTIFY PROBLEMS AND SUGGEST CORRECTIVE ACTION.
- IMPLEMENTATION - SENIOR ANALYSTS MEET SEVERAL TIMES A YEAR TO DISCUSS MATTERS OF CONCERN TO ARMY ANALYSIS.
- IMPACT - PERCEIVED TO BE EFFECTIVE. DIFFICULT TO DETERMINE OVERALL IMPACT.

SECTION VIII: QUALITY ASSURANCE

RAA RECOMMENDATIONS: H. Orient the Army Operations Research Symposia (AORS) to foster communication, exchange studies, and especially, recognize high quality work.

TASKER: Orient Army Operations Research Society Symposia to foster comminication, exchange of studies, and recognition of high quality work.

ACTION TAKEN: AORS 79 was reoriented to focus on study priority problem areas. Subsequent AORS have attempted to focus on a particular set of themes of current interest to the Army. Awards for high quality work were initiated at AORS 80 and have continued thereafter.

QUALITY ASSURANCE
(EIGHTH OF 8 ACTIONS)

- ACTION - ORIENT ARMY OPERATIONS RESEARCH SYMPOSIUM TO FOSTER COMMUNICATION, EXCHANGE STUDIES AND TO RECOGNIZE WORK OF HIGH QUALITY
- IMPLEMENTATION - HAS BEEN DONE
- IMPACT - HAS BEEN USEFUL.

SECTION IX: USE OF OPERATIONS RESEARCH IN OPERATIONAL COMMANDS

R&A RECOMMENDATION: Initiate discussions with all interested parties with the goal of establishing an analytical activity in USAREUR in general accordance with the conceptual scheme by end FY 79.

TASKER: Develop strategy and make recommendations for use of operations research in USAREUR.

ACTION TAKEN: ORSA cell established in USAREUR in 1980; fully staffed by 1982; has continued sucessfully through several cycles.

USE OF OPERATIONS RESEARCH IN OPERATIONAL COMMANDS

- ACTION - ESTABLISH OPERATIONS RESEARCH ANALYTICAL ACTIVITY IN MAJOR COMMANDS

- IMPLEMENTATION - ESTABLISHED ACTIVITY IN USAREUR IN 1979

- IMPACT - HAS BEEN SUCCESSFUL. ANALYTICAL CAPABILITY HAS BEEN INCREASED AT USAREUR AND IS REFLECTED IN STUDIES CONDUCTED. HAS SOME NEGATIVE IMPACT ON PROVIDING ORGANIZATION (MORE INTENSE ON SMALL ANALYSIS CELLS) BUT AN OVERALL POSITIVE IMPACT ON ARMY ANALYSIS. FOR FURTHER DETAILS SEE RAAEX CHAPTER 16.

PROGRAM FOCUS

TASK DESCRIPTION

TASK: Assess adequacy of policy and procedures for focusing analysis on Army priority problems. The task may be viewed as having two aspects--the adequacy of the policies and procedures for:

- identifying and defining the important issues and
- directing resources to the identified issues.

INFORMATION SOURCES

The following documentary sources were consulted:

- Review of Army Analysis, Vols. I and II, 1979.
- MACOM and HQDA Coordination Comments re RAA, 1979.
- Centralization/Decentralization "read ahead" for Study Agency Senior Member Conference, 22 Sep 1981.
- DACS-DMO Memorandum, Subject: Priority Analysis Topics, 18 Nov 1981.
- AR 5-5, Army Studies and Analyses, 15 Oct 1981.
- AR 5-14, Managing Analytic Support Services, 15 Oct 1981.
- Issues Important to Army Policy Analysis (Ratings Provided by the Arroyo Center Advisory Panel), 11 Oct 1983.
- Evaluation of Fiscal Year 1983 Study Program, Mar 1984.
- DACS-DMO Memorandum, Subject: FY 85 Study Guidance, 11 Apr 1984.

Interviews were conducted with selected RAAEX participants and other persons familiar with Army studies and analyses.

TASK DESCRIPTION

- TASK: ASSESS ADEQUACY OF POLICY AND PROCEDURES FOR FOCUSING ANALYSIS ON ARMY PRIORITY PROBLEMS.

- OBJECTIVE: PROBLEMS SELECTED FOR STUDY AND ANALYSIS--THE ARMY ANALYSIS COMMUNITY SHOULD WORK MAINLY ON IMPORTANT ISSUES IN NEED OF SOLUTION AND PROBLEMS WHOSE SOLUTION WOULD BE OF HIGH BENEFIT TO THE ARMY.

DISCUSSION

- The Study Program Coordination Committee (SPCC) and the Study Program Management Office (SPMO) were created in response to Review of Army Analysis (RAA) recommendations and have jurisdiction over AR5-5 studies. The SPCC is a continuing subcommittee of the SELCOM (Select Committee) and is chaired by the Director of Management, OCSA.

- The RAA recommended the creation of an Army Study Council, chaired by the Vice Chief of Staff (VCSA), to provide guidance for The Army Study Program (TASP). This recommendation was not approved. Instead, the SELCOM was charged to provide guidance. In practice, the SELCOM has rarely discussed TASP.

- The SPCC Working Group prioritizes the HQDA study program. The MACOM portions of TASP receive minimal review from the Working Group. The SPCC settles any disagreements concerning priorities and recommends approval of the program to the Vice Chief of Staff.

- The Arroyo Center Advisory Panel, chaired by the Vice Chief of Staff and the Assistant Secretary of the Army (Research, Development and Acquisition) (ASA(RDA)) identified and prioritized major analysis issues for the FY 1984 Arroyo Center program.

- The Arroyo Center Policy Committee (ACPC) approves the annual program of the Arroyo Center and any subsequent modifications. The ACPC consists of the VCSA, the ASA(RDA) and the Director of Management.

DISCUSSION

- STUDY PROGRAM COORDINATION COMMITTEE (SPCC) AND STUDY PROGRAM MANAGEMENT OFFICE (SPMO) IN-HOUSE JURISDICTION LIMITED TO AR5-5 STUDIES.
- SPMO PREPARES ANNUAL STUDY GUIDANCE DERIVED FROM THE ARMY PLAN AND DEFENSE GUIDANCE.
- STUDY PROGRAM PLANS DEVELOPED BY MACOMS AND AGENCIES BASED ON GUIDANCE OVERLAID WITH INTERNAL DEMANDS.
- SPCC AND SPCC WORKING GROUP PRIORITIZE HEADQUARTERS, DEPARTMENT OF ARMY ARMY STUDY PROGRAM PLANS AND REVIEW THE ARMY STUDY PROGRAM.
- ARROYO CENTER ADVISORY PANEL IDENTIFIES AND PRIORITIZES MAJOR ANALYSIS ISSUES TO BE ADDRESSED BY THE ARROYO CENTER.
- ARROYO CENTER POLICY COMMITTEE APPROVES THE ANNUAL ARROYO CENTER PROGRAM.

ISSUES

The perspectives of the respondents with respect to policy and procedures have been categorized under the three headings below. The three perspectives are logically compatible, but differ in emphasis:

- IMPORTANT, NON-URGENT, NON-MILESTONE PROBLEMS NOT IDENTIFIED.

  Problems which are not tied to any milestone, Congressional interest, or other action forcing event tend to be slighted. These problems are not adequately studied nor is sufficient effort devoted to development of supporting analytic bases (data bases, methodologies and models).

- URGENT PROBLEMS IDENTIFIED, BUT NOT ALWAYS WELL-DEFINED NOR PRIORITIZED, AND DRIVE OUT OTHER ANALYSIS.

  Request was not adequately defined in the first place or was garbled in transmission. Valuable time is lost, and questions tend to turn into studies. Little time left for development of knowledge base or new methodologies. Morale of the analysts, particularly the best analysts, is negatively affected. This is not a problem for all analytic agencies.

- NO ARMY WIDE PRIORITIZATION OF PROBLEMS.

  SPCC jurisdiction limited to AR5-5 studies. Lack of Army wide priorities for studies and development of analytic bases. Knowledge of studies and analyses is dispersed thus limiting ability to respond to decisionmaker requests for information.

ISSUES

- IMPORTANT, NON-URGENT, NON-MILESTONE PROBLEMS NOT IDENTIFIED.
- URGENT PROBLEMS IDENTIFIED, BUT NOT ALWAYS WELL-DEFINED NOR PRIORITIZED, AND DRIVE OUT OTHER ANALYSIS.
- NO ARMY WIDE PRIORITIZATION OF PROBLEMS.

RECOMMENDATIONS

- INSTITUTIONALIZE IDENTIFICATION OF MAJOR ANALYSIS ISSUES.

  Army decision-making is decentralized and the major portion of the Army Study Program is and should be decentralized. Only a portion of TASP will respond to central direction. However, the Army's highest priority issues should be addressed. It is recommended that the procedure which was used to develop issues for the Arroyo Center for its FY 84 program be employed to identify long-range issues for the Army. In this procedure, issues are identified through interviews with Army decisionmakers and then prioritized by an ASA/Three Star committee. Those high priority issues which require a range of analytic techniques and which cut across command and functional boundaries would receive special attention. The issues should then be provided as Study Planning Guidance for the development of study programs and the highest priority issues tasked to the appropriate agencies and MACOMs.

- EMPHASIZE INTEGRATION OF ANALYSIS, STAFF PROCESS AND DECISIONMAKING.

  Study requirements which are driven by milestones, Congressional interest and other events create turbulence in the programs of analytic agencies. Procedures should be developed and implemented for the earlier identification and prediction of event-driven study requirements in order to improve the planning for studies and analysis. Improved integration of analysis and staff process should improve Army decisionmaking. Study agencies should work with appropriate staffs to translate results into specific, taskable actions.

RECOMMENDATIONS

- INSTITUTIONALIZE IDENTIFICATION OF MAJOR ANALYSIS ISSUES.
  - ARMY LEADERSHIP IDENTIFIES AND PRIORITIZES MAJOR ISSUES.
  - IDENTIFY AND ADDRESS SPECIFIC MAJOR ANALYSIS ISSUES WHICH
    - REQUIRE A BROAD RANGE OF ANALYTIC CAPABILITIES
    - CUT ACROSS COMMAND AND FUNCTIONAL BOUNDARIES.
  - TASK HIGH PRIORITY ISSUES TO APPROPRIATE AGENCIES AND MACOMS.

- EMPHASIZE INTEGRATION OF ANALYSIS, STAFF PROCESS AND DECISIONMAKING.
  - DEVELOP AND IMPLEMENT IMPROVED PROCEDURES FOR EARLY IDENTIFICATION OF EVENT-DRIVEN STUDY REQUIREMENTS.
  - RELATE STUDIES AND ANALYSES FINDINGS TO SUPPORT OF ARMY DECISIONS.

QUALITY ASSURANCE AND RESEARCH

TASKS

This assessment focused on two major issues: factors that adversely affect the quality of Army studies and analyses, and the adequacy of research directed at improving the tools and methodologies employed within the analysis community. The methodology used in addressing these tasks is described in the following chart.

RAA
EX

TASKS

- ADEQUACY OF POLICY AND PROCEDURES FOR INSURING HIGH QUALITY ARMY ANALYSIS
- ADEQUACY OF RESOURCES INVESTED IN RESEARCH, DEVELOPMENT AND IMPROVEMENT OF ARMY ANALYSIS CAPABILITIES

METHODOLOGY

The methodology used in assessing the impact of policies and procedures on the quality of Army analysis employed the use of expert testimony developed during several weeks of interviews with knowledgeable senior military and civilian managers currently associated with the preparation and/or use of studies and analyses (S&A). From these interviews major factors adversely affecting the utility of Army S&A were identified, and on the basis of those interviews, and task force deliberations, proposed recommendations were developed. This chart identifies those organizations in which interviews took place. In most cases more than one individual was interviewed. The remainder of the report focuses on problem areas and proposed solution. The latter are organized into technical and procedural/structural categories.

METHODOLOGY
POLICIES AND PROCEDURES AFFECTING QUALITY

- INTERVIEWS WITH SENIOR MILITARY AND CIVILIANS

- HQDA
  - ODUSA (OR)
  - ODCSOPS
  - ODCSRDA
  - OCA

- TRADOC
  - HQ (CD)
  - TORA
  - TRASANA
  - CAORA
  - CACDA
  - LOGC
  - USAES
  - USAAS
  - USAIS

- DARCOM
  - AMSAA
  - ARADCOM
  - NATICK R&D LABS

- OTHERS
  - USN
  - USAF

FOCUS AND CONTINUITY

Virtually everyone interviewed expressed some frustration with the "focus" and "continuity" of the Army's studies and analysis (S/A) activities. Upon follow-up, these frustrations usually took one of the following forms:

a. Most of our major S&A activities are driven by tasks emanating from the Army Headquarters. They are frequently poorly coordinated, and inadequately defined.

b. Little of our effort is devoted to the longer range development/accrual of information concerning topic/functional area; the major focus is on near-term POM/BUDGET issues, most likely related to specific hardware systems.

c. S&A activities are overly focused on system acquisition programs, and too little is devoted to broader doctrine, tactics, force structure, operational planning and training issues.

RAA EX

FACTORS ADVERSELY AFFECTING QUALITY

- LACK OF FOCUS AND CONTINUITY IN STUDY AND ANALYSIS PROGRAM
  - TASK DRIVEN
  - PREDOMINANTLY AIMED AT NEAR-TERM PROBLEMS
  - VERY LITTLE INVESTMENT IN FUTURE CAPABILITY
  - TOO NARROW A FOCUS

PROPONENCY AND LACK OF OBJECTIVITY

This factor was raised, in one form or another, by just about everyone interviewed. It is a frustration created by two competing interests. First, is the need (emphasized by everyone) to have the TRADOC schools (the "PROPONENTS") play a major role in the combat developments process. The second is the need (again emphasized by everyone) to have some mechanism (counter-vailing force) to put the schools' proponency into some more useful perspective. Follow-up discussions of this topic generally led to professions of frustration with the perceived inability of the integrating centers, specifically CAC, to provide the appropriate balance to the schools' proponency. No one argued with the need for the TRADOC schools to play a strong advocacy role, nor to have access to the necessary analytic capability to play that role. Inevitably the frustration focused on the inability of the integrating center to "cope" with the obvious parochialism of the functional centers. There is a very strong perception that TRADOC acts as a set of functional "stove pipes", with requirements identified at the school/center passed-up through those "stove pipes", and encountering little challenge, or review, in the process.

FACTORS (CONTINUED)

- PROPONENCY/LACK OF OBJECTIVITY
  - ADVOCACY ROLE OF FUNCTIONAL CENTERS
  - BALANCING ROLE OF INTEGRATING CENTERS
  - NEED TO PUT FUNCTIONAL CENTER ASSESSMENTS INTO BROADER PERSPECTIVE

HORIZONTAL AND VERTICAL INTEGRATION

This issue again focused primarily on the role of the integrating centers in TRADOC, particularly that of CAC, and frustration over the failure (to date) of AMIP to materially improve the horizontal and vertical integration processes. CAC's inability to (or at least failure to) provide assessments of trade-offs across functional areas was repeatedly highlighted as a significant impediment to the utility of much of TRADOC's analysis. An example of a large study in which it was felt that CAC (or more particular CACDA) performed a useful integrating role was the recent Anti-Armor Systems Study (AASS). It is anticipated that had corps and division level tools been better, CACDA's integrating role in the AASS would have been even more effective. Unfortunately, the AASS appears to be an exception to the rule. By the same token, AMSAA's formal designation for the AASS as the DARCOM integrating agency was highlighted as: (1) unusual; and (2) very effective. However, discussions at AMSAA did not uncover any interest in permanently formalizing such a role. On the contrary, reliance on establishing such a relationship on a case by case basis seemed to be preferred. Major factors cited that affect CAC's (CACDA's) ability to perform the integrating role were:

A. Lack of adequate corps and division level tools.

B. Perception that TRADOC's attitude is to "go along" with virtually all requirements identified by the functional centers/schools, i.e. challenge (review) impedes the tempo of progress, so keep it down to a minimum.

C. CACDA is becoming more a staffing (coordinating and tasking) agency, frequently in competition/conflict with elements of the HQ TRADOC staff, and less a study doing agency.

D. CACDA is frequently "overwhelmed" (by the weight of analysis/"stature" of School Commandants) by the functional centers, as they frequently enter the review process too late, and with too little capability.

FACTORS (CONTINUED)

- LACK OF RESPONSIVENESS
  - •• TIMELINESS
    - -- MODEL COMPLEXITY
    - -- DATA AVAILABLITY
    - -- FRONT-END PLANNING
  - •• COMPLETENESS
    - -- TOO NARROWLY FOCUSED
    - -- FAIL TO CAPTURE RANGE OF UNCERTAINTY
    - -- POORLY REPORTED

RESPONSIVENESS

Criticisms concerning responsiveness generally focused on the "timeliness" and "completeness" of Army analyses.

a. TIMELINESS. The lack of timeliness was generally attributed to one, or more, of the following causes:

(1) Model complexity and the time needed to make changes to existing scenarios.

(2) Time required to obtain new data.

(3) Inadequate front-end preparation, resulting in poor definition of issue(s) to be addressed.

(4) Staffing of issue at intermediate headquarters, which consumes too much of the available time, and frequently adds significantly to the actual work required, without producing a commensurate contribution to the quality of the work performed.

b. COMPLETENESS. Completeness, as described by those interviewed seemed to imply a failure to be "responsive" to the needs of management in the sense that analyses seldom address a sufficiently broad range of alternatives (solutions), and/or conditions (weather, CM's, terrain, forces). In addition, the reporting of the results of analyses was frequently criticized as being too shallow, too narrow and poorly communicated.

RAA
EX

FACTORS (CONTINUED)

- LACK OF HORIZONTAL AND VERTICAL INTEGRATION OF STUDIES
  - AMIP NOT COMPLETED YET
  - LACK OF ADEQUATE TOOLS
  - PERCEPTION OF HQ TRADOC ATTITUDE TOWARDS REVIEW PROCESS
  - ROLE OF CACDA - STUDY OR STAFF AGENCY?
  - CACDA "OVERWHELMED" BY FUNCTIONAL CENTERS

DATA

a. CONSISTENCY. Considerable concern has been expressed over the consistency of data from study to study. Most individuals indicated that a lot of progress had been achieved with regards to "AMSAA - provided data". Of major concern was that data that is generally provided by a wider range of other agencies, such as the TRADOC schools/centers, and the apparent inability of SAG's to adequately screen that data in the past. It should be noted that HQ TRADOC has been leading an effort within that command to address the broader "consistency in studies" problem. Part of this effort has been directed to this issue. A series of working groups was formed to identify problems and suggest solutions. A copy of the resulting report was reviewed. To date, however, no action has been taken on those recommendations, so it is difficult to assess their potential impact on this specific issue.

b. VISIBILITY. Independent data review in the studies quality control process, particularly in TRADOC, is to a great extent limited to that which is undertaken by the SAG. Historically, the SAG's attention has been focused primarily on performance data for those systems of particular interest to the study. Unfortunately this ignores a very large and important segment of the total data base. A fairly common occurrence is for the SAG to rely on the judgment of a variety of study participants regarding the quality of that data. The result is frequently a very uneven treatment. For example, the participation by schools/centers is very much a function of their perception of the importance of the study to their programs, and this has a considerable impact on the quality of their inputs. To the extent that current and future models draw more extensively on "non-AMSAA" data, and this data has a considerable impact on the nature of the combat being portrayed, this problem will become more critical. HQ TRADOC's recent decision to create Scenario and Threat Sub-SAG's, as well as a family of standard high resolution scenarios, should help to alleviate this problem, but it is too early to make such a judgment.

c. AVAILABILITY. Virtually everyone interviewed indicated in one form or another that: (1) as a community, we are much more severely constrained by a lack of data than a lack of models (or modeling capability) and (2), they see a disproportionate share of our resources devoted to model development vice data development. The result is an awful lot of very questionable data in our models. Follow-up discussions indicated a concern with both the development of "operational" data, e.g. C2 time lines, decision rules, acquisition and search techniques, as well as system performance/vulnerability data. The tendency in the analysis community, both in and outside the Army, to develop data-driven/intensive models, e.g. CASTFOREM, QUICK-SCREEN, will likely aggravate this problem.

FACTORS (CONTINUED)

- DATA
  - LACK OF CONSISTENCY
  - LACK OF VISIBILITY
  - LACK OF AVAILABILITY

SCENARIOS

Lack of "consistency" refers to problems associated with the study-to-study use of the same base case scenario. To achieve true consistency, control must be exercised over both the contextual and input data elements of a scenario description. This will require that standard scenarios be model specific.

Lack of "variation", on the other hand, focuses on our failure to date to develop and employ adaptations to standard scenarios to capture the effect of likely variations in tactics, forces, terrain, weather, visibility, etc.

HQ TRADOC has initiated a program to revitalize the SCORES process, and develop a set of standard high resolution scenarios. This should address the "consistency" problem, but it is doubtful that it will alleviate the lack of "variation" problem. To the extent that study proponents are not motivated to support the preparation of scenarios designed to highlight uncertainty, their development will likely have to be directed by higher headquarters.

FACTORS (CONTINUED)

- SCENARIOS
  - CONSISTENCY, STUDY-TO-STUDY
    - -- NEED CONTEXTUAL CONSISTENCY
    - -- NEED DATA CONSISTENCY
    - -- MUST BE MODEL SPECIFIC
  - VARIATION, WITHIN A STUDY
    - -- REFLECT LIKELY VARIATIONS IN KEY SCENARIO VARIABLES
    - -- CAPTURE RANGE OF UNCERTAINTY ASSOCIATED WITH ASSESSMENTS

FRONT-END DEFINITION

Surprisingly, this topic was raised during discussions with individuals both at the higher and lower ends of the chain-of-command. The "front-end" process was generally interpreted to be those actions that inevitably transform a question/issue into a formal study directive, and eventually a study plan. Typical concerns voiced were that: (1) the process is too lengthy, cutting into the time available to the analysis agency and proponent; (2) the extensive staffing/cordinating frequently clouds the real issue (too many EEA identified in an attempt to cover all possible eventualities); and (3) it is fragmented, with usually several competing headquarters involved in a wide range of negotiations, resulting in confusing and conflicting signals being sent to the field.

A point that was raised repeatedly concerned the propensity to "study" every issue, and the impact this has on the analysis workload and tempo of that workload. The contention is that much of that workload is directed by higher headquarters, frequently by staff officers who lack the experience and institutional memory to determine what needs to be done to answer a question. Normal staffing procedures simply aggravate the problem, usually resulting in "additions" to the original requirement to make sure that all possible bases are covered. A proposal designed to minimize the effects of this criticism involves getting the question posed to the analysis agency as quickly as possible. Let them determine what needs to be done to answer the question and provide that to the Headquarters, through channels, as a proposed analytic plan. Approval of the plan, which would include methodology, schedule, and resources when additional work is required, would constitute a directive to proceed. Many questions could probably be answered on the basis of previously completed analysis. The analysis agencies are likely to be in the best position to determine what relevant work has already been performed, and prepare a plan to develop additional information if needed.

FACTORS (CONTINUED)

- POOR FRONT-END PLANNING AND TASKING
  - TOO LENGTHY
  - STAFFING FREQUENTLY CLOUDS ISSUE
  - FRAGMENTED
  - NEED TO STREAMLINE PLANNING AND DISCIPLINE TASKING PROCESSES

MODEL DOCUMENTATION

Few of those interviewed failed to mention this topic as a major impediment to good quality control. There is considerable frustration, especially among technical managers, over the lack of documentation of Army models. Most called for the adoption of some standard policy regarding model documentation, and some initiative within the community to facilitate the eventual use of program design languages and automated techniques for acquiring and maintaining good documentation once achieved.

FACTORS (CONTINUED)

- POOR MODEL DOCUMENTATION
  - NEED FOR MODEL DOCUMENTATION TO FACILITATE QC REVIEW
  - DESIRABLE TO HAVE COMMUNITY-WIDE STANDARDS
  - NEED TO EXPLOIT AUTOMATED DOCUMENTATION OPPORTUNITIES

STUDY ADVISORY GROUPS

While no one questioned the need for SAGs to coordinate particularly large studies, there was some concern voiced over the growing size of some SAGs, and lots of concern expressed about the SAG's ability to play a strong quality control role. Virtually everyone expressed the view, in one form or another, that the quality of Army analyses was very much dependent on attitudes and qualifications of our analysts, and the environment (mental and physical) in which they must operate. There also seemed to be general agreement, that for one reason or another, attitudes, qualifications and the environment were not all they could be. Consequently virtually everyone saw a need for some external/independent review, which by and large is carried out by a duly appointed SAG. There is, however, some evidence to suggest that emphasizing the SAG's role (responsibility and authority) in the final quality control process may have resulted in a reduction in the attention paid to quality control at the analysis agency, e.g. if the SAG is the principal authority on the quality of the analysis, the analysis agency will primarily concern itself with the "documentation" of that analysis. A further concern about the role of the SAG has to do with its ability to perform effective quality control. As the number and complexity of models and scenarios grows, it is reasonable to question whether or not a SAG, as previously constituted, can exercise adequate quality control. In the opinion of those interviewed previous SAGs have not been able to do so. It should be noted, that TRADOC is establishing SUB-SAGs specifically to look at scenarios and threats. Whether or not they will be able to cope with the problem is yet to be seen. Factors that have contributed to the problem in the past are: qualification of personnel; time to perform the task; timely access to appropriate material; a willingness to get into details; and when necessary, take unpopular positions.

FACTORS (CONTINUED)

- LIMITATIONS OF STUDY ADVISORY GROUPS
  - NEED FOR SAGs UNQUESTIONED
  - CONCERN ABOUT IMPACT ON ATTITUDE OF OTHER PARTICIPANTS REGARDING QC RESPONSIBILITIES
  - CAPABILITY LIMITED BY
    - -- QUALIFICATIONS OF MEMBERSHIP
    - -- TIME DEDICATED TO TASKS
    - -- TIMELY ACCESS TO ANALYSIS
    - -- WILLINGNESS TO ADDRESS DETAILS
    - -- WILLINGNESS TO TAKE UNPOPULAR POSITIONS

THE THREAT

The "threat", in one form or another, was identified as a major problem by virtually everyone interviewed. The frustration expressed usually related to one or more of the following deficiencies: (1) failure to indicate the reliability associated with a particular projection; (2) lack of consistency between and within studies; and (3) failure to pay adequate attention to threat reaction to Blue initiatives.

A. The "reliability" issue seemed to stem from frustration over not being able to determine how much importance should be attributed to a particular change in the threat projections and, hence, what priority should be given to work associated with that change, and to what extent information evolving from that analysis should influence decisions.

B. There was a great deal of frustration expressed over "vascillations", as opposed to "changes/updates", and difficulty in getting a statement from the threat community. Examples cited included threat attack helicopter tactic and the role of a missile firing tank.

C. Failure to pay adequate attention to the threat's reactive capability was raised by only a few individuals. However, their views were strong and well presented. The need is for more effort to develop appropriate tactical as well as technical reactions to Blue initiatives and to incorporate those reactions into our analysis. The perception of our current process is that the Red and Blue analysts provide appropriate inputs at the beginning of a study. Then the Red analysts disappear. The Blue analysts continue to work the problem in an attempt to "optimize" Blue's O&O concepts. At the completion of the study, both analysts "certify" the accuracy of the portrayal of their forces represented in the study. Failure to develop, and employ where appropriate, threat reactions to Blue initiatives, it is argued, underestimates the uncertainty associated with a particular estimate, and generally overestimates the value of a Blue program.

FACTORS (CONTINUED)

- INADEQUATE TREATMENT OF THREAT
  - FAILURE TO ASSESS THREAT PROJECTION RELIABILITY
  - CONSISTENCY WITHIN AND BETWEEN STUDIES
  - FAILURE TO DEVELOP AND ASSESS THE IMPACT OF REACTIVE THREATS (TACTICAL AND TECHNICAL)

REPORTING AND DOCUMENTING STUDY RESULTS

This subject was repeatedly raised during interviews, particularly by those responsible for "chain-of-command" type quality control reviews. The comments usually took one of two forms. Those individuals at the intermediate levels complained about constently having to review (and approve) the results of a study (typically performed at a functional center) on the basis of a relatively short briefing, with little time available to pursue matters of concern, i.e. "the briefing has to be at the next level of review this afternoon, or tomorrow". At DA the complaint was usually having to pronounce judgment on the quality of a study, and hence its potential usefulness in a particular decision, on the basis of a frequently sketchy and incomplete briefing. Considerable concern was voiced over the propensity, particularly at the higher levels, to have briefings presented by senior individuals who generally lacked first hand knowledge of the analysis, and hence were unable to adequately respond to detailed technical questions. The perceived lag between completion of the analysis/study and its complete and formal documentation, as well as the scope and extent of that documentation, appears to be a matter of growing concern.

FACTORS (CONTINUED)

- REPORTING AND DOCUMENTING STUDY RESULTS ARE INADEQUATE
  - REVIEW OF ANALYSIS PRIOR TO DECISION USUALLY BASED ON SUMMARY BRIEFINGS
  - BRIEFINGS ALONE DO NOT ALLOW SUFFICIENT OPPORTUNITY TO PERFORM REVIEW
  - BRIEFINGS FREQUENTLY PRESENTED BY INDIVIDUALS THAT ARE NOT QUALIFIED TO RESPOND TO DETAILED TECHNICAL QUESTIONS
  - STUDY REPORTS DRAFTED AFTER THE DECISION SELDOM AS COMPLETE AS IF PREPARED BEFORE
  - POORLY DOCUMENTED STUDIES ADVERSELY AFFECT THE ACCUMULATION OF OUR CORPORATE KNOWLEDGE

ATTITUDES

The attitude of individual analysts towards the need for quality was repeatedly linked to the analyst's perception of the use to which the analysis is eventually put. If analysts believe that the results of their analysis will be relegated to an obscure annex of a study report, or given only limited visibility in a decision briefing, or someone else is <u>really</u> responsible for insuring the validity of model inputs, then quality control is likely to receive less than adequate attention.

The attitude, or perspective, of study users can also have a significant effect on the quality of S&A. The short-term focus of many Army managers is driven by annual budgetary considerations. This short-term focus often precludes allocating resources to longer-term goals (data development, model enhancements, and studies designed to increase fundamental understanding). Accordingly, the quality of future work is constrained by the failure to invest in future growth today.

FACTORS (CONTINUED)

- THE ATTITUDES OF
  - ANALYSTS
  - USERS

PERSONNEL QUALIFICATIONS

There were really two issues raised in this regard. The first has to do with providing an environment that allows those analysts most involved in producing analyses (thru GS-13) to maintain appropriate skills. The concern here is that the nature of our workload (its magnitude, tempo, and production orientation) does not provide the opportunity to maintain or improve one's technical skills. More internally resourced research was recommended as a means to minimize this problem. But this can only occur if workloads permit. The second problem surfaced had to do with the loss of technical skills among middle and senior level technical managers (GS-14 and above), particularly at the higher levels. The recommendation here involved more opportunities to take part in educational programs specifically designed to keep managers in touch with the changing technology associated with their specific field. Specific areas indicated were computer (hardware and software) developments, modeling techniques, programming languages and documentation, electronic/optical technologies and the like. Some concern was expressed about the lack of basic military knowledge among newly acquired civilian analysts, and a lack of broad perspective among junior managers concerning the role of analysis in the Army.

FACTORS (CONTINUED)

- QUALIFICATIONS OF PERSONNEL
  - OPPORTUNITIES FOR JUNIOR ANALYSTS TO MAINTAIN TECHNICAL SKILLS
  - ROLE FOR INTERNAL RESEARCH PROGRAM
  - NEED FOR MIDDLE MANAGERS TO STAY IN TOUCH WITH EVOLVING TECHNOLOGY
  - NEW CIVILIAN ACQUISITIONS NEED SOME BASIC MILITARY EDUCATION
  - NEED TO PROVIDE MORE OPPORTUNITIES FOR JUNIOR MANAGERS TO BROADEN THEIR PERSPECTIVES

USES OF HISTORICAL DATA

Basically the comment is that the Army analysis community relies too much on simulation in its study of the combat process, and does not take full advantage of the opportunities presented by the use of historical data. The contention is that early attempts to use historical data were fundamentally flawed in that they attempted to use the data for the wrong purposes, and that those early experiences have precluded any further work in the area. What was proposed was some work specifically designed to determine how available historical data should be used to support current and future Army analysis requirements.

FACTORS (CONTINUED)

- FAILURE TO EXPLOIT HISTORICAL DATA
  - TOO MUCH RELIANCE ON SIMULATION
  - FAILURE TO TAKE ADVANTAGE OF EXISTING HISTORICAL DATA
  - PREVIOUS ATTEMPTS TO USE HISTORICAL DATA HAVE BEEN MIS-DIRECTED AND HAVE "POISONED THE WELL"
  - NEED TO PURSUE RESEARCH TO IDENTIFY APPROPRIATE USES OF HISTORICAL DATA

WORKLOAD AND TEMPO

A major concern expressed by many interviewed involved the magnitude of the workload and the tempo of that workload. Much of the problem was related to poor front-end planning and tasking: the tendency is for every question to become a major study; studies attempt to address too many issues; little control over tasking authority. The tempo of the analysis workload does not provide sufficient time to conduct management review and technical QC. In addition, the increased tempo creates a greater demand for the services of a few key analysts (most talented and productive) in an agency, with a concomitant increase in the risk of "burn-out".

FACTORS (CONTINUED)

- WORKLOAD AND TEMPO
  - •• BOTH WORKLOAD AND TEMPO ARE INCREASING AT AN ALARMING RATE
  - •• MUCH OF PROBLEM IS RELATED TO FRONT-END PLANNING AND TASKING PROCEDURES
  - •• CONSIDERABLE IMPACT ON MANAGERIAL REVIEW AND QUALITY CONTROL
  - •• UNEVEN DISTRIBUTION OF WORKLOAD ON MOST PRODUCTIVE/TALENTED ANALYSTS

AGING TOOLS

Considerable concern was expressed over our inability to complete AMIP in a more timely manner. The feeling is that the future utility of current production models is constrained by the basic structure of those models, and further attempts to enhance them will generally result in unacceptable increases in execution time. There is a need to pursue new approaches to modeling through research focused on emerging hardware and software capabilities. Progress along these lines have to date, however, been limited by lack of funding at the agency level, and workloads that have in some cases limited the ability of agency heads to allocate available manpower to IR&D projects. As an example of the former, the TORA Research Program has been zero-funded since the agency was created in FY 83. The AMSAA represents an example of the latter, where workload apparently precludes adequate investment in the future. A successful research program will require adequate stable funding at the Agency level and workload planning/development that allocates manpower to the pursuit of appropriate IR&D projects.

RAA EX

FACTORS (CONTINUED)

- AGING TOOLS
  - AMIP NOT HERE YET
  - CURRENT CONSTRAINT RELATED TO BASIC MODEL STRUCTURE
  - NEED TO INVEST IN FUTURE

SUPPORT TO SPECIAL DA ACTIVITIES

Special DA activities, such as Special Task Forces, the Army Development and Evaluation Agency (ADEA) and the Deep Attack Program Office (DAPO), frequently need analysis support, but just as frequently little provision is made to provide such support. This leads to excessive reliance on coontractors and frequently to the use of methodoligies that are not well understood within the Army. Sometimes analysis support is sought from activities external to the Army (e.g. DNA, OSD) who may have vested interests in the outcome of the special activity.

A senior analyst should be assigned to all major DA special activities. These individuals would provide the analytic experience necessary to help the activity formulate issues for analysis, develop or review analysis plans, provide an interface with the analysis community, advise on the adequacy of tools, techniques and methodologies and review the quality of S&A.

Furthermore, an analysis agency should be identified as the principal point of support within the community. In addition to conducting studies for the activity, this agency would also provide a range of technical consulting services, such as collecting/reviewing data, providing technical review of contractor tools and techniques, and the like.

FACTORS (CONTINUED)

- ANALYSIS SUPPORT TO SPECIAL DA ACTIVITIES (ADEA, DAPO, STFs)
  - LACK OF POLICY AND PROCEDURES
  - RELIANCE ON CONTRACTORS
  - DEPENDENCY ON SUPPORT FROM ACTIVITIES WITH VESTED INTERESTS, E.G. DNA, OSD
  - LACK OF IN-HOUSE FAMILIARITY WITH MODELS AND METHODOLOGIES
  - LACK OF QUALITY CONTROL ON INPUTS USED IN S&A

FILL DATA VOIDS

As a community we have simply got to commit more resources to the identification of key data voids, prioritization of those needs, and collection of data to fill those needs. An intra-agency activity should be established to identify and prioritize needs. Similarly, coordination between analysts and testers should be established to make sure we are getting the most from programmed tests. TRADOC functional centers should employ Boards in the collection of critical crew and small unit performance data. This will likely require improving the instrumentation capabilities of most Boards. In addition, programmed FTXs should be exploited, where practical, to collect unit (staff) performance data. We should initiate research to determine how, and to what extent, historical data can be used to fill existing voids. And finally, we should establish in TRADOC an operational data base manager to centralize the collection and control of data of the type typically provided by TRADOC functional centers.

RECOMMENDATIONS

- DEDICATE MORE RESOURCES TO IDENTIFYING AND FILLING CRITICAL DATA VOIDS
  - SUPPORT ANALYSIS DESIGNED TO DEFINE CRITICAL DATA VOIDS
  - ESTABLISH A MECHANISM FOR COORDINATING AND PRIORITIZING DATA NEEDS
  - ESTABLISH COORDINATION BETWEEN ANALYSIS AND TESTERS TO IMPROVE THE PRODUCTIVITY OF PROGRAMMED TESTS
  - INVOLVE BOARDS MORE IN THE COLLECTION OF CREW AND SMALL UNIT PERFORMANCE DATA
  - EXPLOIT FIELD TRAINING EXERCISE OPPORTUNITIES, TO INCLUDE THE NTC ACTIVITIES, TO COLLECT UNIT PERFORMANCE DATA
  - INITIATE RESEARCH TO EXPLORE POTENTIAL USES OF HISTORICAL DATA
  - ESTABLISH AN OPERATIONAL DATA BASE MANAGER WITHIN TRADOC TO PROVIDE A CENTRAL REPOSITORY OF THAT DATA.

RESTRUCTURE MAA PROCESS

The current MAA process is flawed from three aspects. First, Army missions are defined as functions, not as strategic/tactical tasks. Second, the process builds up from the bottom where the analytic capability is most limited. And third, the development of many independent functional MAAs makes comparisons across functional lines very difficult. What is recommended is a top-down approach, where Army missions are defined in strategic/tactical terms, e.g. defend western Europe, South Korea, etc. The process would start with a theater level assessment conducted by CAA, resulting in prioritized theater level deficiencies (deployment, sustainment, intra-theater mobility, etc) and scenarios to support further, more detailed, analysis by TRADOC. TRADOC would use the scenario material resulting from the CAA analysis to perform corps/division level analyses, from which more detailed prioritized functional deficiencies would evolve. This analysis would be provided to the various TRADOC functional centers. The functional centers would review the corps/division analysis and resulting deficiencies in order to identify and assess potential solutions to those deficiencies. Proposed solutions, with accompanying assessments, would be forwarded to the TRADOC integrating centers where they would be screened, integrated with other functional solutions, and prioritized. The previous prioritization effort by the integrating centers would provide the basis for this final review, i.e. if the first assessment indicated air defense was the number one functional deficiency, one would expect a solution to the air defense problem to be ranked very high among all solutions submitted by the functional centers.

RECOMMENDATIONS (CONTINUED)

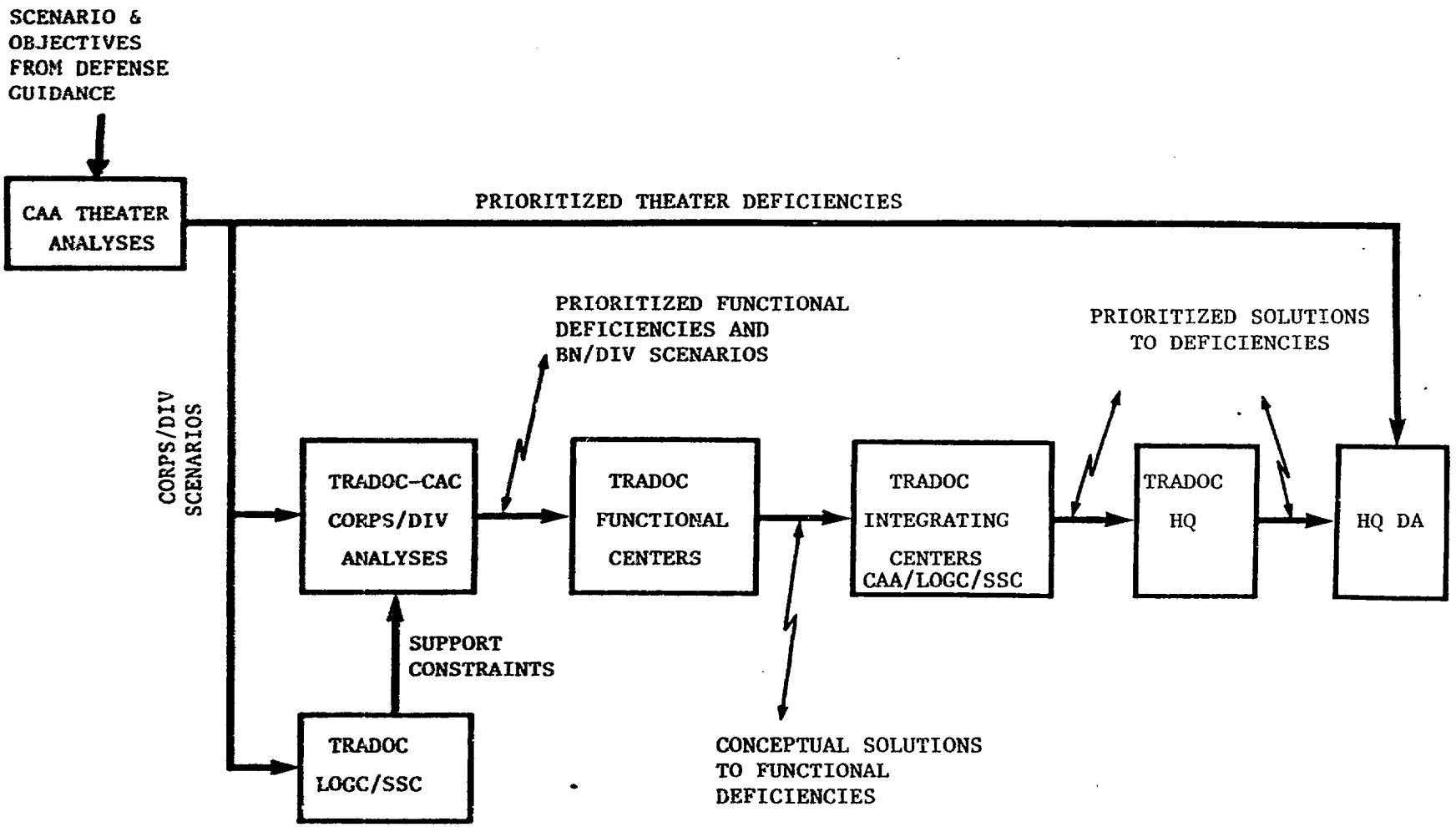
- RESTRUCTURE THE MAA PROCESS
  - •• USE TOP-DOWN APPROACH
  - •• DEFINE MISSIONS STRATEGICALLY AND TACTICALLY NOT FUNCTIONALLY
  - •• CAA THEATER ANALYSIS TO
    - PRIORITIZE THEATER LEVEL DEFICIENCIES
    - DEFINE SCENARIOS FOR TRADOC ANALYSIS
  - •• TRADOC CORPS/DIVISION LEVEL ANALYSIS TO
    - PRIORITIZE FUNCTIONAL DEFICIENCIES
    - DEFINE SCENARIOS FOR FUNCTIONAL CENTER ANALYSES
  - •• TRADOC FUNCTIONAL CENTERS DEVELOP AND PRIORITIZE SOLUTIONS TO FUNCTIONAL DEFICIENCIES
  - •• TRADOC INTEGRATING CENTERS SCREEN AND PRIORITIZE FUNCTIONAL SOLUTIONS

RESTRUCTURE MAA PROCESS

The proposed restructuring of the MAA process would provide for vertical consistency and horizontal balance in the MAA process: Two important ingredients that are now missing. In addition, it should reduce the burden at the lower levels where relief is most needed.

RAA EX

RESTRUCTURED MAA PROCESS



COMMUNITY RESEARCH PROGRAM

To date, most of the research activities of the analysis community have been fragmented with each agency pursuing its own interests fairly independently. AMIP is an exception to that rule. It is important that in the future these research activities be better coordinated, with the limited resources available focused on priority issues. Accordingly, a community-wide research program is recommended, designed to focus attention on improving analytic tools and techniques. The program would provide resources for projects to be performed in-house by one or more agencies, or by contract when appropriate. Control would be exercised by a committee of senior analysts meeting periodically to establish priorities, allocate resources and provide QC. Initial annual funding required would be approximately $5M RDTE, fenced at HQ DA (CAA).

Two precedents for such an initiative are the Advanced Concepts and Technology (ACT) Program administered by the DCSRDA, and the Army Comptroller's Cost Methodology Research Program.

RECOMMENDATIONS (CONTINUED)

- RESTRUCTURE COMMUNITY-WIDE RESEARCH ACTIVITIES
  - NEED TO BETTER COORDINATE AND FOCUS ON KEY ISSUES
  - FOCUS ON IMPROVING ANALYTIC TOOLS AND TECHNIQUES
  - CONTROL PROVIDED BY COMMITTEE ON ANALYTIC RESEARCH
    - MEMBERSHIP
      - -- CHAIR: DUSA (OR)
      - -- HQDA: TECH ADV, ODCSOPS
        RDA ANAL OFF, ODCSRDA
        DIR, CAA
      - -- TRADOC: DIR, TORA
      - -- DARCOM: DIR, AMSAA
    - RESPONSIBILITIES
      - -- ESTABLISH PRIORITIES
      - -- ALLOCATE RESOURCES
      - -- QC
  - APPROXIMATELY $5M RDTE/YR FENCED AT HQ DA

COMMUNITY RESEARCH PROGRAM

A major component of the community research program would be a simulation laboratory, whose focus would be on exploiting new hardware and software opportunities, developing new modeling capabilities and automated documentation techniques. It is recommended that a committee be established under the DUSA(OR) to develop a more detailed concept plan. This plan will address specific goals, funding, manning, and management issues.

RAA
EX

RECOMMENDATIONS (CONTINUED)

- COMMUNITY-WIDE RESEARCH (CONTINUED)
  - MAJOR ELEMENT TO BE A SIMULATION LABORATORY
    - FOCUS ON
      - -- EXPLOITING NEW HARDWARE/SOFTWARE CAPABILITIES, E.G. CONCURRENT PROCESSING, AGGREGATION TECHNIQUES, GRAPHICS
      - -- DEVELOPING NEW MODELING TECHNIQUES TO IMPROVE EFFICIENCY
      - -- DEVELOPING AUTOMATED DOCUMENTATION TECHNIQUES
    - 20-25 PMY/$2-3M RDTE/YR (INCLUDED IN $5M MENTIONED ABOVE)
    - MUST BE EXEMPT FROM STANDARD ADP PROCUREMENT REGULATIONS
    - ESTABLISH COMMITTEE UNDER DUSA(OR) TO DEVELOP CONCEPT PLAN

TRADOC S&A ROLES AND MISSIONS

Since the 1978 RAA Study there have been several important changes within TRADOC that have had a considerable impact on the relationships between S&A activities within that command. They are: the creation of the LOGC; establishment of three DCGs; and creation of TORA. Today there is considerable confusion both inside and outside of TRADOC concerning the roles and responsibilities of the various activities. The quality of TRADOC analysis would be improved considerably if those roles were re-examined and defined along the lines described in the accompanying chart. These guidelines provide for a headquarters S&A element that is primarily concerned with establishing policy and allocating resources. CAC, LOGC and SSC, as study performing agencies, should be integrating the analyses of the functional centers to provide a balanced perspective to combat developments activities. Their focus should be on Corps and Division level doctrinal and force structure issues.

RAA EX

RECOMMENDATIONS (CONTINUED)

- CLARIFY ROLES AND MISSIONS OF TRADOC S&A ACTIVITIES
  - HEADQUARTERS CD ELEMENT
    - ASSIGNING TASKS
    - ESTABLISHING PRIORITIES
    - ALLOCATING RESOURCES
    - INTEGRATION OF INTEGRATING CENTERS
    - SUPERVISION OF COMMAND LEVEL QC
  - INTEGRATING CENTERS
    - BATTLEFIELD INTEGRATION OF FUNCTIONAL O&O CONCEPTS
    - CROSS-FUNCTIONAL TRADE-OFFS
    - EAB FORCE STRUCTURE AND DOCTRINE
    - QC OVER FUNCTIONAL CENTER S&A ACTIVITIES
    - CONDUCT MAA USING TOP-DOWN APPROACH (CAC LEAD)

TRADOC S&A ROLES AND MISSIONS

The functional center should focus their limited analytic resource on the development of O&O concepts, systems and small unit training effectiveness analyses, and the development of a fundamental base of knowledge pertaining to their particular functional area. The latter should be derived from a long range program of coordinated S&A and tests and experiments designed to fill existing voids in our knowledge about small unit operations and individual/crew performance. The Director, TORA should be the single technical manager of the major analytic resources of the command, to include TRASANA, CAORA, as well as those currently assigned to the LOGC and SSC. In addition, TORA should be responsible for performing all COEA's in which force-on-force analysis is a major ingredient. Mini-COEA, e.g. when force-on-force is not a major component of the study, responsibility should continue to rest with the appropriate functional center. In the case of the former, functional center inputs, to include an assessment of the force-on-force results, should be included in the TORA study report. In the case of a mini-COEA, TORA should support the responsible functional center as appropriate. The report, however, should be prepared by the functional center.

RECOMMENDATIONS (CONTINUED)

- TRADOC S&A ROLES AND MISSIONS (CONTINUED)
  - FUNCTIONAL CENTERS
    - O&O CONCEPTS FOR BNTF AND BELOW
    - SMALL UNIT AND SYSTEM TRAINING ANALYSES
    - MINI-COEA (FORCE-ON-FORCE NOT MAJOR ELEMENT)
    - QC OF INTERNALLY DEVELOPED S&A
    - LONG-RANGE FUNCTIONAL AREA TEST AND ANALYSIS PROGRAM
    - SUPPORT MAA ACTIVITIES OF INTEGRATION CENTERS
  - TORA
    - PRIMARY ADVISOR TO HQ ON S&A ACTIVITIES (RESOURCE ALLOCATIONS, QC)
    - SUPPORT INTEGRATING AND FUNCTIONAL CENTERS
    - IMPROVE ANALYTIC TOOLS AND TECHNIQUES
    - ASSUME LEAD FOR MAJOR COEA (FORCE-ON-FORCE A MAJOR ELEMENT)
    - QC OF INTERNALLY DEVELOPED S&A; SUPPORT HQ IN COMMAND-WIDE PROGRAM

FRONT-END PLANNING AND TASKING

In addition to those S&A tasks directed by higher headquarters, the planning process must also acknowledge the need for resources to be devoted to certain activities initiated from below. Specifically, the latter should include: analyses that contribute to the basic understanding of combat processes; analyses designed to identify and prioritize critical data voids; and internally resourced research focused on the improvement of analytic tools and methodologies. In addition, care should be taken to insure that more of the available resources are devoted to the analysis of doctrine, tactics, force structure, operational planning and training effectiveness, and less to the evaluation of specific item level systems. Finally, the ASB should be requested to provide a periodic review of the adequacy of the Army Study Program.

To minimize confusion and the piecemeal commitment of scarce resources, we must establish better control over the S&A tasking process. All S&A requirements from HQDA should be directed to the appropriate MACOM, and, as expeditiously as possible, transmitted to the likely study proponent and analysis agency. These activities should review the issue in light of previous S&A to determine if the current requirement can be handled with existing information, or whether additional work is needed. In the case of the former, a quick response should be proposed. In the latter case, a plan would be submitted to the MACOM outlining methodology, schedule and resources to be used in the proposed longer term study. Upon MACOM approval, this plan would be published as a study directive. Depending on the nature of the issue, either the proponent or analysis agency should take the lead in developing the analysis plan

RECOMMENDATIONS (CONTINUED)

- RESTRUCTURE/DISCIPLINE STUDY AND ANALYSIS FRONT-END PLANNING AND TASKING PROCESS
  - •• PLANNING
    - PROGRAM MUST SUPPORT
      - -- ISSUES IDENTIFIED BY SUBOPDINATE ELEMENTS
      - -- DATA DEVELOPMENT
      - -- RESEARCH ON TOOLS AND TECHNIQUES
    - MORE EMPHASIS ON DOCTRINE, TACTICS, FORCE STRUCTURE, EVALUATION OF OPERATIONAL PLANS, AND TRAINING EVALUATIONS; LESS ON SYSTEM ASSESSMENTS
    - ARMY SCIENCE BOARD REVIEW OF ARMY STUDY PROGRAM
  - •• TASKING
    - ESTABLISH CONTROL OVER TASKINGS
    - STREAMLINE PROCEDURES

SUPPORT OF INTERNALLY GENERATED PROGRAMS

It is suggested that about 20% of the manpower assigned to a major analytical agency should be allocated to "internally generated" tasks, mostly focused on improving tools and techniques. Few of our major activities are achieving this goal as the following chart indicates.

FY 83 ANALYTICAL WORK PROGRAM

	TOTAL WORK (TSM) PROGRAM	RESEARCH SUPPORT (%)	ANALYSIS APPLICATIONS SUPPORT (%)	TASKED BY HIGHER HQ, OR CUSTOMER SUPPORT (%)	SELF GENERATED (%)
AMC					
AMSAA	3627	14	86	94	6
TRADOC					
TRASANA	2410	25	75	82	18
CAORA	667	31	69	87	13
HQDA SSA/FOA					
CAA	2756	20	80	85	15
ESC	230	20	80	100	0
LEA	345	14	86	89	11

IMPROVE UTILITY OF MODELS

Support for three major initiatives is required to improve the future utility of simulation models. The first involves the need for better documentation and documentation techniques: This will require establishing community-wide standards, acquiring automated techniques, and devoting resources to the documentation task on a priority basis. The second major initiative involves improving both pre and post-processing techniques. The former are needed to facilitate the development and loading of new scenarios, thus expanding the range of situations that can be addressed in a given study The latter is needed to expand the range of outputs that can be extracted from a given simulation, and improve the communication of those results to management. To insure the utility of future production models we must start now to invest in the development of modeling techniques that take advantage of new and emerging hardware and software capabilities.

RECOMMENDATIONS (CONTINUED)

- IMPROVE UTILITY OF SIMULATION MODELS
  - ESTABLISH COMMUNITY-WIDE DOCUMENTATION STANDARDS
  - DEDICATE RESOURCES TO DOCUMENT EXISTING MODELS
  - ACQUIRE IMPROVED TECHNIQUES FOR DOCUMENTING AND MAINTAINING DOCUMENTATION OF MODELS
  - DEVELOP BETTER TECHNIQUES FOR PRE-PROCESSING MODEL INPUTS (SCENARIOS) AND POST-PROCESSING OUTPUTS
  - SUPPORT RESEARCH DESIGNED TO EXPLOIT NEW MODELING APPROACHES

SAG QC ROLE

Study Advisory Groups can play an important role in the S&A process, particularly with regards to coordination of study related activities and communication of interim results to those concerned. The QC role is more demanding, however, and the SAGs capability to fulfill that role needs to be strengthened. To adequately meet its quality assurance mission the SAG must get into details pertaining to scenarios (context and data), model modifications and results. This can best be accomplished by small, informal sessions involving individuals with appropriate skills and experience. Some stability should be achieved among these groups from study to study. In addition, these groups, as well as the SAG, must have earlier access to the analysis so that opportunities to have a positive impact are protected. While the number of "observers" may be large for a particularly important study, SAG membership should be limited to facilitate communications with the special working groups. Issues identified by the working groups should be resolved by the full SAG. Those that constitute a change to the original study directive should be documented as such.

RECOMMENDATIONS (CONTINUED)

- STRENGTHEN SAG QC CAPABILITIES
  - SAG PLAYS IMPORTANT ROLE IN STUDY PROCESS
    - COORDINATION
    - COMMUNICATIONS
  - QC CAPABILITY NEEDS TO BE STRENGTHENED
  - STEPS THAT NEED TO BE TAKEN
    - MORE OF REVIEW NEEDS TO BE CONDUCTED BY SMALL, INFORMAL GROUPS OF SPECIALISTS
    - EARLIER ACCESS TO ANALYSIS IMPORTANT
    - SMALL FUNCTIONAL GROUPS REPORT ISSUES TO FULL SAG FOR RESOLUTION
    - SAG DECISIONS BECOME AMENDMENTS TO STUDY DIRECTIVE

REACTIVE THREAT

Little, if any, of our current analyses take into account the enemy's capability to react, technically or tactically, to US initiatives. As a result we fail to adequately reflect the potential uncertainty associated with the effectiveness estimates being developed. Study and system proponents lack the motivation to perform such analyses. Whereas the threat community is generally not close enough to the analysis as it is being developed, and lacks the tools needed to do independent assessments of potential threat reactions. In addition, there appears to be a reluctance on the part of the threat community to produce descriptions of possible reactions, as they will be interpreted as "threat projections". It is therefore recommended that responsibility for developing and evaluating potential (generic) technical and tactical threat reactions be assigned to the analytic agencies responsible for a study. The threat community should support the process with appropriate advice, however the results would not be considered a "threat projection" in the usual sense, but rather a feasible reaction. We should require all study plans to address how this need will be addressed, and the SAG to report on the adequacy of any analysis performed. This will likely require increasing the size of the threat manager activity at each of the major analysis agencies.

RAA
EX

RECOMMENDATIONS (CONTINUED)

- IMPROVE CAPABILITY TO PERFORM REACTIVE THREAT ANALYSES
  - NEED IS TO CAPTURE POTENTIAL THREAT REACTION TO US INITIATIVES
  - CURRENTLY FAIL TO REFLECT UNCERTAINTY ASSOCIATED WITH EFFECTIVENESS ESTIMATES
  - STUDY/SYSTEM PROPONENT LACKS MOTIVATION
  - THREAT COMMUNITY NOT CLOSE ENOUGH TO ANALYSIS; LACKS TOOLS TO DO INDEPENDENT FORCE ASSIGNMENTS
  - ASSIGN RESPONSIBILITY FOR REACTIVE THREAT FORCE LEVEL ANALYSIS TO ANALYTIC AGENCIES
  - REQUIRE ANALYSIS OF THREAT REACTION IN AGENCY STUDY PLANS
  - TASK SAGS TO REPORT ON ADEQUACY OF REACTIVE THREAT ANALYSIS

SCENARIOS

To achieve greater consistency between studies using the same model, and to reduce the time needed to perform a study, it is important that a standard set of model specific scenarios be developed. These scenarios would serve as the base cases for all studies during a given period of time. They would be up-dated when required by changes in either contextual or data inputs. As a second priority, effort should be expended to develop variations on the previously mentioned standard scenarios, to reflect the uncertainty associated with key scenario variables such as force levels and mixes, terrain, weather, tactics and visibility.

HQ TRADOC is currently attempting to re-energize the SCORES process. This summer 7 high resolution base case scenarios were identified as high priority efforts. Three of those should be completed by mid-September; the remaining 4 by the end of December. It is, however, unlikely that these 7 will satisfy all of our analytic needs. By the same token, some effort, as yet undefined, will likely have to be devoted to the development of several larger scale (corps and division) scenarios.

The top-down MAA structure recommended in this study should contribute to the development of standard scenarios for use throughout the community.

RECOMMENDATIONS (CONTINUED)

- EXPAND THE SET OF STANDARD SCENARIOS AVAILABLE TO SUPPORT S&A
  - MODEL SPECIFIC BASE CASES
  - VARIATIONS TO REFLECT UNCERTAINTY

REPORTING PROCEDURES

In order to provide adequate time for the review of study results, DRAFT study reports should be distributed to appropriate agencies at least 30 to 60 days prior to a decision. In the case of those studies supporting materiel acquisition decisions, the draft study report must be distributed at least 60 days prior to the ASARC. Study schedules must include the time needed to prepare and coordinate draft reports prior to their release.

RECOMMENDATIONS (CONTINUED)

RAA
EX

- TIGHTEN UP STUDY REPORTING PROCEDURES
  - REQUIRE DRAFT STUDY REPORTS AT HQ DA PRIOR TO THE DECISION
    - -- 30 TO 60 DAYS PRIOR TO DECISIONS DESIRABLE FOR ALL STUDIES
    - -- 60 DAYS REQUIRED FOR STUDIES SUPPORTING MATERIEL ACQUISITION DECISIONS
  - SCHEDULING MUST ACCOMODATE REPORT DRAFTING

PROFESSIONAL DEVELOPMENT

Quality work can only be derived from a quality workforce. Maintaining, and expanding, the technical and military competence of our analysts should be an important element of our QC program. It is essential that the S&A program clearly identify and focus resources on projects that will encourage the intellectual growth of the community. The community-wide research program will provide opportunities, both in-house (IR&D) and through the simulation laboratory, to pursue these objectives. In addition, we should take full advantage of exchange opportunities with academic institutions like the National Defense University and AFIT. To provide both junior and senior analysts an opportunity to broaden their perspectives, we should encourage intra-community exchanges for 6 months to a year. In particular, research assistant positions in ODUSA(OR) should be established to provide such opportunities for junior management (GS-13/14). In addition, we should encourage, where practical, our new hires to attend an appropriate functional basic or career course, and more experienced analysts to attend either the CGSC or AWC.

RAA
EX

RECOMMENDATIONS (CONTINUED)

- EXPAND OPPORTUNITIES FOR PROFESSIONAL DEVELOPMENT
- NEED TO FENCE RESOURCES UP-FRONT IN S&A PLANNING, E.G. IR&D OPPORTUNITIES
- COMMUNITY-WIDE RESEARCH PROGRAM OPPORTUNITIES TO BE EXPLOITED
  - IN-HOUSE PROJECTS
  - WORK WITH SIMULATION LABORATORY
- EDUCATIONAL OPPORTUNITIES
  - EXCHANGES WITH ACADEMIA (NPS, AFIT, ETC)
  - SHORT COURSES FOR MANAGEMENT
- INTRA-COMMUNITY EXCHANGES
- MILITARY SCHOOL ATTENDANCE
  - BASIC AND CAREER COURSES
  - STAFF AND WAR COLLEGES

PEER REVIEWS

This recommendation would expand the current program of peer review in existence at some agencies to include all in-house and contracted analyses at the agency/activity/commodity command level. Reports of completed peer reviews would be submitted through appropriate MACOMs to HQDA. In addition, from a list of completed S&A, the ODUSA(OR) would continue to select a sample of analyses for ad-hoc peer review.

RAA EX

RECOMMENDATIONS (CONTINUED)

- EXPAND THE ARMY QUALITY CONTROL SYSTEM, BASED ON PEER REVIEW, FOR ARMY ANALYSES
  - AGENCY/ACTIVITY/COMMODITY COMMAND REVIEW
  - MACOM REVIEW
  - SELECTED AD-HOC REVIEW BY ODUSA(OR)

SUPPORT TO SPECIAL DA ACTIVITIES

Concern was expressed over the lack of adequate policy and procedures governing the provision of analytic support to special DA activities such as the ADEA, DAPO and STFs. In some instance the lack of analytic experience and expertise has led to an over reliance on study contractors and others with a vested interest. Accordingly, review of supporting analysis is sometimes hindered by a lack of in-house familiarity with the tools and techniques used.

RAA
EX

RECOMMENDATIONS (CONTINUED)

- ESTABLISH PROCEDURES THAT WILL IMPROVE ACCESS TO ANALYTIC COMMUNITY BY SPECIAL DA ACTIVITIES
  - ASSIGN EXPERIENCED SENIOR ANALYSTS TO SERVE AS KEYMAN
  - DESIGNATE AN ANALYSIS AGENCY TO SERVE AS FOCAL POINT OF SUPPORT

TREATMENT OF COUNTERMEASURES AND COUNTER-COUNTERMEASURES

PROBLEM STATEMENT

The overall study task directed that the study review a number of specific areas and propose specific steps for improvements. Among these was a recognition that the treatment of (or lack of treatment of) countermeasures and counter-countermeasures in Army analyses has a direct effect on study outcomes and on how threat issues are treated. A task included in the study Terms of Reference was to evaluate the adequacy of the treatment of countermeasures and counter-countermeasures in Army analyses.

DETERMINE ADEQUACY OF THE TREATMENT OF COUNTERMEASURES AND COUNTER-COUNTERMEASURES IN ARMY ANALYSES.

Methodology. The study co-directors and the USA provided a statement of the problem (partially summarized in the above short title), and initial guidance. The co-directors provided continuing review and critique of the approach and emerging results, arranged several formal briefings, and provided several relevant documents.

The 1978 Review of Army Analysis, the Soviet Battlefield Development Plan and several study reports and briefings were surveyed, the latter with the helpful assistance of Mr. R. Thompson and Mr. J. Carr of the AMSAA staff. Mr. T. Nolan of AMSAA provided information from the 21-22 August 1984 Symposium on Ground Vehicle Signatures. Additional written comments were obtained from the total AMSAA staff. These have been retained in the RAAEX archives.

FORMAL BRIEFINGS AND DISCUSSIONS

UNDERSECRETARY OF THE ARMY, MR. AMBROSE
DEPUTY USA/OR, MR. HOLLIS (STUDY CO-DIRECTOR)
TECHNICAL ADVISOR TO THE DCSOPOS, MR. VANDIVER
(STUDY CO-DIRECTOR)
OTEA, MR. MCCOY
OACSI, COL MILAM
HQ TRADOC, COL LUNDGREN
AMSAA, MR. MCCARTHY
ARMY RESEARCH INSTITUTE, COL COSBY
PACIFIC SIERRA CORP., MR. KOENIG
SAI DENVER, MR. BATTILEGA
SAI WASHINGTON, DR. RHIEM
BDM, MR. STOEHRMANN

INTERVIEWS AND DISCUSSIONS

DCSRDA, MR. WOODALL
TORA, DR. PAYNE AND MR. MILLER
TRASANA, MR. GOODE AND STAFF
AMSAA, MR. MYERS AND STAFF
CAA, DR. METZGER AND COL GANTZLER
CAORA, MR. DAVIS AND STAFF
ACSI, LTG ODOM
OACSI, LTC O'CONNOR, LTC JAMES, MR. HARRISON
PSTC, COL HOPE, MR. DINGER AND STAFF
MIA, MR. WALKER
HQ TRADOC, MR. GOLDBERG AND MR. REICH
DNA, MR. BEUCH
CAC, COL STRIMBU
CM/CCM CENTER, DR. MANION
ARI, DR. JOHNSON
TCATA, DR. COLLIER (TELEPHONE)
BDM, MR. DAVIS
AND THE FOLLOWING US ARMY OFFICERS WHO HAVE RETIRED FROM ACTIVE DUTY BUT ARE WORKING AS FULLTIME CONTRACTOR EMPLOYEES OR ARE CONSULTANTS:
GEN G. BLANCHARD
LTG J. EWELL (TELEPHONE)
MG E. WHITEHEAD
COL N. WELLS
COL Wm GRACE
COL P. PATTAKOS
AND COL H. MOSS, USAF RET

NOTE: INDIVIDUALS LISTED ABOVE WERE ALSO INTERVIEWED IN CONNECTION WITH RESEARCH ON INTER-RELATIONSHIP OF ANALYSIS AND INTELLIGENCE (CHAPTER 10)

METHODOLOGY (CONTINUED)

A Defense Technical Information Center (DTIC) search of the key word "countermeasure", of report titles only, was done. The latter revealed more than 2,000 cites of this term as a primary key word since 1979, and more than 25,000 uses of the term in the total archives. A sample of the titles of 240 of the more recent publications that are contained in DTIC files was taken to find where our emphasis has been placed. None of these sampled titles suggest experiements or analysis of countermeasure tactics per se but a few imply combinations of tactics and technology for CM/CCM. The sample was placed in the following, admittedly inconsistent, categories:

METHODOLOGY (CONTINUED)

CATEGORY	NUMBER	PERCENT
GENERAL STUDIES	10	4
LOCATION AND JAMMING (RF[1])	51	21
ECCM[2]	47	20
ELECTRO-OPTICAL	26	11
CHAFF	7	3
AEROSOLS	4	2
DECOYS	10	4
C_2 DECEPTION	2	1
COUNTERMINE (LAND-10, SEA-4)	14	6
SONAR	3	1
TORPEDO/COUNTER-TORPEDO	3	1
COUNTERAIRE	3	1
COUNTERJAMMER	2	1
WARNING	3	1
UNDETERMINED FROM TITLE	48	20
OTHER[3]	7	3
	240	100

NOTES: 1-- RF = RADIO FREQUENCY, INCLUDING RADIOS AND RADARS.
2-- ECCM = ELECTRONIC COUNTER-COUNTERMEASURES.
3-- ONE PUBLICATION IN EACH OF THE FOLLOWING CATEGORIES: CAMOUFLAGE, C^3CM, MIXED MINES (LAND), MINE MARKING (LAND), COUNTERARTILLERY, COUNTER CRUISE MISSILE, AND COUNTER NAVIGATION.
4-- PUBLICATIONS CONCERNING BALLISTIC PROTECTION DO NOT APPEAR TO HAVE CITED "COUNTERMEASURES" AS A KEY WORD.

ISSUES

RAA
EX

CM/CCM ADEQUACY IN STUDIES AND ANALYSES

ISSUE: ADVOCACY OF SINGLE THREAD SOLUTIONS AND UNJUSTIFIED CONSTRAINTS

- ADEQUACY OF DATA BASE?
  - COMPILATION
  - DO STUDIES ADDRESS ALL THE OBVIOUS CM'S
  - SECURITY CONSTRAINTS
- TEST FACILITIES?
  - ONE-ON-ONE
  - SIMULATORS/STIMULATORS
- THREAT INFORMATION (MATERIEL & TACTICS)?
  - TIMELINESS
  - SECURITY CONSTRAINTS
- IN-HOUSE KNOW HOW?
- DEVELOPER MOTIVATION?
- TIME?
- FRONT-END GUIDANCE AND MID-TERM REVIEW
  - SUFFICIENCY
  - TIMELINESS
  - PRIORITIES

RAA
EX

ISSUE: STATUS OF THE DATA BASE

- PASSIVE TECHNICAL AND TACTICAL
  - CM
  - CCM
- ACTIVE TECHNICAL AND TACTICAL
  - CM
  - CCM
- ENVIRONMENT

RAA
EX

ISSUE: ADEQUACY :AND VISIBILITY OF ASSUMPTIONS IN REPORTS

- ASSUMPTIONS BUILT INTO ANALYSIS MODELS?
  - MODEL DOCUMENTATION ADEQUACY
  - VISIBILITY OF IMPACT
- ASSUMPTIONS SPECIFIC TO STUDIES?
  - ADEQUACY
  - UP FRONT

ISSUE: ALTERNATIVE THREAT DOCTRINE & TACTICS (ALL ARMS)

- THREAT INPUTS
  - ADEQUACY
  - TIMELINESS
  - RESOURCE CONSTRAINTS
- MODEL ABILITY TO REPRESENT
  - URBAN WARFARE
  - DISMOUNTED INFANTRY
  - ALL ARMS
- FEEDBACK TO INTELLIGENCE COMMUNITY
- INTELLIGENCE COMMUNITY RESPONSIVENESS TO FEEDBACK
- INFLUENCE ON THE NEXT STUDY

ISSUE: ADEQUACY OF THREAT INPUTS TO STUDIES

- ANALYSIS OF THREAT ALLOCATION OF RESOURCES
  - MATERIEL - SPECIFIC
  - GENERIC
  - ALL ARMS COUNTERMEASURES OPTIONS (TACTICAL AND TECHNICAL)
- IMPACT OF THREAT LEAD TIME
- EVALUATION OF THREAT CAPABILITIES
  - TO FIELD TECHNICAL COUNTERMEASURES
  - TO MODIFY TACTICS ON-THE-SPOT
- EVALUATION OF THREAT PERCEPTION OF BLUE SYSTEM VALUE
- VALUE OF US DECEPTION EFFORTS
  - PEACE TIME/WAR TIME SIGNATURE
  - REAL PROGRAMS

RAA
EX

ISSUE: OUR ABILITY TO EVALUATE ALTERNATIVE CM/CCM TACTICS

- ADEQUACY OF US TACTICS REPRESENTATION
  - FIELD EXERCISES
  - FIELD TESTS
  - O&O
  - COMBAT MODELS
- ADEQUACY OF FEEDBACK AMONG:
  - TACTICIANS
  - MATERIEL DEVELOPERS
  - INTELLIGENCE ORGANIZATIONS
  - INDUSTRY
- ADEQUACY OF ANALYSIS OF:
  - ALL ARMS AND
  - MATERIEL CM/CCM SOLUTIONS

ISSUE: US ALLOCATION OF RESOURCES

- APPROPRIATE CONSIDERATION OF ALL FORCE CAPABILITIES?
- US EVALUATION OF THREAT SYSTEM VALUE?
- ANALYSIS OF RED AS A SYSTEM?

ISSUE: CONTRIBUTIONS OF OTHER SERVICES, COUNTRIES

- MODEL ADEQUACY?
  - REPRESENTATION OF OTHER FRIENDLY CAPABILITIES?
  - COALITION WARFARE?
    - DIFFERENT TACTICS
    - COMMUNICATIONS INTEROPERABILITY
    - ABILITY TO REARM, REFUEL, MAINTAIN

RAA
EX

ISSUE: UTILITY OF ANALYSIS OF HISTORY

- RED DEVELOPMENT TRENDS?
- ABILITY TO MAKE USEFUL PROJECTIONS?
- PITFALLS?

RAA
EX

ISSUE: IMPACT OF NEW KINDS OF CAPABILTIES

- RESPONSIVENESS OF US ANALYSIS COMMUNITY?
  - ITEM LEVEL
  - COMBAT MODELS
  - CONCEPT EVALUATION
- USER INPUTS (O&O)?
- INTELLIGENCE COMMUNITY PROJECTIONS?
  - THREAT REACTION
  - THREAT TIMELINESS

FINDINGS AND RECOMMENDATIONS

No one has yet attempted to compile and evaluate all the available CM/CCM data. DTIC contains thousands of references but we do not know enough about these sources to enable us to describe fully the scope, adequacy of test instrumentation or consistency of analytical methods, or treatment of related aspects such as battlefield environment. Signature data have been collected and analyzed by a number of DOD elements. It is known that inconsistencies exist in the instrumentation for and record-keeping of important aspects of the environment in which the data were collected. The best signature data base is probably that contained in TRISIG, a joint service effort involving NVEOL (Army), Naval Weapons Lab at China Lake, and Air Force Armaments Lab at Eglin AFB. This data base is maintained and accessed via System 2000. There is no central direction to the total effort. In addition to the environment problem, there are inconsistencies in resolution and data collection methodology. Many important models contain significant aspects of countermeasures imbedded in the model logic. Much of this is known only to the model creator, less often to the model user. Transparency and model documentation shortfalls remain serious problems.

There exist strong motivations to push programs to fielding without addressing all the options that are available to an enemy. Among these are the desire of the user for solutions to mission area deficiencies and the desire of both developer and user to control program costs. Both user and developer think first of technical solutions to deficiencies rather than of tactical options or of combinations of tactics and technical options. The absence of a balanced analysis of tactics and materiel CM/CCM solutions has led to a plethora of unjustified (often unmentioned) constraints in our studies and analyses.

CM/CCM ADEQUACY -- FINDINGS

- EXTENT AND QUALITY OF DATA BASE UNKNOWN
- DTIC CONTAINS 13,153 PRIMARY REFERENCES, >25,000 TOTAL REFERENCES TO CM; AND 2,253 PRIMARY REFERENCES SINCE 1979
- KEY MODELS ARE NOT DOCUMENTED
- UNJUSTIFIED CONSTRAINTS

CM/CCM ADEQUACY — FINDINGS

We have long recognized the shortcomings of Army and Army contractor test instrumentation, and test-associated stimulators and simulators, plus our inability to realistically test aspects of combat that affect human safety.

Our assessment is that the Army has very good staff ability in-house in every area of technical CM/CCM, but that this will not continue because we can no longer compete with industry for young engineers. Jobs in the private sector are becoming increasingly attractive to our experienced engineers. As discussed elsewhere, the release of much of the classified threat information that would be needed to enable contractors to provide CM/CCM analysis functions has been denied. The most critical parts of this activity must be performed in-house.

On the other hand we do not routinely consider every tactical and technical CM/CCM option such as attack of the C2 elements of a Blue or Red system. We need to learn to apply our abilities more broadly.

Our models contain many well-known shortcomings, and some are listed here. The current inability of the hierarchy of models to evaluate all forms of combat in all potential combat environments impacts our ability to perform unconstrained studies of CM/CCM options.

CM/CCM ADEQUACY -- FINDINGS

- TEST FACILITIES SHORTFALL
  - EW
  - DIRECTED ENERGY
  - OBSCURATION
  - STIMULATORS/SIMULATORS
- IN-HOUSE TECHNICAL KNOW-HOW IS GOOD BUT WE ARE NOT HIRING ENOUGH YOUNG ENGINEERS
- IN-HOUSE KNOW-HOW IS NOT APPLIED BROADLY ENOUGH
- MODEL SHORTFALL
  - MOUT
  - DISMOUNTED INFANTRY
  - ENVIRONMENT

CM/CCM ADEQUACY — FINDINGS

Study activities and agencies are nearly always tasked to add to a study's scope late in the game. The additional tasking comes from those who could have contributed to more definitive front-end guidance and mid-term review. The late tasking to add additional CM/CCM analysis impacts on the timeliness and priority of other on-going work.

Constraints on the release of classified information outside the Capital Region adds to travel burden by the study activities and denies critical information on threat capabilities and projections to contractors. This is thought to be a singular handicap to hardware manufacturers since the best choice of design of technical CM/CCM is usually appropriate at the engineering design stage of system development. Army design engineers need to fill this void.

CM/CCM ADEQUACY — FINDINGS

- FRONT-END GUIDANCE AND MID-TERM REVIEW COULD BE IMPROVED
  - SCOPE
  - TIMELINESS
  - PRIORITIES
- SECURITY CONSTRAINTS HAMPER IN-HOUSE EFFORTS AND HANDICAP CONTRACTORS

CM/CCM ADEQUACY -- RECOMMENDATIONS

One reason for the short-fall in compiling and establishing a comprehensive technical CM/CCM data base is the size of the task needed to organize all the signature, environment, instrumentation and other data together with information on laboratory and field test conditions, calibration, and predictive model characteristics. CM/CCM data are in general quite dynamic due to constantly changing background noise and geometry of the CM/CCM engagement. Elements of battlefield geometry that change with time and that variably influence CM/CCM include: moving puffs of dust from vehicle tracks and tires and from helicopter rotor wash in the atmosphere and on the target; puffs of combustion products from weapon propellant and warhead explosions; the presence of vegetation and the movement of vegetation caused by wind; the presence of moisture on the target, on the terrain and in the atmosphere at different altitudes; target orientation from the perspective of the viewer, the weapon launcher and the incoming warhead sensor; masking by terrain and man-made objects; the orientation of main and side lobes of moving antennas; the direction and included angle of reflections; electromagnetic, acoustic and seismic propagation and reflection characteristics of germane media; the structure of electronic links in netted systems; position of heavenly bodies; friendly troop safe distances; distance to cover, concealment and protection devices; suppression of covering force, of a target, of a firer; unintentional electronic interference by friend or enemy; unintended delivery of weapons or obscurants, etc. Many elements of the Army are involved, and each has its piece of data and information, such as ballistics and nuclear effects in BRL, electronic effects in OMEW, environmental in ECAC and ASL, accoustic in TACOM, etc. AMSAA has collected quantities of the data sufficient to satisfy most of the current need for item-level performance. If tasked to fully compile all the useful data AMSAA would need contractor assistance. Completion of this task would reduce future redundant effort.

Our ignorance of CM/CCM assumptions and influences that are imbedded in models would be alleviated by a determined effort to improve model documentation. This can be accomplished with contractor assistance and good standards and good configuration control.

RAA EX

CM/CCM ADEQUACY — RECOMMENDATIONS

- DIRECT AND FUND EFFORT TO ESTABLISH TECHNICAL CM/CCM DATA BASE
  - ASSESS SIZE OF TASK
  - ASSIGN PRIORITY IN RELATION TO OTHER ON-GOING WORK
  - ESTABLISH MILESTONES
- DIRECT AND FUND EFFORT TO DOCUMENT KEY MODELS AND ESTABLISH CONFIGURATION CONTROL

CM/CCM ADEQUACY -- RECOMMENDATIONS (CONTINUED)

More robust test facilities are needed. Groups of knowledgeable users need to formulate actions leading to recommendations to upgrade CM/CCM test facilities. The findings of the AMC Test and Evaluation Study should be evaluated and implemented as they relate to CM/CCM.

Engineer recruiting for Army laboratories and study activities has reached a very critical stage. Our inability to hire some of the best engineers bankrupts our future. Although engineer TDA spaces are being filled, the fills are mostly not by the talent most suited to the task.

Clearly we need to approach CM/CCM analysis as the Soviets do it, by thinking of total force tactical and combinations of tactical and technical solutions. Rarely do our studies evaluate tactics, or contributions of alternative arms or other services, and almost never are these options treated as variables.

A better mechanism is needed to obtain the insights of decision-makers earlier in the study and analysis process. One approach would be to improve the visibility of the Army leadership's functional areas priority issues, e.g., FY 85 Army Study Guidance, and to enlist the study activities and agencies in contributing to breaking these into defineable study tasks and establishing priorities in relation to other workload. If this were a continuing effort it would accomplish most of the needed guidance.

Although we could not assess the impact of security constraints this is a serious problem and its cost needs to be assessed in terms of the trade-offs in exposure to potential loss of sources and technology.

CM/CCM ADEQUACY — RECOMMENDATIONS

- MAKE DECISIONS ON TEST FACILITIES
- IDENTIFY MEANS TO ALLEVIATE THE ENGINEER RECRUITING PROBLEMS
- STIMULATE THINKING ABOUT TOTAL FORCE TRADE-OFFS
- IMPROVE FRONT-END GUIDANCE AND MID-TERM REVIEW
- DIRECT A REVIEW AND EVALUATION OF THE IMPACT OF SECURITY CONSTRAINTS AND DEVELOP SOLUTIONS FOR
  - IN-HOUSE ANALYSES
  - CONTRACTORS

CM/CCM ADEQUACY -- FINDINGS

Some aspects of CM/CCM are taken as a "given" by model developers and are not visible enough to be recognized throughout the interested community. Some examples are listed.

On the other hand the study doers rarely consider tactical options that are not imbedded in the models they use. We have looked extensively at evasive maneuvers by ground combat vehicles versus direct fire, and at helicopter pop-up and side-to-side movement due to the modeler's efforts. Rarely if ever do ground combat vehicles take evasive action when engaged by aircraft in our studies, and tactical aircraft are not allowed jinking maneuver when engaged by air defense. ECCM analysts have yet to produce a trade-off with shooting the jammers. Tactical aircraft have rarely, if ever, been examined in the role of covering fire for ground obstacles.

The CM/CCM alternatives are not sufficiently considered by Red and Blue analysts working directly together on a common problem. This leads to omission of some of the most obvious CM/CCM options in our studies.

Information and data from recent wars in the Middle East, Carribean and South Atlantic have not been sufficiently exploited to provide much influence in our studies. We have not pressed enough for data, and have not set aside enough analytical effort to collect and evaluate combat data in general. This perpetuates our problem of having to relearn, and denies us many opportunities to improve our analyses. The recommendations chart describes some shortfalls in draft AR XXX-XX, "Adapting for Combat -- Lessons Learned."

A small number of studies was reviewed to determine the adequacy and visibility of assumptions concerned with CM/CCM. The results are spotty. We found that a few in the sample were good, some were poor, some did part of the job. The results of our survey are retained in the RAAEX archives.

CM/CCM ADEQUACY -- FINDINGS

- SOME TACTICS AND EFFECTS ARE HIDDEN IN MODELS
  - EVASIVE MANEUVER, SHOOT-AND-SCOOT
  - SUPPRESSION
  - ENVIRONMENT
- SOME TACTICAL OPTIONS DON'T COME UP
  - EVASIVE MANEUVER
  - TOTAL FORCE ALTERNATIVES
- ALTERNATIVES ARE RARELY SUBJECTED TO G2-G3 DELIBERATION
- COMBAT DATA ARE NOT SUFFICIENTLY EXPLOITED, DRAFT AR XXX-XX, "ADAPTING FOR COMBAT -- LESSONS LEARNED" ON RIGHT TRACK.
- STUDY ASSUMPTIONS ARE ARTICULATED INCONSISTENTLY

CM/CCM ADEQUACY -- RECOMMENDATIONS

It is recommended that the Army leadership continue to point to specific examples of inadequate communication. A recent example is set forth in a letter written by the USA. Specific examples could be cited to stimulate better analysis of uncertainty. No part of the analysis community is blameless for these shortcomings although time, workload and conflicting priorities are often the well-founded reason for them. Criticism of our work is embarrassing but this is usually alleviated when we earn a pat on the back.

Stimulate from the top studies and analyses that consider the employment of all components of the force. Make tactics a prime consideration in our analyses of MAA deficiencies.

Establish an in-house task to obtain more combat data and to emphasize collection and evaluation of tactical CM/CCM options. Suppression effets can be obtained through reconstruction and evaluation of small-unit battle histories that contain sufficient information on time, space and losses. Combat data may provide significant insights on the effects of degraded C3. The draft AR XXX-XX, "Adapting for Combat -- Lessons Learned," should be strengthened by adding the provisions that are described on the next chart.

CM/CCM ADEQUACY -- RECOMMENDATIONS

- STIMULATE BETTER VISIBILITY AND ANALYSIS OF ASSUMPTIONS AND MODEL DRIVERS -- QUALIFY RESULTS WITH RANGE OF VALUES
- STIMULATE THINKING AND ANALYSIS CONCERNING FORCE LEVEL TRADE-OFFS
- DIRECT EFFORT TO OBTAIN AND EXPLOIT COMBAT DATA (RECOMMENDATIONS ON NEXT CHART PROVIDE COMMENTS ON AR XXX--XX)

CM/CCM ADEQUACY -- RECOMMENDATIONS
AR XXX-XX

Military and civilian analysts who have extensive experience in participating in analyses and studies learn the shortfalls in our information and data base. The predesignated military observation team members would derive significant benefit if frequently trained by in-depth review of on-going studies and analyses and participation in specific data and information collection efforts at training sites. Training should be provided in several terrain/weather environments and on a full range of combat problems and organizational levels.

Up-front formal agreement for timely release of data concerning the performance of US materiel is clearly needed. The agreements should provide for complete access even if US equipment has been modified.

Detailed reconstruction of specific battles via war games, including time, space and attrition data can provide new information and data concerning combat effects that cannot adequately be measured in field tests or exercises. This approach was accomplished by AMSAA after the 1973 Mid East War. It yielded significant new understanding of materiel and unit performance in combat.

Battles involving modern weapons can yield invaluable data concerning materiel system performance and combat damage to materiel components, repair time and parts consumption for combat damage repair.

War games that replay real combat can lead to invaluable insights and data concerning reconstitution of damaged units.

Some specific examples of data from past collection and analysis efforts, lessons learned, and major shortfalls are available in classified RAAEX archives.

CM/CCM ADEQUACY -- RECOMMENDATIONS

ADD TO AR XXX-XX, "ADAPTING FOR COMBAT -- LESSONS LEARNED"

- PROVIDE FREQUENT (AT LEAST TWICE/YEAR) TRAINING OF PREDESIGNATED MILITARY OBSERVATION TEAM MEMBERS
  - REVIEW KEY KNOWLEDGE GAPS IDENTIFIED IN STUDIES/ANALYSES
  - COLLECT DATA AT NTC AND OTHER TRAINING SITES
- PROVIDE FOR TIMELY RELEASE OF US MATERIEL PERFORMANCE DATA BY BUYERS
  - PART OF FMS AGREEMENTS
  - SPECIFIC LANGUAGE IN DEA'S
- PROVIDE FOR JOINT (US/ALLY) RECONSTRUCTION OF SELECTED BATTLES USING EXISTING WAR GAME METHODOLOGIES
  - SUPPRESSION, PARTICIPATION, EXECUTION OF DOCTRINE UNDER FIRE
  - LEADERSHIP, MORALE, SLEEP LOSS, STRESS
- PROVIDE FOR COLLECTION AND ANALYSIS OF DATA CONCERNING COMBAT DAMAGE TO MATERIEL SYSTEM COMPONENTS AND COMBAT DAMAGE REPAIR TIME AND PARTS CONSUMPTION
- PROVIDE FOR ANALYSIS AND EVALUATION OF RECONSTITUTION ACCOMPLISHMENTS AND FAILURES FROM CREW-SERVED TO HIGHEST APPLICABLE UNIT LEVEL
- ADD CLASSIFIED ENCLOSURE DESCRIBING RANGE OF EXAMPLES OF PAST COMBAT LESSONS LEARNED AND MAJOR SHORTFALLS

CM/CCM ADEQUACY -- FINDINGS

We have found little evidence of a transfer of information from studies, analyses experiments on CM/CCM back to the threat community. The fault lies with both parties. Study activities/agencies do incorporate their own CM/CCM lessons in future studies with reasonable reliability, although exceptions could be cited. Many of the exceptions occur when a different combat model or other methodology is applied to the next studies, even in the same activity.

Security lids are properly placed on CM/CCM efforts but this is restricting the potential contributions of our mulit-disciplined study activity staffs. The benefits of surprise and protection of technology transfer need to be weighed against the loss of these potential contributions toward alternative tactical/technical approaches.

CM/CCM ADEQUACY — FINDINGS

- CM/CCM FINDINGS IN ARMY STUDIES/ANALYSES/EXPERIMENTS
  - •• ARE RARELY DISCUSSED WITH THE INTELLIGENCE COMMUNITY
  - •• USUALLY DO INFLUENCE THE NEXT STUDY OR ANALYSIS THAT USED THE SAME METHODOLOGY
  - •• DO NOT NECESSARILY INFLUENCE THE NEXT STUDY OR ANALYSIS IF DIFFERENT MODELS ARE UTILIZED
  - •• ARE, INCREASINGLY, CLOSELY HELD

CM/CCM ADEQUACY — FINDINGS

We have not done a good job of evaluating how Red will allocate resources to CM/CCM's. Our materiel analyses usually address worst-case technical countermeasures that are specific to our design concept. The Soviets will think first of generic solutions that may be tactical or combinations of tactical and technical approaches. Their massive fire support capability is a significant counter to our good antitank weaponry, and their radio-electronic combat capability is integrated. Further, we announce most of our development plans in open literature.

The Soviets have plenty of time to exploit and adopt many of our rejected ideas and to think through CM/CCM's to the ideas that we do decide to field. They do not always react to our first thoughts because we give them the luxury of information and time.

We have not quantified the benefits of war time/peace time signature or other deception efforts.

In requesting threat information the systems analysis community is routinely guilty of asking some of the most important questions very late or not at all. We don't ask for assessments of specific resource allocation, we don't expose the intelligence community sufficiently to all the total system concept, and we don't seek tactical alternatives or all force capabilities.

CM/CCM ADEQUACY -- FINDINGS

- ANALYSIS OF THREAT ALLOCATION OF RESOURCES IS LACKING
  - MATERIEL - SPECIFIC

    NOT

  - GENERIC

    OR OF

  - ALL FORCE CAPABILITIES
- RED HAS LUXURY OF TIME TO REACT
- DECEPTION BENEFITS HAVE NOT BEEN EVALUATED
- SYSTEMS ANALYSIS COMMUNITY DOES NOT ASK ALL THE RIGHT KINDS OF QUESTIONS

CM/CCM ADEQUACY -- RECOMMENDATIONS

We recommend that the leadership of the Army emphasize the need for (threat) Red Team - (US capability) Blue Team thinking in all our studies and analyses. The quality of CM/CCM assessments would be improved if intelligence analysts worked side-by-side with the systems analysis community to jointly recognize the key elements of on-going analyses and to jointly develop tactical and technical alternatives. Continual interaction is needed, not occasional short meetings.

This kind of interaction could be started via joint projects, but it should be the norm for nearly every study.

A directive that all study activities establish a full time Red team that coordinates continually with the intelligence community (ACSI, ITAC, MIA, FSTC), learns well how potential enemies think about combat and combat developments, works hand-in-hand with Blue analysts in planning, conducting and drawing conclusions from studies of countermeasures, and contributes directly to the study report and briefings would provide for the kind and quality of emphasis that is needed to achieve unconstrained assumptions and multiple solutions to countermeasures problems.

A helpful tasking would be one to survey and evaluate the kinds of questions that have been directed to the intelligence community. Some of the issues concern the analysis of resource allocation, such as the number of Soviet electronic jammers targeted against one type of US communications system, or the amount of target acquisition and fire support resources that might be allocated to the attack of our FST teams; and the question of alternative parts of the combined arms force that constitute a threat to our FAARP's or ASP's.

The process of estimating future threat doctrine, unit organization and force structure related to CM/CCM can probably be improved through application of decision theory. The intelligence and systems analysis communities should be tasked to jointly pursue this idea and to provide for trade-offs with technical CM/CCM's. The tasking should include an evaluation of decision theory methodology or other quantifiable approaches.

CM/CCM ADEQUACY — RECOMMENDATIONS

- ENCOURAGE INCREASED TOP-LEVEL INFLUENCE ON INTELLIGENCE COMMUNITY — SYSTEMS ANALYSIS COMMUNITY INTERACTIONS
- ESTABLISH TASKING OF JOINT PROJECTS AT ONE SITE
- DIRECT ESTABLISHMENT OF G2-G3 ANALYTICAL CAPABILITY AT ALL LEVELS
- DIRECT TASK TO EVALUATE QUALITY OF QUESTIONS ASKED OF INTELLIGENCE COMMUNITY
  - THREAT ALLOCATION OF RESOURCES
  - CONSIDERATION OF ALL FORCE CAPABILITIES
- DIRECT TASK FOR SYSTEMS ANALYSIS COMMUNITY TO HELP INTELLIGENCE COMMUNITY DEVELOP DISCIPLINED PROJECTION METHODOLOGY UTILIZING DECISION THEORY

CM/CCM ADEQUACY — FINDINGS

Rarely do we examine tactical or combinations of tactical and technical options as CM/CCM's. The Knowledgeable Users Group has proposed some field tests that will provide insights on countermeasure tactics. These iclude: "Command and Control of Small Units in Smoke," "Smart Munitions," "Air Attack of Ground Troops," "Deep Zone Ambushes," "Mother Hen and Five Chickens," "Pitch Angle Effects on Vulnerability," "Search Strategies," "Target Motion," "Cover and Concealment Functions, Infantry," "Helicopter Survivability," and perhaps others. Field exercises rarely examine countermeasures for reasons of safety. OSO concepts for CM/CCM that are approved for use in studies are rarely documented as doctrine. Combat models portray combat in one way that may incorporate some countermeasure tactics but alternatives are typically not provided for. Further, there are few linkages that would integrate our evaluation of countermeasure tactics from model to field exercise.

Feedback on Red and Blue CM/CCM analysis results is rarely discussed among the principals who are interested, except in the occasional AORS or MORS working group meeting. We are not sharing the lessons learned by industry, Army intelligence, the materiel developer and tacticians such that tactical options that have been evaluated are made known to the total Army.

CM/CCM ADEQUACY -- FINDINGS

- ALTERNATIVE TACTICS ARE NOT EXAMINED IN AN INTEGRATED MANNER
  - FIELD EXERCISES
  - FIELD TESTS
  - O&O
  - COMBAT MODELS
- FEEDBACK IS WEAK AMONG
  - TACTICIANS
  - MATERIEL DEVELOPERS
  - INTELLIGENCE ORGANIZATIONS
  - INDUSTRY

CM/CCM ADEQUACY — FINDINGS

We do not adequately assess how our own resources can best be allocated to CM/CCM. We omit consideration of shooting jammers as a trade-off to ECCM, usually do not consider Air Force or Navy air contributions to air defense suppression, and very rarely allow these kinds of total force contributions to vary in studies of specific technical CM/CCM utility. We have not done a good job evaluating the relative value of the numerous components of the threat force; our methodology for assessing the impact of degradation of Red C3 and intelligence is weak. This is a critical part of any analysis of Red total system vulnerability and could shape our allocation of resources.

CM/CCM ADEQUACY — FINDINGS

- ANALYSIS OF US ALLOCATION OF RESOURCES USUALLY DOES NOT:
  - INCLUDE ALL APPROPRIATE FORCE CAPABILITIES
  - ADEQUATELY ASSESS THREAT SYSTEM VALUE
  - ANALYZE RED AS A SYSTEM

CM/CCM ADEQUACY — RECOMMENDATIONS

The Knowledgeable Users Group (KUG) membership contains expertise that should be exploited to help solve these problems. The KUG includes representatives with long and successful backgrounds as analysts, testers, and tacticians. The testing approach that they have identified should be given very high priority to provide information and data to integrate models, O&O concepts, tests and exercises. The KUG could provide a forum that would benefit the total Army and Army contractors by sharing its minutes and, perhaps annually, by holding a wider forum. The KUG has established a context of evaluation of Blue and Red capabilities as systems.

Analysis of US resource allocation would be improved via guidance by way of specific examples, and by more timely top-level guidance through work with the study activities in breaking down into manageable tasks the Functional Areas-Priority Issues that have been identified by Army leadership. Full implementation of a (threat) Red Team-(US capabilities) Blue Team approach in all study activities and agencies would foster development of a more robust set of Red and Blue tactics and materiel CM/CCM options.

CM/CCM ADEQUACY -- RECOMMENDATIONS

- UTILIZE THE KNOWLEDGEABLE USERS GROUP
  - •• INTEGRATED COMBAT MODELS, OSO, FIELD TESTS, EXERCISES
  - •• ENHANCE FEEDBACK, INTERACTION AMONG TACTICIANS, DEVELOPERS, INTELLIGENCE INDUSTRY
  - •• ADDRESS BLUE AND RED AS A SYSTEM
- ENCOURAGE BETTER ANALYSIS OF RESOURCE ALLOCATION
  - •• FRONT-END AND MID-TERM GUIDANCE
  - •• G2 - G3 INTERACTION

CM/CCM ADEQUACY -- FINDINGS

Our models and data bases are seriously deficient in capability to represent the capabilities and alternative contributions of other services and other countries to ground combat. For example, CASTFOREM does not represent employment of tactical fixed wing aircraft, and FORCEM does not represent communication interoperability requirements for coalition warfare. The current planning for hierarchy linkages and AMIP functional area model linkage has not faced up to this problem. These shortfalls deny us the basic methodology needed to explore the best set of options for allocation of CM/CCM resources.

CM/CCM ADEQUACY -- FINDINGS

- ANALYSIS OF THE CONTRIBUTIONS OF OTHER SERVICES AND OTHER COUNTRIES IS A SERIOUS SHORTFALL
  - MODELS AND DATA INADEQUATE, LINKS QUESTIONABLE
  - MAY LEAD TO POOR ALLOCATION OF US ARMY RESOURCES

CM/CCM ADEQUACY — FINDINGS

Although the intelligence community has met occasionally to discuss projection methodology and has on-going effort to improve these techniques, there has been no known comprehensive self-evaluation of the intelligence product. Historical trends have been utilized in making projections but these have not led to specifics on the likelihood of the results of Red tactical/technical trade-offs for CM/CCM. Scientific methods have not been applied in our projections, providing no useful rationale for assessing the pitfalls of projection based on history. Further, a rich souce of data from past combat has generally been ignored. We have not placed enough effort on the reconstruction of recent wars that have involved the employment of a nearly full range of weapon and other system types and many forms of tactical and technical CM/CCM's.

CM/CCM ADEQUACY — FINDINGS

- UTILITY OF ANALYSIS OF HISTORY UNKNOWN
  - NO SELF-EVALAUTION OF PROJECTIONS
  - NO DISCIPLINED APPROACH
  - NOT ENOUGH COMBAT DATA ARE OBTAINED OR EXPLOITED

CM/CCM ADEQUACY -- RECOMMENDATIONS

It is recommended that we reassess the adequacy of our hierarchy of models and study guidance with emphasis on alternatives to CM/CCM in the total friendly and total enemy force structure. We need to devote more thinking to both models and linkages in the hierarchy to provide for adequate representation of all arms and coalition warfare.

Recent combat in the Middle East, Carribean and South Atlantic provides an insufficiently exploited source of CM/CCM data and information on tactics. The Army study and intelligence communities should be tasked to accomplish this through commitments of minimum levels of effort. This can best be accomplished via joint analysis tasks with the involved countries and by identifying up front what the benefit will be to these countries.

The combat data and information that have been collected do not often enough find a place in our studies. This orientation needs emphasis by Army leadership, as provided in the draft AR XXX-XX, "Adapting for Combat -- Lessons Learned."

CM/CCM ADEQUACY — RECOMMENDATIONS

- DIRECT AN EVALUATION OF PLANNING AND TREATMENT OF
  - ALL COMPONENTS OF THE FORCE
  - COALITION WARFARE

  IN ARMY MODELS AND MODEL LINKAGES

- ESTABLISH A TASK TO OBTAIN AND EVALUATE COMBAT DATA BY JOINT ANALYSIS EFFORTS WITH RECENT COMBATANTS

- DIRECT THE ANALYSIS COMMUNITY TO CONTINUE THEIR EFFORTS TO BETTER UNDERSTAND AND UTILIZE COMBAT DATA AND INFORMATION

CM/CCM ADEQUACY — FINDINGS

New potential combat system capabilities are not evaluated as quickly as they should be, at the item or higher levels of analysis, or in our projection of reactive threats in time to influence the development of sound employment concepts from the start. Examples of our slow pace include the lack of sufficient analytical tools for evaluating position location system concepts, netted communications, laser designators and directed energy weapons. This short-fall has caused the materiel developer to change fundamental design concepts later than they should be, and has delayed the development of interoperability links that impact CM/CCM.

CM/CCM ADEQUACY — FINDINGS

- WE DEVELOP METHODOLOGY TO EXPLOIT NEW CAPABILITIES VERY SLOWLY
  - ITEM LEVEL
  - COMBAT MODELS
  - CONCEPT EVALUATION
  - ORGANIZATION AND OPERATION
  - THREAT REACTION (RESOURCE ALLOCATION)
  - THREAT TIMELINESS

CM/CCM ADEQUACY -- RECOMMENDATIONS

Ad hoc tasking of study activities/agency by senior Army management usually causes the assignment of the best analysts, who are invariably already committed to deadline tasks. Often the senior analysts do not have the benefit of knowledge of the full on-going distribution of effort and do not realize the impact on responsible study organizations. A better up-to-date familiarity with workload would help senior Army management relate current distribution of effort to the full range of Army priorities.

Study activities/agencies need to reserve a significant part of their effort for methodology development and self-generated analyses so as to not bankrupt the future. The multitude of new kinds of system and process concepts requires evaluation methodology that places the potential of these systems and processes in a context easily related to the contributions of current systems. Better methodology than we now hve is also needed for characterizing the consequences of disruption of C3 and intelligence and of the attack of deep targets. Methodology development has not kept pace with the need due to the pressure of deadlines and our difficulty in placing priority on future problems. We need the continual guidance and support of Army senior management in deferring and allocating analyst effort to methodology development along with agreement on what will be done less comprehensively in on-going studies and analyses.

CM/CCM ADEQUACY — RECOMMENDATIONS

- FREQUENT SENIOR MANAGEMENT REVIEW OF STUDY AGENCY/ACTIVITY WORKLOAD DISTRIBUTION, AND OF DETAILS OF ON-GOING STUDIES AND ANALYSES
- STUDY ACTIVITIES/AGENCIES RESERVE 20% OF WORKLOAD FOR METHODOLOGY DEVELOPMENT AND OTHER SELF-GENERATED INITIATIVES THAT PREPARE FOR THE FUTURE

CHAPTER 6

ANALYTICAL SUPPORT OF FUNCTIONAL AREAS

ANALYTICAL SUPPORT OF FUNCTIONAL AREAS

- In determining the functional areas to address in this study, the functions performed by the Army staff were used as a point of departure. Combat developments was then split out from the DCSOPS function of force design and structure and identified as a separate function. Combat developments was then subdivided into 12 mission area functions plus combined arms to accomodate the organizational alignment within TRADOC.

- The accompanying chart indicates the EEA used.

RAA
EX

ANALYTICAL SUPPORT OF FUNCTIONAL AREAS

- FUNCTIONAL AREAS SUPPORTED BY EACH ANALYTICAL ACTIVITY
- TOTAL ANALYTICAL WORK EFFORT IN SUPPORT OF EACH FUNCTIONAL AREA
- AMOUNT OF ANALYTICAL WORK EFFORT IN EACH FUNCTIONAL AREA THAT SUPPORTS HQDA DECISIONS
- ADEQUACY OF ANALYTICAL SUPPORT OF EACH FUNCTIONAL AREA

FUNCTIONAL WORK EFFORT

- The analysis organizations selected for review reported the number of technical staff months (TSM) expended in FY 83 on studies and analysis in support of various functional areas. Most organizations had data on which to base their submission; some could provide only estimates.

- This chart shows, for 11 functional areas, the number of studies and analyses conducted by all reporting organizations, the total technical staff years (TSY) expended, and the TSY expended to support HQDA decisions.

- Combat devleopments (CD) is shown as a one line entry on this chart. The next chart shows the CD work effort divided into the 12 mission areas, plus combined arms, and other.

- Because data were solicited from a selected set of organizations, not all of the work effort being expended in support of the various functional areas was captured. The data then reflects a selected sample.

- Slightly over one half of the analysis work effort was in support of HQDA decisions.

- 93% of the analysis work effort is in support of five functional areas (training, force design and structure, combat developments, RDA, and Logistics).

- 37% of the work effort support combat developments.

- The average study or analysis expends 6.8 Technical Staff Months (TSM), with considerable variation evident across the functional areas with the least being 2.8 TSM per cost study and the most 24.9 TSM for a force design and structure study.

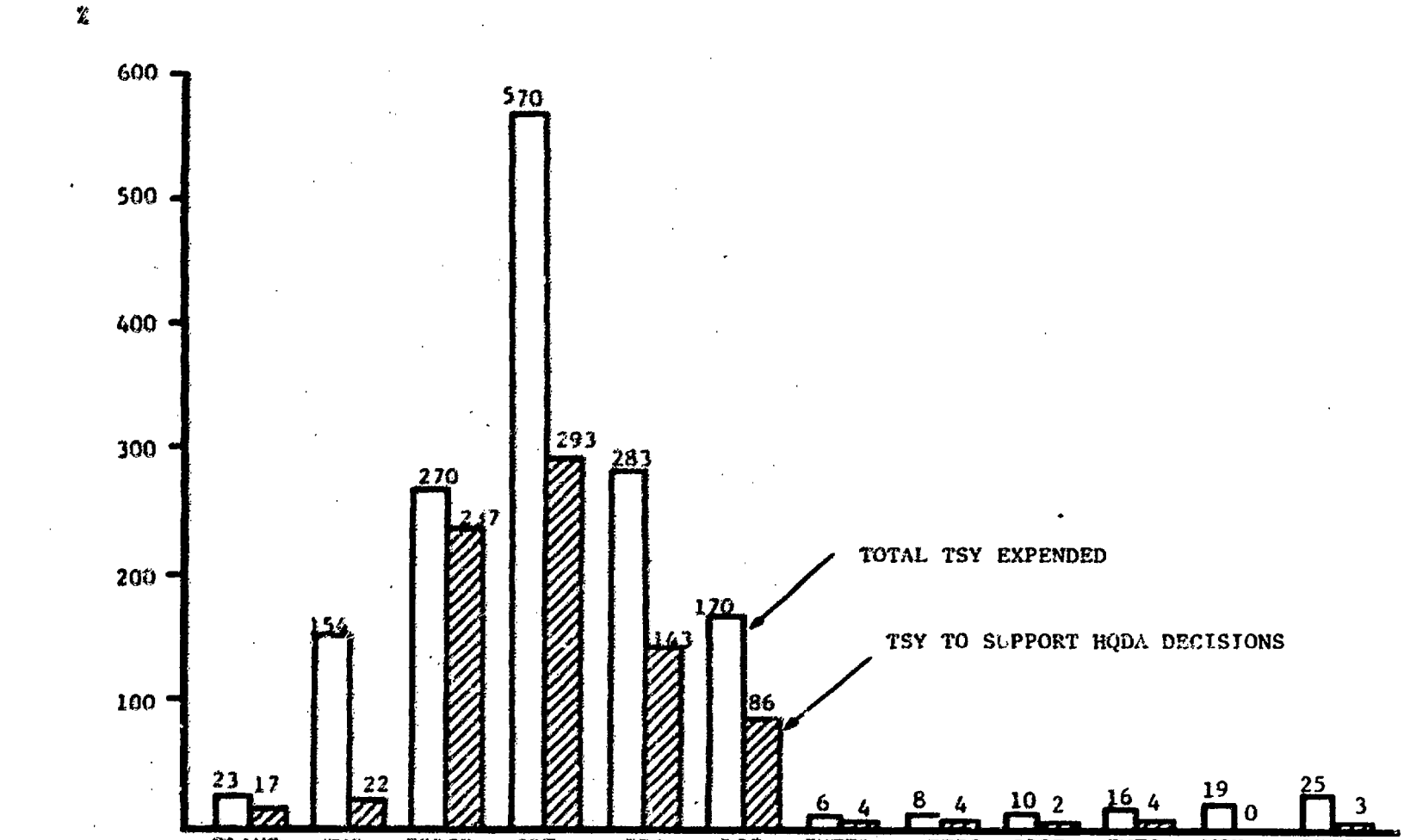
- An "Other" category was used to capture combat development studies and analyses conducted that do not fit neatly into the functional areas prescribed. Examples of studies and analysis reported in the "Other" category include:

  - Development of standard scenarios

  - ADP support that could not be identified with a specific study.

RAA
EX

FUNCTIONAL WORK EFFORT (FY83)



NUMBER OF STUDIES	68	506	130	914	542	356	8	39	42	39	37	28

FOR PURPOSES OF SCALE TSY WERE USED HERE ALTHOUGH THE DATA WERE COLLECTED IN TSM.

COMBAT DEVELOPMENTS WORK EFFORT

- As mentioned before, this chart shows the division of combat developments FY 83 analytical work effort across the 12 mission areas and combined arms. Based on the selected sample reviewed, the data represents the great majority of the combat developments analysis work done in the Army in FY 83.

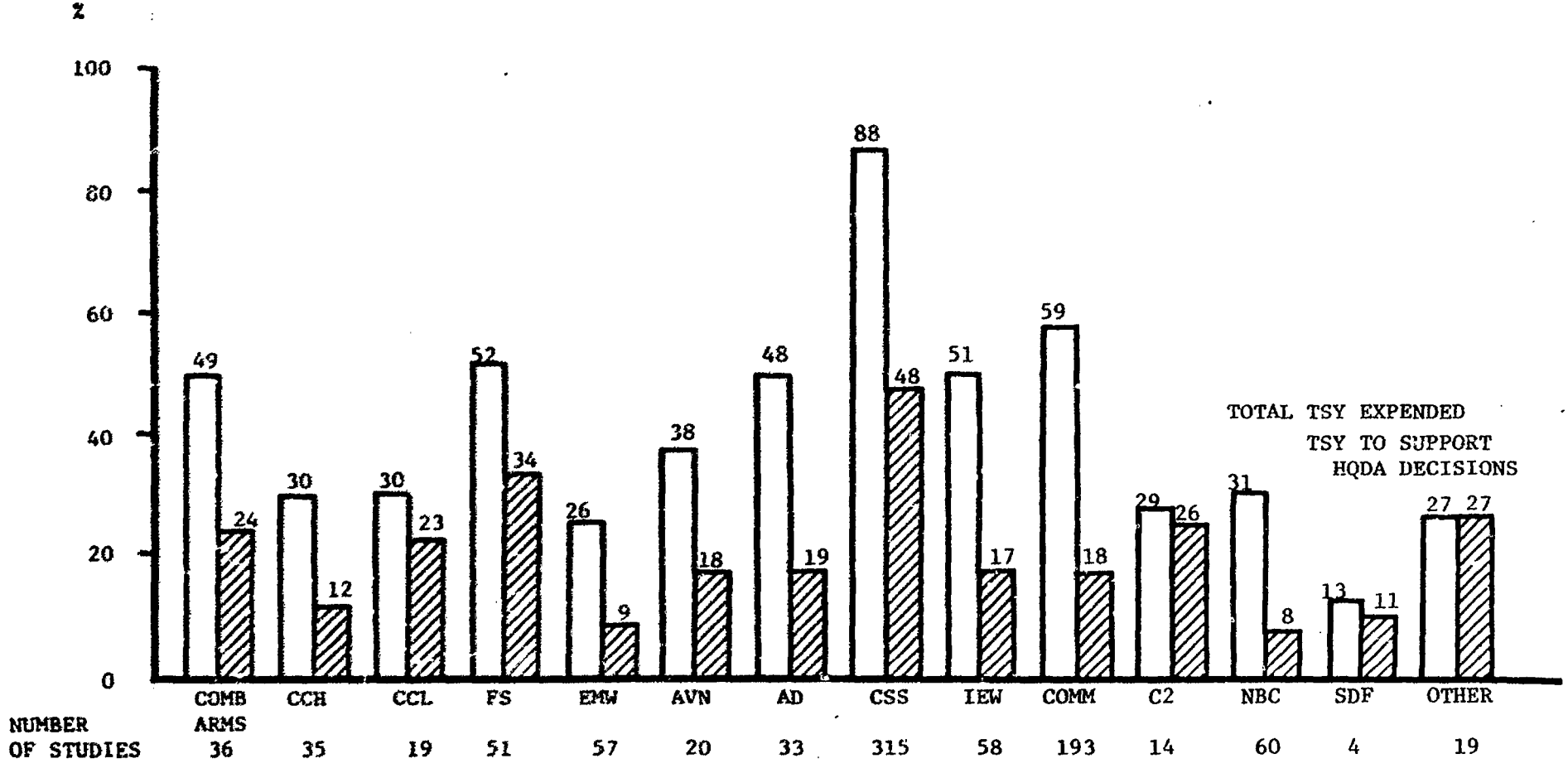
- Just over half of the combat developments analysis work effort was in support of HQDA decisions.

- 34% of the combat developments studies and analyses conducted were in the combat service support area.

- The technical staff months (TSM) expended per study or analysis ranged from a low of 3.4 TSM for combat service support studies to a high of 39 TSM for special operations forces studies.

RAA EX

COMBAT DEVELOPMENTS WORK EFFORT (FY 83)



FOR PURPOSES OF SCALE TSY WERE USED HERE ALTHOUGH DATA WERE COLLECTED IN TSM.

FUNCTIONS REQUIRING ADDITIONAL ANALYSIS SUPPORT

- The analysis organizations were also requested to report, for each functional area, the total work effort which would have been expended had personnel resources been unconstrained. This information provided an indication of the additional work effort each organization perceived to be required to adequately support each functional effort.

- In addition, each organization reported how much of the additional work effort should have been done, in their view, in support of HQDA decisions. This information provided an indication of inadequate analytical support of HQDA decisions as well as inadequate support of, or inability to perform, internal MACOM or organization generated studies and analyses.

- This chart displays the reported additional analysis support required for each functional area as a percent of the analysis effort expended during FY 83. The shaded area represents the additional analysis effort that would have supported HQDA decisions.

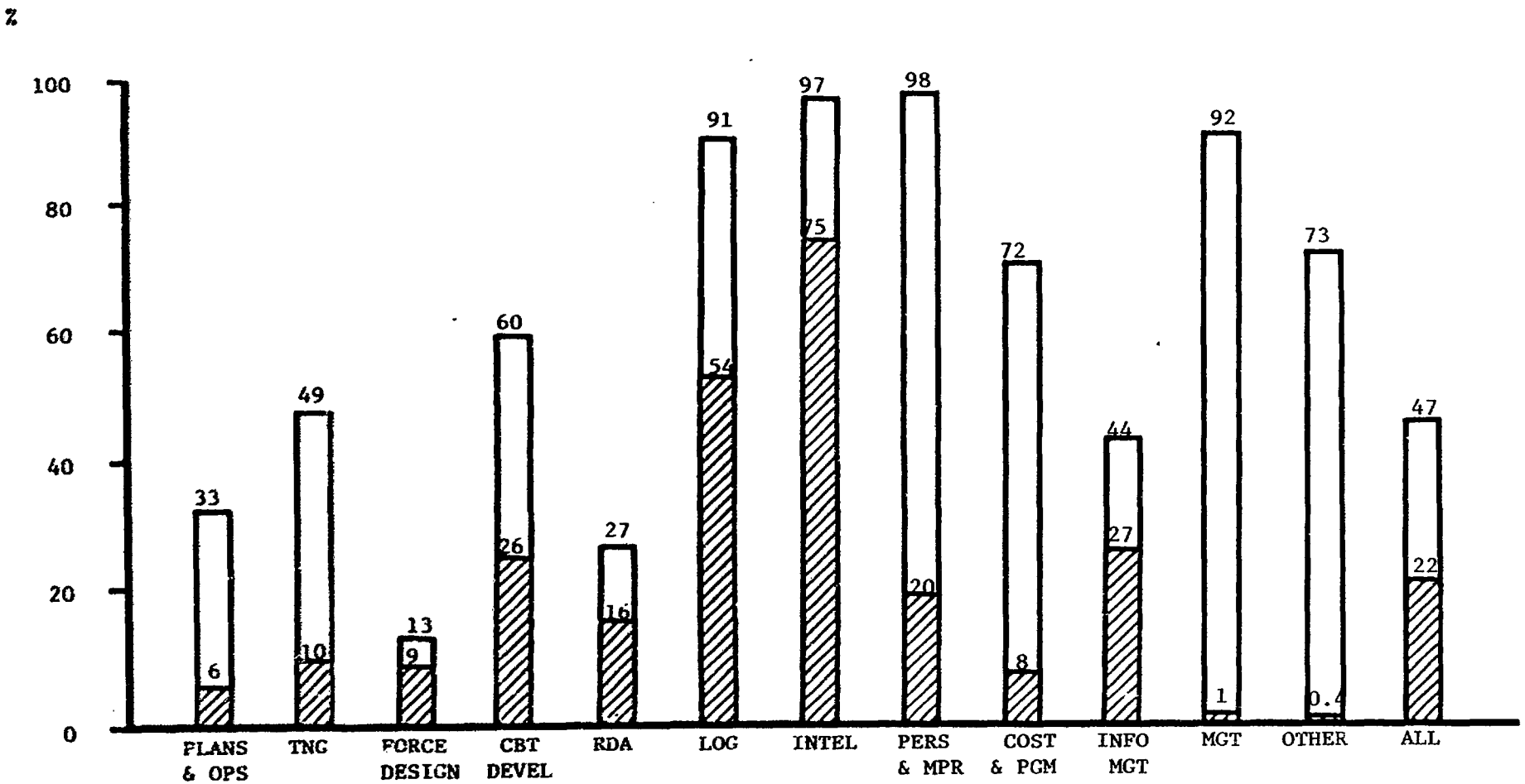
- Four functional areas (Logistics, Intelligence, Personnel and Manpower, and Management) are perceived to require nearly double the analysis work effort expended.

- Force design and structure is perceived to require the least additional support (13%) with RDA perceived to require the next lowest (27%) incremental increase.

- The 11 functional areas, plus the "other" category, together require nearly half again the amount of analysis support received.

RAA EX

ADDITIONAL ANALYSIS SUPPORT REQUIRED (AS PERCENT OF EFFORT EXPENDED)



NOTE: SHADED AREA REPRESENTS AMOUNT THAT WOULD BE IN SUPPORT OF HQDA DECISIONS.

ADDITIONAL ANALYSIS SUPPORT REQUIRED FOR COMBAT DEVELOPMENTS

- This chart displays the reported additional analysis support required for each of the combat developments mission areas. As in the previous chart for functional areas, the additional analysis support required is shown as a percent of the total analysis effort expended. The shaded area represents the additional analysis effort that would support HQDA decisions.

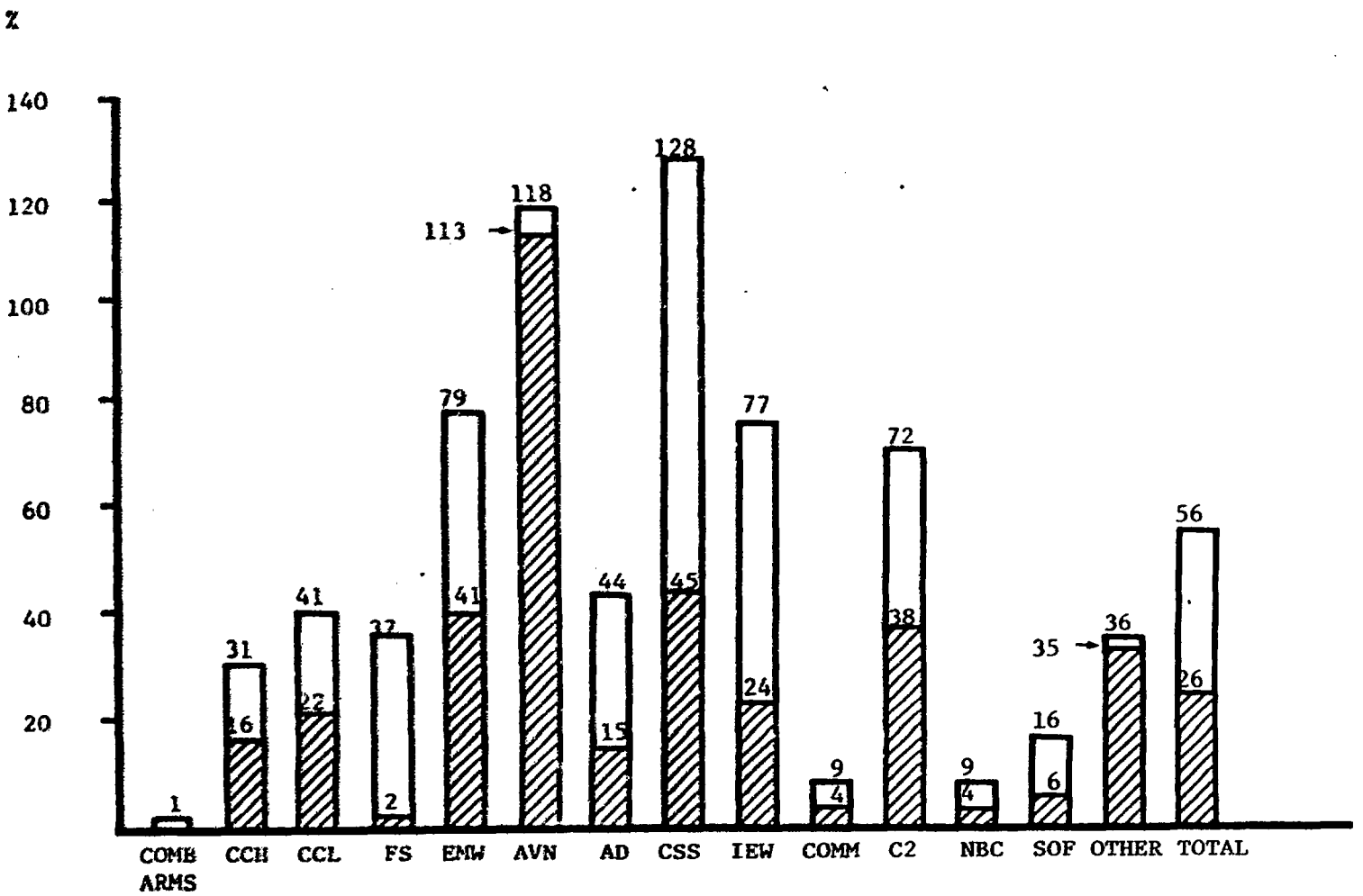
- Two mission areas (Aviation and Combat Service Support) are preceived to require more than double the analysis effort expended.

- Combined Arms is perceived to require little additional analysis support and Communications and NBC are perceived to require approximately 10% additional support.

- Nearly all of the additional analysis support required for Aviation would support HQDA decisions, while little of the additional support required for Fire Support would be for HQDA decisions.

RAA EX

ADDITIONAL ANALYSIS SUPPORT REQUIRED FOR COMBAT DEVELOPMENTS
(AS PERCENT OF EFFORT EXPENDED)



NOTE: SHADED AREA REPRESENTS AMOUNT THAT WOULD BE IN SUPPORT OF HQDA DECISIONS.

FUNCTIONAL WORK EFFORT FINDINGS

- Although the organizations reviewed reported having conducted 2719 studies and analyses during FY 83, there is undoubtedly double counting due to multiple analytical agencies working on the same study or analysis. Hence there were not 2719 separate and distinct studies and analyses done in FY 83, but some lower number.

- Five functional areas, including combat developments as a rollup of mission areas, account for 93% of the TSY expended.

- Slightly over one-half of the analysis work effort is in support of HQDA decisions.

- All functional areas require additional analysis support. Estimates provided by reporting organizations indicate they would have expended, if available, an additional 729 TSY on studies and analyses in FY 83. The high level of HQDA taskings limits TRADOC ability to pursue its own analysis initiatives.

- While precise estimates escape our ken, there is no doubt that the analysis workload exceeds the capacity of the organizations. Since the number of analyst authorizations in the Army is not likely to increase, other means must be used to come to grips with the workload problem. These include establishment and enforcement of priorities, identifying trade-offs, more responsive models, faster and more powerful computers, and increased contract support for routine technical services.

RAA EX

FUNCTIONAL WORK EFFORT FINDINGS

- THE ORGANIZATIONS REVIEWED REPORTED 2719 STUDIES AND ANALYSES CONDUCTED WITH AN EXPENDITURE OF 1552 TECHNICAL MAN YEARS (TSY).

- PLANS AND OPERATIONS, INTELLIGENCE, PERSONNEL, INFORMATION MANAGEMENT, AND MANAGEMENT ALL COMBINED REPRESENT ONLY 5% OF THE TOTAL TSY EXPENDED.

- COMBAT DEVELOPMENTS ACCOUNTS FOR 37% OF THE TOTAL TSM EXPENDED, WHILE RDA ACCOUNTS FOR 18%, FORCE DESIGN FOR 17%, LOGISTICS FOR 11%, AND TRAINING FOR 10%.

- 52.2% OF THE ANALYSIS WORK EFFORT EXPENDED WAS IN SUPPORT OF HQDA DECISIONS. NEARLY 90% OF THE ANALYSIS EFFORT IN FORCE DESIGN AND COMMAND AND CONTROL WAS IN SUPPORT OF HQDA DECISIONS.

- ORGANIZATIONS REPORTED THEY WOULD HAVE EXPENDED AN ADDITIONAL 729 TSY ON STUDIES AND ANALYSES IF THE RESOURCES HAD BEEN AVAILABLE. THIS REPRESENTS A 47% INCREASE IN WORK EFFORT.

- 46% OF THE ADDITIONAL WORK EFFORT WOULD BE IN SUPPORT OF HQDA DECISIONS.

- THE ANALYSIS WORKLOAD IN ALL FUNCTIONAL AREAS EXCEEDS THE CAPABILITY OF THE ORGANIZATIONS REVIEWED. THE FUNCTIONS REQUIRING THE MOST ADDITIONAL ANALYSIS SUPPORT ARE COMBAT SERVICE SUPPORT, AVIATION, PERSONNEL, INTELLIGENCE, MANAGEMENT, AND LOGISTICS.

FUNCTIONAL WORK EFFORT RECOMMENDATIONS

- The data reported on functional work effort provide useful insights into where work effort was applied. However, it does not provide answers about whether it was the right amount of work effort in a particular functional area.

- HQDA needs to determine, in coordination with AMC and TRADOC, an appropriate balance of analysis across the functional areas. Steps should then be taken to obtain that balance through the assignment and enforcement of priorities and review of analysis requirements prior to tasking the MACOM.

- TRADOC, AMC, and CAA need to review the analysis support provided to each functional and mission area to assess the adequacy of support. They should then assist HQDA in determining the appropriate balance of analytical support to the various functions.

- All analysis organizations should consider increased contractor support for routine technical support services, such as programing and documentation, to free analysts to work on more critical aspects of analysis. Further, considerations should be given to increased use of turnkey operations to offload routine work to customers.

FUNCTIONAL WORK EFFORT RECOMMENDATIONS

- HQDA SHOULD:
  - ASSIGN ONE STAFF AGENCY RESPONSIBILITY TO REVIEW STUDY AND ANALYSIS REQUIREMENTS TASKED TO MACOM
  - ESTABLISH PRIORITIES FOR STUDY AND ANALYSIS TASKINGS
  - ENSURE A PROPER BALANCE OF STUDIES AND ANALYSES ACROSS FUNCTIONAL AREAS
- TRADOC, AMC, AND CAA SHOULD:
  - REVIEW THEIR STUDY AND ANALYSIS EFFORT APPLIED IN SUPPORT OF FUNCTIONAL AND MISSION AREAS
  - SEEK AN APPROPRIATE BALANCE OF ANALYTICAL EFFORT WITHIN THE CONSTRAINTS OF HQDA TASKINGS AND PRIORITIES, RESOURCES AVAILABLE, AND INTERNAL PRIORITIES
  - EXAMINE INCREASED CONTRACTOR SUPPORT OF ROUTINE TECHNICAL SUPPORT SERVICES

CHAPTER 7

ACQUISITION AND TRAINING OF ARMY ANALYSTS

STATUS OF SC 49's AND GS-1515

- This chart points out that a complete look at our analysis capabilities and efforts must include examination of career management of the military ORSA specialists (SC 49) and civilian analysts. This includes a look at the education requirements both at entry and during their professional development.

- The strengths and weaknesses of both the civilian and military career management programs will be highlighted.

RAA
EX

STATUS OF SC 49's AND GS-1515 CAREER MANAGEMENT

- GOOD ANALYSIS REQUIRES GOOD PEOPLE WHO ARE MOTIVATED TO CONTINUE PROFESSIONAL GROWTH AND ENCOURAGED BY MANAGEMENT TO DO SO

- THIS STUDY FOCUSES ON ONE IMPORTANT ASPECT OF MANAGEMENT'S ROLE - PROVIDING FOR INDIVIDUAL CAREER MANAGEMENT THROUGH:
  - EDUCATION
  - CAREER PROGRESSION AND TRAINING

- STRENGTHS AND WEAKNESSES WILL BE HIGHLIGHTED

STATUS OF SC 49's

- This chart summarizes the findings concerning the management of the SC 49 military specialty. In general, SC 49 officers, when compared to other specialty codes, have higher educational levels, have above average advanced schooling opportunities, and consistently have a higher percentage of officers receiving promotions and attending CGSC and SSC. The very active proponency of this specialty code is an integral part of its success. The proponency office keeps abreast of opportunities for SC 49's and does a very credible job of distributing the pertinent information.

- Some areas which deserve highlighting include the excellent education program at the Naval Post Graduate school tailored to Army needs, as well as the efforts which have established intern programs at Kansas University and George Washington University. The FY 84 budget provided for 49 fully funded graduate students and the FY 85 calls for 55. There is a general consensus that ALMC is exceedingly beneficial in refreshing and refining ORSA skills.

STATUS OF SC 49's

FINDINGS

- IN GENERAL SC 49 IS WELL TRAINED, EDUCATED AND MANAGED
- PROPONENCY FOR SC 49 IS ACTIVE, INFORMATIVE, AND MAKING FURTHER IMPROVEMENTS
- AREAS IN GOOD SHAPE
  - FULLY FUNDED PROGRAMS ARE ADEQUATE AND GROWING
  - EDUCATIONAL PROGRAMS AT NPG ARE EXCELLENT
  - INTERN PROGRAMS AT KANSAS UNIVERSITY AND OTHER UNIVERSITIES FURTHER DEVELOP SKILLS
  - ALMC CONTINUING EDUCATION PROGRAM REFRESHES SKILLS

STATUS OF SC 49's

Regarding the ALMC Continuing Education Program (CEP) there is concern that commanders take a more enlightened view of attendance at ALMC. There is an apparent tendency to deem an officer indispensible once assigned for duty. Release to attend ALMC should be encouraged.

STATUS OF SC 49's

- FINDINGS (CONT'D)

- AREA OF POTENTIAL IMPROVEMENT

  - COMMANDS COULD TAKE BETTER ADVANTAGE OF ALMC CONTINUING EDUCATION PROGRAM

Recommendations include continuing the proponency and SC 49 specialty code as they presently exist. It is also recognized that a broader segment of the Officers Corps would benefit from in depth training in selected OR/SA skills tailored to their own speciality (41, 75 etc).

Consideration should be given to offering a short ORSA type course at ALMC or other institutions after which, those who attend would be awarded an Additional Skill Identification (ASI). All officers should be given at least some ORSA training early in their careers. The Officer Advanced Course is a logical place for such training.

STATUS OF SC 49's

RECOMMENDATIONS

- CONTINUE PROPONENCY AND MAINTAIN THE SC 49 SPECIALTY CODE AS THEY PRESENTLY EXIST

- DCSPER EXAMINE THE FEASIBILITY OF PROVIDING TRAINING IN SELECTED SKILLS TO OFFICERS WITH SPECIALTIES SUCH AS 41 & 75 AND AWARDING THESE OFFICERS AN ASI.

- DCSPER/TRADOC CONSIDER PROVIDING ALL OFFICERS WITH SOME OR/SA TRAINING AT OFFICER ADVANCED COURSES.

STATUS OF GS-1515

FINDINGS: This chart describes these areas which represent problems in the management of GS-1515 careerists.

The 1515 career field is a subelement of the engineering and scientist field presently managed at HQ AMC. The E & S field numbers almost 20,000 and by size alone is almost not manageable. It certainly prohibits attention to individuals.

Presently the entry requirements for GS-1515 are extremely broad. This represents a problem in that some of the people qualified in the career field have weak analytic backgrounds when compared with counterparts who have strong backgrounds in math or other analytic disciplines.

The 1515 career field encompasses personnel who are managed under the comptroller and specialize in cost analysis. This is a two way street for opportunities in that the comptroller managed 1515's are a small group and eligible for the excellent graduate program the comptroller runs with Syracuse University. In the other side, there is a general feeling that ORSA 1515's are more capable of competing for cost analysis jobs than comptroller 1515 are able to compete for ORSA 1515 slots.

To some extent a perception exists that GS-1515 along with other civilian career fields are limited by the adverse cost of mobility. Personnel in other regions view 1515's in the MDW area as having many more advancement opportunities than their counter parts in other locations but the same individuals do not generally seek assignments in the Washington area because of the high cost of initially moving into the area.

Since 1515's are managed as part of the much larger E&S career field much of the counseling is done by the career manager at local command or activity. Although many of these individuals do an excellent job and are extremely dedicated, there is clearly a lack of uniformity in the counseling and career guidance that is given.

Presently job announcements at the higher grade levels are made public through the DARCOM Announcement Distribution System (DADS). Although fairly thorough, this system is still somewhat dependent on each individual's initiative to get into the the DADS program and keep his information current.

At the intermediate level, there are very limited oportunities for exposure to advanced military education. For example at present only one civilian, who happens to be a GS-1515, is able to attend Command and General Staff College.

At the entry level the education opportunities are even more limited. Basic training for entry level people is not uniform and very little additional education is available.

STATUS OF GS-1515

FINDINGS

- AREAS OF CONCERN
  - MANAGED UNDER ENGINEERING AND SCIENTIST CAREER PROGRAM WHICH IS TOO LARGE AND TOO DIVERSE
  - ENTRY STANDARDS ARE TOO BROAD
  - CONTROLLER 1515 AND ORSA 1515 HAVE DIFFERENT OPPORTUNITIES
  - MOBILITY OF GS-1515 IS SOMETIMES LIMITED
  - INADEQUATE STANDARDIZATION OF CAREER COUNSELING AND PLANNING
  - ANNOUNCEMENT DISTRIBUTION SYSTEM (DADS) IS TOO DEPENDENT ON INDIVIDUAL INITIATIVE
  - LIMITED OPPORTUNITIES FOR CIVILIANS TO ATTEND CGSC
  - TRAINING COURSES FOR LOWER LEVELS ARE VERY LIMITED

FINDINGS

The office of civilian personnel it taking steps which may remedy many of the problems stated in the previous findings. The Army Civilian Training Education and Development System (ACTEDS) is an attempt to establish a planned progression of training and professional development for interns, intermediate managers and senior civilians. It will establish the essential skills and knowledge needed at each level and more importantly provide education opportunities to achieve those skills. The largest potential problem with this program is that it is dependent on annual funding in the budget to establish its cadre and subsequently the schooling and faculty to support the effort. Obviously, if funds are decremented the objectives are subject to trade-offs.

STATUS OF GS-1515

FINDINGS (CONT'D)

AREAS OF POTENTIAL IMPROVEMENT

- ARMY CIVILIAN TRAINING, EDUCATION AND DEVELOPMENT SYSTEM (ACTEDS)
  - PROVIDES PLANNED DEVELOPMENT FOR INTERNS TO SES
  - ESTABLISHES MINIMUM ESSENTIAL SKILLS, KNOWLEDGE, AND COMPETENCIES
  - PROGRESSIVE SEQUENCE FOR ASSIGNMENTS AND TRAINING
  - DEPENDENT ON ANNUAL BUDGET FUNDING

- ESTABLISH GS-1515 PROPONENCY BY ADDING A MEMBER REPRESENTING CIVPERCEN TO THE EXISTING MEMBERSHIP OF THE SC-49 PROPONENCY COMMITTEE

RECOMMENDATIONS:

In order to improve the present management of 1515's it seems prudent to break the GRSA 1515's out from under the Career Management within Engineering and Scientists program. E & S is simply too large. The diversity of disciplines as well as the number within the E & S field prohibit providing individual attention to specific disciplines like operations research.

The establishment of a separate functional chief for GS-1515, along the lines of the comparable SC 49 proponent appears to be a logical step toward refining the standards and training for GS-1515. Director, AMSAA is a prudent choice for this function.

The ACTEDS program is a good start in trying to discipline the training and education of interns through SES. In order to determine if it can actually achieve its goals the funding requests need to be supported.

Entry standards for the GS-1515 need to be reevaluated. Army should request OSD to pursue with OPM completing its now inactive study on this matter.

STATUS OF GS-1515

RECOMMENDATIONS

- BREAK OUT GS-1515 FROM ENGINEERING & SCIENTIST CAREER FIELD FOR ARMY CAREER MANAGEMENT PURPOSES
- ESTABLISH PROPONENT MUCH LIKE SC 49 COUNTERPART
- SUPPORT ARMY CIVILIAN TRAINING, EDUCATION, AND DEVELOPMENT SYSTEM
- REQUEST OSD TO PURSUE WITH OPM MORE STRINGENT ENTRY LEVEL STANDARDS FOR THE 1515 SERIES.

CHAPTER 8

ANALYSIS MISSION AND RESOURCES
AND
ARMY MODEL IMPROVEMENT PROGRAM

ANALYTICAL MISSION RESPONSIBILITIES

- This section is divided into two parts.

  - Part I is a discussion of analytical organizations that were reviewed during the study, the analytical mission responsibilities assigned to organizations, and the resources available to the analytical organizations reviewed.

  - Part II concentrates on the Army Model Improvement Program (AMIP) and the Army Model Improvement Program Management Office (AMMO). It is a discussion of their current status and proposed future orientation.

RAA
EX

ANALYTICAL MISSION RESPONSIBILITIES

- PART I - MISSIONS AND RESOURCES
  - RAAEX ORGANIZATIONAL FOCUS
  - ASSIGNED MISSION RESPONSIBILITIES
  - RESOURCES AVAILABLE
    - -- PERSONNEL
    - -- FUNDING
    - -- COMPUTERS
- PART II - ARMY MODEL IMPROVEMENT PROGRAM (AMIP)
  - STATUS AND FUTURE OF AMIP
  - STATUS AND FUTURE OF ARMY MODEL IMPROVEMENT PROGRAM MANAGEMENT OFFICE (AMMO)

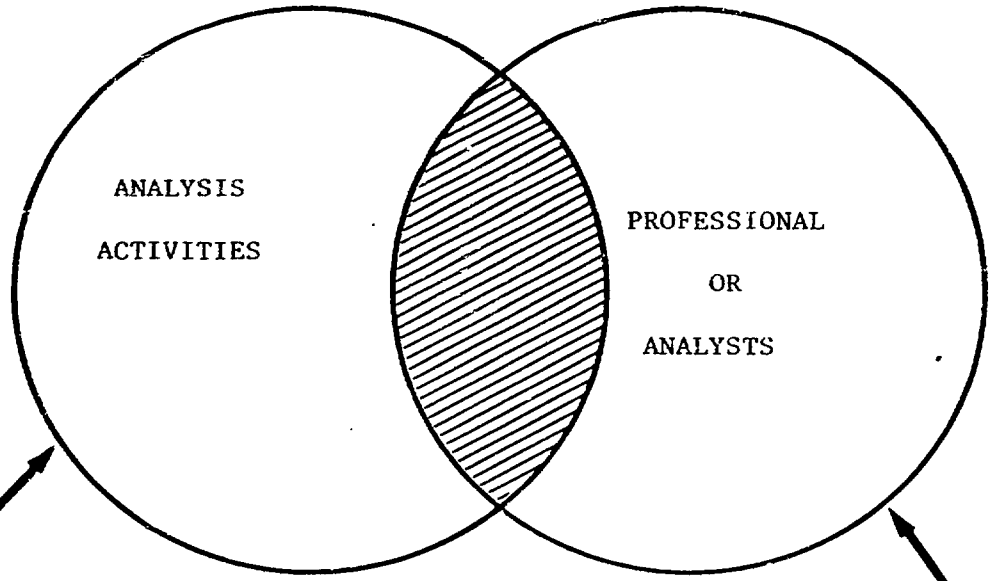
THE ARMY'S ANALYSIS COMMUNITY

- THE ANALYSIS COMMUNITY CONSISTS OF:
  - ANALYSIS PRODUCING ACTIVITIES WITH FORMAL PROGRAMS
  - SC49 MILITARY AND 1515 CIVILIAN AUTHORIZATIONS AND ASSETS

- FOR RAAEX WE DEFINED A SET OF ORGANIZATIONS TO FOCUS ON:
  - DEDICATED TO PRODUCING ANALYSIS
  - THAT HAVE FORMAL ANALYSIS PROGRAMS

- FOR THE ORGANIZATIONS SELECTED WE LOOKED AT THEIR:
  - ANALYSIS WORK PROGRAM
  - RESOURCES AVAILABLE

THE ARMY'S ANALYSIS COMMUNITY



- ANALYSIS PRODUCING ACTIVITIES WITH FORMAL PROGRAMS

- ALL SC49 MILITARY AND 1515 CIVILIAN AUTHORIZATIONS AND ASSETS

RAAEX ORGANIZATIONAL FOCUS

- We elected not to gather data from the entire analysis community. Rather we decided to concentrate on a selected sample of organizations and to focus primarily on organizations dedicated to producing analysis.

- AMC and TRADOC were logical choices since the two MACOM combined have 69% of the Army's authorized analyst spaces.

- We also selected five SSA/FOA that support HQDA.

RAA
EX

RAAEX ORGANIZATIONAL FOCUS

- SOLICITED FY 83 RESOURCE AND ANALYSIS WORK PROGRAM DATA FROM SELECTED ANALYSIS ORGANIZATIONS

- CONCENTRATED ON ANALYSIS PRODUCING ORGANIZATIONS

  - WITHIN ARMY MATERIEL COMMAND
  - WITHIN TRAINING AND DOCTRINE COMMAND
  - THAT SUPPORT HQDA (SSA/FOA)

ANALYSIS ORGANIZATIONS REVIEWED

- The specific organizations requested to provide data on their FY 83 analysis work program and the resources expended to support that work program are listed in the accompanying chart.

- Note that within AMC and TRADOC specific offices and directorates were identified which were to provide data.

- FY 83 data was requested in order to capture work accomplished in the most recently completed fiscal year.

- A message requesting specific resource and work program data from the listed analysis organizations was transmitted 271700Z Jul 84.

RAA EX

ANALYSIS ORGANIZATIONS REVIEWED

HQDA SSA/FOA
- ARMY RESEARCH INSITUTE (ARI)
- CONCEPTS ANALYSIS AGENCY (CAA)
- ENGINEER STUDIES CENTER (ESC)
- LOGISTICS EVALUATION AGENCY (LEA)
- STRATEGIC STUDIES INSTITUTE (SSI)

ARMY MATERIEL COMMAND (AMC)
- ARMY MATERIEL SYSTEMS ANALYSIS ACTIVITY (AMSAA)
- SYSTEMS ANALYSIS OFFICES WITHIN:
  - ARMAMENT, MUNITIONS & CHEMICAL CMD (AMCCOM)
  - ARMAMENT RESEARCH & DEVELOPMENT CENTER (ARDC)
  - AVIATION SYSTEMS COMMAND (AVSCOM)
  - BELVOIR RESEARCH & DEVELOPMENT CMD (BRDC)
  - COMMUNICATIONS-ELECTRONICS CMD (CECOM)
  - DEPOT SYSTEMS CMD (DESCOM)
  - ELECTRONICS RESEARCH & DEVELOPMENT CMD (ERADCOM)
  - MISSILE CMD (MICOM)
  - TANK-AUTOMOTIVE CMD (TACOM)
  - TEST AND EVALUATION CMD (TECOM)
  - TROOP SUPPORT CMD (TROSCOM)

TRAINING AND DOCTRINE COMMAND (TRADOC)
- COMBINED ARMS OPNS RESEARCH ACTIVITY (CAORA)
- TRADOC SYSTEMS ANALYSIS ACTIVITY (TRASANA)
- COMBINED ARMS CBT DEVELOPMENTS ACTIVITY (CACDA)
- LOGISTICS CENTER (LOGC)
  - OPERATIONAL ANALYSIS DIRECTORATE (OAD)
- SOLDIER SUPPORT CENTER (SSC)
  - OFFICE OF ANALYSIS SUPPORT
- FUNCTIONAL CENTERS AND SCHOOLS (CD AND TRAINING ELEMENTS ONLY)
  - AIR DEFENSE
  - ARMOR
  - AVIATION
  - CHEMICAL
  - ENGINEER
  - ARTILLERY
  - INFANTRY
  - INTELLIGENCE
  - SPECIAL WARFARE
  - MISSILE & MUNITIONS
  - MILITARY POLICE
  - ORDNANCE
  - QUARTERMASTER
  - SIGNAL
  - TRANSPORTATION

ANALYTIC MISSION RESPONSIBILITIES

- The previous Review of Army Analysis (RAA), conducted in 1978, proposed a hierarchical concept for assignment of analysis responsibilities. That concept was accepted by the analysis community and given strong support.

- The hierarchical concept has stood the test of time and has proven to be sound. It is strongly supported. There is no reason to change the assigned analytical mission responsibilities shown in the accompanying chart.

- Occasionally there is an exception to assigned responsibilities that must be decided through coordination. For example, a Corps weapons system for which CAORA and CACDA are normally responsible might have sufficient theater impact that analysis would be conducted by CAA.

- The missions and functions of analysis organizations are properly aligned with the assigned analytical mission responsibilities.

RAA EX

ANALYTIC MISSION RESPONSIBILITIES

- RAA HIERARCHICAL CONCEPT FOR ANALYSIS RESPONSIBILITIES IS ACCEPTED AND SUPPORTED

- ASSIGNED ANALYTICAL MISSION RESPONSIBILITIES ARE SOUND

LEVEL	MAJOR AGENCY RESPONSIBLE	OTHER AGENCIES RESPONSIBLE
THEATER/FORCE	CAA	LEA
CORPS/DIVISION	CAORA	CACDA, LOGC, SSC
FUNCTIONAL	TRASANA	TRADOC SCHOOLS, CACDA, LOGC, AND SSC
BN TASK FORCE	TRASANA	TRADOC SCHOOLS, CACDA, LOGC, AND SSC
ITEM SYSTEM	AMSAA	AMC SUBORDINATE COMMANDS

- ORGANIZATIONAL MISSIONS AND FUNCTIONS STATEMENTS ARE ALIGNED

PERSONNEL DOING STUDIES AND ANALYSES

- This charts shows the number of SC 49 officers, 1515 civilians, other military, and other civilians who did the FY 83 studies and analyses in the organizations reviewed.
- 49% of the personnel reported doing studies and analyses were SC 49 and 1515 analysts.
- AMSAA, AMC SAO, ESC and LEA have few SC 49 officers doing studies and analyses. SSI has none.
- ARI reports it does no studies or analyses.
- Note the large number of "other military" and "other civilians" reported doing analysis work in TRADOC functional centers and schools. Only one school reported a majority of the work being accomplished by SC 49 and 1515 personnel.

RAA EX

PERSONNEL DOING STUDIES AND ANALYSES*

	49	1515	OTHER MIL	OTHER CIV	TOTAL
AMC					
AMSAA	2	218	7	112	339
SUB CMD SAO	4	164	2	79	249
TRADOC					
TRASANA	23	174	29	40	266
CAORA	19	52	28	5	104
INTEGRATING CENTERS	22	71	4	8	105
FUNCTIONAL CENTERS & SCHOOLS	58	93	307	344	802
HQDA SSA/FOA					
ARI	0	0	0	0	0
CAA	48	68	39	24	179
ESC	1	9	5	16	31
LEA	2	5	4	14	25
SSI	0	0	12	9	21
TOTAL	179	854	437	651	2121

*Selected organizations. End FY 83 Data.

SC 49 PERSONNEL

- This chart displays the number of military SC 49 positions, by grade, that are authorized, provided by Officer Distribution Plan (ODP), and the number of SC 49 officers assigned within the indicated organizations. The number entries are authorizations/ODP/ assigned strength.

- The systems analysis offices within the AMC subordinate commands are summed and shown as one entry. The same is true for the TRADOC integrating center organizations and the 15 TRADOC functional centers and schools. This same grouping of organizations is used in subsequent personnel charts.

- Remember that this and subsequent data represent a selected sample of analysis organizations, not the entire analysis community. Also note that because not all SC49 personnel in these organizations are engaged in doing studies and analysis there are differences between the totals shown here and in the preceding chart.

RAA
EX

SC 49 PERSONNEL
(AUTH/OCP/ON HAND)

	GO	06	05	04	03	TOTAL
AMC						
AMSAA		0/1/0	0/0/0	4/1/1	2/2/1	6/4/
SUB CMD SAO		1/1/1	1/0/0	1/2/2	4/0/1	7/3/
TRADOC						
TRASANA		1/1/1	4/4/5	14/11/8	19/20/9	38/36/
CAORA	1/-/1	3/2/2	8/8/3	17/11/9	14/17/5	42/38/
INTEGRATING CENTERS (IC)		1/1/2	11/4/8	8/7/7	4/6/6	24/18/
FUNCTIONAL CENTERS & SCHOOLS		0/0/0	12/7/8	58/30/27	58/57/30	128/94/
HQDA SSA/FOA						
ARI		0/0/0	0/0/0	0/0/0	0/0/0	0/0/
CAA		7/6/5	10/9/14	37/31/25	6/5/12	60/51/
ESC		0/0/0	0/0/0	1/1/1	0/0/0	1/1/1
LEA		0/0/0	1/1/0	1/1/2	0/0/0	2/2/2
SSI		0/0/0	0/0/0	0/0/0	0/0/0	0/0/0
TOTAL:	1/-/1	13/12/12	47/33/38	141/95/82	107/107/64	308/247/

SC49 GRADE DISTRIBUTION

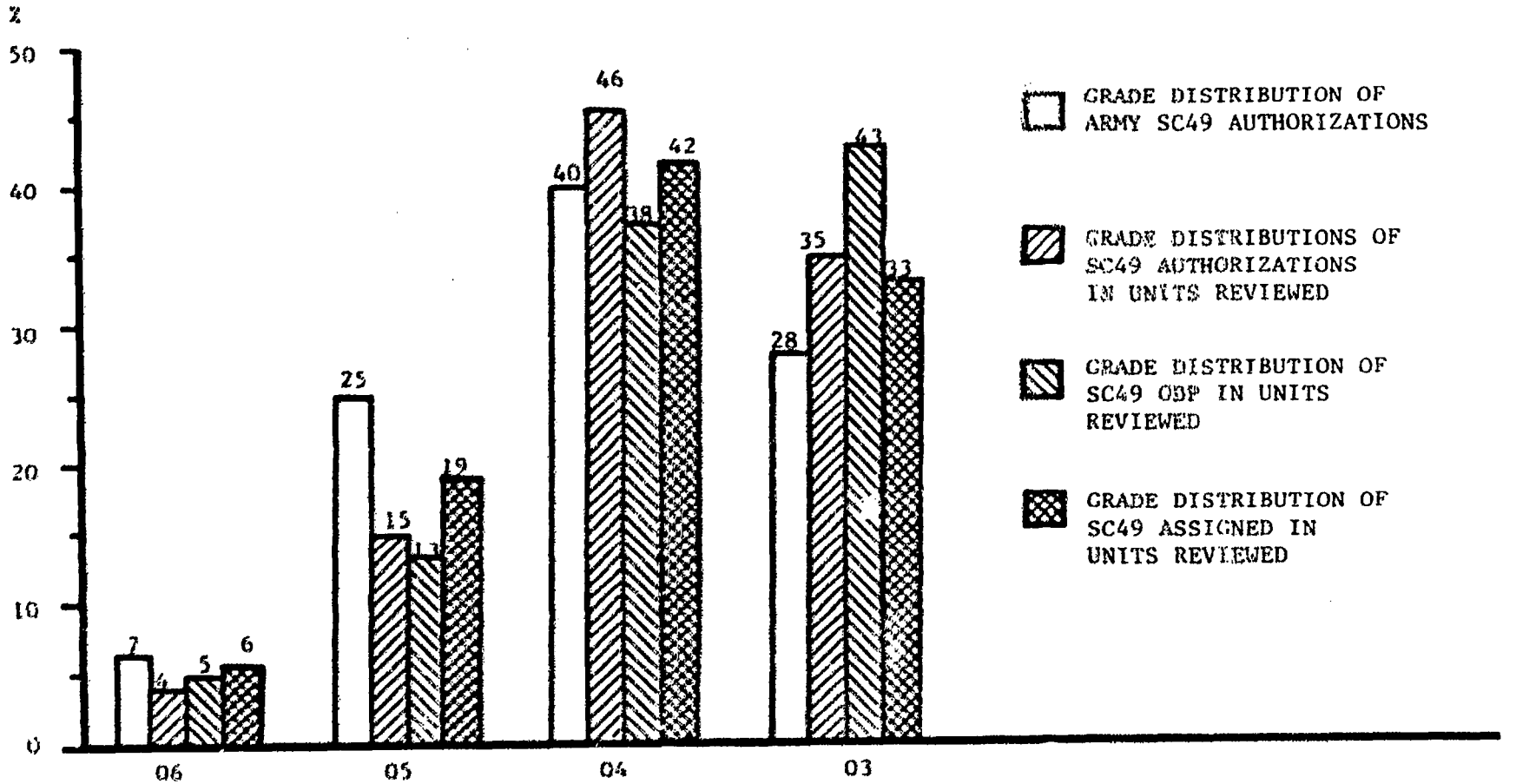
- This chart shows the grade distribution of:
  - SC49 authorizations in the Army
  - SC49 authorizations in organizations reviewed
  - SC49 ODP in organizations reviewed
  - SC49 assigned strength in organizations reviewed

- SC49 distribution of 06 and 04 in organizations reviewed is close to the Army-wide distribution.

- SC49 distribution of 05 is lower and 03 higher in the organizations reviewed than the Army-wide distribution. Units reviewed have less than their fair share of experienced SC49.

RAA
EX

SC49 GRADE DISTRIBUTION
(FY 83)



SC49 STRENGTH AS PERCENT OF ODP

- This chart compares the assigned strength (as a percent of ODP) in the organizations reviewed. This is a measure of how well the personnel system is distributing the available assets and is not a measure of how well recognized requirements are being satisfied.

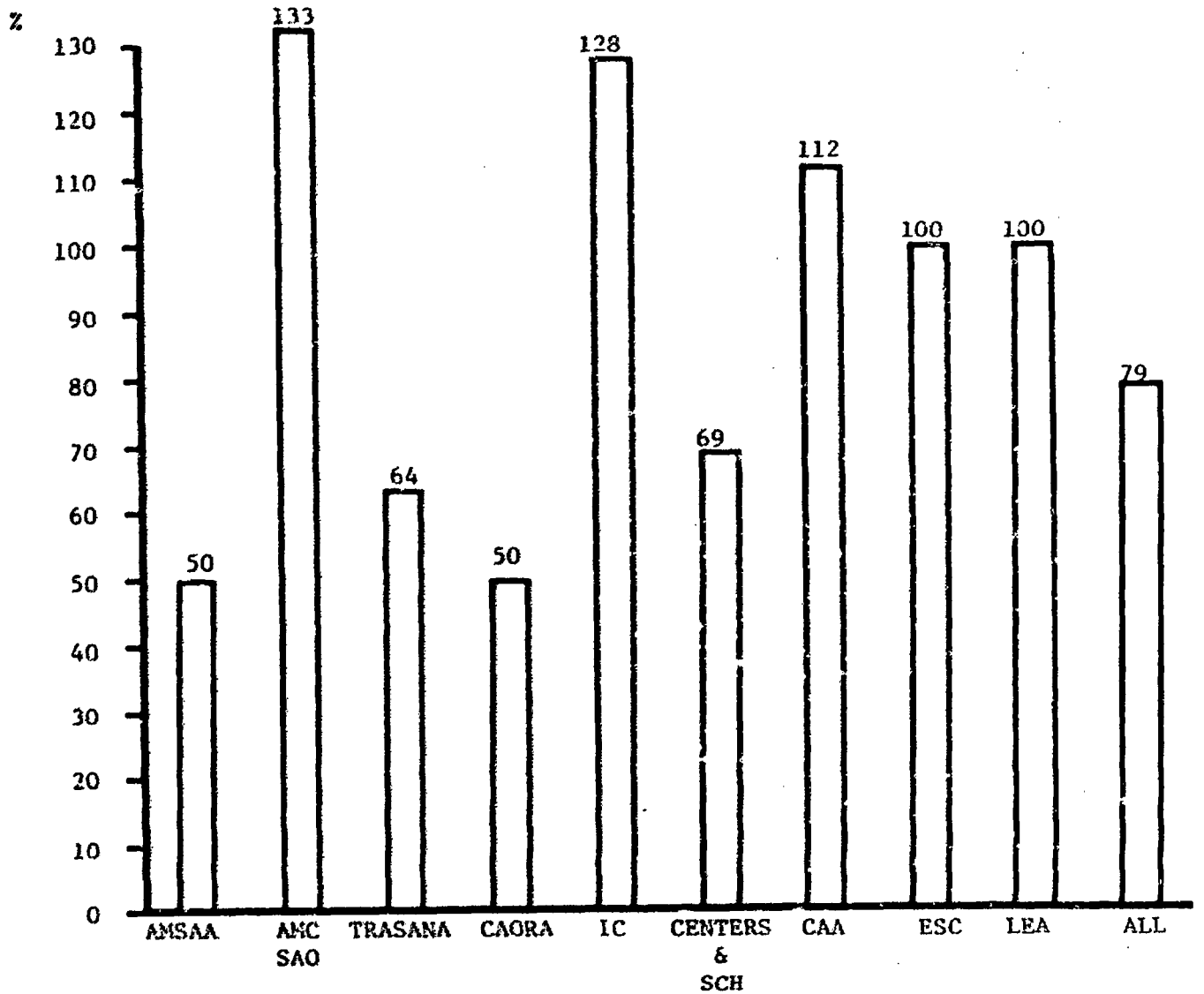
- The organizations vary considerably from a low of 50 percent in AMSAA and CAORA to a high of 133 percent in the AMC Systems Analysis Offices.

- The average SC49 fill of ODP for all organizations reviewed is 79 percent.

- With the exception of the integrating centers, TRADOC fill of SC49 ODP is particularly low. CAORA is at 50 percent, TRASANA at 64 percent, and the functional centers and schools at 69 percent.

RAA
EX

SC49 STRENGTH AS PERCENT OF ODP
(FY 83)



1515 PERSONNEL

- This chart displays the civilian analysts (1515), by grade, that are authorized and on hand in the organizations. The number entries are authorizations/on hand strength. The total shown here is different from that shown earlier because not all 1515s assigned to these organization are engaged in doing studies and analysis.

- Note that the greatest shortfall in on-hand strength falls at the GS 12 and GS 13 level which are the critical journeyman analyst and study team leader levels.

RAA EX

1515 PERSONNEL
(AUTH/ON HAND)

	SES	15	14	13	12	11	9	7	TOTAL
AMC									
AMSAA	0/0*	10/12	54/29	103/80	132/70	1/9	0/11	0/7	300/218
SUB CMD SAO	0/0	10/10	31/31	57/51	76/64	12/9	4/4	2/6	192/175
TRADOC									
TRASANA	2/2	9/9	36/33	65/67	63/57	5/6	0/0	0/0	180/174
CAORA	0/0	7/5	8/7	21/18	21/16	9/6	0/0	0/0	66/52
IC	0/0	4/4	8/7	18/14	42/31	3/8	0/6	0/1	75/71
CENTERS & SCHOOLS	0/0	0/0	5/4	39/37	59/45	16/9	1/1	0/3	120/99
HQDA SSA/FOA									
ARI	0/0	2/2	1/1	0/0	2/0	3/3	0/0	0/0	8/6
CAA	3/3	10/10	24/22	37/30	6/7	1/0	0/0	0/0	81/72
ESC	0/0	2/2	6/4	3/3	0/0	0/0	0/0	0/0	11/9
LEA	0/0	0/0	3/3	2/2	0/0	0/0	0/0	0/0	5/5
SSI	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0
TOTAL	5/5	54/54	176/141	345/302	401/290	50/50	5/22	2/17	1038/881

*SES Positions in AMSAA are not 1515

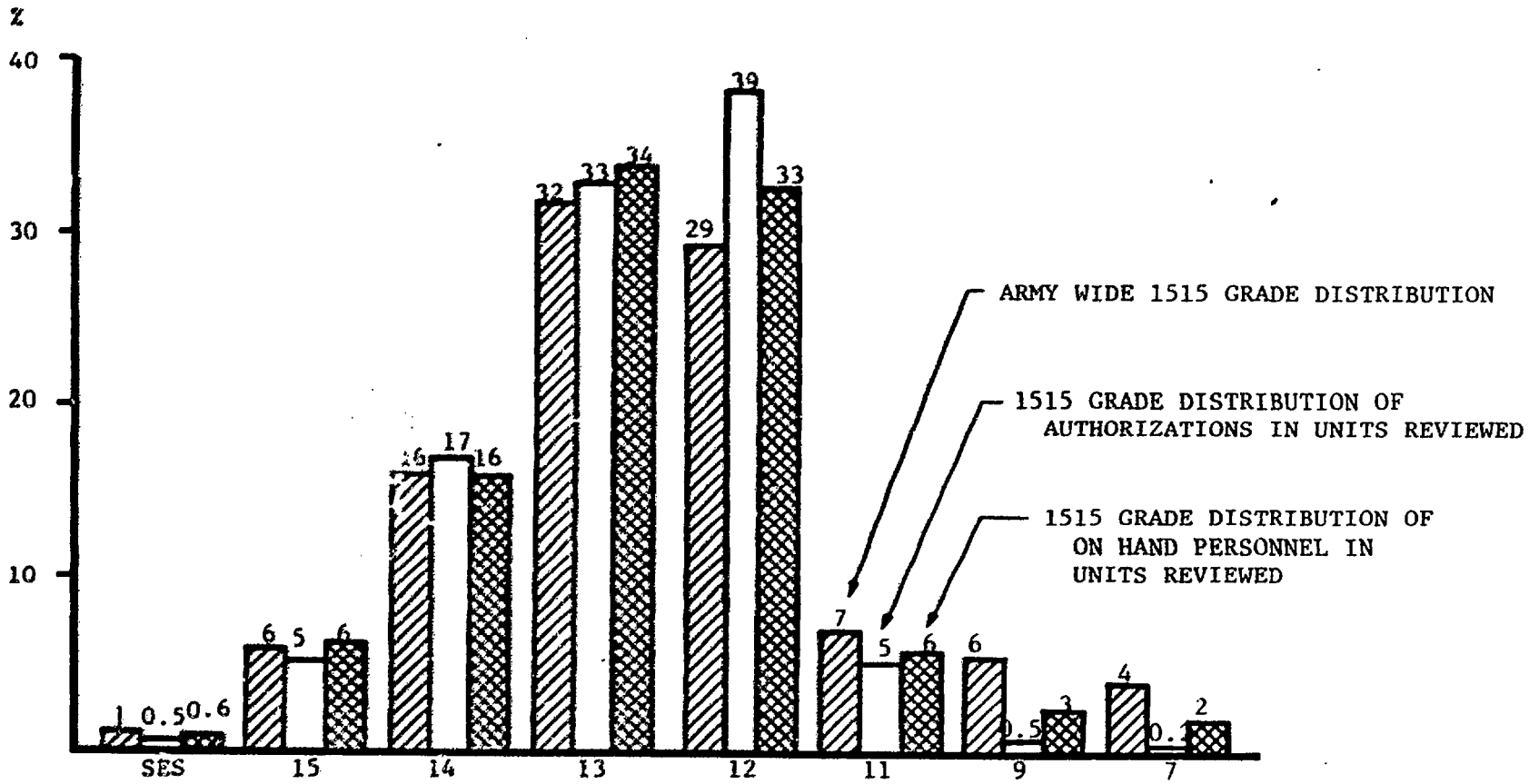
1515 GRADE DISTRIBUTION

- This chart compares distribution of:
  - 1515 Authorizations in the Army
  - 1515 Authorizations in Organizations Reviewed
  - 1515 on hand strength in organizations reviewed

- Within organizations reviewed, grade distribution of:
  - SES, 15, 14, 13, and 11 authorizations are comparable to the Army-wide distribution
  - GS 12 authorizations are higher than for the Army as a whole while GS 9 and GS 7 authorizations are lower

RAA
EX

1515 GRADE DISTRIBUTION
(FY 83)



1515 STRENGTH AS PERCENT OF AUTHORIZATIONS

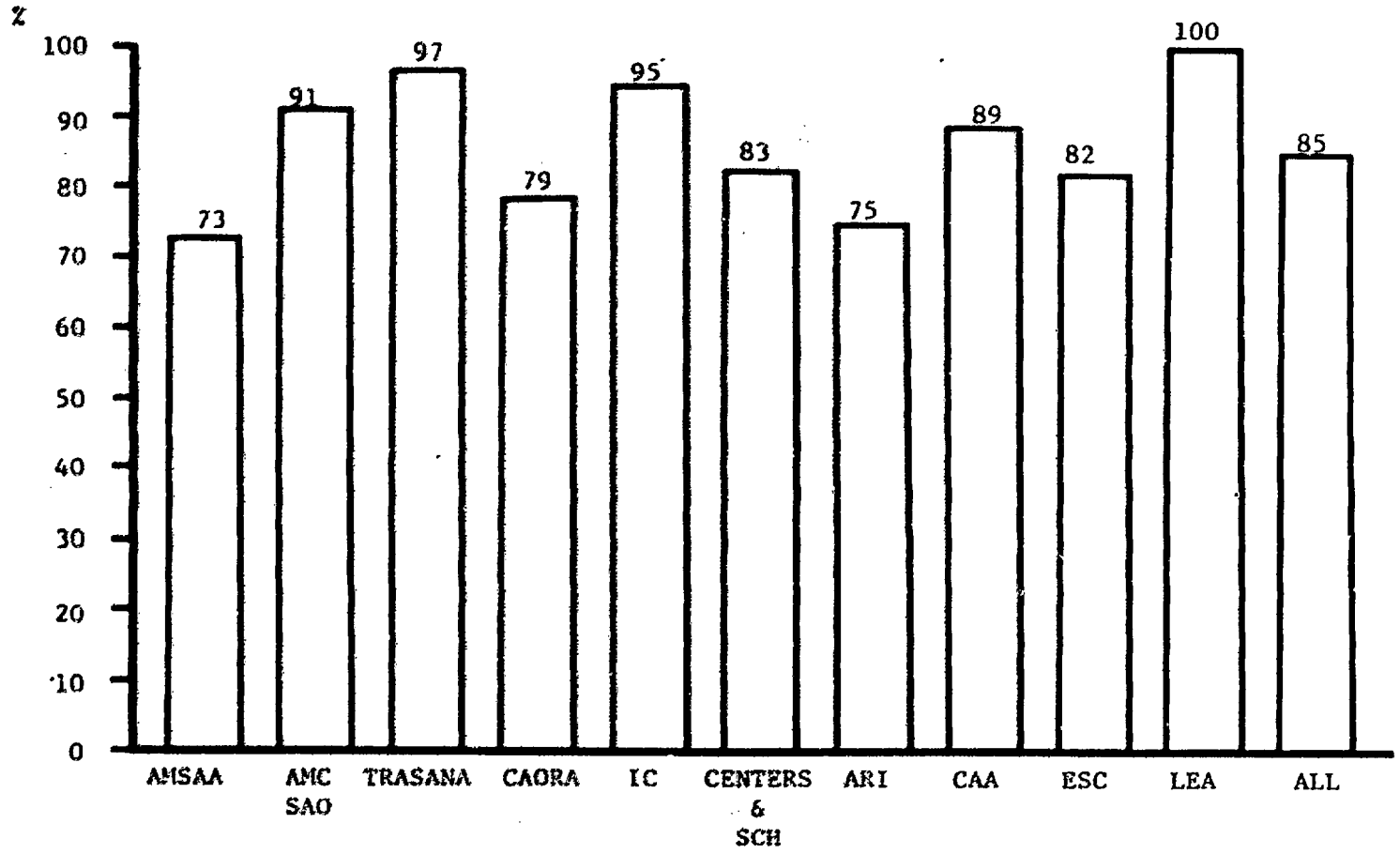
- This chart compares the 1515 on hand strength (as a percent of authorizations) in the organizations reviewed.

- The average 1515 fill of authorizations for all organizations reviewed is 85 percent.

- Five organizations (AMSAA, CAORA, TRADOC functional centers and schools, ARI, and ESC) have vacancy rates exceeding 15 percent.

RAA
EX

1515 STRENGTH AS PERCENT OF AUTHORIZATIONS
(FY 83)



RAA EX

COMPARISON WITH OVERALL ARMY SC 49 AND 1515 STRENGTHS

	TOTAL ARMY	ALL ORGANIZATIONS REVIEWED	AMC	TRADOC	HQDA SSA/FOA
SC 49:					
AUTHORIZED	918	308	13	232	63
ODP (% AUTH)	85.2%	80.2%	53.8%	80.2%	85.7%
ASSIGNED (% ODP)	89.4%	79.4%	85.7%	69.9%	111.1%
ASSIGNED (%AUTH)	76.1%	63.6%	46.2%	56.0%	95.2%
1515:					
AUTHORIZED	1768	1030	492	456	97
ON HAND (% AUTH)	--	85.0%	79.9%	86.6%	89.5%

TOTAL ARMY SC 49 INVENTORY IS 1846 OFFICERS

- ORGANIZATIONS SURVEYED REPRESENT 34% OF THE ARMY'S SC49 AUTHORIZATIONS AND 59% OF THE 1515 AUTHORIZATIONS.

PERSONNEL RESOURCES

- The number of military officer authorizations within the AMC organizations reviewed, which are the key analysis activities within AMC, is quite small - only a total of 30 officer authorizations in 12 organizations, with 20 of those in AMSAA. Thirteen of the officer spaces authorized are SC49 positions, with six of those in AMSAA. Six of the eleven subordinate command Systems Analysis Offices have no military authorizations.

- The SC49 ODP for the AMC organizations reviewed is only 53.8% of authorizations, which is much lower than the Army average. TRADOC ODP is reasonably close to, although lower than, the Army average; however, SC49 assigned strength as a percent of ODP is significantly lower than other organizations reviewed and the Army average.

- Within the TRADOC organizations reviewed, approximately 70% of the SC49 ODP positions are filled. CAORA is lowest at 50% fill, while TRASANA and the functional Centers and Schools are 64% and 69% respectively.

- There are 1030 authorized 1515 analyst spaces in the organizations reviewed, with 155 of the positions either vacant or not filled by 1515 personnel. AMSAA and TRASANA have filled some 1515 positions with engineers, physicists, mathematicians, and statisticians because of the very broad nature of their analysis missions. The number of actual 1515 vacancies is believed to be 96 (9.3%). This is a reasonable vacancy rate considering hire lag.

- Within TRADOC functional Centers and Schools, the number of analysts (SC49 and 1515) authorized varies from a low of one at the JFK Special Warfare Center to 58 at the Air Defense School. The schools under the LOGC are all limited to seven analyst authorizations or less.

RAA EX

PERSONNEL RESOURCES

- AMC ORGANIZATIONS REVIEWED HAVE A SC49 ODP THAT IS SIGNIFICANTLY LOWER THAN OTHER ORGANIZATIONS REVIEWED AND THE ARMY AVERAGE.
- TRADOC FILL OF SC49 POSITIONS IS SIGNIFICANTLY LOWER THAN OTHER ORGANIZATIONS REVIEWED AND THE ARMY AVERAGE.
- 15% OF THE AUTHORIZED 1515 POSITIONS IN THE ORGANIZATIONS REVIEWED ARE VACANT OR FILLED BY NON 1515 PERSONNEL
- OVER 95% OF THE SC49 AND 1515 PERSONNEL ON HAND ARE DOING STUDIES AND ANALYSES.
- WITHIN TRADOC FUNCTIONAL CENTERS AND SCHOOLS, THE MAJORITY (81.6%) OF THE INDIVIDUALS DOING COMBAT DEVELOPMENTS AND TRAINING STUDIES AND ANALYSES ARE NON-ANALYST PERSONNEL.
- THE NUMBER OF OR ANALYSTS AUTHORIZED VARIES WIDELY ACROSS TRADOC CENTERS AND SCHOOLS.

STUDY AND ANALYSIS FUNDING SUPPORT

- The large majority of studies and analyses done in FY83 by the organizations reviewed were done in-house, not by contract. Only approximately 4% of the work was accomplished by contract.

- Technical support services (e.g. programing, documentation, etc.) require considerable analyst time. Contracting for these type services would free analysts to work on studies and analyses that cannot be done currently.

RAA
EX

STUDY AND ANALYSIS FUNDING SUPPORT

- ORGANIZATIONS REVIEWED REPORTED EXPENDITURE OF $5.9M IN CONTRACTOR SUPPORT OF STUDIES AND ANALYSES IN FY83.
- THIS REPRESENTS APPROXIMATELY 59 EQUIVALENT TSY OF EFFORT.
- ORGANIZATIONS EXPENDED 1552 TSY DOING ANALYSIS IN-HOUSE IN FY83.
- ADDITIONAL CONTRACT SUPPORT, PARTICULARLY TECHNICAL SUPPORT SERVICES, WOULD HAVE HELPED REDUCE WORK BACKLOG.

COMPUTERS

- With the exception of CAORA, analysis workload in the major analysis producing organizations now exceeds the capacity of mainframe computers. AMSAA has two VAX 11/780 that are limited by disk space and main memory. The CAA UNIVAC is limited by main memory and mass storage capacity. The TRASANA UNIVAC and one of its two VAX 11/780 are limited by computing capacity.

- The VAX 11/780 at the TRADOC Logistics Center is limited by mass storage. The Operations Analysis Directorate is forced to use a number of different computers in accomplishing required analysis workload.

- In general, AMC SAO use mainframe computers operated by their respective AMC subordinate commands. Adequacy of computer support varies.

- TRADOC functional Centers and Schools receive computer support for combat developments studies and analyses from the Fort Leavenworth DPFO.

- Electronic linking of AMSAA, CAA, CAORA, and TRASANA is currently being pursued by HQDA. Although the original concept started with the awareness of the need to establish electronic linkage of CAORA and TRASANA, technical problems may prevent TRASANA from being included in initial linkage of the Army's major analysis producing organizations. The linkage should provide secure, high capacity electronic interface with conferencing, bulk data transfer, and remote interactive model operation.

COMPUTERS

- THREE OF THE FOUR MAJOR ANALYSIS PRODUCING ORGANIZATIONS (AMSAA, CAA, AND TRASANA) HAVE INADEQUATE COMPUTER CAPABILITY TO HANDLE WORKLOAD.

- TRADOC LOGISTICS CENTER HAS INADEQUATE COMPUTER CAPABILITY.

- MOST OF THE AMC SAO AND TRADOC CENTERS AND SCHOOLS HAVE LIMITED COMPUTER CAPABILITY THAT THEY CONTROL. ALMOST ALL ARE CUSTOMERS OF MAINFRAME AND MINI COMPUTERS CONTROLLED BY OTHERS.

- ELECTRONIC LINKING OF TRASANA, CAORA, AMSAA, AND CAA IS REQUIRED. OTHER MAJOR ANALYSIS ORGANIZATIONS WITH ANALYSIS REQUIREMENTS/CAPABILITIY (E.G. AIA, OTEA, LEA, & LOGC) SHOULD ALSO BE CONSIDERED FOR ELECTRONIC INTERFACE.

DISTRIBUTION OF ANALYST AUTHORIZATIONS (AS OF END OF FY83)

- There are both civilian and military analysts in organizations outside the select sample previously discussed. On an Army-wide basis (including the organizations sampled) there are 2686 analyst space authorizations in the Army -- 918 military (SC 49) and 1768 civilian (1515).

- The preponderance of the authorized spaces are in AMC (953), TRADOC (899), HQDA (152), and SSA/FOA that support HQDA (268).

- The accompanying chart indicates the distribution of the 2686 analyst authorizations within the Army.

DISTRIBUTION OF ANALYST AUTHORIZATIONS

DISTRIBUTION OF SC49 AND 1515 ANALYST AUTHORIZATIONS WITH THE ARMY:

• HQDA	-	152
• HQDA SSA/FOA	-	268
• AMC	-	953
• TRADOC	-	899
• USACC	-	44
• USAREC	-	36
• FORSCOM	-	27
• EUROPE FORCES	-	33
• KOREA FORCES	-	2
• OTHER (OSD, OJCS, DEFENSE AGENCIES, OTHER ARMY ACTIVITIES)	-	272
		2686

MISSIONS AND RESOURCES RECOMMENDATIONS

- Assigned analytic mission responsibilities are sound and should not be changed.

- SC49 authorizations, ODP, and assignments must be spread equitably consistent with the study and analysis work load organizations are required to perform.

- Contracting for routine, time consuming technical services would free analysts to work on studies and analyses that otherwise would not be done.

- Analysis producing organizations are limited by their computer capability. Availability of faster, more powerful computers would significantly improve the timeliness and responsiveness of studies and analyses being conducted.

- Electronic linking of the major analysis producing organizations is critical to enhancing the analysis capability of the Army.

MISSIONS AND RESOURCES RECOMMENDATIONS

- MISSIONS -- NO CHANGE
- PERSONNEL
  - AMC SHOULD REVIEW THE DISTRIBUTION OF SC49 ODP TO AMSAA AND THE SUBORDINATE COMMAND SAO.
  - TRADOC SHOULD REVIEW THE SC49 AUTHORIZATIONS COVERED BY ODP AND DETERMINE THE REASONS FOR THE LOW PERCENT OF FILL.
  - TRADOC SHOULD REVIEW CURRENT SC49 AND 1515 AUTHORIZATIONS IN FUNCTIONAL CENTERS AND SCHOOLS, COMPARE THEM WITH ANALYTICAL WORK LOAD ANTICIPATED IN THE FUTURE, AND CONSIDER REDISTRIBUTING ANALYST AUTHORIZATIONS ACROSS THE FUNCTIONAL CENTERS AND SCHOOLS
- FUNDS -- ANALYSIS ACTIVITIES SHOULD CONSIDER CONTRACTING TO FREE ANALYSTS FROM ROUTINE TECHNICAL SERVICES.
- COMPUTERS
  - HQDA SHOULD ASSESS ADEQUACY OF COMPUTERS IN AMSAA, CAA, AND TRASANA TO SUPPORT ANALYTICAL WORK LOAD.
  - AMC SHOULD ASSESS ADEQUACY OF COMPUTER SUPPORT AVAILABLE TO SUBORDINATE COMMAND SAO.
  - TRADOC SHOULD ASSESS ADEQUACY OF COMPUTER SUPPORT AVAILABLE TO LOGC, SSC, AND FUNCTIONAL CENTERS AND SCHOOLS TO SUPPORT ANALYTICAL WORK LOAD.
  - HQDA SHOULD CONTINUE TO PURSUE WITH HIGH PRIORITY THE ELECTRONIC LINKING OF THE ARMY'S MAJOR ANALYSIS PRODUCING ORGANIZATIONS (AMSAA, CAA, CAORA, AND TRASANA) AND CONSIDER ALSO INCLUDING AIA, OTEA, LEA, AND LOGC.

PART II

ARMY MODEL IMPROVEMENT PROGRAM (AMIP)

- STATUS AND FUTURE OF AMIP

- STATUS AND FUTURE OF AMIP MANAGEMENT OFFICE (AMMO)

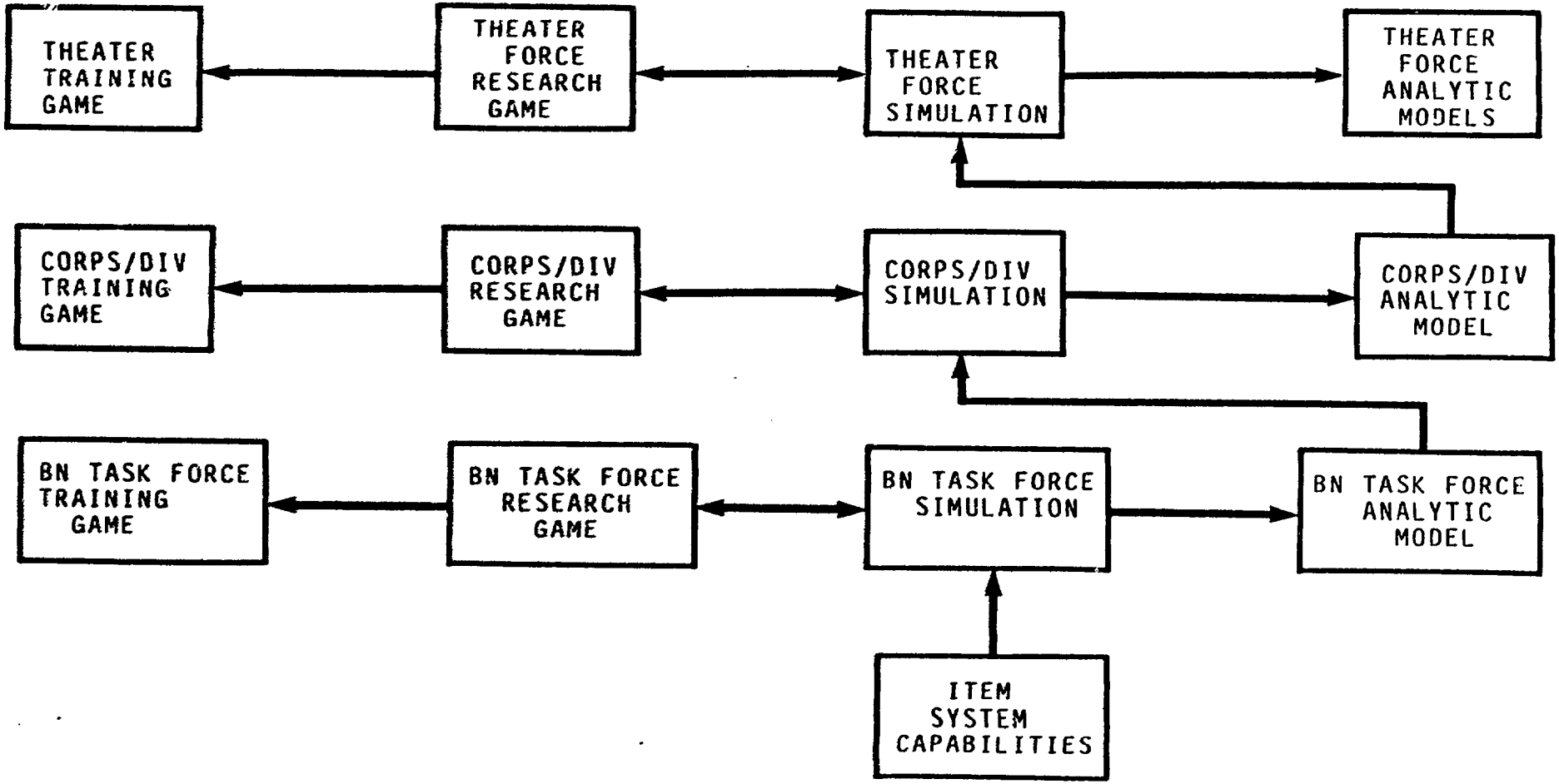
RAA PROPOSED HIERARCHY OF MODELS

- The RAA study report included a proposal to develop a hierarchy of four models at each of three force levels of organization (theater, corps/div, and battalion task force). At each level there would be a basic stochastic simulation of combined arms combat, a research oriented war game, a war game for training purposes, and a fast running analytical model. The concept included each simulation model accepting input data from the next lower level analytical model.

- The chart depicts the hierarchy of models proposed by the RAA.

RAA EX

RAA PROPOSED HIERARCHY OF MODELS



ARMY ACTIONS TO IMPLEMENT HIERARCHY OF MODELS

- Following SELCOM approval of the KAA recommendation to develop a hierarchy of Army models and supporting integrated data base, the Army initiated these key actions to effect implementation:

  - The program was established by AR 5-11.

  - An Army Model Committee was established to provide oversight to the project.

  - The Army Model Improvement Program was initiated as the vehicle to implement the concept.

  - The Army Model Improvement Program Management Office (AMMO) was established to coordinate the activities of the AMC, TRADOC, and CAA organizations involved in the program, increase communication and interaction among the agencies, and orchestrate the efforts. Commander TRADOC was designated Executive Agent for the program and the AMMO was established in TRADOC at Fort Leavenworth, Kansas.

RAA EX

ARMY ACTIONS TO IMPLEMENT HIERARCHY OF MODELS

- INITIATED ARMY MODEL IMPROVEMENT PROGRAM (AMIP)
- OVERSIGHT PROVIDED BY ARMY MODELS COMMITTEE
- ESTABLISHED ARMY MODEL IMPROVEMENT PROGRAM MANAGEMENT OFFICE (AMMO) TO COORDINATE AMIP EFFORTS

STATUS OF AMIP

- This chart reflects the current status of AMIP.
  - The solid blocks indicate models that are developed.
  - The dash line blocks indicate models being developed.
  - The open blocks indicate models that have not been developed.

- FORCEM is running parallel to CEM and is scheduled to begin production on 1 January 1985.

- CORDIVEM is undergoing testing. Problems have been encountered that are being evaluated.

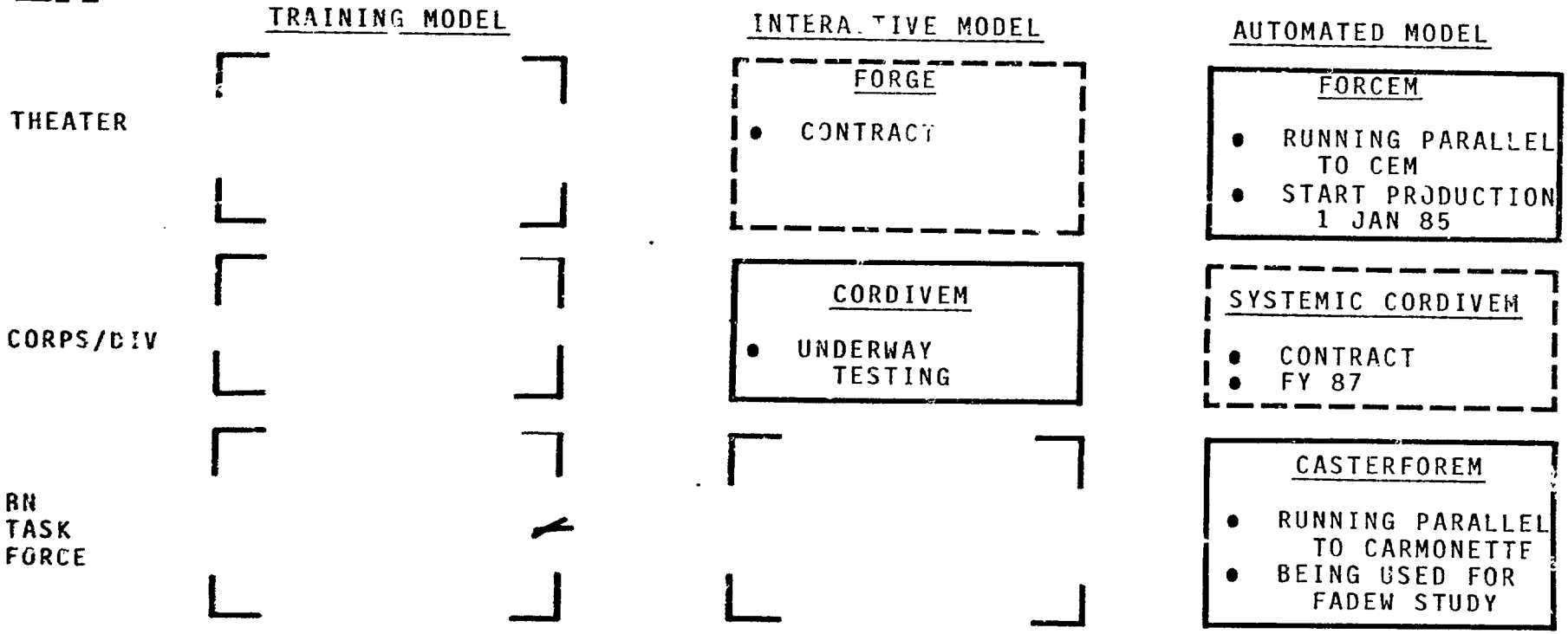
- CASTFOREM is running parallel to CARMONETTE and is being used for the FADEW Study. CASTFOREM run time is excessive and needs to be reduced to make the model more responsive.

- Limited vertical linkage of the models has been accomplished.

- Little emphasis has been given to the development of the fast running analytical models.

RAA
EX

STATUS OF AMIP



AMIP IMPLEMENTATION

- Support for the AMIP varied within the Army and the analysis community. It ranged from total opposition to serious commitment. Initial implementation efforts varied accordingly.

- With assignment of Executive Agent, staffing of the AMMO, and provision of resources efforts were formalized, support increased, and considerable progress made.

- The optimum approach to developing a hierarchy of models is to start by designing the architecture and model interfaces. This would provide the blueprint for all participants to follow.

- The initial approach followed was to modify models under development or in existence:
  - CEM ⟶ Improved CEM
  - ICOR ⟶ CORDIVEM
  - BEST ⟶ CASTFOREM

- CAA subsequently stopped modification of CEM and developed a new FORCEM model.

- After five years three models have been developed, and two are under development.

RAA
EX

AMIP IMPLEMENTATION

- AMIP CONCEPT WILL SUPPORTED NOW, ALTHOUGH NOT INITIALLY
  - DID NOT START WITH A TOP DOWN DESIGN OF HIERARCHY ARCHITECTURE AND MODEL INTERFACES
  - INITIAL APPROACH WAS TO MODIFY EXISTING MODELS OR MODELS ALREADY UNDER DEVELOPMENT
- PROGRESS HAS BEEN SIGNIFICANT
  - THREE MODELS DEVELOPED
  - TWO MODELS UNDER DEVELOPMENT

AMIP EFFORTS THAT REQUIRE EMPHASIS

- Linkage of models and library entries are essential to make the hierarchy a reality. CAA and TORA must continue to work together to complete development of the FORCEM-CORDIVEM linkage, while TORA must continue to work the CORDIVEM-CASTFOREM linkage. In addition, CAA must begin to develop links from FORCEM to global models, e.g. RAND RSAC Project.

- Contractor development of systemic CORDIVEM is underway. The automated corps/division model is essential to completion of the hierarchy.

- Logistics representation in CORDIVEM is incomplete. TORA and LOGC have initiated coordination to effect better logistics representation in the model. This effort needs strong emphasis and high priority.

- Role of functional models within AMIP has not been dealt with because of priority given to development of three main combined arms models

- Models have become more complex, more detailed, longer running, and less responsive. Fast running analytical models, capable of quickly generating force performance data over a wide range of conditions are needed.

- Little effort in the development of training models has been coordinated with the AMIP.

- Data base management needs continued emphasis with particular attention to item level system performance data both Red and Blue.

- The major shortcoming of combat simulation is excessive run time. The run time needs to be decreased to improve the responsiveness of the models.

RAA
EX

AMIP EFFORTS THAT REQUIRE EMPHASIS

- MODEL LINKAGE
- SYSTEMIC CORDIVEM DEVELOPMENT
- LOGISTICS REPRESENTATION IN CORDIVEM
- FUNCTIONAL MODEL DEVELOPMENT
- ANALYTIC MODEL DEVELOPMENT
- TRAINING MODELS
- DATA BASE
- REDUCTION OF SIMULATION RUN TIME

STATUS OF AMMO

- CG TRADOC has been Executive Agent since inception of AMMO

- AMMO has been located at Fort Leavenworth since it was formed. The office was recently placed under the TRADOC Deputy CG for Combined Arms (DCG-CA).

- The AMMO mission has been to coordinate model developments. The hierarchical framework has been established. Model development responsibility rests with the directors of TORA and CAA.

- Future role in development of subsequent edition of the hierarchy needs definition.

RAA EX

STATUS OF AMMO

- CG TRADOC IS EXECUTIVE AGENT FOR HQDA
- AMMO IS LOCATED AT FORT LEAVENWORTH AND CURRENTLY REPORTS TO TRADOC DEPUTY CG FOR COMBINED ARMS (DCG-CA)
- RESPONSIBLE TO COORDINATE IMPLEMENTATION OF AMIP
- FUTURE ROLE NEEDS DEFINITION

AMMO ORGANIZATIONAL ALIGNMENT

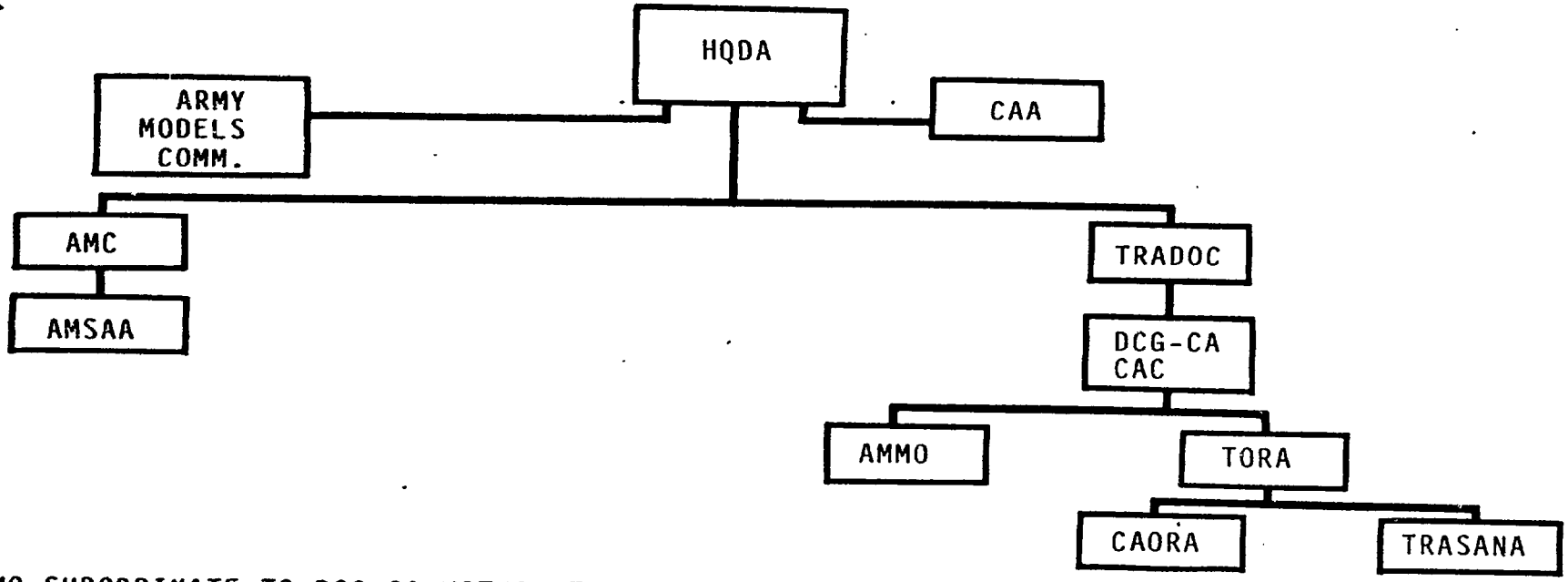
- The chart depicts the organizational alignment of AMMO and the key AMIP/AMMO organizations.

- Although the CG TRADOC remains the Executive Agent, AMMO was recently placed under the DCG-CA.

- It is difficult to manage and coordinate an Army program from within a MACOM.

RAA EX

AMMO ORGANIZATIONAL ALIGNMENT



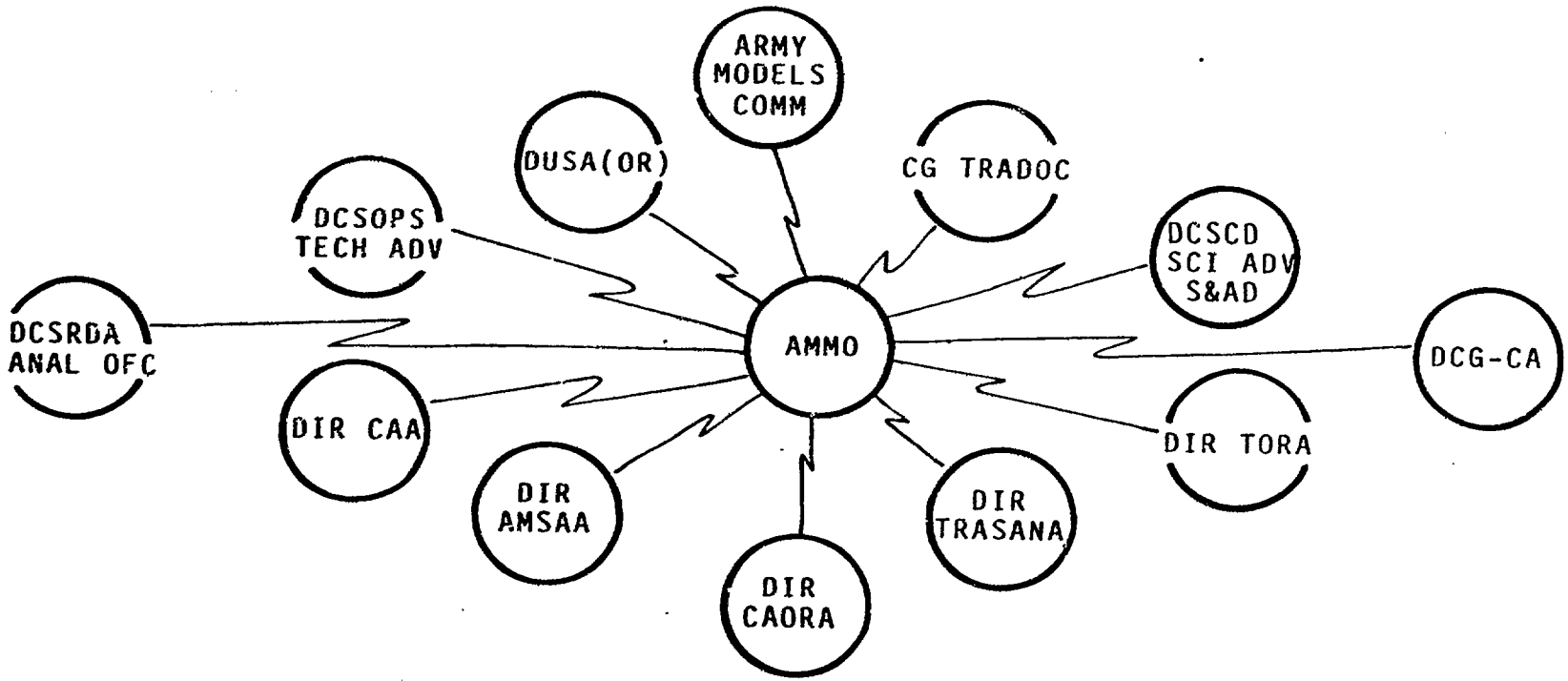
- AMMO SUBORDINATE TO DCG-CA WITHIN TRADOC
- YET RESPONSIBLE TO MANAGE AN ARMY PROGRAM
- ORGANIZATION ALIGNMENT CONSTRAINS EFFECTIVENESS

THE COORDINATION PROBLEM

- AMMO is faced with the difficult task of managing an Army program by coordination, not directive authority.

- It is difficult to manage an Army program effectively through coordination, consensus building, and committee oversight.

THE COORDINATION PROBLEM



- AMMO 06 CHIEF COORDINATES WITH MINIMUM OF 13 INDIVIDUALS -- MAJORITY ARE SES & G.O.
- RECEIVES ADVICE FROM ALL PLUS GUIDANCE FROM THE ARMY MODELS COMMITTEE AND A FEW OF THE INDIVIDUALS
- AMMO SEEKS CONSENSUS

WHAT'S NEEDED NOW

- The Army Models Committee is too large to provide effective oversight to AMIP and AMMO. A small executive committee of selected key individuals is considered more appropriate. Members should be limited to the DUSA(OR), DCSOPS Technical Advisor, DCSRDA Analysis Officer, and the directors of AMSAA, CAA, and TORA.

- At its inception the program primarily required leadership and managment skills to bring together disparate Army activities in a common endeavor. This has been accomplished and close working relationships have been established. The challenges of the future evolution of the hierarchy are more technical in nature and require leadership and guidance of a different kind.

- Clear guidance and specific roles for all players are essential if AMMO is to be effective.

RAA
EX

WHAT'S NEEDED NOW

- A LESS COMPLEX ALIGNMENT
- A SMALL EXECUTIVE MODEL COMMITTEE
- AN EXECUTIVE AGENT FOCUSED ON TECHNICAL GUIDANCE & LEADERSHIP
- AMMO DIRECTLY UNDER AND IN CLOSE PROXIMITY TO EXECUTIVE AGENT
- DEFINE SPECIFIC ROLES FOR AMMO AND ANALYTICAL AGENCIES

AMMO

- A number of alternative alignments were considered ranging from retaining the current alignment to placing AMMO under HQDA. No alternative alignment considered satisfied all of the needs identified on the previous chart. There is no ideal solution.

- The current organizational alignment limits the effectiveness of AMMO. Making AMMO a HQDA FOA under the DCSOPS appears to offer an opportunity to simplify the organizational alignment, provide needed technical guidance and leadership, and increase AMMO effectiveness.

- AMMO can contribute to AMIP implementation, but only if it is assigned roles within its capability to perform. Candidate roles are listed. The executive agent together with the executive committee must define specific roles and establish priorities for the AMMO.

FINDINGS

- AN ALIGNMENT THAT WILL PERMIT AMMO TO BE MORE EFFECTIVE IS NEEDED
- THERE ARE IMPCRTANT ROLES THAT AMMO CAN PERFORM
  - COORDINATE ACTIVITIES
  - MANAGE AMIP FUNDS
  - EXPEDITE CONTRACTS
  - GUIDE RESEARCH PROGRAM
  - ASSIST TOP DOWN DEVELOPMENT OF SCENARIOS
  - WORK LINKAGE ISSUES
  - DEVELOP FUTURE ORIENTATION -- DEVELOP APPROACH TO NEXT GENERATION OF AMIP MODELS
- SPECIFIC ROLES AND PRICRITIES MUST BE DEFINED
- A SMALL EXECUTIVE COMMITTEE FOR OVERSIGHT WOULD BE MORE EFFECTIVE THAN THE ARMY MODELS COMMITTEE

AMIP RECOMMENDATIONS

- The AMIP concept is sound and promises significant future benefit to the Army. Implementation of the program should continue.

- Everything that needs to be done cannot be accomplished simultaneously. A realistic, attainable program must be developed by the Army Models Committee, priorities established, and guidance for implementation provided. Since the Army's analysis community is fully committed, trade-offs must be identified.

RAA EX

AMIP RECOMMENDATIONS

- CONTINUE TO IMPLEMENT AMIP
- ARMY MODELS COMMITTEE ESTABLISH PRIORITIES AND PROVIDE GUIDANCE CONCERNING DEVELOPMENT OF:
  - FUTURE DEVELOPMENT OF THE HIERARCHY
  - TECHNICAL INTERFACES & LIBRARY ENTRIES
  - FUNCTIONAL MODELS
  - ANALYTICAL MODELS
  - TRAINING MODELS
  - DATA BASES
  - LOGISTICS REPRESENTATION
- HQDA CONTINUE TO PROVIDE RESOURCES TO SUPPORT DEVELOPMENT PRIORITIES ESTABLISHED BY THE ARMY MODELS COMMITTEE

AMMO RECOMMENDATIONS

- Making AMMO a HQDA FOA will simplify the organizational alignment and enhance AMMO capability to coordinate AMIP initiatives.

- Specific roles and priorities for AMMO must be defined. AMMO focus should be on completing development of current models, expanding the hierarchy to encompass training and operations models, functional models interface, and development of the next generation hierarchy.

- Revised missions will require review and possible adjustment to AMMO staffing.

- The Army Models Committee is too large to provide effective oversight to AMMO and AMIP. A small executive committee comprised of the DUSA(OR), DCSOPS Technical Director, DCSRDA Analysis Officer and the directors of AMSAA, CAA, and TORA should be established to provide oversight.

RAA
EX

AMMO RECOMMENDATIONS

- AMMO SHOULD BE MADE A HQDA FOA REPORTING TO THE DCSOPS. (DELEGATION TO DCSOPS TECHNICAL ADVISOR IS SUGGESTED)

- AMMO SHOULD FOCUS ON COMPLETION OF DEVELOPMENT OF CURRENT MODELS, EXPANSION OF HIERARCHY TO ENCOMPASS MODELS FOR TRAINING AND OPERATIONS, INTERFACE FUNCTIONAL MODELS, AND DEVELOPMENT OF FUTURE VERSIONS OF THE HIERARCHY.

- AMMO SHOULD BE CO-LOCATED WITH CAA FOR ADMINISTRATIVE AND LOGISTICAL SUPPORT.

- AMMO STAFFING SHOULD BE REVIEWED AND CHANGED AS NECESSARY TO SUPPORT THE REVISED MISSIONS.

- HQDA SHOULD ASSIGN OVERSIGHT RESPONSIBILITY TO A SMALL EXECUTIVE COMMITTEE IN PLACE OF THE EXISTING ARMY MODELS COMMITTEE.

CHAPTER 9

INTER-RELATIONSHIP OF ANALYSIS AND TESTING

TASK DESCRIPTION

- ASSIGNED TASK - Examine two areas:

  - Analysis Support of Testing -Assess the adequacy of policy, procedures, and programs for providing support to the conduct of and the evaluation of the results of development and operational testing.

  - Testing Support of Analysis - Assess the adequacy of policies, procedures, and programs for developing test and experimental data upon which to base Army analyses.

- CONCEPTUAL TEST/ANALYSIS INTERFACE

  - Planning Interface - During development of models (or other simulations, gaming or analysis) and test and evaluation planning, the planners can interact to assure a mutual interface during running of the models and tests.

  - Support of Test Design - The model (or other analysis technique) is exercised using the best data available (often consisting of theoretical or predicted values at first) to identify the factors most critical to the outcomes, thus identifying crucial test conditions to be emphasized in the test design, and making a savings in the number of tests runs needed.

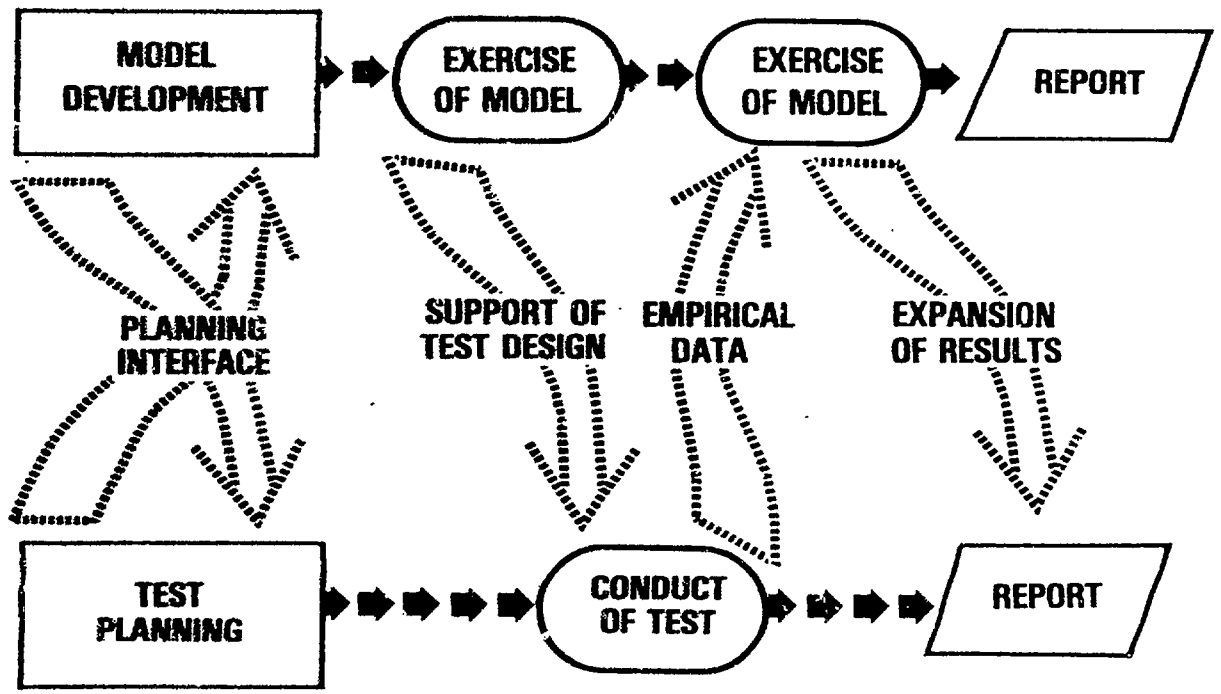
  - Empirical Data - The data produced by the testing is aimed directly at the most critical factors identified by the modeling and in the form most useful to the model.

  - Expansion of Results - The use of empirical data in the model not only aids the analysis, but also allows various excursions in the analysis to explore the limits of conditions not feasible to fully test, enriching both the analysis report and the test and evaluation report.

- TEST/ANALYSIS INTERFACE:
  The benefits of analysis support of testing and testing support of analysis can be realized by providing for a mutually supportive interface.

TASK DESCRIPTION

Analysis Support of Testing + Test Support of Analysis = Test/Analysis Interface



PROBLEM STATEMENT

- The Army conducts hundreds of tests per year, costing tens of millions of dollars:

Numbers of tests (Costs in millions of dollars)

TYPE TEST	FISCAL YEAR 80	81	82	83	84(Est)	TOTALS
OPERATIONAL TESTS (OT's)						
MAJOR & SELECTED NONMAJOR	9(11.5)	8(10.2)	7(15.7)	12(33.4)	9(27.7)	45(98.5)
OTHER NONMAJOR	32(2.3)	61(3.6)	45(2.6)	42(3.1)	45(2.5)	225(14.1)
FORCE DEVELOPMENT T&E	16(4.1)	28(8.9)	33(7.5)	35(11.1)	22(8.0)	134(39.6)
CONCEPTS EVAL PROG TESTS	34(.5)	41(.9)	21(.7)	29(1.3)	35(2.8)	160(6.2)
JOINT TESTS	6(2.8)	6(1.5)	4(1.1)	3(1.7)	4(7.7)	23(14.8)
DEVELOPMENT TESTS	184(30.2)	149(30.0)	190(24.7)	90(23.5)	103(21.0)	716(129.4)
TOTALS	281(51.4)	293(55.1)	300(52.3)	211(74.1)	218(69.7)	1303(302.6)

- All major Development Tests, and about 80% of the nonmajor, are conducted for purposes which include interaction with system models and simulations.

- In the sample year of FY 83, the 139 User Tests were conducted for five types of purposes and, of these, only 4% included in their purpose, support of analysis:

	MATERIEL ACQUISTION DECISION	MATERIEL REQUIREMENT DEVELOPMENT	MATERIEL FIELDING OR CORRECTIONS	COMBAT CONCEPTS TRAINING	PROVIDE DATA TO MODELS	TOTALS
OT's	30 (22%)	2 (1%)	22 (15%)	0	0	54 (38%)
FDTE	3 (2%)	3 (2%)	4 (3%)	21 (15%)	4 (3%)	35 (25%)
CEP Tests	8 (6%)	8 (6%)	3 (2%)	9 (6%)	1 (1%)	29 (21%)
Joint Tests	0	0	1 (1%)	1 (1%)	1 (1%)	3 (2%)
ADEA Tests	4 (3%)	5 (4%)	0	9 (6%)	0	18 (13%)
TOTALS	45 (33%)	18 (13%)	30 (21%)	40 (29%)	6 (4%)	139 (100%)

STATEMENT OF PROBLEM

Although the Army conducts hundreds of tests per year costing tens of millions of dollars, and most Development Tests interact with analyses, very few User Tests provide for such interaction.

DISCUSSION

- Examination of the purpose statements of the User Tests conducted in FY 83 shows that their purposes may be categorized into five general reasons, and each test assigned by type and purpose:

CATEGORIZATION OF FY 83 USER TESTS BY PURPOSE

	MATERIEL ACQUISITION DECISION	MATERIEL REQUIREMENT DEVELOPMENT	MATERIEL FIELDING OR CORRECTIONS	COMBAT DEVELOPMENTS OR TRAINING	PROVIDE DATA TO ANALYSIS	SUMS
MAJOR OPN'L TESTS	OT280A, OT403, OT516 OT647, OT752, OT901A OTN917 7	0	OT064, OT593 OT621, OT845 OT972A 5	0	0	12
NON MAJOR OPN'L TESTS	OTN194, OTN412, OTN563 OTN592, OTN677, OTN691 OTN695, OTN709A, OTN747A OTN753, OTN756, OTN782 OTN785, OTN787, OTN834 OTN854, OTN865, OTN891 OTN897, OTN974, OTN984 OTN1029, OTN1032 23	OTN903, OTN920 2	OTN345, OTN626 OTN684, OTN701 OTN704, OTN746 OTN760, OTN803 OTN873, OTN889 OTN895, OTN982 OTN1014, OTN1025 OTN1027 17	0	0	42
FORCE DEV TESTS OR EXPT'	F0255, F0267, F0281 F0281 3	FT469, F0264 F0286 3	F0278, F0289 F0293, F0313 4	FT385, FT458, FT460 FT463A, FT465A, FT470 FC113, FC137, F0152 F0153, FP154, F0155 F0206, F0208, F0214A F0218A, F0236, F0253 F0261, F0275A, F0315 21	FC139 F0140 F0309 F0310 4	35
CEP TESTS	CEP90, CEP97, CEP98 CEP99, CEP117, CEP124 CEP153, CEP155 8	CEP89, CEP91 CEP109, CEP110 CEP112, CEP118 CEP123, CEP130 8	CEP103, CEP113 CEP121 3	CEP92, CEP93, CEP100 CEP106, CEP114, CEP115 CEP120, CEP126, CEP154 9	CEP107 1	29
JOINT TESTS	0	0	JT038 1	JT036B 1	JT023 1	3
ADEA HTLD	TMD50, TMD53, TMD60 TMD66 4	TMD11, TMD31 TMD38, TMD41 TMD51 5	0	TMD23, TMD26, TMD33 TMD34, TMD36, TMD37 TMD39, TMD54, TMD72 9	0	18
TOTALS	45	18	30	40	6	139

- Six User Tests were conducted specifically to support analysis:
  - FC139, Main Tank Gun vs Helicopters, provided data to AMSAA vulnerability modeling
  - FC140, Project Thermal Pinpoint, provided IR and visual detection data to models
  - FO's 309 and 310 provided data to studies concerning operations in chemical terrain
  - JT 023, DVAL Cubic, obtained jamming data for item-level simulation and methodology
  - CEP, Military Wheeled Wrecker, was run to validate a study by field results

Of the 139 User Tests conducted in the example year FY 83, six included support of analysis in their purpose statements (Numbers 64, 65, 86, 87, 90, and 122 below).

NUMBER	NAME OF TEST	STATED TEST PURPOSE	
OT 044	PATRIOT FOE	Fielding, correction	1
OT 280A	SINCGARS MGT	ASARC, Fielding	2
OT 403	MLRS OT III	DA IPR	3
OT 516	BSCS III IOTE	DSARC production decision	4
OT 592	TACJAM FOE	Logistics, performance	5
OT 621	PEASANT II OT III	Effectiveness, suitability	6
OT 647	FIST OT II	DEVA IPR	7
OT 762	SHORAD IOTE	Production decision	8
OT 845	AN/TSC-39 FOE	Corrections	9
OT 901A	LAV-25 OT II	Production rates decision	10
OT 917	SCOTT LOT	ASARC production decision	11
OT 972A	SGT YORK OT/DT EPUT	Performance, corrections	12
OT#194	Airdrop Platform OT II	Acquisition, concepts	13
OT#345	Sp Ops Burst Comm I FOE	Fielding	14
OT#412	PIDS OT II	DEVA IPR	15
OT#563	Airdrop Control Exit OT I	DEVA IPR	16
OT#592	Transp Mode Eval OT I	LOA, procurement	17
OT#676	TCAC(B) IE	Document capabilities	18
OT#677	[EETS OT II	Materiel requirements	19
OT#684	Satellite Monitor FOE	Verify corrections	20
OT#691	Metro data system OT II	DEVA IPR	21
OT#695	Proj 155mm XM825 OT II	DEVA IPR	22
OT#701	LACV-30 FOE	Verify corrections	23
OT#704B	Spec Comm Sys's FOE	Fielding release	24
OT#709A	Recoilless, Portable OT IA	Acquisition decision	25
OT#746	GSC-39 SINT	Fielding, mod's	26
OT#747A	ISU Shelter OT II	IPR production decision	27
OT#753	MILSAT Master Sheet OT II	IPR	28
OT#756	ANTPASS OT II	DEVA IPR	29
OT#760	ATE MSM-105(V)1 OT III	Type classification	30
OT#782	Simulator, Chem IMRI OTII	Acquisition decision	31
OT#785	Radiac VDR-2 OT I	DTAL IPR	32
OT#787	IMIS Decontamination OT I	DTAL IPR	33
OT#803	MATE Beacon OT/DT II	Fielding	34
OT#834	ALQ-151 in YEM-60A FII	Production decision IPR	35
OT#841	Air Traffic TSM-7A OTOT	Logistics & training	36
OT#854	ATMS OT I	Concepts, materiel	37
OT#865	Chaparral Flte OT IIA	Program decision	38
OT#888	Portable Unit, OT IIA	Suitability	39
OT#873	Tracked Comm M50-1013A PIT	Fielding decision	40
OT#889	MI Cav Cartographic OT II	Type classification	41
OT#891	Petroleum Hoseline OT I	DEVAL IPR	42
OT#895	BSE/CCSS Opt Upgrade OTOT	Org, logistic, training	43
OT#897	FIST CMD OT II	DEVA IPR	44
OT#903	Antiarmor Grenade OT II	Material development	45
OT#920	Intercept, UH-60A OT II	Materiel needs, training	46
OT#924	Intog Insrt Nav Sys OT II	IPR procurement decision	47
OT#982	MPI-RAM/EUCOM FOE	Suitability, training	48
OT#984	Driver's Thermal OT I	DEVA IPR (Candidates)	49
OT#1010	Night Chaparral OT IIA	Correctimat	50
OT#1025	CVCCS Gloves FOE	Suitability, effectiveness	51
OT#1027	CVCCS Mask OT IIA	Suitability, effectiveness	52
OT#1029	DA510 OT II	Production decision	53
OT#1032	Improv Nap Facility OT II	IPR production decision	54
FT 385	Spec Proj Activities FOTE	Cbt Developments	55
FT 458	Combat Feeding Sys FOTE	Concepts	56
FT 480	BFV (DC-FOTE	Cbt developments	57
FT 483A	Npns Crew Trng-COHORS FOTE	Compare trng strategies	58
FT 485A	NCS FOTE	Develop concepts	59
FT 489	JINTACCS Interop OED	Mat. requirements, training	60
FT 670	New Meantag Sys FOTE	Evaluate personnel concept	61
FC 113	APACHE (Chem) FOTE	Concepts	62
FC 137	CAWS 1 FOTE	Combat development	63
FC 139	Mate Tank Gun vs Mate FOTE	Data to AMSAA models	64
FC 140	Thermal Pinpoint FOTE	Data to models	65
FB 151	External Air Transp FOTE	Rigging procedures	66
FB 152	Internal Air Transp FOTE	Loading procedures	67
FB 154	Low Alt Para Entr FOTE	Drop kit & procedures	68
FB 155	Standard Airdrop FOTE	Standard kit & procedures	69
FB 206	Interim Facsimile FOTE	OEO Concepts and MOE	70

NUMBER	NAME OF TEST	STATED PURPOSE OF TEST	
FO 208	FIST DMD FOTE	O&O Concepts for OT II	71
FO 214A	SEMA/ASE Ph II FOTE	Concepts	72
FO 218A	PAPRICCA FOTE	Parachute (chem) proc's	73
FO 236	APCEL FOTE	Parachute (load) proc's	74
FO 253	MLRS FOTE	Organization for OT III	75
FO 255	Recov Veh M578 FOTE	IPR	76
FO 261	COHORT FOTE	Organizational concept	77
FO 264	BFVS-AD FOTE	Materiel requirements	78
FO 267	Tact Water Distr FOTE	Materiel acquisition IPR	79
FO 275A	MASUS FDJTF IOC-FOTE	O&O Concepts	80
FO 278	Abn/Airmob Egr IOC-FOTE	Certification of equipment	81
FO 281	Pipeline Outfit FOTE	DVAL IPR	82
FO 286	MKMNV Grenade Gun FOTE	Materiel requirements	83
FO 289	CH-47D TDME IOC-FOTE	Materiel, trng, concepts	84
FO 293	FAASV XM992 FOTE	Materiel mods & req's	85
FO 309	A/C Ops Chem OT/FOTE	Provide data with study	86
FO 310	Maint Ops Chem OT/FOTE	Provide data with study	87
FO 313	RF4S-AD FOE	Materiel req's, training	88
FO 315	CEWI FOTE	Org concepts comparison	89
JT 023	DVAL CUBIC JT	Test methodology	90
JT 036B	JLOTS II Ph II JT	Concepts	91
JT 038	JINTACCS OED	Functional segments	92
TMD 11	MTLD MP Co IT	Org, materiel requirements	93
TMD 23	MTLD Fwd Spt Bn IT	O&O Concepts	94
TMD 26	MTLD Lt Atk Bn IT	O&O Concepts	95
TMD 31	Digital Comm IT	Materiel requirements	96
TMD 33	Extended Range Comm IT	O&O Concepts	97
TMD 34	Mobile Asit Gun Bn IT	O&O Concepts	98
TMD 36	Unit Level NBC IT	O&O Concepts, mat. req's	99
TMD 37	MTLD Pers Sys IT	Org	100
TMD 38	Lt Air Cav Troop IT	O&O Concepts, mat. req's	101
TMD 39	MI Bn Fwd Spt Co IT	Org	102
TMD 41	MI Bn Transpack Mount IT	Mat., pers. req's	103
TMD 50	Env Cold Weather CS IT	Select (four candidates)	104
TMD 51	Improv Fighting Load IT	Materiel Requirements	105
TMD 53	Sleep System IT	Select from candidates	106
TMD 54	Phys Fit Requirements IT	Procedures	107
TMD 60	MDCES IT	Select from candidates	108
TMD 66	Mission Existence Load IT	Select from candidates	109
TMD 72	MTLD MI Abn Surv Ph I IT	O&O Concepts	110
CEP 89	Grnd Elem Rpt Sys CEP	Materiel concept	111
CEP 90	Sp Ops Infil/Exfil CEP	Materiel acquisition	112
CEP 91	VHF ECM CEP	Materiel concept	113
CEP 92	Tact EwSIGINT Trainer CEP	Training device dev	114
CEP 93	Cdr's Thermal Sight CEP	Training device dev	115
CEP 97	Test Input Device CEP	Materiel eval	116
CEP 98	Combat Boot Walk-Off CEP	Materiel eval	117
CEP 99	Sniper Night Sight CEP	Materiel eval	118
CEP100	Interactive Video CEP	Training concept	119
CEP103	TOW 2 on BFV CEP	Materiel utility	120
CEP106	Sim Area Wpns Effects CEP	Training device eval	121
CEP107	M11 Wheeled Wrecker CEP	Data to validate study	122
CEP109	Dual Purp Rifle Sling CEP	Materiel requirement	123
CEP110	Packet Radio Expt	Materiel concept eval	124
CEP112	Radio Requirement CSS CEP	Materiel requirements	125
CEP113	Narrow Wheels M198 CEP	Materiel development	126
CEP114	Soldier Data Card CEP	Concept eval	127
CEP115	Variable Format Device CEP	Training device eval	128
CEP117	Comm Switches CEP	Materiel eval	129
CEP118	CFV Scout Vision CEP	Materiel requirements	130
CEP120	Secure Video Link CEP	O&O Concepts	131
CEP121	310 Bn Auto C2 Sys CEP	Materiel utility	132
CEP123	Automated CEOI Sys CEP	Materiel concept	133
CEP124	Ionization Dust Detect CEP	Materiel evaluation	134
CEP176	Gunnery CEP	Procedures eval	135
CEP130	Veh Nav Aids Sys CEP	Materiel potential	136
CEP153	Mat Mon Battle Dress CEP	Compare two candidates	137
CEP154	Closed Loop Training CEP	Training concept eval	138
CEP155	Directed Ener Filter Test	Materiel eval	139

14 Aug 84

Test/Analysis Interface (1,j)

FINDINGS

- The materiel development process, including the development testers and evaluators currently has an integrated approach to testing/analysis:
  - System engineering includes mathematical modeling at the system level and uses empirical data from laboratory testing, contractor testing, and government Development Test and Evaluation (DT&E).
  - Performance modeling includes effects of environment, lethality and vulnerability, reliability growth, and other simulations. It provides assistance to development test design and also uses the results of laboratory experiments, DT&E, Initial Production Testing(IPT), post-production Sample Data Collection (SDC), and other empirical data sources to expand analyses.

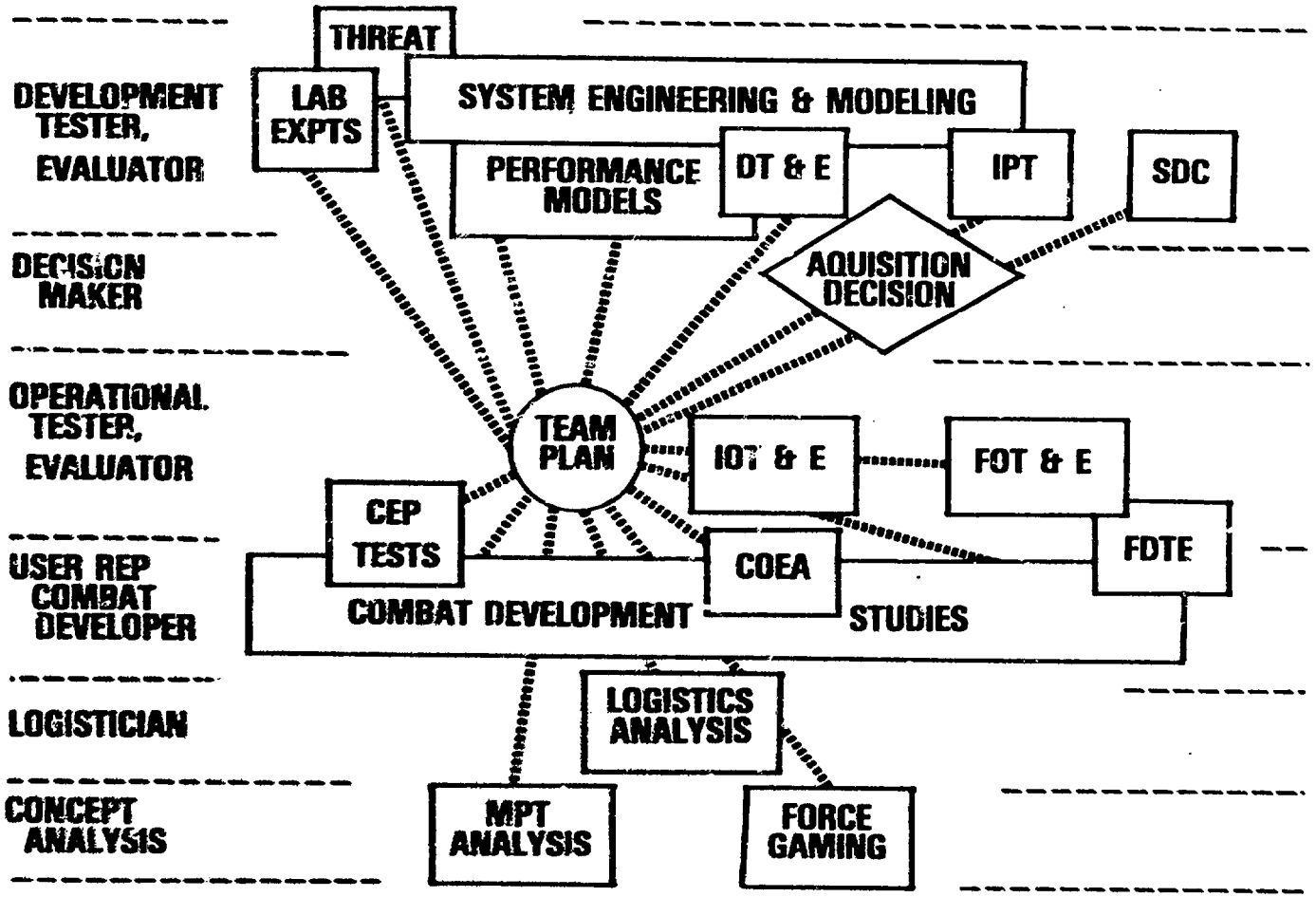
- Analytic studies and testing done by other organizations:
  - Combat development studies:
    - Include modeling in support of Cost and Operational Effectiveness, development of doctrine and organization, and setting of materiel requirements.
    - Can be integrated with user testing such as Concept Evaluation Program (CEP) and other force development tests and experiments, and with Initial Operational Test and Evaluation, Follow-on Operational Test and Evaluation, and other empirical data sources.
  - Other major analyses:
    - Include those for Manpower, Personnel, and Training (MPT), logistics, and force planning.
    - Could be integrated with (or at least made complementary to) combat development studies, and use the results of User Testing.

- The operational test and evaluation process currently has in progress a pilot program to improve the usefulness of operational test and evaluation by trying a Continuous and Comprehensive Evaluation approach, similar to that of the development community:
  - The integrating planning document is the Test, Evaluation, Analysis, and Modeling (TEAM) Plan which is meant to coordinate (but not task) the related testing and analytic efforts of the Army's materiel acquisition community.
  - The TEAM Plan, and its associated working group, are currently under trial and modifications will be made as necessary.
  - The TEAM Plan occupies a central position in the materiel acquisition process, in keeping with its original purpose.

- The TEAM Plan and its Working Group provide a mechanism for planning the interface of testing and analysis in the materiel acquisition process.

FINDINGS

The Test, Evaluation, Analysis,and Modeling (TEAM) Plan provides a centralized mechanism for the planning interaction for Test/Analysis interface in the materiel acquistion process.



FINDINGS (CONTINUED)

- Mission Area Analysis:
  - Major study done in each mission area
  - Specific analyses have been done at the functional area level, and integrated at the integrating centers level (But another approach is developing MAA's from the "top-down")
  - Requires both analyses (models, games, and simulations) and also empirical data (tests, experiments, and exercises)

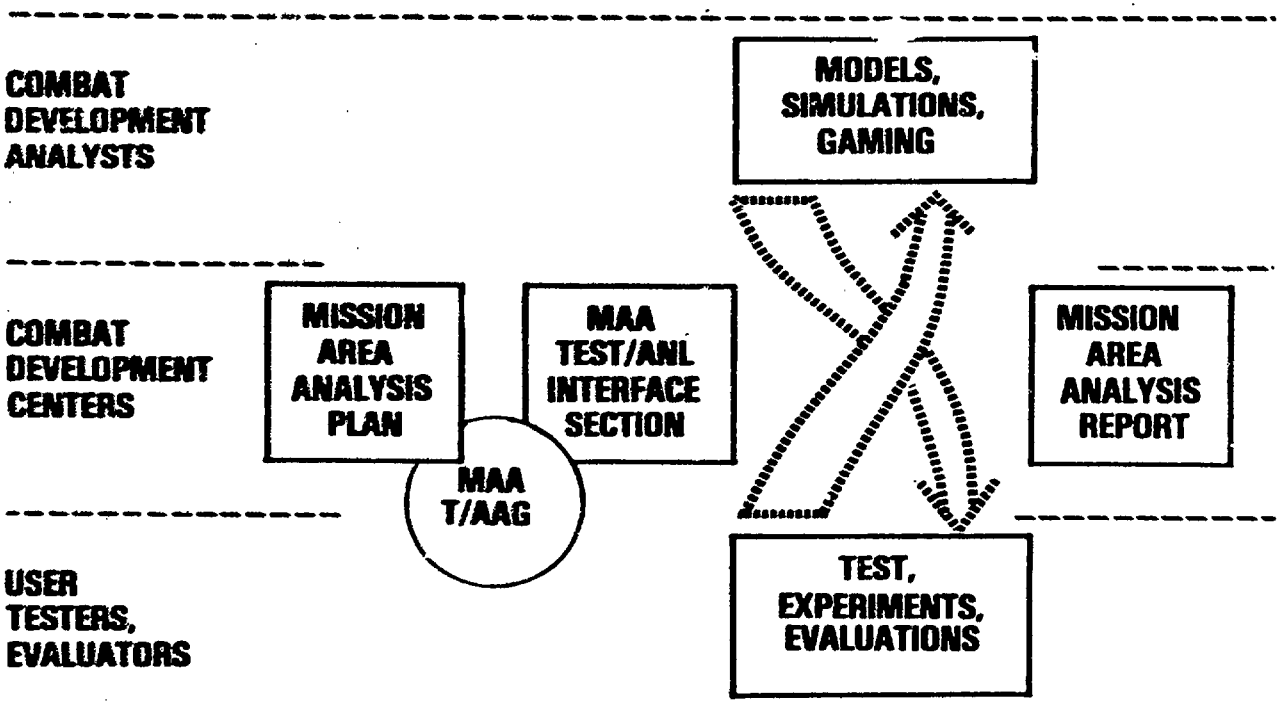
- Interface of tests/analyses not provided for in mission area analysis process
  - Planning for models, simulations, games, and other analyses follows the normal studies and analyses planning process, not specifically related to MAA
  - Planning for tests and experiments for the mission area analysis process is currently being tried in a new Mission Area Analysis Test Advisory Group (MAATAG) forum, and initial results look promising
  - No provision for interface of tests and analyses

- Expanded MAATAG is potential interface forum
  - Current MAATAG could be expanded to Test/Analysis Advisory Group (MAAT/AAG)
  - Senior members of both the Test community and the Analysis community in TRADOC desire test/analysis interface, but are sceptical of the "MAAT/AAG" as a mechanism because of the "bottom-up" approach now used
  - Many of the planned test/analysis interfaces to date (such as Project Thermal Pinpoint) have resulted from the Knowledgeable Users Group(KUG), and that forum can continue to provide guidance to test/analysis interface
  - Use of the "MAAT/AAG" approach has potential, but would have to be tried in practice
  - Restructuring the MAA process to a "top down" approach would improve the prospects of the MAATAG or some other part of the process serving as the mechanism for planning test/analysis interaction in the combat development process

- The RAAEX Task Force is limited to identifying the possibility of a MAAT/AAG in terms of its <u>potential</u>

FINDINGS (CONTINUED)

An expansion of the TRADOC Mission Area Analysis Test Advisory Group (MAATAG) into a Test/Analysis Advisory Group (MAAT/AAG) provides a potential mechanism for the planning interaction for Test/Analysis interface in the combat development/force development process.



RECOMMENDATIONS

- Designate responsibility to OTEA for planning and coordinating integration of testing, evaluation, analysis, and modeling in the materiel acquisition process:

  - Utilize the Test, Evaluation, Analysis, and Modeling (TEAM) Plan and its associated working group as the central planning mechanism

  - Initiate regular reporting to DA concerning status of TEAM planning

  - Modify AR 70-10 (Materiel Acquistion Testing) and AR 71-3 (User Testing) to accomplish designation of responsibility

- Designate responsibility to TRADOC for planning and coordinating integration of testing, evaluation, analysis, and modeling in the combat developments process:

  - Restructure the Mission Area Analysis (MAA) process to a "top-down" approach to development, defining missions strategically and tactically instead of functionally

  - Examine the feasibility of utilizing an expanded TRADOC Mission Area Analysis Test Advisory Group (MAATAG) as the central planning mechanism for test/analysis interface

  - Require a section of the MAATAG report or other suitable document to state the provision for integration of testing and analysis

  - Modify AR 5-5 (Studies and Analyses) and AR 71-3 (User Testing) to accomplish designation of responsibility

RECOMMENDATIONS

TEST/ANALYSIS INTERFACE FOR MATERIEL ACQUISITION

- Designate responsibility to OTEA for planning and coordinating integration of testing, evaluation, analysis, and modeling in the materiel acquistion process.

TEST/ANALYSIS INTERFACE FOR COMBAT DEVELOPMENTS

- Designate responsibility to TRADOC for planning and coordinating integration of testing, evaluation, analysis, and modeling in the combat developments process.

CHAPTER 10

INTER-RELATIONSHIP

OF

INTELLIGENCE AND ANALYSIS

PROBLEM STATEMENT

Important to quality analysis is the consideration and representation of intelligence data within the context of given threats. This chapter explores how intelligence support is being provided to the analytical community and how operations research support is provided to the intelligence community.

ADEQUACY OF INTELLIGENCE SUPPORT TO THE ANALYTIC COMMUNITY AND THE ADEQUACY OF OPERATIONS RESEARCH SUPPORT TO INTELLIGENCE ANALYSIS

Findings were derived from the interviews, briefings and study survey. Information to support the findings is provided in the briefing text or is retained in the RAAEX archives. Emphasis was placed on the derivation of findings that relate to the Army's hierarchy of models, related functional area models, item level performance models, analyses and studies, plus intelligence analyses, but some effort was given to consideration of study efforts and analyses other than those supported directly by the model hierarchy. The latter occurred during general discussion of the issues and questions with the several people who were interviewed and during study report surveys. The persons interviewed were most of the same interviewed for the analysis/intelligence interface listed In Chapter 5 at page 5-5. The total list of questions was not reviewed by all participants, but the relevant issues were discussed. Two responders that provided examples commented that the feedback process is slow. One responder stated that, within TRADOC, there is no direct interaction with the intelligence community because all threat information must be approved by HQ TRADOC.

EXAMPLES OF ANALYSES AND STUDIES CITED AS BENEFITING FROM FEEDBACK INTERACTION WITH THE INTELLIGENCE COMMUNITY:

- TEST SUPPORT FOR JTIDS CLASS II TERMINALS
- THREAT SUPPORT FOR MSE/SINCGARS
- AN/GRC-102 VULNERABILITY ANALYSIS
- HELIBORNE JAMMER ANALYSIS
- CHANGES TO SCORES EUROPE V THREAT ARTILLERY STRUCTURE
- CLOSE COMBAT HEAVY MISSION AREA ANALYSIS

In an attempt to to reveal the effort that is placed on the evaluation of Red materiel performance and tactics in the study community, several questions were included in the RAAEX request for data from the FY 1983 analytical work program:

- How many TSM (technical staff months) were expended evaluating Red tactics and materiel (example: in evaluating M1 tank performance what part of total analysis/study effort evaluated Red tank/ATGM/ARTY/TAC)?

ANSWER: 1224. This is believed to be a significant under-estimate. Forty percent of study activities responded zero or "N/A."

- How frequently (in percent) were the results of your analysis of Red tactics and materiel fed back directly to the intelligence community? Identify how feedback was accomplished.

ANSWER: Range of zero to 100 percent. Methods cited were SAG meetings, direct discussion with intelligence community and correspondence.

- How frequently (in percent) did your feedback cause a new assessment of threat capabilities by the intelligence community?

ANSWER: Range of zero to 33 percent. Some responders were unable to make an estimate, others responded "N/A."

- How frequently (in percent) were the results of your analysis of Red tactics and materiel incorporated (as modified as a result of feedback interaction with the intelligence community) in on-going or later analyses? Provide specific examples (tactics and materiel). Comment on adequacy of feeback methods.

ANSWER: Sixteen of 37 responded to this question. Five answered 100 percent, six answered zero, one 50 percent, one 10 percent, one "N/A," and two could not make an estimate.

METHODOLOGY (CONTINUED)

RESPONSES TO QUESTIONNAIRE:

- 40% OF STUDY ACTIVITIES DO NO EVALUATION OF RED TACTICS AND MATERIEL
- WIDE VARIATION IN LEVEL OF FEEDBACK TO INTELLIGENCE COMMUNITY
- IMPACT OF FEEDBACK ON NEW THREAT ASSESSMENTS OR LATER STUDIES VERY SLIGHT

ISSUES

- Application of scientific methods to intelligence analysis
  - Use of analysis (operations research) in the intelligence community
  - TRADOC and AMC inputs to the intelligence community
    - ...Evaluation of tactics
    - ...Estimates of materiel performance
  - Methodology used in intelligence projections
  - Adequacy of feedback
    - ...To TRADOC and AMC
    - ...To Army intelligence
- Operations research community effort
  - % effort in TRADOC } That evaluates RED
  - % effort in AMC } tactics and materiel
- Background of people in intelligence organizations
  - ORSA Training: ACSI, ITAC, FSTC, MIA
  - Combat arms (military)
  - Understanding of analytical models
- Utility of feedback mechanisms
  - Procedures that could improve
    - ...Reinforcement of responsibilities
    - ...Threat sub-SAG's
    - ...Periodic commander meetings
    - ...Analyst exchange
    - ...Red teams/Blue teams
    - ...Participation in studies
    - ...Special training in each methodology
  - Timeliness of feedback of reactive threats
  - Influence of feedback

ISSUES

- APPLICATION OF SCIENTIFIC METHODS TO INTELLIGENCE ANALYSIS
- OPERATIONS RESEARCH COMMUNITY EFFORT
- BACKGROUND OF PEOPLE IN INTELLIGENCE ORGANIZATIONS
- UTILITY OF FEEDBACK MECHANISMS

ISSUES (CONTINUED)

- Need for and impact of project ons
  - Have they been right?
  - Impact on development decisions?
  - Are we asking the right questions at the right time?
  - Cost of significant change in THREAT
    ...Decision milestones?
    ...Development $ clock?
    ...Technical & tactical alternatives?
- Need for intelligence training in ORSA/Tactics
  - Would ORSA training improve the first call?
  - Would combat arms experience enhance the evaluation of Red options?
- Adequacy of threat materiel and tactics representation in models & scenarios
  - Model sufficiency/flexibility
  - Hierarchy sufficiency/flexibility
  - Value and pitfalls of use of generic threats and impact of evaluation of Blue and Red options
  - Adequacy of ORSA community feedback in time to influence on-going and future studies
  - Is enough effort being made to sanitize information?

ISSUES (CONTINUED)

- NEED FOR AND IMPACT OF PROJECTIONS
- NEED FOR INTELLIGENCE ANALYST TRAINING IN ORSA, TACTICS
- ADEQUACY OF THREAT MATERIEL AND TACTICS REPRESENTATION IN MODELS AND SCENARIOS

FINDINGS ... INTELLIGENCE AND OPERATIONS RESEARCH MUTUAL SUPPORT

Insights on Red tactics options and materiel performance that surface in systems analysis agencies/activities are rarely discussed with the intelligence community. The two communities have quite different perspectives. The word "ANALYSIS" does not mean the same thing. The intelligence community does not apply scientific methods to most of its intelligence analysis (some discipline is used in characterizing materiel performance). There is no formal requirement to communicate, and there appears to be a feeling of reluctance: study agencies feel they can do a better job of threat characterization than they get from ACSI. Recent initiatives by the ACSI and TRADOC have the potential to ameliorate this latter situation.

There are no special initiatives to develop and assess tactical/doctrinal solutions to MAA deficiencies. This orientation should start at the top Army leadership level.

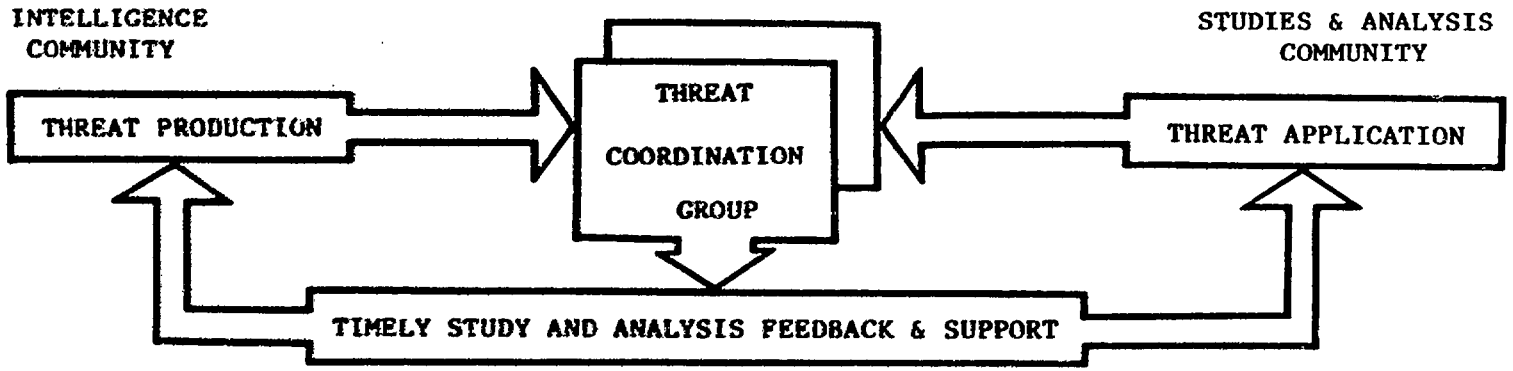
THREAT COORDINATION GROUPS, CHAIRED EITHER BY HQDA OR TRADOC, ARE NOW SERVING TO HELP INTEGRATE THE TWO COMMUNITY EFFORTS. IF THESE COORDINATION GROUPS GET AN EARLY START AND PROVIDE CONTINUING INTERACTION DURING THE PLANNING FOR AND CONDUCT OF STUDIES AND ANALYSES THE BENEFITS OF FEEDBACK AND EQUAL EMPHASIS ON ANALYSIS OF TACTICS AND MATERIEL MAY BE REALIZED.

FINDINGS (CONTINUED)

- Feedback is minimal, rarely at the right time
  - Two different worlds
  - Perceived reluctance, no formal requirement
  - Mechanism changing, maybe for the better
  - Several initiatives needed
  - Both parties at fault

- Analysis of tactics
  - Is not planned for,
  - Rarely done,
  - Happens by coincidence
  - Not often considered an option to new materiel or product improvement

FINDINGS (CONTINUED)



- SOVIET BATTLEFIELD DEVELOPMENT PLAN
- ARMY REGIONAL THREATS
- LAND ARMAMENTS AND MANPOWER MODEL
- THREAT SYSTEM DESCRIPTIONS
- THREAT ASSESSMENTS FOR MISSION AREAS
- SYSTEM THREAT ASSESSMENT REPORTS (PREPARED BY TRADOC)
- SCENARIO DEVELOPMENT
- REACTIVE THREATS
- REQUIREMENTS DOCUMENTS
- COMBAT DEVELOPMENT
- MATERIEL DEVELOPMENT

FINDINGS (CONTINUED)

Since the intelligence community has not developed capabilities to exploit mathematical and physical sciences and operations research methods in most of its analyses no logical basis was found for explaining the organization/force structure "why's" and the doctrine/tactics "hows" in relation to our evaluations of Red materiel performance.

FINDINGS ... MUTUAL SUPPORT

- INTELLIGENCE COMMUNITY USE OF SCIENTIFIC METHODS IS SPOTTY
  - MATERIEL PERFORMANCE ONLY, THEREFORE:
  - UNIT ORGANIZATION, QUANTITY, OPERATION ARE
    - NOT EVALUATED IN RELATION TO MATERIEL PERFORMANCE
    - NOT EXPLAINABLE IN RIGOROUS TERMS

FINDINGS (CONTINUED)

- SYSTEM-SPECIFIC THREAT "STUDIES" ARE
  - NOT RESPONSIVE ENOUGH TO THE RIGHT QUESTIONS
  - NOT USUALLY DEVELOPED IN A CONTEXT SATISFACTORY TO EITHER PARTY
  - NOT THOUGHT TO BE TIMELY
  - GOING TO IMPROVE IN TIMELINESS, ACCORDING TO ACSI
- INTELLIGENCE ANALYST TRAINING & EXPERIENCE LOOKS GOOD
- INTELLIGENCE ANALYST UNDERSTANDING OF MODELS VERY WEAK

We must improve the feedback process if we are to fully utilize the talents of the two communities. Most feedback that does occur happens due to personal friendships. Further, the qualifications of threat people in TRADOC schools needs to be examined. On a three-year tour the typical threat manager needs to spend much of the time in learning who the players are and how the process works. A known exception is the especially competent threat manager at CAC. One of the country's leading Sovietologists has stated that this task requires much more training and time than the typical member of a combat development department has. Since our threat analyses in studies have been very narrow, it is doubted that the threat managers really know what the Soviet approach to combat development is likely to be. Further, we spend not enough time in evaluating threats other than Soviet. The AMC FIO system concept provides full time intelligence analysts who interact with the total intelligence community and provide a study Red team. Several AMC FIO offices are staffed with excellent civilian intelligence analysts who have military and intelligence experience and provide good continuity to the study process. Concepts Analysis Agency (CAA) cited some recent examples of feedback interaction with ACSI and DIA that were especially useful. An ACSI threat analyst has learned the capabilities and limitations of a major CAA combat simulation and has developed the threat representation to suit, plus changes in the estimate of Red mobilization rate were made as a result of direct interaction. THE ACSI implementation of the TISO (Threat Integration Systems Officer) system to charge analysts with specific materiel system support responsibilities has the potential to ameliorate this problem, particularly when coupled with TRADOC initiatives to establish Threat Sub-SAG's for major studies. It should be noted, however, that unless both of these initiatives are pursued with vigor at the onset of study planning their impact on this problem may be minimal. Present staffing is unlikely to provide enough feedback opportunity.

FINDINGS (CONTINUED)

- EXISTING FEEDBACK PROCESS IS NOT GOOD ENOUGH
  - BLUE AND RED ANALYSTS ALMOST NEVER WORK TOGETHER
  - QUALIFICATIONS OF THREAT PEOPLE IN TRADOC SCHOOL SUSPECT
  - INFLUENCE OF RED ANALYSTS $\neq$ INFLUENCE OF BLUE ANALYSTS
  - REAL KNOWLEDGE OF SOVIET TENDENCIES QUESTIONABLE
  - ANALYSIS OF OTHER THREATS AN AFTERTHOUGHT
  - THE PROBLEM STARTS AT THE TOP
  - ONGOING ACTIONS MAY SOLVE PART OF THE PROBLEM

An increased staffing of ORSA, hard sciences/engineering trained and combat arms experienced military and civilian intelligence analysts would improve the intelligence analysis process, but this might be accomplished better via routine feedback and joint community projects. There are indications that projection of what materiel the Soviets will field have been more accurate than the forecasts of new equipment fielding time.

Analysis of threat materiel performance causes a lot of action in the systems analysis community but we spend very little effort on analysis of optional tactical employment of a given system or, more importantly, in evaluating alternative applications of our total force. This directly influences our allocation of resources in a very negative way. The CSS community can be cited as an element of the Army which looks primarily to changes in doctrine as a solution to MAA deficiences.

FINDINGS (CONTINUED)

- INTELLIGENCE ANALYSIS CAN BE IMPROVED, ESPECIALLY THE FORECAST OF TIME TO FIELD NEW EQUIPMENT
- PROJECTIONS OF THREAT TECHNICAL CAPABILITIES MAKE A SIGNIFICANT IMPACT ON MATERIEL PROGRAMS
  - UPGUNNING, UPARMORING
  - ECCM
  - OTHER HARDENING
  - SPECIALIZED WEAPONRY

BUT NOT ON:

- TACTICS AND OPERATIONS THAT EMPLOY ALL ARMS
  - ORSA COMMUNITY DOES NOT USUALLY ANALYZE TACTICS
  - MAJOR PARTS OF FORCE HELD CONSTANT
  - ALTERNATIVE METHODS TO DEFEAT THREAT AS A SYSTEM ARE OFTEN NOT ADDRESSED

THEREFORE:

- WE MAY BE DEVELOPING LESS THAN THE BEST CAPABILITIES TO UTILIZE OUR RESOURCES MUCH OF THE TIME

FINDINGS (CONTINUED)

The hierarchy of models has some acknowledged shortcomings that we need to emphasize. We have not developed sufficiently the needed methodologies or the requisite input data for evaluating alternative applications of force, assessing the consequences of the attack of command posts, communications, second echelon forces, etc., or of evaluating all the potentials for deception. We do not have agreed methodology to evaluate the time and impact of Red reconstitution of attrited second echelon units.

Our scenarios and related information fall short in providing for the total combat environment of message density, electronic signature, emanations and other activities of neighboring US and allied units, and the transitions from "conventional" to "biological" to "chemical" to "nuclear" combat and the plausible combinations of these. Much of both Red/or Orange and Blue is not accounted for on our maps or in our models, denying an opportunity to consider them (trucks, signal elements especially) as targets or as battlefield elements that will draw fire that would otherwise be directed to other targets.

The controls that are placed on some classified information, due to sensitivity, require that analysts perform much more TDY than they would need to if the information could be stored at their activity. A possible solution is to increase the use of couriers so that one person could take information to study activity sites for the use of several analysts. Army contracts pose a further problem. It is probably that a significant amount more of relevant information, than is now released, could be made available to contractors if earlier efforts were made to identify the needs and request sanitization.

FINDINGS (CONTINUED)

- HIERARCHY OF MODELS DOES NOT YET PROVIDE FOR THE EVALUATION OF SOME MAJOR OPTIONS AVAILABLE TO RED (OR BLUE)
  - ALL FORCE CAPABILITIES
  - ATTACK OF C2, C3
  - DECEPTION
- MOST ANALYSES UTILIZE INADEQUATE SCENARIOS
  - RF STIMULATOR SHORTFALL
  - NEIGHBORING ACTIVITIES
  - ESCALATION CONTINGENCIES
  - PARTS OF THE FORCE ARE NOT PHYSICALLY ACCOUNTED FOR
- CLASSIFICATION OF SENSITIVE INFORMATION IS A PROBLEM
  - GEOGRAPHICAL CONTROLS
  - ACCESSIBILITY TO CONTRACTORS

RECOMMENDATIONS

A Red Team-Blue Team concept should be present in all Army analysis organizations, MACOMs and in DA staff to provide for a continuing interaction on the evaluation of alternative tactics and materiel AND COMBINATIONS of the two. Few major studies address Red and Blue tactical options, even when emerging analysis of materiel performance suggests it. This cannot be accomplished by occasional visits to the study centers by members of the intelligence community. It needs to be a routine part of our planning and research. Further, all Blue analysts need to become Orange analysts.

ACSI is thought to be the best organization to review the qualifications, training and experience needs of the MACOM threat managers. Their understanding of models should be evaluated as well as their intelligence analyst qualifications. The AMC FIO system is a good example of the requisite quality and continuity that is needed.

Improvement of the feedback process needs the attention of Army leadership.

One approach to the training of both communities in each other's methods is to assign joint tasks. Some specific recommendations are provided.

There is a clear need for earlier formulation of tasking from DA for many problems that require careful assessment of Red and Blue tactics and materiel options so that the right questions can be asked of the intelligence community and the right resources assembled in time to influence a study.

Top-down emphasis is needed to cause a balance in tactical and materiel analyses to resolve MAA deficiences.

The suggested way to cause scientific methods to be utilized in threat analysis is to direct that the two communities work together toward this end. Decision analysis methods can improve our rationale for porjections of threat organization, force structure and tactical doctrine and would help to relate these to our technical analyses of materiel performance in a disciplined way.

RECOMMENDATIONS

- ADOPT G2 - G3 APPROACH TO ANALYSIS AT ALL LEVELS - ANALYSTS NEED TO DEVELOP ORANGE/BROWN ATTITUDE
- ACSI ASSESS ADEQUACY OF TRAINING AND EXPERIENCE OF THREAT MANAGERS IN MACOMS
- CHANGE AR 5-5 AND PAM 5-5 TO PROMOTE TOP LEVEL ENCOURAGEMENT OF FEEDBACK
- ASSIGN JOINT TASKS AT COMMON SITE FREQUENTLY
- IMPROVE TOP-LEVEL FRONT-END AND MID-TERM REVIEW
- DIRECT EQUAL ANALYSIS OF TACTICS ANT MATERIEL VS MAA AND BDP DEFICIENCIES
- DIRECT COMBINED TRAINING OF INTELLIGENCE AND SYSTEMS ANALYSTS ONE ACH OTHER'S METHODOLOGY
- DIRECT SYSTEMS ANALYSIS AND INTELLIGENCE COMMUNITIES TO JOINTLY DEVELOP SCIENTIFIC METHODS FOR USE IN INTELLIGENCE ANALYSIS

RECOMMENDATIONS (CONTINUED)

The recommendation to place more effort and quality on the AMIP is stimulated by a perception that we must avoid creating all the AMIP expertise in contractor organizations. We have done this with other modeling efforts: DIVWAG is an example where the ability to utilize this fundamentally sound war game methodology was lost to the Army when it was decided to end the Booze-Allen contract support. Currently the major laser systems engineering models which were developed under contract to MICOM are operational only because AMSAA utilizes them. It can be argued that the only continuing success in Army use of models and war games has been when the using study agency develops the model in-house or trains its staff with hands-on experience throughout the course of model development. Scenario development needs more (threat) Red Team - (US capabilities) Blue Team thinking to improve the incorporation of all the tactical and combinations of tactical and technical options readily available to Blue and Red. The Analysis Community should be directed from the top to look for solutions to MAA deficiencies other than technical approaches. There is a need for improved stimulators that provide scenario/analysis input on traffic densities on roads and in the electromagnetic spectrum, and much of this needs to be dynamic.

We need to assess the utility and potential pitfalls of use of the emerging generic threats that ACSI is developing to represent areas of the world other than Central Europe and that TRADOC is developing as part of "standard" scenarios. In the course of doing this we need to assess how scenario inputs are actually being utilized in our studies. That is, how does the threat evolve in our models/war games with time, in relation to the actions described in the basic scenario. A joint intelligence and systems analysis community effort to do this would provide an excellent opportunity to further develop a mutual understanding of methodology and it would prime the feedback mechanism.

Due to restrictions on the geographical distribution of some sensitive classified material, analysts in study activities need to travel to obtain some relevant material or depend on intelligence analysts from the intelligence community to recognize and provide for all information needs. More courier service to the study activity site would enable several analysts to review sensitive classified material and save travel time and cost. An incorrect interpretation of intelligence due to this problem was cited by CAORA.

Much sensitive classified material is not releasible to contractors. One retired general officer, now working for a contractor, reported that it is not unusual to wait six months for his information requests to be responded to. Government COTR's need to identify classified resource needs and request sanitization before contracts are let.

RAA
EX

RECOMMENDATIONS (CONTINUED)

- INCREASE THE AMOUNT AND QUALITY OF EFFORT IN
  - MODEL HIERARCHY, INCLUDING LINKS
  - SCENARIO DEVELOPMENT AND ANALYSIS
  - STIMULATORS TO EMULATE FULL FORCE CAPABILITIES AND
- DIRECT AN EVALUATION OF GENERIC THREATS BY A JOINT TASK FORCE
- INVESTIGATE THE FEASIBLITY OF COURIER SERVICES FOR STUDY ACTIVITIES
- TRAIN CONTRACTING OFFICER REPRESENTATIVES TO ASSESS CONTRACTOR INTELLIGENCE NEEDS EARLIER

CHAPTER 11

INTER-RELATIONSHIP OF ANALYSIS AND COSTING

COST ANALYSIS TASK

The task focused on the interfaces between the cost analysis community and analytical community. This included the types of products or services that each community provides or can provide in support of the other.

COST ANALYSIS TASK

- DETERMINE ADEQUACY OF:
  - SUPPORT - COST ANALYSIS COMMUNITY TO ANALYTICAL COMMUNITY
  - SUPOPRT - ANALYTICAL COMMUNITY TO COST ANALYSIS COMMUNITY

ESSENTIAL ELEMENTS OF ANALYSIS

The study team identified four broad categories for analysis. The first two categories were established to identify what products and services were required of the Cost Analysis and Analytical Communities. The third category was establishd to identify the interfaces which supported those products and services. And, the fourth category, cost analysis resources, was analyzed to determine resources and shortfalls. The Analytical Community resources were analyzed as part of other RAAEX tasks.

ESSENTIAL ELEMENTS OF ANALYSIS

- PRODUCTS/SERVICES (COST ANALYSIS COMMUNITY)
- PRODUCTS/SERVICES (ANALYTICAL COMMUNITY)
- INTERFACES
- COST RESOURCES
  - ORGANIZATIONS
    - -- POLICIES AND PROCEDURES
  - PERSONNEL
    - -- NUMBER AND TYPES
    - -- CAPABILITIES
      - --- CAREER FIELD
      - --- TRAINING COURSES
  - CONTRACTOR ASSISTANCE
    - -- COST ESTIMATES
    - -- COST RESEARCH

COST PRODUCTS/SERVICES

The many types of cost products and services were grouped into three broad categories. Cost Estimates include but are not limited to Baseline Cost Estimates (BCE), Independent Cost Estimates (ICE), the cost portion of Cost and Operational Effectiveness Analyses (COEA), force costs, and Economic Analyses (EA).

The cost analysis community is continually attempting to improve the state of the art in methodologies and data bases. Included in "Other" are requirements such as the Program Management Control System (PMCS), Selected Acquisition Reports (SAR), Defense Acquisition Executive Summary (DAES) and the integration of cost estimates and the Planning, Programing, Budgeting and Execution System (PPBES).

COST ANALYSIS PRODUCTS/SERVICES

- COST ESTIMATES
  - MATERIEL SYSTEMS
  - FORCE UNITS
  - TOTAL ARMY
  - ECONOMIC ANALYSIS
- METHODOLOGY AND DATA
- OTHER

ANALYTICAL COMMUNITY PRODUCTS/SERVICES

These are just some of the many Analytical Community analyses or products that form the basis of the Materiel System Requirements Specification (MSRS). The MSRS is the basic document that contains the minimum information necessary to cost a Materiel System

The MSRS is the linking document between the Analytical Community and the Resource Management (which includes Cost Analysis) Community. A new concept that we will address in the interfaces section of this report is the Force Systems Requirements Specification (FSRS). The FSRS will do for forces what the MSRS does for weapons systems. That is, it will be the linking document for force analysis. The better the linkage, the better the inputs to the Acquisition Management and PPBES decision making-process.

ANALYTICAL COMMUNITY PRODUCTS/SERVICES

- OPERATIONAL REQUIREMENTS AND PERFORMANCE ANALYSIS (MATERIEL SYSTEMS AND FORCES)
  - FAILURE DATA
  - ATTRITION RATES
  - USAGE RATES
  - SYSTEM CHARACTERISTICS
  - PRODUCTION SCHEDULES
  - DEPLOYMENT PLANS
  - TABLES OF ORGANIZATION AND EQUIPMENT (TOE)
  - RESOURCE REQUIREMENTS

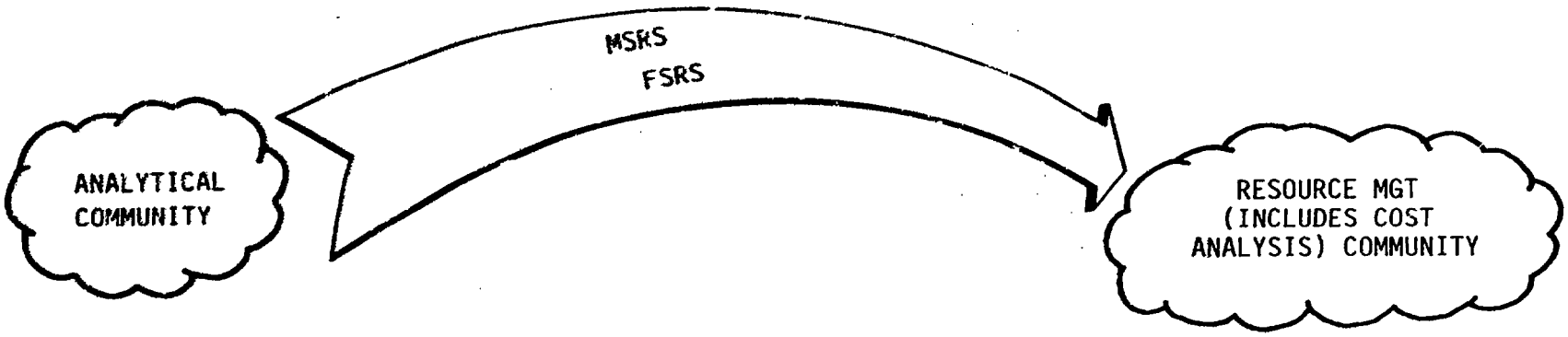
INTERFACES

As stated earlier, the Materiel System Requirements Specification (MSRS) serves as the requirements basis for materiel systems cost estimates (e.g. Baseline Cost Estimates (BCE's) and Independent Cost Estimates (ICE's)). THE BCE's in turn are used as the basis for the cost portions of Cost and Operational Effectiveness Analyses (COEA's). The new (still conceptual) Force System Requirements Specification (FSRS) will serve as the basis for force costing.

In addition, the MSRS is becoming increasingly important because of the integration of cost estimates with the Planning, Programming, and Budget Execution System (PPBES). The HQDA Horseblanket Review (which reconciles the MSRS, BCE, SAR, and PDIP) increasingly is focusing on the MSRS as the anchor to the process. The MSRS must be complete, comprehensive, accurate, and dependable so that the cost estimates can be a reliable basis for the budget

INTERFACES

- MSRS AND FSRS
  - CRITICAL BRIDGE



  - BASIS FOR
    - -- BCE's AND FORCE COSTING WHICH IN TURN ARE BASIS FOR:
      - --- COEA's
      - --- PPBES's

COST ANALYSIS POLICIES AND PROCEDURES

Policies and procedures for materiel system, force and total Army costing are contained in these documents. AR 11-8 establishes policy and procedures and assigns responsibilities for cost analysis. The DA PAM's provide the framework for presenting, documenting and reporting cost estimates. DCA-P-92 provides the framework for the integration of cost estimates and the PPBES. The MSRS as stated earlier provides the requirements information necessary to develop a cost estimate. The TRADOC PAM provides comprehensive guidance and assistance to TRADOC personnel to plan and conduct studies. It includes guidance for the cost portion of COEA's and detailed information on force costing. AR 11-28 contains policies and procedures for economic analysis.

COST ANALYSIS POLICIES AND PROCEDURES

- AR 11-8, COST ANALYSIS PROGRAM
- DA PAMS 11-1/5, COST ANALYSIS GUIDES
- DCA-P-92, INSTRUCTIONS FOR REFORMATTING THE BCE/ICE (PART OF THE COST/PPBES INTEGRATION)
- MSRS, MATERIEL SYSTEM REQUIREMENTS SPECIFICATION
- TRADOC PAM 11-8, STUDIES AND ANALYSIS HANDBOOK (CH III, APPB)
- AR 11-28, ECONOMIC ANALYSIS

COST RESOURCES/PERSONNEL

This chart shows the distribution of cost analysis resources by types of Army organizations . A distribution by type of work would show that approximately 10% work in Project Management Offices, 50% in Cost Analysis Offices, 15% in Resource Management Offices, and 25% in miscellaneous organizational units.

COST ANALYSIS PERSONNEL

TYPE OF ORGANIZATION		NUMBER
• HQDA		40
• MACOMS		165
• MAJOR SUBORDINATE COMMANDS (MSC)		340
• PMO		95
• OTHER		100
	TOTAL	740

COST ANALYSIS PERSONNEL JOB SERIES

The majority of cost analysts are classified as job series 1515 (60%). The fourth category listed here includes about 30 each in series 0510 (Auditor/Accountant), 0343 (Management Analyst) and 0896 (Industrial Engineer). The remainder in the Other category are a mixture of 0801 (General Engineer), 0560 (Budget Analyst), 0110 (Economist), 1101 (Business and Industrial Analyst), 2140 (Traffic Management), and miscellaneous mathematical series.

PERSONNEL JOB SERIES OF COST ANALYSTS

JOB SERIES	TITLE	NUMBER	PERCENT
1515	OPERATIONS RESEARCH ANALYST	440	60
0345	PROGRAM ANALYST	70	10
1102	CONTRACT PRICE ANALYST	70	10
XXXX	OTHER	160	20
	TOTAL	740	100

COST ANALYSIS PERSONNEL CAPABILITIES

There has been a long recognized need, spanning the past 20 years, for a separate cost analysis job series. The groundwork for such a series has been laid by creation of job qualification standards (1975), a code of Professional Standards (1976), Selective Placement Criteria for cost analysis positions (1976), a Cost Analysis Career Appraisal Plan (1977), a Cost Analysis Course Catalog, and a justification memo to OPM personnel.

Another element which determines the capabilities of the cost analysts is the selection process by which they are recruited. The TRADOC Cost Analysis Office indicated that they have to select cost analysts from the Engineer and Science Field whereas they would rather select from the Comptroller Career field and draw on Operations Research Analysts with cost analysis and/or resource management expertise.

COST ANALYSIS PERSONNEL CAPABILITIES

- COST ANALYST CAREER FIELD
  - TOWARDS NEW JOB SERIES
    - -- 1965 - 1974 (25 REFERENCES)
    - -- 1975 - 1984 (20 REFERENCES)
      - --- QUALIFICATION STANDARDS
      - --- PROFESSIONAL STANDARDS
      - --- PLACEMENT CRITERIA
      - --- CAREER APPRAISAL PLAN
  - TRADOC SELECTION PROCESS

COST ANALYSIS PERSONNEL CAPABILITIES

There appear to be an adequate number of courses available to complement entry level operations research knowledge and skills. Of the approximately 10 courses specifically developed for the cost analysis profession, approximately half are offered by the Air Force Institute of Technology and several by the Army Logistics Management Center. The Cost Analysis related courses run the gamut from effective writing and briefing techniques to statistical inference. The numerous courses in the Comptroller field include such courses as Budget Formulation and Financial Planning/Control Techniques. The long-term training includes the Army Comptrollership Program at Syracuse and the Sloan Fellows Program at Stanford.

COST ANALYSIS PERSONNEL CAPABILITIES

- TRAINING COURSES

  - ARMY/DOD COURSES

	COURSES
-- COST ANALYSIS	15
-- COST ANALYSIS RELATED	30
-- COMPTROLLER	20
-- LONG-TERM TRAINING	30

CONTRACTOR ASSISTANCE-COST ESTIMATES

Cost analysis workload has outpaced cost analysis resources over the past ten years. As a result, AMC had to contract over 25% of their Baseline Cost Estimates(BCE's) over the past few years.

CONTRACTOR ASSISTANCE-COST ESTIMATES

FISCAL YEAR	NUMBER OF PMCS * BASELINE COST ESTIMATES	NUMBER CONTRACTED OUT	% CONTRACTED OUT
FY 81	22	8	36%
FY 82	28	7	25%
FY 83	29	9	31%

* PROGRAM MANAGEMENT CONTROL SYSTEM; PMCS BCE'S COMPRISE MOST OF THE BCE'S DEVELOPED.

COST RESEARCH

- CDAC Recommendation: The Cost Discipline Advisory Committee (CDAC), in 1981, recommended that COA initiate a program of contractor support.

- Categories of assistance: In order to implement the CDAC Recommendation, a cost analysis research program was constructed that is composed of three categories. Short-term projects are contracted out on a yearly basis. Projects of mid-term duration are performed in-house. And for long-term projects, the Comptroller of the Army's Directorate of Cost Analysis was able, beginning in 1983, to take advantage of an existing agreement between the Army and the Arroyo Center at the Jet Propulsion Laboratory at CALTECH University. Three to four man years of effort per year is being provided by the Arroyo Center to address broad, general management issues.

- Funding for Short-term-Projects: The Vice Chief of Staff of the Army Directed that COA implement a plan for cost analysis research in the amount of $5 million dollars per year. The first PDIP, the FY85-89 PDIP, was zeroed by OSD. Therefore the Comptroller of the Army's Director of OMA funded .45 million dollars in FY82, 3 million in FY83, and 2.6 million in FY84. A second PDIP is being recommended for FY86-91, ramping upward from 2.6 million dollars to 5 million dollars per year.

COST RESEARCH

- CDAC RECOMMENDATION (1981)
- CATEGORIES OF ASSISTANCE
  - SHORT-TERM: CONTRACTED ON YEARLY BASIS
  - MID-TERM: IN-HOUSE
  - LONG-TERM: THINK TANK (ARROYO CTR. ESTAB 1983)
- FUNDING FOR SHORT-TERM PROJECTS

FY 82	1 PROJECT/.5M	(COMPLETED)
FY 83	6 PROJECTS/3M	(ON-GOING)
FY 84	7 PROJECTS/2.6M	(PLANNED)

INTERFACES

- MSRS:

  - There has been a pervasive problem with obtaining MSRS's from the requirements community on a timely basis. Consequently, cost analysts have had less time before reviews such as the ASARCs and Budget to Most Likely Cost Reviews to prepare the necessary cost estimates. This, obviously, impacts on the scope and quality of estimates.

  - The MSRS's often do not identify all the requirements necessary to support the Weapon System. For example, all the Associated Items of Support Equipment (ASIOE) may not be identified.

  - The MSRS's often do not provide enough detail to develop complete or accurate estimates. For example, the RAM projection for major components may not be provided.

  - The HQDA Horseblanket reviews have uncovered requirements conflicts between the MSRS and the PPBES/Budget requirements basis. For example, conflict over ammunition requirements appears to be common among a number of systems right now.

- FSRS

  - A recent (Feb/Mar 1984) Memorandum from the Director of the Army Staff, subject: Costing, indicated that different action agencies respond to force costing requests with different assumptions, parameters, and methodology. The DAS Memo directs some efforts towards standardizing force costing procedures. They include tasking ODCSOPS to take the lead on all force structure requirements specification (FSRS) efforts and OCA to develop and publish a Force Structure Costing Manual that complements the Weapons System Cost Estimate/PPBES efforts and the Weapon System Costing Manual.

INTERFACES

- MSRS
  - OFTEN NOT TIMELY
  - OFTEN NOT COMPREHENSIVE
  - OFTEN NOT DETAILED ENOUGH
  - OCCASIONALLY CONFLICT WITH PPBES/BUDGET REQTS BASE
- FSRS (DAS MEMO) TO ALLEVIATE FORCE COSTING PROBLEMS:
  - LACK OF CONSISTENCY
  - UNCLEAR COMPREHENSIVE STRUCTURE

COST ANALYSIS RESOURCES

• PERSONNEL RESOURCES: Since the early 1970's there has been a large net increase to HQDA and AMC cost analysis functions. These functions include Selected Acquisition Reports (SARs), the Program Management Control System (PMCS), annual updates of the Baseline Cost Estimates (BCEs) and Independent Cost Estimates (ICEs) and numerous efforts in Weapons System Cost Estimate/PPBES integration.

•• HQDA: In 1984, the Comptroller of the Army obtained approval to expand the COA Directorate of Cost Analysis into a Field Operating Agency. However, the resourcing for the additional 41 spaces that were requested was not provided in the recent May 1984 Out of Cycle Review by the Manpower Committee.

•• AMC: A Cost Analysis Improvement PDIP was coordinated in January of 1983 that recommended an additional 96 GS-13 cost analysts in the AMC Project Management (PM) and Major Subordinate Command (MSC) Cost Analysis Offices; to support the PMCS, BCEs, and ICEs. This PDIP was justified by the AMC Cost Analysis Personnel Assessment (CAPA) Studies which determined that the AMC structure was aligned correctly, but understaffed to carry out assigned duties.

•• TRADOC Schools/Centers: The TRADOC Cost Analysis Office, and the TRADOC Resource Analysis Office recommend that some cost analysis support (perhaps 50-75 cost analysts) be placed in the TRADOC Schools and Centers (e.g. Combat Arms School, Combat Support School, Logistic Center, Soldier Support Center). This would give each school and center 2 to 3 personnel.

COST ANALYSIS RESOURCES

- PERSONNEL RESOURCES
  - HQDA (UNDER-RESOURCED)
    - -- COA FOA APPROVED; RESOURCES DENIED
  - AMC (UNDER-RESOURCED)
    - -- AMC SPACES DENIED
  - TRADOC SCHOOLS/CENTERS
    - -- MAY BE UNDER-RESOURCED

COST ANALYSIS RESOURCES

- CAREER FIELD: Of the approximately 740 Army cost analysts identified earlier, the majority (approximately 60%) are in the Operations Research series 1515. The rest of the population is made up of some 10 or more series. This mixture of specialties has resulted more from an absence of an appropriate classification standard than for the need for such a mixture. Cost analysis is a discipline having unique education and experience requirements that are not adequately covered in any current qualification standard. A cost analyst is not a budget analyst (560), contract analyst (1102), statistician (1529) or engineer (8xx). Rather, he is a professional in his own right and must be qualified in selected aspects of a number of existing qualification standards. A cost analyst is a multi-disciplined professional who employs operations research, engineering, and econometric techniques to prepare, evaluate, and validate cost estimates. The establishment of a common job series and qualifications standard for cost analyst would ensure that a cost analyst, by definition, is the required multi-disciplined professional.

- TRAINING COURSES: The perception, supported by some evidence, is that while courses for training were adequate, utilization of those courses was not. Part of the reason, though certainly not all, is the heavy workload which is a hindrance to taking time out for courses. The level of professionalism and effectiveness could be raised by utilization of more training. Therefore, additional emphasis should be given and efforts undertaken by managers to correct this problem.

COST ANALYSIS RESOURCES

- CAREER FIELD
  - 1515 JOB SERIES
- TRAINING COURSES
  - UTILIZATION INADEQUATE

INTERFACES

- MSRS

  - IMPROVE EXECUTION OF MSRS PROCESS: It is recommended that there be a mandatory requirement for a MSRS coordination meeting 5 months prior to the ASARC. There is already a requirement for MSRS approval 4 months prior to the ASARC.

  - EXPAND DISTRIBUTION: It is recommended that MSRS's be distributed for comment to the appropriate elements of the analytical community to better utilize the analyses and projections of such elements as weapon system performance, supportability, provisioning, and reliability growth trends and patterns.

  - LINK TO BUDGET: While not a recommendation of this study, it is important that continued management emphasis be placed on linking the MSRS to those requirements changes that are forced by the Budget (e.g. affordability cuts). Specifically, the DAS Memorandum, subject: "Integration of Weapons Systems Costing, Programming and Execution Management Systems," dated 16 August 1984 should be implemented.

INTERFACES

- MSRS
  - IMPROVE EXECUTION OF PROCESS
    - -- MANDATORY MSRS COORDINATION MEETING 5 MONTHS PRIOR TO ASARC
  - EXPAND DISTRIBUTION
    - -- AMSAA, TRASANNA, TRADOC COST ANALYSIS

INTERFACES

- FSRS: This recommendation consists of implementing the Department of the Army Staff (DAS) Memorandum, subject: "Costing," referred to in the RAAEX Findings. The guidance presented in the memorandum will help interrelate the analytical community and cost analysis community efforts regarding force costing and force structuring.

INTERFACES

- FSRS

  - IMPLEMENT FSRS CONCEPT

    - -- DESIGN AN FSRS
    - -- DEVELOP FORCE COSTING ARCHITECTURE

PERSONNEL CAPABILITIES

- CAREER FIELD: The Findings indicate that there has been a very comprehensive effort at developing the necessary personnel management structure (e.g. qualification standards) for a new job series for cost analysts. It appears that what mostly remains is higher management visibility. It is recommended that ODCSPER utilize the estabilshed structure and take necessary actions to get the office of Personnel Management (OPM) to create a new job series.

- TRAINING: It is recommended that a review of training course utilization be conducted for cost analysts to focus attention on an apparent deficiency.

RECOMMENDATIONS

PERSONNEL CAPABILITIES

- CAREER FIELD
  - HIGHER LEVEL MGT ATTENTION/VISIBILITY TO NEW COST ANALYSIS JOB SERIES EFFORTS
- TRAINING
  - REVIEW OF COST ANALYSIS TRAINING COURSE UTILIZATION

CHAPTER 12

MANPOWER AND PERSONNEL ANALYSIS

RAA
EX

ESSENTIAL ELEMENTS OF ANALYSIS (EEA)

- WHAT ARE PRIMARY & RECURRING DEMANDS FOR PERSONNEL/MANPOWER DATA, STUDIES & ANALYSES? WHO GENERATES THESE DEMANDS?

- WHAT AGENCIES & ORGANIZATIONS CONDUCT PERSONNEL/MANPOWER STUDIES & ANALYSES? WHAT IS PRIMARY FOCUS OF STUDIES?

  - PERSONNEL COMMUNITY

  - OTHER ANALYTICAL AGENCIES OR EFFORTS

- HOW ADEQUATELY IS PERSONNEL COMMUNITY SUPPORTED BY ANALYTICAL ORGANIZATIONS?

- HOW ADEQUATELY ARE ANALYTICAL AGENCIES/ORGANIZATIONS SUPPORTED WITH PERSONNEL/MANPOWER RELATED DATA, STUDIES, ANALYSES, ETC?

RAA
EX

ESSENTIAL ELEMENTS OF ANALYSIS (EEA)

- REQUIREMENTS
- RESOURCES
- ADEQUACY OF:
  - ANALYTICAL SUPPORT TO PERSONNEL COMMUNITY
  - DATA SUPPORT TO ANALYTICAL COMMUNITY
  - COORDINATION

REQUIREMENTS

The investigation of demands for personnel/manpower data, studies, & analysis showed requirements are complex. There are three "states of the Army" about which information is desired, an Army at peace, an Army mobilizing, and an Army at war. There are also two communities which desire information: the personnel/manpower community (DCSPER, USAREC, MILPERCEN, ASA(M&RA), NGB, etc.) and the technical/analytical community (CAA, TRASANA, HEL, ARI, AMC, etc).

REQUIREMENTS

- REQUIREMENTS ARE GENERATED FOR THREE "STATES OF THE ARMY"
  - ARMY AT PEACE
  - ARMY DURING MOBILIZATION
  - ARMY IN COMBAT
- TWO DISTINCT COMMUNITIES REQUIRE DIFFERENT ORIENTATION OF PERSONNEL/MANPOWER STUDY
  - -- PERSONNEL/MANPOWER COMMUNITY (DCSPER, USAREC, ETC)
  - -- TECHNICAL/ANALYTICAL COMMUNITY (AMC, HEL, ARI, ETC)

REQUIREMENTS

Current demands for studies & analyses which are included in the Army Study Program principally reflect peacetime demands primarily generated by the personnel/manpower community and address such issues as market analyses, demographics, Quality of Life, Quality of Force, Effects of Economics, Recruiting & Retention, Force Alignment. In the research area there is investigation into Army combat performance with the Personnel Performance & Training Program, the Hardware - Manpower Comparability (HARDMAN) Analyses, Human Factors Engineering and investigation of man-machine interfaces.

There is, however, limited study into mobilization issues and few current or recurring studies of the validity of model inputs (casualty rates, hospital/medical operations, replacement policies & operations, unit degradations, etc) for study of an Army in combat.

REQUIREMENTS

- DEMANDS FOR STUDIES ARE PRIMARILY ORIENTED TOWARD PERSONNEL/MANPOWER CONCERNS ABOUT ARMY AT PEACE, E.G.
  - ●● DEMOGRAPHICS
  - ●● MARKET ANALYSES
  - ●● QUALITY OF FORCE
  - oo RECRUITING/RETENTION
  - oo FORCE ALIGNMENT
  - oo QUALITY OF LIFE
- DEMANDS FOR RESEARCH ARE PRIMARILY ORIENTED TOWARD ANALYTICAL/TECHNICAL CONCERNS ABOUT ARMY IN COMBAT, E.G.
  - ●● HARDMAN ANALYSES
  - ●● HUMAN FACTORS ENGINEERING
  - ●● MAN-MACHINE INTERFACE

DISCUSSION - RESOURCES

Analytical support to the personnel/manpower community is provided by a variety of in-house and contract resources. Although the majority of work is accomplished by contract (60% in FY 83 Study Program) and Lines of Credit are committed by CAA, there is a continuing requirement for quick reaction studies for impact on near-term future decisions. These studies are generally conducted by contract. It is not uncommon, however, for ad hoc study groups to be formed to accomplish these studies. Examples of the ad hoc study groups formed in the past few years are:

- Review of Education & Training for Officers (RETO), 1977
- Reserve Officer Training Course (ROTC) Study Group, 1984
- Officer Personnel Management System (OPMS) Study Group, 1983
- Officer Professional Development System (OPDS) Study Group, 1983
- Reserve Component Manpower Management Study Group, 1983
- New Manning System Task Force, 1981

Additionally, ARI, TRADOC, and USMA conduct limited studies and analyses in support of the functional area but these organizations are not generally staffed to do so.

In most cases, the focus of studies is on the state of the Army at Peace. Very little is done to examine mobilization issues or combat simulation issues. Note that studies are mostly oriented on the Army at Peace while research is mostly oriented on the Army in combat.

DISCUSSION

RESOURCES

- CAA IS THE PRIMARY IN-HOUSE AGENCY DESIGNATED TO CONDUCT STUDIES & ANALYSES IN SUPPORT OF THE PERSONNEL/MANPOWER COMMUNITY.

- ARI CONDUCTS LIMITED STUDIES & ANALYSES BUT IS NOT ASSIGNED THAT MISSION AND NOT RESOURCED TO PERFORM IT. ARI IS RESOURCED AND STAFFED AS A PERSONNEL RESEARCH ORGANIZATION.

- TRADOC ACCOMPLISHES LIMITED PERSONNEL/MANPOWER STUDIES AND ANALYSIS.

- AD HOC STUDY GROUPS ARE ESTABLISHED TO DO WORK THAT THE ANALYTICAL COMMUNITY IS NOT ORIENTED OR STAFFED TO DO.

- MAJORITY OF WORK IS ACCOMPLISHED BY CONTRACT (60% IN FY83 STUDY PROGRAM).

- PRIMARY FOCUS OF STUDIES WHICH ARE BEING ACCOMPLISHED IS ORIENTED ON THE ARMY-AT-PEACE AND IN RESPONSE TO DEMANDS FROM THE PERSONNEL/MANPOWER COMMUNITY.

- THE RESEARCH WHICH IS BEING CONDUCTED AND SOME ANALYSES ARE ORIENTED ON THE ARMY-IN-COMBAT AND IN RESPONSE TO DEMANDS FROM THE ANALYTICAL/TECHNICAL COMMUNITY (RDT&E ACQUISITION).

FINDINGS IN MGMT OF PERS/MPWR STUDIES

The DCSPER Research & Studies Office (RSO) has the mission to manage, direct, and integrate:

a. R&D Program in Manpower, Personnel, Training, and Human Factors Engineering

b. Studies Program in Manpower availability and personnel management

The staff relationship of the RSO is that of a Staff agency division which limits the exercise of authority to provide study guidance and coordinate analyses that cut across functional lines. There is not enough emphasis to accomplish necessary control.

The RSO manages input to the studies program and executes contracts but the management of the R&D program is actually controlled by ARI.

The identification of studies to be included in the personnel/manpower study program continues to be accomplished by a "dragnet" process. Weakness is that only problems relating to near-term decisions tend to be identified. Further complications are that sponsors representatives are often reassigned before studies are started or completed. Frequently, the urgency for the study disappears with the POC.

REQUIREMENTS

- OVERALL MANAGEMENT OF DEVELOPMENT, COORDINATION, IMPLEMENTATION AND EXECUTION OF RESEARCH, STUDIES AND ANALYSIS IN THE PERSONNEL/MANPOWER FUNCTIONAL AREA SHOULD BE STRENGTHENED
  - •• THERE IS NO REVIEW PROCESS FOR SHORT-TERM ANALYSES WHICH COULD IDENTIFY "RECURRING ANALYSES" AND, WHERE APPROPRIATE, THE NEED FOR METHODOLOGY/MODEL DEVELOPMENT
  - •• THERE IS NO EFFECTIVE CAPABILITY TO COORDINATE ANALYSES CUTTING ACROSS FUNCTIONAL LINES, FORECAST REQUIREMENTS AND PROVIDE STUDY GUIDANCE
  - •• PERSONNEL/MANPOWER LONG-TERM REQUIREMENTS ARE NOT ADEQUATELY IDENTIFIED FOR INCORPORATION INTO STUDY PROGRAM
  - •• LACK OF OVERALL TECHNICAL CONTROL AND EXECUTIVE RESPONSIBILITY FOR ALL ASPECTS OF PERSONNEL ANALYSIS IN RESEARCH, HUMAN FACTORS ENGINEERING, AND PERSONNEL PERFORMANCE AND TRAINING PROGRAMS LEADS TO OVERLAP, DUPLICATION OF EFFORT AND INADEQUATE COORDINATION
  - •• INADEQUATE COMMUNICATION BETWEEN ANALYSTS & SPONSORS CAUSES POOR PREPARATION OF STATEMENTS OF WORK AND DEVELOPMENT OF STUDY DIRECTIVES/LETTERS OF AGREEMENT

FINDINGS CONCERNING HARDMAN ANALYSES

The Army has no effective capability to estimate soldier requirements (number, skills quality, and training resources) early in the materiel acquisition process, when tradeoffs between system complexity, performance, and personnel requirements are still feasible.

TRADOC (SSC/SSC-NCR) has responsibility for estimating soldier requirements for new systems. Expertise for accomplishing this within the Army is virtually non-existent and all Hardware-manpower (HARDMAN) comparability analyses which are now done are performed under contract. A resulting shortfall is that the Army lacks sufficient expertise in HARDMAN analysis to adequately validate and verify the work of the contractors.

ARI is embarking on a 10 year program, if resources are allocated, to develop this capability in the Army.

RESOURCES

- CAPABILITY WITHIN ARMY ANALYTICAL COMMUNITY TO CONDUCT PERSONNEL REQUIREMENTS ANALYSIS FOR NEW SYSTEMS IS INADEQUATE
  - EXISTING CAPABILITY BY CONTRACTOR
  - ARMY IN-HOUSE EXPERTISE INADEQUATE TO MONITOR AND VALIDATE ANALYSIS

SUPPORT TO PERSONNEL COMMUNITY

There is a definite lack of adequate in-house capability to conduct personnel/manpower studies. CAA is the principal designated in-house analysis agency and extends lines of credit to the personnel/manpower community. CAA, however, has a mission of force level studies that principally rely on theater level combat simulations. There are personnel/manpower studies which certainly fall into the purview of CAA, but there is a large requirement for studies which cannot or should not be done by CAA.

A result of this lack of in-house capability is that most studies needed by the personnel/manpower community are done by contract or by Ad Hoc committees.

Agencies and commands have identified requirements for personnel/manpower studies in addition to the research currently being done at ARI. While ARI has procedures which make resources available to the whole Army, more emphasis is needed to ensure that total Army requirements are expressed and input to the ARI work program.

FINDINGS

SUPPORT TO PERSONNEL COMMUNITY

- LACK OF ADEQUATE IN-HOUSE CAPABILITY TO CONDUCT PERSONNEL/MANPOWER STUDIES
- LACK OF QUICK RESPONSE TO PERSONNEL/MANPOWER STUDY REQUIREMENTS BY THE ANALYTIC COMMUNITY
- NEED FOR AGENCIES (OTHER THAN DCSPER) TO SHARE ASSETS/CAPABILITIES OF ARI

DATA SUPPORT TO ANALYTICAL COMMUNITY

As pointed out earlier there are no programs that address manpower and personnel data needed for models. Neither the personnel community nor the analytic community have procedures in place to routinely verify, validate, or challenge model inputs.

The personnel community doesn't know what the data needs are for modeling and is not called upon to verify or validate the assumptions.

Modelers generally are unaware of what data is available to verify or change assumptions. They also are seldom criticized for using "stale" or overly simplified assumptions. There is little incentive to challenge & improve assumptions.

Neither the personnel community nor the analytic community have adequate programs to satisfy modelers needs for personnel, manpower and training data.

DATA SUPPORT TO ANALYTICAL COMMUNITY

- PERSONNEL/MANPOWER/TRAINING (PMT) INPUT TO MODELS INADEQUATE:
  - FRAGMENTED
  - INCOMPLETE

COORDINATION

Lack of communication between the personnel/manpower/training community and the analytical/technical community aggravates the situation.

Model input and assumptions are not reviewed or analyzed in any structured manner. Assumptions and rates used in one agency are not necessarily coordinated with assumptions used in other agencies. Casualty rates, degradation of morale & Training effects, medical capabilities, etc, are frequently assumed to be those experienced in WWII adjusted for modern technology and systems. These assumptions are rarely challenged or analyzed.

COORDINATION

- COORDINATION BETWEEN PERSONNEL/MANPOWER/TRAINING AND MODELING COMMUNITIES ESSENTIALLY NON-EXISTENT
  - PMT COMMUNITY UNAWARE OF MODELING DATA NEEDS
  - MODELERS UNAWARE OF DATA AVAILABLE
  - NO PROGRAMS EXIST TO ADDRESS MODELERS NEEDS

FINDINGS

The 1978 RAA study identified analysis to support the POM/Budget process as being inadequate in the Personnel/Manpower functional area. Since then many steps and internal reorganizations have placed emphasis upon analytical supportability of Army programs in the personnel/manpower functional area. This supporting analysis is considered by all interviewed parties as being a strength of the analysis that is done. It should be noted, however, that the majority of these analyses are less than 6 PSM. Existing manpower analysis models such as ELIM-COMPLIP and the economic models at USMA have been considered valuable to analysis and decision making.

RAA
EX

FINDINGS

- ANALYSES TO SUPPORT PERSONNEL/MANPOWER PROGRAMS IN POM/BUDGET PROCESS IS PERCEIVED AS A STRENGTH OF PERSONNEL/MANPOWER COMMUNITY

- EXISTING MANPOWER MODELS & MARKET ANALYSIS ARE PERCEIVED TO BE GOOD

RECOMMENDATIONS IN MGMT OF PERS/MPWR STUDIES:

The creation of an SES level Technical Advisor to the DCSPER would enhance the capabilities to manage overall studies, analysis and research programs in the personnel/manpower functional area.

The creation of a technical advisor would place the necessary emphasis on the study & analysis program. It would allow for institutionalization of programs and continuity of technical expertise.

Continual review of Directorate "Study needs" would be most beneficial, over time, in orienting study efforts and resources to resolution of core functional area problems. This would enhance the development of study guidance and formal work agreements.

MANAGEMENT OF PERSONNEL AND MANPOWER STUDIES (REQUIREMENTS)

- ESTABLISH AN SES LEVEL TECHNICAL ADVISOR TO THE DCSPER TO ADVISE ON AND ASSIST IN THE MANAGEMENT AND CONTROL OF:
  - SHORT-TERM RESEARCH, STUDIES AND ANALYSIS REQUIREMENTS
  - RESEARCH, STUDIES AND ANALYSIS CUTTING ACROSS FUNCTIONAL LINES
  - FORMULATION OF GUIDANCE FOR RESEARCH, STUDIES, AND ANALYSIS
  - LONG-TERM REQUIREMENTS FOR RESEARCH, STUDIES, AND ANALYSIS
  - NEGOTIATIONS OF FORMAL WORK AGREEMENTS

RECOMMENDATIONS CONCERNING HARDMAN ANALYSES:

Recognizing the need for soldier requirements for new systems to be available early in the materiel acquisition process, the Army must ensure such capability exists.

> In 1980 Generals Kerwin and Blanchard reported. "More specific guidelines concerning total Army manpower and personnel requirements are needed by decision makers to determine if adequate personnel resources are available for systems under development, and to redirect selected system development programs if they are not."

The Army must develop the capability to monitor, control, and validate soldier requirements analyses done by contract and develop capability to conduct limited analyses in-house.

ARI is embarking on a 10-year program, if resources are allocated, to develop this capability for the Army. The feasibility of accelerating this program should be examined.

RECOMMENDATIONS

RESOURCES

- INCREASE ARMY CAPABILITY TO MONITOR, CONTROL, VALIDATE PERSONNEL/MANPOWER REQUIREMENTS ANALYSES AS PART OF MATERIEL ACQUISITION PROCESS

- FEASIBILITY OF ACCELERATING ARI PROGRAM TO PROVIDE IN-HOUSE CAPABILITY SHOULD BE EXAMINED

RECOMMENDATION CONCERNING ARI EXPANSION

The most cost-effective means for increasing analysis support to the manpower/personnel area would be to expand the ARI mission, realign the available analytical skill base, and organize the agency into separate departments for research and studies.

ARI should be placed under the DAS in support of the entire Army. A Program Review committee made up of DCSPER, DCSOPS, TRADOC, AMC, and all other subscribers of ARI assets should be created to establish and prioritize the ARI program.

With ARI's mission and capability broadened it would then be possible to sharpen the focus of CAA studies in the manpower and personnel functional area to those requiring CAA's special expertise in force design, force structure, and theater campaign simulation.

RECOMMENDATIONS

SUPPORT BY PERSONNEL COMMUNITY

- EXPAND ARI MISSION TO ENCOMPASS STUDIES AND ANALYSIS OF MANPOWER & PERSONNEL ISSUES
  - DEVELOP STUDIES AND ANALYSIS CAPABILITY IN ARI
  - ENHANCE MILITARY OPERATIONS RESEARCH CAPABILITY AND EXPERTISE
  - ORGANIZE ARI INTO RESEARCH AND STUDIES & ANALYSIS ELEMENTS
  - FUND STUDIES & ANALYSIS WITH OMA

- ENSURE ARI PROVIDES SUPPORT TO ALL ARMY ELEMENTS INTERESTED IN MANPOWER AND PERSONNEL ISSUES
  - ASSIGN ARI TO THE DAS
  - ESTABLISH A PROGRAM REVIEW COMMITTEE OF USERS

- FOCUS CAA STUDIES OF MANPOWER AND PERSONNL TO ADDRESS ISSUES REQUIRING CAA'S SPECIAL EXPERTISE IN FORCE DESIGN, FORCE STRUCTURING, AND THEATER CAMPAIGN SIMULATION.

RECOMMENDATIONS CONCERNING PMT INPUT TO MODELS:

Inclusion of personnel/manpower/training analysts in the models review process would apply analytic expertise from the functional area to challenge or affirm modeling assumptions.

Identification of areas for data collection and investigation would be facilitated. Periodic Review of the personnel/manpower/trainng assumptions could identify requirements for improvment of future madel development. At the least it would assure uniform application of personnel/manpower/training data and assumptions.

RECOMMENDATIONS

COORDINATION

- INCLUDE REPRESENTATIVES FROM PERSONNEL/MANPOWER/TRAINING COMMUNITY IN THE MODELS REVIEW PROCESS

CHAPTER 13

ANALYTICAL SUPPORT TO LOGISTICS FUNCTIONAL AREA

TASK DESCRIPTION

Determine the adequacy of analytical support to the logistics functional area.

RAA EX

TASK DESCRIPTION

- DETERMINE ADEQUACY OF ANALYTICAL SUPPORT TO LOGISTICS FUNCTIONAL AREA

PROBLEM STATEMENT

The purpose of this task is to ascertain whether Army analysis is adequately supporting the logistics (LOG) functional area. More specifically --

a. Are resources devoted to logistics analysis sufficient?

b. Is there sufficient coordination and direction of logistics analysis?

c. Are computer models and other methodologies adequate?

RAA EX

PROBLEM STATEMENT

- ARE RESOURCES DEVOTED TO LOGISTICS ANALYSIS SUFFICIENT?
- IS THERE SUFFICIENT COORDINATION AND DIRECTION OF LOGISTICS ANALYSES?
- ARE COMPUTER MODELS AND OTHER METHODOLOGIES ADEQUATE?

DATA AND DISCUSSION

The approach taken for this task was to conduct interviews with users and performers of logistics analysis. Interviews were preceded by a written list of questions. The organizations queried were --

a. Office of the Deputy Chief of Staff for Logistics (ODCSLOG).

b. US Army Concepts Analysis Agency (CAA).

c. Headquarters, Army Materiel Command (HQ, AMC).

d. US Army Materiel Systems Analysis Activity (AMSAA) (Logistics and Readiness Analysis Division).

e. Vulnerability and Lethality Division, Ballistics Research Laboratory (VLD/BRL).

f. Headquarters, US Army Training and Doctrine Command (HQ, TRADOC).

g. TRADOC Logistics Center.

h. Combined Arms Operations Research Activity (CAORA).

i. TRADOC Systems Analysis Activity (TRASANA).

j. Army Model Improvement Program (AMIP) Management Office.

- APPROACH
  - PROVIDE QUESTIONS
  - CONDUCT INTERVIEWS
- ORGANIZATIONS QUERIED
  - ODCSLOG
  - CAA
  - HQ, AMC
  - AMSAA
  - VLD/BRL
  - HQ, TRADOC
  - TRADOC LOGISTICS CENTER
  - CAORA (TORA)
  - TRASANA (TORA)
  - AMIP MANAGEMENT OFFICE

FINDING: PERFORMERS OF LOGISTICS ANALYSIS

The organizations performing the majority of the logistics analysis are --

a. HQDA Field Operating Agencies (FOAs):

   (1) Concepts Analysis Agency (CAA)

   (2) Logistics Evaluation Agency (LEA)

b. TRADOC:

   (1) Logistics Center and associated schools (Missile and Munitions Center and School, Ordnance School, Quartermaster School, Transportation School)

   (2) TRADOC Operations Research Activity (TORA)

c. AMC:

   (1) US Army Materiel Systems Analysis Activity (AMSAA)

   (2) Project Managers (PMs)

   (3) Major Subordinate Commands (MSCs), primarily Systems Analysis Offices

d. Health Services Command:

   (1) Academy of Health Sciences

e. Operational Commands

f. Contractors

RAA
EX

PERFORMERS OF LOGISTICS ANALYSIS

- HQDA FOAs
  - CAA
  - LEA
- TRADOC
  - LOGISTICS CENTER AND ASSOCIATED SCHOOLS
  - TORA
- AMC
  - AMSAA
  - PMs
  - MSCs
- HEALTH SERVICES COMMAND
  - ACADEMY OF HEALTH SCIENCES
- OPERATIONAL COMMANDS
- CONTRACTORS

FINDING: RESOURCES

For TRADOC, given the importance of logsitics there appears to be a disproportionately small fraction of the total TRADOC operations research/systems analysis (ORSA) personnel (officer SC-49, civilian series 1515) supporting logsitics. Only 13% of the TRADOC ORSA personnel are assigned to the Logistics Center and associated schools. The Logistics Center has limited discretionary ORSA personnel and a large backlog of analyses and model developments. The associated schools have few or no ORSA personnel.

For LEA, there do not appear to be sufficient ORSA resources for the analytic mission. There is a mechanism for LEA to obtain analytical support from the US Army Concepts Analysis Agency (CAA) through the Office of the Deputy Chief of Staff for Logistics (ODCSLOG) line-of-credit with CAA. It is possible that a line-of-credit or less formal cooperative mechanism could be arranged between LEA and the US Army Materiel Systems Analysis Activity (AMSAA).

RESOURCES

- TRADOC
  - TOO SMALL FRACTION OF ORSA PERSONNEL SUPPORTING LOGISTICS
  - 13% OF ORSA PERSONNEL ASSIGNED TO LOGISTICS CENTER AND ASSOCIATED SCHOOLS
  - LOGISTICS CENTER WITH LIMITED DISCRETIONARY ORSA PERSONNEL, LARGE BACKLOG OF ANALYSES AND MODEL DEVELOPMENTS
  - LOGISTICS SCHOOLS WITH FEW OR NO ORSA PERSONNEL
- LEA
  - INSUFFICIENT ORSA PERSONNEL FOR ANALYTIC MISSION
  - EXISTING MECHANISM FOR ANALYTICAL SUPPORT FROM CAA
  - POTENTIAL FOR ANALYTICAL SUPPORT FROM AMSAA

FINDING: COORDINATION OF LOGISTICS ANALYSIS

Coordination is necessary for fostering consistency and promoting useful techniques.

Existing mechanisms for coordination include --

a. The Logistics Studies Steering Committee (LSSC), a committee (chartered under AR 15-79) which monitors the program of Army Studies (AR 5-5) of logistics; it notes potential duplication and highlights voids.

b. The Army Logistics Analysis Community Working Committee (ALAC), an informal group for exchanging information on logistics analysis. Under ALAC, a data base is being developed containing summaries of logistics analyses that are not included under AR 5-5.

Such coordination efforts are very useful. Nevertheless, more coordination would be desirable to insure consistency of logistics analysis.

RAA EX

COORDINATION OF LOGISTICS ANALYSIS

- NECESSITY FOR COORDINATION
  - FOSTER CONSISTENCY
  - PROMOTE USEFUL TECHNIQUES
- EXISTING MECHANISMS FOR COORDINATION
  - LSSC
    - -- MONITORS PROGRAM OF LOGISTICS STUDIES
    - -- NOTES POTENTIAL DUPLICATION, HIGHLIGHTS VOIDS
  - ALAC
    - -- EXCHANGES INFORMATION IN INFORMAL GROUP
    - -- PROVIDES SUMMARIES OF LOGISTICS ANALYSES IN DATA BASE
- COORDINATION EFFORTS USEFUL
- MORE COORDINATION DESIRABLE TO INSURE CONSISTENCY

FINDING: GUIDANCE OF LOGISTICS ANALYSIS

Guidance is necessary for insuring that logistics analysis is pursuing the right goals with appropriate tools, and producing results useful to decisionmakers.

Existing mechanism for guidance -- Annually the Study Program Management Office (SPMO), Office of the Chief of Staff, US Army, publishes the Army Study Guidance, which describes problem areas against which studies (AR 5-5) should be planned. This document furnishes those performing logsitics analysis with general direction on what is important. Note, however, that while there is an overlap between "studies" and "logistics analyses," neither is a subset of the other.

There is no senior analyst in the Office of the Deputy Chief of Staff for Logistics (ODCSLOG) to oversee logistics analysis, provide direction on appropriate goals and tools for analysis, and insure the utility of analysis.

RAA
EX

GUIDANCE OF LOGISTICS ANALYSIS

- NECESSITY FOR GUIDANCE
  - INSURE LOGISTICS ANALYSIS PURSUES RIGHT GOALS WITH APPROPRIATE TOOLS
  - INSURE RESULTS ARE USEFUL
- EXISTING MECHANISM FOR GUIDANCE
  - ARMY STUDY GUIDANCE DOCUMENT
- NO SENIOR ANALYST IN ODCSLOG TO --
  - OVERSEE LOGISTICS ANALYSIS
  - PROVIDE DIRECTION ON GOALS AND TOOLS FOR ANALYSIS
  - INSURE UTILITY OF ANALYSIS

FINDING: LOGISTICS IN COMPUTER MODELS

The activities of combat and logistics must be integrated in computer models (that treat either combat or logistics), since the activities are interrelated --

a. Combat generates requirements for logistics support.

b. Combat yields attrition, and hence reduced capabilities, of logistics support units.

c. Logistics constrains combat capabilities.

Regarding the current status of models, in general logistics models lack valid representations of combat or, at best, have input factors that represent combat-generated demands on logistics support. The interactions between combat and logistics have not been portrayed well. Similarly, combat models have limited or no representation of logistics.

The Army Model Improvement Program (AMIP) is remedying the situation for combat models, and has the potential for remedying the situation for logistics models.

RAA
EX

LOGISTICS IN COMPUTER MODELS

- ACTIVITIES OF COMBAT AND LOGISTICS MUST BE INTEGRATED IN COMPUTER MODELS, SINCE ACTIVITIES ARE INTERRELATED --
  - COMBAT GENERATES REQUIREMENTS FOR LOGISTICS SUPPORT
  - COMBAT YIELDS ATTRITION (AND REDUCED CAPABILITIES) OF LOGISTICS SUPPORT UNITS
  - LOGISTICS CONSTRAINS COMBAT CAPABILITIES
- CURRENT STATUS
  - LOGISTICS MODELS LACK VALID REPRESENTATIONS OF COMBAT
  - COMBAT MODELS HAVE LIMITED OR NO REPRESENTATION OF LOGISTICS
- AMIP WILL HELP

FINDING: AMIP MODELS

The Army Model Improvement Program (AMIP), chartered under AR 5-11, is developing an integrated hierarchy of combat models as shown on the facing figure (see also chapter 8 of this report).

a. The Force Evaluation Model (FORCEM) is an automated theater-level model developed by the US Army Concepts Analysis Agency (CAA).

b. The Corps/Division Evaluation Model (CORDIVEM) is an interactive corps/division-level model developed by the Combined Arms Operations Research Activity (CAORA).

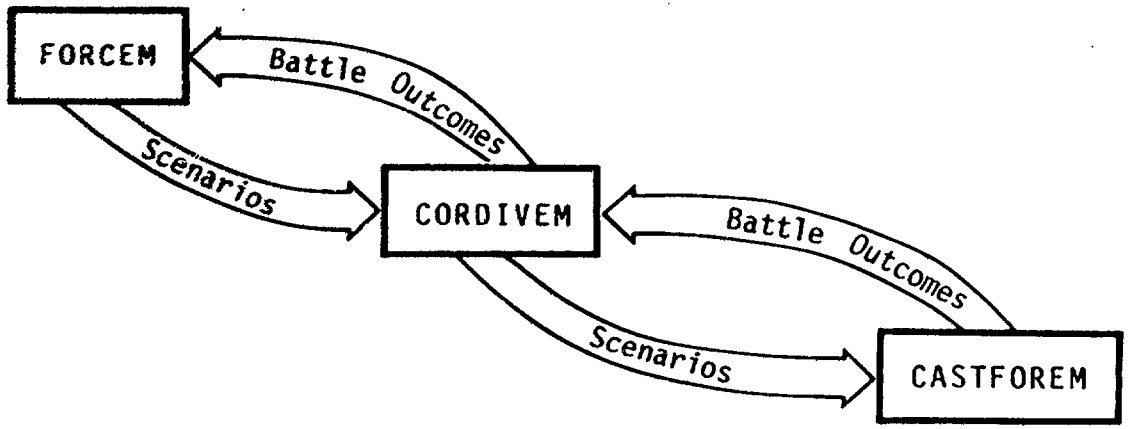
c. The Combined Arms Support Task Force Evaluation Model (CASTFOREM) is an automated battalion-level model developed by the TRADOC Systems Analysis Activity (TRASANA).

The three models have been developed and are in initial stages of use or in final testing. They are to be linked, in the sense that FORCEM is to provide scenario information to CORDIVEM, and CORDIVEM is to provide battle outcomes to FORCEM. A similar linking applies between CORDIVEM and CASTFOREM. More specifically, techniques have been devised for providing data on combat attrition and ammunition consumption from CORDIVEM to FORCEM, and from CASTFOREM to CORDIVEM.

AMIP MODELS

RAA EX

ECHELON	THEATER	CORPS/DIVISION	BATTALION
DEVELOPER			
CAA	FORCEM	CORDIVEM	CASTFOREM
CAORA (TORA)			
TRASANA (TORA)			



- LINKING METHODOLOGIES ALREADY DEVISED
  - COMBAT ATTRITION
  - AMMO CONSUMPTION

FINDING: LOGISTICS IN AMIP MODELS -- CURRENT

Regarding the current representation of logistics in the AMIP models --

a. CASTFOREM is primarily designed to treat a firefight taking place for a brief period of time, wherein logistics support activities would have little immediate impact. It has the capability to generate requirements for supply classes III, V, VII, and IX. It can represent equipment recovery and medical evacuation, and thereby generate requirements for maintenance and medical.

b. CORDIVEM portrays supply (classes III and V) and transportation. It has an interim representation of maintenance and medical through a return-to-duty module.

c. FORCEM has an extensive treatment of logistics including supply (classes III, V, VII, and IX), transportation, evacuation, maintenance and medical.

RAA
EX

LOGISTICS IN AMIP MODELS -- CURRENT

- CASTFOREM
  - USAGE OF SUPPLY CLASSES III, V, VII, AND IX
  - CAPABILITY FOR MAINTENANCE AND MEDICAL
- CORDIVEM
  - SUPPLY (CLASSES III AND V)
  - TRANSPORTATION
  - INTERIM REPRESENTATION OF MAINTENANCE AND MEDICAL
- FORCEM: EXTENSIVE TREATMENT OF LOGISTICS
  - SUPPLY (CLASSES III, V, VII, IX)
  - TRANSPORTATION
  - EVACUATION
  - MAINTENANCE
  - MEDICAL

FINDING: LOGISTICS IN AMIP MODELS -- PLANNED

Regarding the planned developments for logistics in the AMIP models --

a. A vastly expanded logistics module for CORDIVEM will be developed. Requirements for the module, and a management plan for its development and implementation, have been prepared and agreed to by the TRADOC Logistics Center and TORA.

b. Discussions are now ongoing among personnel of the three model development organizations and the TRADOC Logistics Center on technical approaches to passing logistics data up and down the hierarchy.

RAA
EX

LOGISTICS IN AMIP MODELS -- PLANNED

- VASTLY EXPANDED LOGISTICS MODULE FOR CORDIVEM, AGREED TO BY TRADOC LOGISTICS CENTER AND TORA
- PASSING LOGISTICS DATA UP AND DOWN HIERARCHY

FINDING: OTHER LOGISTICS MODELS

A detailed corps/divisional level functional model linked to CORDIVEM is needed by the TRADOC Logistics Center to provide detailed evaluation of logistic capabilities and to determine values for logistics parameters treated implicitly in CORDIVEM. Specifications can be developed now (given preparation of documentation of CORDIVEM). Implementation must await the automated version of CORDIVEM now being developed under contract.

The yearly logistic exercise (LOGEX) has traditionally required large numbers of combat arms players to feed the logistics system so that logistics training may be accomplished. A logistics training model with a combat driver is needed for LOGEX. This simulator would be interactive with the logistics system eliminating the need for the combat arms personnel. Cost avoidance for TDY and personnel will offset the cost of model development. The JESS/JTLS model may satisfy the requirement for the logistics training model; if not, a new development may be needed.

OTHER LOGISTICS MODELS

- DETAILED LOGISTICS MODEL NEEDED BY TRADOC LOGISTICS CENTER
  - CORPS/DIVISION LEVEL
  - LINKED TO CORDIVEM
  - PURPOSES -- DETAILED EVALUATIONS OF LOGISTICS CAPABILITIES
    -- DETERMINATION OF VALUES FOR LOGISTICS PARAMETERS TREATED IMPLICITLY IN CORDIVEM
  - SPECIFICATIONS CAN BE DEVELOPED NOW (GIVEN DOCUMENTATION OF CORDIVEM)
  - IMPLEMENTATION MUST AWAIT AUTOMATED VERSION OF CORDIVEM
- LOGISTICS TRAINING MODEL WITH COMBAT DRIVER NEEDED FOR ANNUAL LOGEX
  - TO REDUCE NUMBER OF COMBAT ARMS PLAYERS
  - MAY BE SATISFIED BY JESS/JTLS

FINDING: FORCE STRUCTURE

Regarding the studies performed by the US Army Concepts Analysis Agency (CAA) in support of the logistics functional area (typically for the Office of the Deputy Chief of Staff for Logistics (ODCSLOG) though the "line-of-credit" mechanism), such efforts should be those that focus on force structure or force design issues, or those that take advantage of CAA's unique capabilities in theater combat simulation.

A second item relates to those simulation capabilities. The theater combat model at CAA initiates two processes --

a. Total Army Analysis (TAA), wherein the initial program force (including logsitics support units) is developed beginning with the "design" combat force.

b. US Army Operational Readiness Analysis (OMNIBUS), wherein the capabilities of the current force are determined.

Given the imminent transition to the use of FORCEM for these processes (1 Jan 85), and the fact that FORCEM has an extensive treatment of logistics activities, the processes should be examined and possibly revised.

For example, regarding OMNIBUS, currently certain areas of logistics are treated after the CAA warfight by appropriate functional area proponents (e.g., POL by USAGMPA), albeit in greater detail than is possible in FORCEM. It is likely that the OMNIBUS process can be streamlined to take advantage of the treatment of logistics in FORCEM and to insure that FORCEM and subsequent computations are consistent.

RAA EX

FORCE STRUCTURE

- CAA LOGISTICS STUDIES SHOULD BE THOSE THAT --
  - FOCUS ON FORCE STRUCTURE OR FORCE DESIGN ISSUES, OR
  - TAKE ADVANTAGE OF CAA's UNIQUE CAPABILITIES IN THEATER COMBAT SIMULATION
- THEATER COMBAT MODEL AT CAA INITIATES --
  - TAA PROCESS FOR DEVELOPING THE INITIAL PROGRAM FORCE (WITH LOGISTICS UNITS)
  - OMNIBUS PROCESS FOR DETERMINING CAPABILITIES OF THE CURRENT FORCE
- FORCEM TO BE USED IN THESE PROCESSES BEGINNING 1 JAN 85
- PROCESSES SHOULD BE EXAMINED, REVISED, AND STREAMLINED IN ORDER TO --
  - TAKE ADVANTAGE OF REPRESENTATION OF LOGISTICS IN FORCEM
  - INSURE CONSISTENCY OF FORCEM COMPUTATIONS AND SUBSEQUENT OFFLINE COMPUTATIONS

RECOMMENDATION: RESOURCES

Regarding TRADOC, a recommendation that can increase the number of TRADOC ORSA personnel available for logistics analyses is given in chapter 4 of this report.

Regarding LEA, explore the establishment of a line-of-credit, or less formal mechanism, for LEA to obtain analytical support from AMSAA.

- TRADOC: RECOMMENDATION TO INCREASE TRADOC ORSA PERSONNEL AVAILABLE FOR LOGISTICS ANALYSES CONTAINED IN CHAPTER 4

- LEA: EXPLORE ESTABLISHMENT OF LINE-OF-CREDIT OR LESS FORMAL MECHANISM FOR LEA TO OBTAIN ANALYTICAL SUPPORT FROM AMSAA

RECOMMENDATION: GUIDANCE OF LOGISTICS ANALYSES

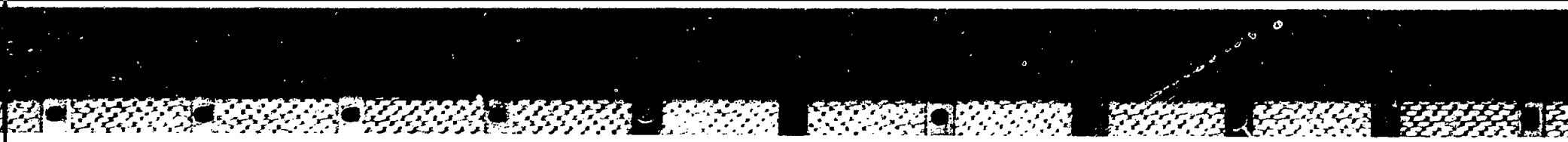
Establish and fill an SES-level operations research/systems analyst (ORSA), series 1515 position of Technical Advisor to the Deputy Chief of Staff for Logistics (DCSLOG) with the mission to oversee logistics analysis, provide direction on goals and tools for analysis, and insure the utility of the analysis.

In addition, assign responsibility for monitoring logistics analysis to an analyst in the Office of the Deputy Under Secretary of the Army for Operations Research (ODUSA(OR)).

GUIDANCE OF LOGISTICS ANALYSIS

- ESTABLISH AND FILL AN SES-LEVEL OPERATIONS RESEARCH/SYSTEMS ANALYST POSITION OF TECHNICAL ADVISOR TO DCSLOG WITH MISSION TO --
  - OVERSEE LOGISTICS ANALYSIS
  - PROVIDE DIRECTION ON GOALS AND TOOLS FOR ANALYSIS
  - INSURE UTILITY OF ANALYSIS

- ASSIGN RESPONSIBILITY FOR MONITORING LOGISTICS ANALYSIS TO AN ANALYST IN ODUSA(OR)



CHAPTER 14

PRODUCTION OF VULNERABILITY AND LETHALITY INPUT DATA

TASK DESCRIPTION

Determine the adequacy of support by the Army Materiel Command (AMC) and the Office of the Assistant Chief of Staff for Intelligence (OACSI) in providing critical vulnerability and lethality input data for assessment and decisionmaking.

TASK DESCRIPTION

- DETERMINE ADEQUACY OF SUPPORT BY AMC AND OACSI IN PROVIDING CRITICAL VULNERABILITY AND LETHALITY INPUT DATA

PROBLEM STATEMENT

Vulnerability analyses produce data on the vulnerability of a target (materiel or personnel) and the lethality of a weapon system. The Army analysis community has long recognized the need for large quantities of vulnerability and lethality (V&L) data. For a number of years, criticism has been leveled at the system for generating the data; in particular, the availability of V&L data needed for major decisions, and the timeliness and accuracy of the data. The purpose of this task is to determine the validity of such criticism, identify deficiencies, and bring the deficiencies to the attention of those capable of making improvements.

Regarding the scope of this task, there are many types of V&L data; e.g., physical, electronic, electro-optical. This task focuses on physical V&L data, a small area but one crucial to Army analyses. Other areas of V&L data are likely to have the same or similar problems to those identified here. Also, natural byproducts of V&L data and associated analyses are "vulnerability reduction" and "lethality enhancement." While such applications are important, they are not the primary focus here.

RAA
EX

PROBLEM STATEMENT

- TASK ORIGINATES IN CRITICISM REGARDING --
  - ABILITY OF PRODUCERS TO SUPPLY V&L DATA NEEDED FOR MAJOR DECISIONS
  - TIMELINESS AND ACCURACY OF V&L DATA
- SCOPE OF TASK
  - FOCUS: PHYSICAL VULNERABILITY
  - EXCLUDED
    - -- OTHER TYPES OF VULNERABILITY; E.G., ELECTRONIC, ELECTRO-OPTICAL
    - -- APPLICATIONS OF V&L DATA TO VULNERABILITY REDUCTION AND LETHALITY ENHANCEMENT

DATA AND DISCUSSION

The approach taken for this task was to conduct interviews with users and generators of V&L data. Interviews were preceded by a written list of questions. The organizations queried were --

a. Office of the Assistant Chief of Staff for Intelligence (OACSI)

b. Army Intelligence Agency (AIA) (provisional)

c. US Army Concepts Analysis Agency (CAA)

d. Headquarters, Army Materiel Command (HQ, AMC)

e. Vulnerability and Lethality Division, Ballistics Research Laboratory (VLD/BRL)

f. US Army Materiel Systems Analysis Activity (AMSAA)

g. Headquarters, US Army Training and Doctrine Command (HQ, TRADOC)

h. Combined Arms Operations Research Activity (CAORA)

i. TRADOC Systems Analysis Activity (TRASANA)

j. Deep Attack Program Office

- APPROACH
  - PROVIDE QUESTIONS
  - CONDUCT INTERVIEWS
- ORGANIZATIONS QUERIED
  - OACSI
  - AIA (PROVISIONAL)
  - CAA
  - HQ, AMC
  - VLD/BRL
  - AMSAA
  - HQ, TRADOC
  - CAORA (TORA)
  - TRASANA (TORA)
  - DEEP ATTACK PROGRAM OFFICE

FINDING: VULNERABILITY & LETHALITY DATA FLOW

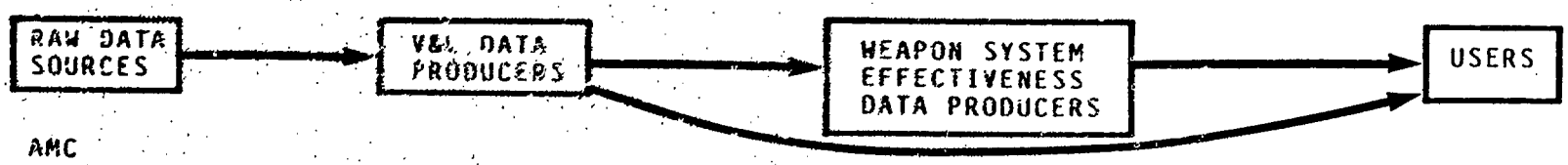
Vulnerability and lethality (V&L) data are generated using raw data describing the target and the weapon system. For all types of V&L data, some of the major sources of raw data, producers of V&L data, and users of V&L data are shown on the facing figure. Acronyms are defined below.

Because the focus of this task is physical V&L data, and because the primary producer of such data is VLD/BRL, the emphasis here is on V&L data generated by VLD/BRL. (Note: For some non-physical kill mechanisms, MSCs of AMC produce weapon system effectiveness data. Because of the focus here on physical V&L data, such activities of MSCs will not be discussed further).

Acronym	Organization
AMC	Army Materiel Command
PMs	Project Managers
MSCs	Major Subordinate Commands
TBD/BRL	Terminal Ballistics Division of Ballistics Research Laboratory
CRDC	Chemical Research and Development Center
TECOM	Test and Evaluation Command
AMMRC	Army Materiels and Mechanics Research Center
CIA	Central Intelligence Agency
DIA	Defense Intelligence Agency
FSTC	Foreign Science and Technology Center
USAF	US Air Force
USN	US Navy
USMC	US Marine Corps
VLD/BRL	Vulnerability and Lethality Division of Ballistics Research Laboratory
HDL	Harry Diamond Laboratories
MIA	Missile Intelligence Agency
AVSCOM	Aviation Systems Command
OMEW	Office of Missile Electronic Warfare
LAIR	Letterman Army Institute of Research
AMSAA	US Army Materiel Systems Analysis Activity
OSD	Office of the Secretary of Defense
HQDA	Headquarters, Department of the Army
CAA	US Army Concepts Analysis Agency
AIA	Army Intelligence Agency (provisional)
TRADOC	US Army Training and Doctrine Command
TORA	TRADOC Operations Research Activity
FORSCOM	US Army Forces Command
USANCA	US Army Nuclear and Chemical Agency
DNA	Defense Nuclear Agency
JTCG/ME	Joint Technical Coordinating Group for Munitions Effectiveness

RAA EX

VULNERABILITY & LETHALITY DATA FLOW



AMC
- PMs, MSCs, TBD/BRL, CRDC, TECOM, AMMRC

CONTRACTORS

INTEL COMMUNITY
- CIA, DIA, FSTC

DUGWAY PG

MEDICAL RESEARCH INSTITUTE

WALTER REED ARMY INSTITUTE OF RESEARCH

LOVELESS MEDICAL INSTITUTE

USAF, USN, USMC

VLD/BRL

HDL

MIA

AVSCOM

OMEW

BELVOIR R&D CENTER

LAIR

SIGNAL WARFARE LABS

SMALL CALIBER LAB

AMC
- AMSAA, MSCs

USANCA

DNA

OSD

HQDA

CAA

AMC
- PMs, MSCs

INTEL COMMUNITY
- CIA, DIA
- ACSI, AIA

TRADOC
- TORA
- LOGISTICS CENTER
- CENTER & SCHOOLS

FORSCOM

USAF, USN, USMC

JCTG/ME

V&L data are sometimes passed directly to the user for assessment and decisionmaking. More often, however, they are transmitted to AMSAA where they are integrated with scenario data and weapon system characteristics to yield weapon system effectiveness data (e.g., kill probabilities) under a variety of conditions.

FINDING: NEED

V&L data support a myriad of analytical efforts, a few of which are --

a. Cost and Operational Effectiveness Analyses (COEAs)

b. Mission Area Analyses (MAAs)

c. Sustainability Predictions for Army Spare Component Requirements Combat (SPARC), wherein predictions are made of spare parts needed as a result of combat damage.

d. Manpower Requirements Criteria (MARC), wherein maintenance manpower requirements are determined.

e. Source Selection Evaluation Boards (SSEBs).

f. Vulnerability reduction studies.

As a case example, a current program will be followed through the discussion of issues; namely, the Anti-Armor Weapon System-Missile (AAWS-M) program for developing a manportable missile capable of destroying a future Red tank. This program has two immediate demands for V&L data: TRADOC for a COEA prior to ASARC I, and AMC for engineering warhead lethality trade-off analyses for use by industrial competitors for development efforts.

NEED

- V&L DATA NEEDED FOR --
  - COEAs
  - MAAs
  - SPARC
  - MARC
  - SSEBs
  - VULNERABILITY REDUCTION STUDIES
- CASE EXAMPLE: AAWS-M
  - TRADOC FOR COEA
  - AMC FOR ENGINEERING WARHEAD TRADE-OFF ANALYSES

FINDING: CRITICALITY

V&L data can be critical for decisionmaking.

For example, with AAWS-M, the required probability of kill given a hit against the designated tank target could not be met by some candidate weapons, thus eliminating them from the competition.

CRITICALITY

- V&L DATA CRITICAL FOR DECISIONMAKING
- FOR AAWS-M, REQUIRED PROBABILITY OF KILL GIVEN HIT ELIMINATED SOME CANDIDATE WEAPONS

FINDING: ACCURACY

In general, users are satisfied with the accuracy of V&L data, although skepticism occasionally surfaced. The user is frequently less interested in knowing the margin of error (which can be provided) than in getting numbers!

There is no independent mechanism to verify accuracy.

VLD/BRL indicated concern on the issue of accuracy. A large fraction of the raw experimental data upon which vulnerability analyses are based is antiquated. There is a need to conduct experiments with modern warhead concepts against modern armor concepts. Also, faithful representations of the threat are essential to accuracy. Without such experiments and threat definitions, there is a large margin of error in the V&L data.

Regarding AAWS-M, V&L data obtained using "new data" and that obtained using "old data" showed marked differences.

ACCURACY

- USER
  - GENERALLY SATISFIED WITH ACCURACY, SOME SKEPTICISM
  - FREQUENTLY MORE INTERESTED IN GETTING NUMBERS THAN IN KNOWING MARGIN OF ERROR
- NO INDEPENDENT MECHANISM TO VERIFY ACCURACY
- PRODUCER -- CONCERNED
  - NEED FOR NEW EXPERIMENTAL DATA
  - NEED FOR FAITHFUL REPRESENTATION OF THREAT
- FOR AAWS-M, V&L DATA OBTAINED FROM "NEW DATA" SHOWED MARKED DIFFERENCES FROM THAT OBTAINED FROM "OLD DATA"

FINDING: TIMELINESS

Timeliness is very important to users, who are constrained by milestones.

In general, V&L data are provided in a timely fashion -- but not always.

For AAWS-M, the COEA was delayed due to late V&L data. This occurred because the existing raw data and methodology were felt by VLD/BRL to be inappropriate, and funding to obtain new raw data and modify methodology was not provided until very late.

RAA
EX

TIMELINESS

- TIMELINESS IMPORTANT TO USERS, WHO ARE CONSTRAINED BY MILESTONES
- IN GENERAL, V&L DATA PROVIDED IN TIMELY FASHIONS -- BUT NOT ALWAYS
- FOR AAWS-M, COEA DELAYED DUE TO LATE V&L DATA
  - OUTDATED RAW DATA AND METHODOLOGY
  - FUNDING TO UPDATE DATA AND METHODOLOGY PROVIDED LATE

FINDING: COST

Producing V&L data is expensive. This applies especially to methodology development and (raw) data generation. The latter often involves live firings with attendant costs for weapon procurement and target construction.

The actual application of raw data to generate V&L data through the appropriate methodology is less expensive.

For example, with AAWS-M, the cost presented to TRADOC for the COEA was $135K. However, it was supported by a $2M program to obtain experimental data and modify methodology; this money was provided primarily by AMC elements.

COST

- PRODUCING V&L DATA EXPENSIVE
  - METHODOLOGY DEVELOPMENT
  - RAW DATA GENERATION
- FOR AAWS-M, COEA --
  - COST $135K
  - SUPPORTED BY $2M PROGRAM TO OBTAIN EXPERIMENTAL DATA AND MODIFY METHODOLOGY

FINDING: SUMMARY OF ISSUES

V&L data are necessary and critical for assessment and decisionmaking. There are problems associated with accuracy, timeliness, and cost.

RAA
EX

SUMMARY OF ISSUES

- V&L DATA NECESSARY AND CRITICAL
- PROBLEMS
  - ACCURACY
  - TIMELINESS
  - COST

FINDING: UNDERLYING PROBLEMS

The problems noted on the previous figure can be traced back to several underlying problems --

a. New methodologies for vulnerability analysis are often needed but not yet available. Such methodologies are needed because of the introduction of new kill mechanisms and vulnerability reduction techniques, and because of changing threat.

b. New raw data are often needed but are not available. Terminal effects data are needed for the same reasons as are new methodologies; obtaining such data usually involves conducting live firings. Target descriptions must be developed when new targets are encountered, and the behavior of these targets when damaged must be analyzed.

c. Early planning and coordination of requirements fo V&L data and weapon system effectiveness data are not accomplished due to changes in user planning schedules.

d. There is a lack of steady user funding for VLD/BRL work.

UNDERLYING PROBLEMS

- UNDERLYING PROBLEMS
  - NEED TO DEVELOP NEW METHODOLOGIES FOR VULNERABILITY ANALYSES
  - NEED TO OBTAIN NEW RAW DATA
    - -- TERMINAL EFFECTS DATA
    - -- TARGET DESCRIPTIONS
  - INSUFFICIENT EARLY PLANNING AND COORDINATION OF REQUIREMENTS WITH VLD/BRL AND AMSAA
  - LACK OF STEADY USER FUNDING FOR VLD/BRL WORK

FINDING: ROOT CAUSE OF PROBLEMS

The root cause of the problems noted can be traced to the current method of operation of VLD/BRL.

VLD/BRL's work program can be subdivided (for discussion purposes) into three broad areas --

a. Methodology development. This involves designing and implementing new vulnerability analysis methodologies. Such development takes considerable time.

b. Raw data generation. This involves obtaining new raw data (including terminal effects data and target descriptions). Obtaining terminal effects data often requires live firings, which take time (for planning and execution) and money.

c. Application. This usually involves applying computer models to raw data. It is the last step in providing data for the user, and takes the least time.

Currently, the money provided through mission funding is intended for methodology development, and covers 30-40% of the work program. Almost all raw data generation and application, and some methodology development, must be paid for by user funding, which covers the remaining 60-70% of the work program.

Planning for methodology development and raw data generation is difficult. Such activities take time to perform. On the other hand, because VLD/BRL's program is market-driven, requirements in these areas only become firm when user funds are provided.

Lastly, even were VLD/BRL prescient and hence able to plan for future requirements the work performed would not necessarily support those analysis organizations most in need of V&L data for assessment and decisionmaking, since such organizations may not be those with the money.

ROOT CAUSE OF PROBLEMS

- CURRENT METHOD OF OPERATION OF VLD/BRL

- WORK PROGRAM
  - METHODOLOGY DEVELOPMENT
  - RAW DATA GENERATION
  } -- MOST TIME CONSUMING, MOST IMPORTANT
  - APPLICATION -- LEAST TIME CONSUMING

- CURRENT FINDING
  - 30% MISSION: FOR METHODOLOGY DEVELOPMENT, SOME RAW DATA GENERATION
  - 70% USER: FOR RAW DATA GENERATION AND APPLICATION, SOME METHODOLOGY DEVELOPMENT

- DIFFICULT TO PLAN FOR METHODOLOGY DEVELOPMENT AND RAW DATA GENERATION
  - ACTIVITIES TAKE TIME TO PERFORM
  - REQUIREMENTS FIRM ONLY WHEN USER FUNDS PROVIDED

- THOSE NEEDING V&L DATA MAY NOT BE THOSE WITH THE MONEY

FINDING: REMEDY

The fact that AMC has the technical expertise on materiel and damage to materiel; the need within AMC for V&L data and vulnerability reduction and lethality enhancement data; and the fact that historically, AMC sources have provided the bulk of the funding for such data argue that AMC should continue to conduct the V&L function and that AMC's funding allocation strategy should provide the necessary resources.

Armed with appropriate funding, VLD/BRL should plan and execute a coherent, long-term program of methodology development, raw data generation, and application to support assessment and decisionmaking. Involved in such a program should be a method for determining likely future users, prioritizing work for current and future users, and balancing the areas of work.

Because VLD/BRL is, and should continue to be, a key player in preparing intelligence estimates -- vulnerability of foreign targets, lethality of foreign weapon systems -- consideration should be given to seeking funds for a portion of VLD/BRL's program through the General Defense Intelligence Program (GDIP) managed by the Defense Intelligence Agency (DIA). Involved in such a request, of course, would be the preparation by VLD/BRL of a long-term plan for generating intelligence data.

RAA
EX

REMEDY

- AMC SHOULD CONTINUE V&L FUNCTION AND PROVIDE NECESSARY RESOURCES
  - HAS TECHNICAL EXPERTISE
  - MAJOR USER OF DATA
  - MAJOR SOURCE OF FUNDS FOR DATA
- VLD/BRL SHOULD PLAN AND EXECUTE LONG-TERM, COHERENT PROGRAM OF METHODOLOGY DEVELOPMENT, RAW DATA GENERATION, AND APPLICATION, INCLUDING --
  - METHOD FOR DETERMINING LIKELY FUTURE USERS
  - PRIORITIZING WORK FOR CURRENT AND FUTURE USERS
  - BALANCING AREAS OF WORK
- GDIP FUNDS CAN BE SOUGHT FOR PORTION OF VLD/BRL PROGRAM
  - SINCE VLD/BRL PRODUCES INTELLIGENCE DATA
  - WOULD REQUIRE PREPARATION OF LONG-TERM PLAN

RECOMMENDATION: TIMELINESS

Users of V&L data and weapon system effectiveness data should coordinate requirements as early as possible with VLD/BRL and AMSAA. Such coordination enables VLD/BRL and AMSAA to provide data in a more timely fashion.

TIMELINESS

- USERS OF V&L DATA AND WEAPON SYSTEM EFFECTIVENESS DATA SHOULD COORDINATE RQUIREMENTS AS EARLY AS POSSIBLE WITH VLD/BRL AND AMSAA

RECOMMENDATION: VLD/BRL WORK PROGRAM

VLD/BRL should plan and execute a long-term program of methodology development, raw data generation, and application.

AMC should resource VLD/BRL to accomplish such a program.

VLD/BRL should prepare a long-term plan for generating intelligence data.

OACSI should petition DIA for GDIP funds to finance that plan for generating inteiligence data

RAA
EX

VLD/BRL WORK PROGRAM

- VLD/BRL SHOULD PLAN AND EXECUTE LONG-TERM PROGRAM OF --
  - METHODOLOGY DEVELOPMENT
  - RAW DATA GENERATION
  - APPLICATION
- AMC SHOULD RESOURCE VLD/BRL TO ACCOMPLISH PROGRAM
- VLD/BRL SHOULD PREPARE LONG-TERM PLAN FOR GENERATING INTELLIGENCE DATA
- OACSI SHOULD PETITION DIA FOR GDIP FUNDS TO FINANCE PLAN FOR GENERATING INTELLIGENCE DATA

RECOMMENDATION: FOLLOW-ON STUDY

Due to time constraints, the review conducted under the "Production of Vulnerability and Lethality Input Data" task focused on physical V&L data, omitting to a large extent other types of V&L data.

As a follow-on study, AMC should review the processes for obtaining all types of V&L data, determine if deficiencies exist, make recommendations for improvement, and implement the recommendations where possible.

FOLLOW-ON STUDY

- AMC SHOULD --
  - REVIEW PROCESSES FOR OBTAINING ALL TYPES OF V&L DATA (NOT JUST PHYSICAL)
  - DETERMINE IF DEFICIENCIES EXIST
  - MAKE RECOMMENDATIONS FOR IMPROVEMENT
  - IMPLEMENT RECOMMENDATIONS WHERE POSSIBLE

CHAPTER 15

INTERFACE WITH EXTERNAL ANALYSIS ACTIVITIES

TASK DESCRIPTION

The purpose of this task was to assess how analysis activities within the Army interface with analysis activities external to the Army, and to evaluate the adequacy of such relationships.

RAA
EX

EXTERNAL ANALYSIS INTERFACES

- ASSESS THE ADEQUACY OF INTERFACES WITH ANALYSIS ACTIVITIES EXTERNAL TO DEPARTMENT OF THE ARMY

SCOPE OF EXTERNAL INTERFACES

There are many analysis organizations external to the Department of the Army both in government and in the private sector. This study principally examined analysis activities within the Department of Defense: the Office of the Joint Chiefs of Staff, Department of the Air Force, Department of the Navy, and the Office of the Secretary of Defense. This set was chosen because of high Army management emphasis on improving capabilities for joint operations by greater coordination and cooperation with joint activities and other services. In addition analysis interfaces with selected Allies were examined.

RAA
EX

SCOPE OF EXTERNAL ANALYSIS INTERFACES

EXAMINED INTERFACES WITH:

- OFFICE JOINT CHIEFS OF STAFF
  - DIRECTOR OF THE JOINT STAFF
  - JOINT ANALYSIS DIRECTORATE
- OTHER SERVICES
  - HEADQUARTERS DEPARTMENT OF THE AIR FORCE
  - HEADQUARTERS DEPARTMENT OF THE NAVY
- OFFICE OF THE SECRETARY OF DEFENSE
- ALLIES

POTENTIAL INTERFACE WITH OJCS AND CINCs

A major initiative of General Vessey, Chairman of the Joint Chiefs of Staff, has been the development and fielding of analytical techniques to support operational planning by the Unified Commands. This project, called Modern Aids to Planning (MAP) is under the joint staff cognizance of the Joint Analysis Directorate with US Readiness Command charged with developmental responsibilities. There is no formal role for the services in the project, but there has been extensive informal participation and some funding support by the Army. Two Army activities (Concepts Analysis Agency and Army War College) are supporting a REDCOM sponsored contract with JPL to develop the Joint Theater Level Simulation (JTLS), a computer assisted man-in-the-loop war game to be used by the Unified Commands to assist in plan development and evaluation. The Army has an interest in this war game as both a tool for analysis and for training. JAD has sponsored informal meetings of senior analysts of all the services to provide greater information exchange on the MAP.

Under the current MAP arrangements there is a serious mis-match between responsibilities and capabilities. The command with development responsibility has limited in-house development capability and is forced to rely on contractors: the services, which have substantial in-house development capabilities, have no formal role in the project. An obvious remedy is to assign a formal development role to the services in support of OJCS. This role could encompass technical guidance and assistance to the project. Service development of models to be used in the MAP would also assist in ensuring consistency between analytical planning aids developed for the Unified Commands and those developed unilaterally by the services. Further, to adequately support the program in the field the Service Component Commands will need increased analysis capabilities to interact with the analysis groups to be formed in the headquarters of the Unified Commands.

RAA EX

ANALYSIS INTERFACES WITH OJCS AND UNIFIED COMMANDS

- OJCS MODERN AIDS TO PLANNING PROJECT (MAP)
  - JOINT ANALYSIS DIRECTORATE - PROJECT COORDINATION
  - US READINESS COMMAND - DEVELOPMENT RESPONSIBILITY
  - SERVICES - NO FORMAL ROLE. INFORMAL PARTICIPATION AND SUPPORT
- PROBLEMS
  - CAPABILITY-RESPONSIBILITY MIS-MATCH
  - LACK OF MECHANISMS TO ENSURE CINC-SERVICE CONSISTENCY
  - LIMITED ANALYSIS SUPPORT IN ARMY COMPONENT COMMANDS
- POTENTIAL IMPROVEMENTS
  - FORMALIZED SERVICE SENIOR ANALYSTS ADVISORY BODY
  - FORMAL SERVICE PARTICIPATION IN DEVELOPMENT ACTIVITIES
  - ORSA CELLS IN ARMY COMPONENT COMMANDS

POTENTIAL INTERFACES WITH OJCS

Both OJCS and HQ DA (through the Concepts Analysis Agency) conduct studies at force level using theater campaign models. These studies examine, among other things, the capabilities of current and future forces to execute various operations plans. Although similar in purpose and scope these studies differ by being done by different organizations using different people, methodologies, and data bases. This creates the potential for unnecessarily different outcomes and hence unnecessarily different views between organizations which should share a common perspective. The opportunity exists to reduce this potential through greater coordination and cooperation between the Joint Analysis Directorate (JAO) of OJCS and the Concepts Analysis Agency especially in model and data base development.

RAA EX

POTENTIAL ANALYSIS INTERFACES WITH OJCS

OJCS
JOINT ANALYSIS DIRECTORATE

TOTAL FORCE CAPABILITY ANALYSIS

- THEATER LEVEL (NATO, NEA, SWA, ETC)
- CURRENT AND PROGRAM YEARS
- ALL SERVICES PARTICIPATE
- INBATIM MODEL PLAYED AS A MAN-IN-THE-LOOP WAR GAME

HQ DA
CONCEPTS ANALYSIS AGENCY

FORCE STUDIES (OMNIBUS, TAA, PFCA, ETC)

- THEATER LEVEL (NATO, NEA, SWA, ETC)
- CURRENT AND PROGRAM YEARS
- UNILATERAL WITH INPUT DATA ON OTHER SERVICES
- CEM/FORCEM SIMULATION

SIMILAR SCOPE	DIFFERENT DATA BASES
SIMILAR PURPOSE	DIFFERENT METHODOLOGIES
SIMILAR OUTPUTS	DIFFERENT PEOPLE

- POTENTIAL FOR UNNECESSARILY INCONSISTENT VIEWS BETWEEN OJCS AND ARMY ON TOPICS OF COMMON INTEREST
- OPPORTUNITY FOR COLLABORATION ON DATA BASES AND METHODOLOGIES

INTERFACE WITH AIR FORCE

The recent Memorandum of Agreement, (MOA), between the Chiefs of Staff of the Army and the Air Force demonstrates the range of joint issues of major importance to the two services. Many of the specific issues addressed in the MOU require analysis. In response to the MOA various ad hoc arrangements are being made to conduct these analyses. The MOA does not address the general issue of joint analysis by the two services, particularly the continuing identification of issues for joint analysis and mechanisms for their conduct. It does, however, expressly note that it may be expanded to include future joint initiatives.

There are also opportunities for joint testing on a bilateral basis. As the number of joint analyses increases it is expected that both the need and opportunity for joint testing will increase. Mechanisms developed for identifying issues for joint analysis and ensuring their conduct should also address issue identification and conduct of joint testing.

RAA EX

ANALYSIS INTERFACE WITH AIR FORCE

- THERE ARE MANY MAJOR ISSUES OF IMPORTANCE TO BOTH THE ARMY AND THE AIR FORCE
- MEMORANDUM OF AGREEMENT (MOA) BETWEEN ARMY AND USAF CHIEFS OF STAFF CALLS FOR STUDY OF NUMEROUS ISSUES... DOES NOT ADDRESS THE GENERAL ISSUE OF CONDUCTING JOINT STUDIES... DOES PROVIDE FOR EXPANSION TO INCLUDE FUTURE JOINT INITIATIVES.
- VARIOUS ARRANGEMENTS ADOPTED TO GET REQUIRED STUDIES DONE: USAF LEAD, ARMY LEAD, CONTRACTOR, ETC.
- OPPORTUNITY FOR INCREASING ARMY-AIR FORCE TESTING.
- NO SIMPLE WAY TO EITHER IDENTIFY ISSUES FOR JOINT STUDY OR GET THEM DONE.

INTERFACE WITH THE AIR FORCE

At the headquarters level there is a considerable difference in how analysis is conducted in the two services. As a generalization the Air Force conducts its analysis at this level by several elements integral to the Air Staff whereas the Army employs a single, large analysis activity (i.e. the Concepts Analysis Agency) in support of all of HQ DA. Two aspects of this complicate the conduct of joint studies. First, there is no central point of contact for studies and analysis in the Air Staff whereas there is a central point of contact on the Army Staff (i.e. SPMO and a central point of contact in the Army Secretariat (i.e. ODUSA(OR)). Second, the study-doing elements of the two headquarters do not align well organizationally.

RAA EX

ANALYSIS INTERFACE WITH AIR FORCE

HQ USAF	HQ DA
ASSISTANT CHIEF OF STAFF STUDIES & ANALYSIS -- STUDIES OF SYSTEMS & OPERATIONS DEPUTY CHIEF OF STAFF OPERATIONS -- FORCE STRUCTURE ANALYSIS -- MISSION AREA ANALYSIS -- CHECKMATE CAPABILITY ANALYSIS	CONCEPTS ANALYSIS AGENCY
STUDIES AND ANALYSIS CONDUCTED BY SEVERAL ORGANIZATIONS INTEGRAL TO THE AIR STAFF	CENTRAL STUDIES AND ANALYSIS AGENCY IN SUPPORT OF THE ARMY STAFF

- NO CENTRAL POINT OF CONTACT FOR STUDIES AND ANALYSIS ON AIR STAFF.
- STUDY AND ANALYSIS ACTIVITIES OF THE AIR STAFF AND ARSTAFF DO NOT ALIGN WELL. COMPLICATES CONDUCT OF JOINT STUDIES AT HEADQUARTERS LEVEL.

INTERFACE WITH THE AIR FORCE

Over the years there have been various arrangements made by TRADOC to secure USAF participation in Army combat developments studies. These have involved TRADOC relationships with the Tactical Air Command for the provision of USAF liasion personnel to TRADOC and at one time a joint TAC-TRADOC war games activity at Nellis AFB. These arrangements have been on a MACOM to MAJCOM basis rather than department-to-department and have varied with the various commanders. Also the arrangements are not really symmetrical in terms of assigned responsibilities because while TRADOC is delegated the combat developments function for the Army the Air Force retains this function at Departmental level.

RAA EX

ANALYSIS INTERFACE WITH AIR FORCE

COMBAT DEVELOPMENTS

TAC-TRADOC Headquarters Analysis Activity

USAF MAJCOM	ARMY MACOM
TAC-TRADOC NELLIS AFB ANALYSIS ACTIVITY DISCONTINUED	TRADOC - CAC CACDA CAORA TAC LNO MAC LNO

- TAC-TRADOC ARRANGEMENTS ON COMBAT DEVELOPMENTS DO NOT REFLECT EQUAL RESPONSIBILITIES. TRADOC RESPONSIBLE FOR ARMY DOCTRINE DEVELOPMENT: HQ USAF RESPONSIBLE FOR AIR FORCE DOCTRINE.

- PREVIOUS TAC-TRADOC JOINT ANALYSIS ACTIVITY AT NELLIS AFB DISESTABLISHED AT TAC INITIATIVE

- SMALL JOINT ARMY-USAF ANALYSIS ACTIVITY AT HEADQUARTERS TAC-TRADOC LEVELS LOCATED AT LANGLEY AFB. HAS NO STATUS WITH EITHER HQDA OF HQ USAF.

- EXTENSIVE PARTICIPATION BY USAF AT FORT LEAVENWORTH IN WAR GAMES <u>BUT</u> THESE ARE NOT CONSIDERED JOINT STUDIES BY EITHER THE ARMY OR THE AIR FORCE.

INTERFACE WITH THE DEPARTMENT OF THE NAVY

As with the Air Force, there are numerous issues of joint concern to the Navy and the Army. Some of these involve the potential for common requirements (such as the JVX aircraft), but most are of an operational nature and concern such matters as sealift and fire support coordination. Currently there is very little interface between Navy (incl the Marine Corps) and Army analytical activities. Army studies (such as OMNIBUS and TAA) that include naval forces use input data gathered from the Navy but there is little or no contact between analysis activities. The potential exists for greater interface and the possibility of joint or parallel studies and the possibility of sharing models and data. In the training arena some interface already exists between Army analysis activities and the Naval War College, but there is potential for wider ranging and higher level cooperation.

The recent Memorandum of Agreement between the Army and Navy Logisticians calls for cooperation in OSD/OJCS sponsored logistics and mobility studies. This establishes a precedent that would be broadened to encompass other areas of mutual interest.

RAA EX

ANALYSIS INTERFACE WITH THE DEPARTMENT OF THE NAVY

- POTENTIAL ARMY OPERATIONS ARE AFFECTED BY NAVAL FORCE CAPABILITIES; E.G., SEALIFT, OFF-SHORE FIRE SUPPORT.

- ARMY ANALYSIS OF ISSUES INVOLVING NAVAL SUPPORT HAVE LITTLE OR NO INTERFACE WITH NAVY ANALYSIS ACTIVITIES.

- ARMY - NAVY MEMORANDUM OF AGREEMENT ON JOINT STRATEGIC MOBILITY PROGRAM DEVELOPMENT AND COORDINATION REQUIRES COOPERATION IN OSD/JCS SPONSORED LOGISTICS AND MOBILITY STUDIES.

- POTENTIAL EXISTS FOR JOINT STUDIES OR STUDIES DONE IN PARALLEL WITH CLOSE COORDINATION.

INTERFACES WITH OSD

There are several elements of OSD with which the Army analysis community interacts. Principal amongst these is the Office of the Secretary of Defense for Program Analysis and Evaluation, OSD(PAE). Within this office there are interactions with the elements concerned with land forces, mobility forces, and regional forces and to a lesser extent with strategic forces. On matters of manpower and logistics there is considerable interaction with the Office of the Assistant Secretary of Defense for Manpower, Installations, and Logistics OSD(MIL) and on matters of Net Assessment with the Director of Net Assessment, OSD(NA). With the Tactical Warfare Programs element of the Office of the Under Secretary of Defense for Research and Engineering, there is interaction on analyses regarding materiel systems development and acquisition. There are lesser interactions with various other OSD elements.

With one major exception, there are open and productive interchanges between Army analysis activities and OSD elements. Because of fundamentally different views between the Army top leadership and certain individuals in OSD/(PAE) Land Forces a strong adversary relationship has developed. This is not a new development but has evolved over a period of some years. The current atmosphere of animosity, distrust and secretiveness precludes establishing with this office a healthy analysis interface such as exists between the Army and all other elements of OSD.

RAA
EX

ANALYSIS INTERFACES WITH OSD

- PRINCIPAL ANALYTICAL INTERFACES
  - OFFICE ASSISTANT SECRETARY OF DEFENSE PROGRAM ANALYSIS AND EVALUATION - OSD(PAE)
  - OFFICE ASSISTANT SECRETARY OF DEFENSE MANPOWER, INSTALLATIONS, AND LOGISTICS - OSD(MIL)
  - OFFICE DIRECTOR OF NET ASSESSMENT - OSD(NA)
  - OFFICE OF THE UNDER SECRETARY OF DEFENSE FOR RESEARCH AND ENGINEERING - USDRE
- STATUS OF ARMY - OSD ANALYSIS RELATIONSHIPS
  - WITH USDRE - GOOD
  - WITH OSD(NA) - GOOD
  - WITH OSD(MIL) - GOOD
  - WITH OSD(PAE) - GOOD WITH MOBILITY FORCES DIVISION AND REGIONAL FORCES DIVISION.
    - VERY POOR WITH LAND FORCES DIVISION

ANALYSIS INTERFACES WITH OSD

An example of a successful tri-service program is provided by the Joint Technical Coordinating Group which develops data on munitions effectiveness and publishes the Joint Munitions Effectiveness Manuals. This is a long standing and well supported program that is directed by the Secretary of Defense and is considered an OSD program although it is funded in the Army Budget. It is considered to be successful primarily because it produces a product needed by the field, and is technical in nature and hence avoids budget threatening issues that detract from many attempted joint programs. It could be viewed as a potential model for other efforts.

RAA
EX

ANALYSIS INTERFACE WITH OSD

- SUCCESSFUL OSD DIRECTED TRI-SERVICE ANALYSIS PROGRAM: JOINT TECHNICAL COORDINATION GROUP (JTCG)
  - DEVELOPS AND PUBLISHES MUNITIONS EFFECTIVENESS DATA (JOINT MUNITION EFFECTIVENESS MANUALS - JMEM)
  - REASONS FOR SUCCESS:
    - -- SEC DEF DIRECTED
    - -- CENTRALLY FUNDED
    - -- TECHNICAL PROGRAM - NOT MISSION OR BUDGET THREATENING TO THE SERVICES
    - -- COMMUNITY OF DEDICATED PRODUCERS
    - -- PRODUCTS ARE USEFUL TO THE FIELD
  - COULD BE SEEN AS A POTENTIAL MODEL FOR OTHER EFFORTS

ANALYSIS INTERFACES WITH ALLIES

The Army analytical community has developed strong relationships with the analysis activities of many of our major allies. Some of these interfaces have come about as a consequence of international agreements (e.g. the Quadripartite Panel on Army Operational Research - QWG/AOR, NATO Panels) while others have evolved on a bilateral basis. An especially strong link has been forged with two of the major UK analysis organizations (RARDE and DOAE) and with the FRG MOD Department for Studies and Exercises. Within the past several years relationships have been developed with French analysis organizations. These relationships are characterized by model, data, and study results sharing and by the conduct of joint studies. Indeed we have enjoyed greater success in conducting joint studies with our allies than with our sister services. The relationship with the ROK Korean Institute of Defense Analysis has been progressing on the level of methodology exchange and development. Further seminars between KIDA and US Army analsis agencies are planned for the Fall of 1985. The potential exists for the conduct of joint ROK-US studies.

RAA EX

ANALYSIS INTERFACES WITH ALLIES

- EXTENSIVE ARMY ANALYSIS COMMUNITY INTERFACES WITH ANALYSIS ACTIVITIES OF ALLIES
- INTERFACES THROUGH INTERNATIONAL AGREEMENTS
  - QWG/AOR
  - NATO PANELS
- BI-LATERAL INTERFACES
  - UK
  - FRANCE
  - FRG
  - ROK
- PROVIDE
  - BETTER DATA AND MODELS
  - GREATER UNDERSTANDING OF COMMON PROBLEMS

FINDINGS ON EXTERNAL ANALYSIS INTERFACES

The consolidated findings on the chart are extracted from the preceding discussion of interfaces with various organizations external to the Army.

RAA
EX

FINDINGS ON EXTERNAL ANALYSIS INTERFACES

- INTERFACE WITH OJCS
  - NO FORMAL SERVICE ROLE IN MODERN AIDS TO PLANNING (MAP) PROJECT.
  - EXTENSIVE SERVICE CAPABILITY TO SUPPORT MAP PROJECT.
  - INSUFFICIENT EFFORT TO ENSURE CONSISTENCY BETWEEN OJCS THEATER LEVEL MODELS AND ARMY MODELS AT SAME LEVEL.

- INTERFACE WITH USAF
  - NEED FOR JOINT STUDIES.
  - NEED FOR MECHANISMS FOR IDENTIFYING SPECIFIC JOINT STUDY AND TEST NEEDS AND PROVIDING TASKINGS
  - NEED FOR MECHANISMS FOR CONDUCTING JOINT STUDIES AND TESTS.

- INTERFACE WITH THE NAVY
  - NEED FOR MECHANISM FOR IDENTIFYING AREAS OF COORDINATION AND COOPERATION IN ANALYSIS.
  - NEED FOR MECHANISMS FOR EFFECTIVE COORDINATION AND COOPERATION IN CONDUCTING ANALYSIS.

- INTERFACE WITH OSD
  - EXTENSIVE ANALYSIS INTERFACES WITH MULTIPLE OSD ELEMENTS.
  - RELATIONSHIPS GOOD WITH ALL ELEMENTS OF OSD(PAE) EXCEPT LAND FORCES
  - JCG/ME/JMEM EXAMPL OF A SUCCESSFUL OSD SPONSORED TRI-SERVICE PROGRAM.

- INTERFACE WITH ALLIES
  - EXTENSIVE INTERFACES WITH ANALYSIS ORGANIZATIONS OF MAJOR ALLIES.
  - VERY PRODUCTIVE AND USEFUL ACTIVITY.

ANALYSIS INTERFACE WITH OJCS - RECOMMENDATIONS

The OJCS Modern Aids to Planning project could substantially benefit from greater service participation. Two forms of participation are recommended. First, an advisory body composed of senior analysts from the services to provide technical guidance and ensure coordination with similar or related service efforts. Such a body has met several times informally under Joint Analysis Directorate auspices. Adoption of this recommendation would formalize this activity. Second, the services should play a formal role in the development and testing of analytical techniques that would ultimately be exported to the Unified Commands. This would make available to OJCS the considerable in-house analysis capabilities of the services and would help ensure consistency between analytical planning aids developed for service use and for the Unified Commands.

Because both the Army and OJCS conduct war games of theater level compaigns there should be greater sharing of models, data and experience to eliminate unnecessary inconsistencies. This can be done by regular interchanges between the Army's Concepts Analysis Agency and the OJCS Joint Analysis Directorate.

RECOMMENDATIONS ON EXTERNAL ANALYSIS INTERFACES

- ANALYSIS INTERFACE WITH OJCS
  - REQUEST OJCS TO FORMALIZE SERVICE ROLES IN THE MODERN AIDS TO PLANNING PROJECT TO INCLUDE DEVELOPMENT, TEST, AND GUIDANCE RESPONSIBILITIES.
  - CONCEPTS ANALYSIS AGENCY AND JOINT ANALYSIS DIRECTORATE CONDUCT REGULAR INTERCHANGES ON THEATER LEVEL MODELS AND DATA.

ANALYSIS INTERFACES WITH THE AIR FORCE - RECOMMENDATIONS

The Army and the Air Force have a long history of cooperation in studies although this has mainly consisted of input data and advisory services rather than true joint studies. The recent Army-USAF Memorandum of Agreement (MOA) established a more intense level of coordination and cooperation and, indeed, requires the conduct of a number of joint studies. The MOA does not, however, explicitly address mechanisms for conducting joint studies on a continuing basis. The MOA could be amended to do this, and this is recommended. Such an amendment could provide for periodic joint review (at Army DCSOPS, Air Force Ops level) of issues to identify those requiring joint study; a mechanism for tasking the conduct of joint studies; exchange of analysts between Army and USAF analysis activities; and establishment of a HQ DA and HQ DAF sanctioned continuing joint analysis activity. It is further recommended that the latter activity be established at the TRADOC Combined Army Center at Fort Leavenworth, Kansas.

RECOMMENDATIONS ON EXTERNAL ANALYSIS INTERFACES

- ANALYSIS INTERFACE WITH THE AIR FORCE
  - SEEK TO AMEND THE ARMY - USAF MOA TO PROVIDE FOR:
    - -- MECHANISM FOR CONTINUING JOINT IDENTIFICATION OF STUDY ISSUES
    - -- MECHANISM FOR JOINT TASKING OF JOINT STUDY ISSUES
    - -- CONDUCT OF JOINT STUDIES
    - -- EXCHANGE OF ANALYSTS BETWEEN ARMY AND USAF ANALYSIS ACTIVITIES
    - -- ESTABLISHMENT OF A JOINT ARMY - USAF ANALYSIS ACTIVITY TO BE LOCATED AT THE COMBINED ARMS CENTER, FORT LEAVENWORTH

ANALYSIS INTERFACE WITH THE NAVY - RECOMMENDATION

Although there is little history of Army-Navy cooperation in studies the recent Memorandum of Agreement (MOA) between the Army and Navy logisticians establishes a useful precedent. There are many other potentially fruitful areas of analysis cooperation between the Army and Navy. It is recommended the HQ DA explore with the Navy Headquarters the possibility of an agreement to formalize coordination and cooperation on analyses of issues of mutual interest.

RECOMMENDATIONS ON EXTERNAL ANALYSIS INTERFACES

- ANALYSIS INTERFACE WITH THE NAVY.
  - HQ ARMY EXPLORE WITH HQ NAVY POSSIBILITY OF A MEMORANDUM OF AGREEMENT TO FORMALIZE COORDINATION AND COOPERATION ON JOINT STUDIES.

ANALYSIS INTERFACES WITH OSD - RECOMMENDATIONS

The Army's general policy of open disclosure and cooperation on studies with OSD elements has generally been useful and productive and should be continued. The existing adversary relationship between the Army and OSD(PAE) Land Forces should not be allowed to obscure or detract from the helpful relationships between the Army and all other elements of OSD.

The OSD sponsored Joint Technical Coordination Group (JTCG) on munitions effectiveness can provide a model for technical multi-service programs. It is recommended that AMC survey existing Army technical programs to identify those that could benefit from similar arrangements and for those so identified the Army should seek OSD sponsorship.

RAA
EX

RECOMMENDATIONS ON EXTERNAL ANALYSIS INTERFACE

- ANALYSIS INTERFACE WITH OSD
  - CONTINUE GENERAL POLICY OF OPEN DISCLOSURE AND COOPERATION WITH OSD ELEMENTS WITH AN INTEREST IN ANALYSIS.
  - EXAMINE ARMY TECHNICAL PROGRAMS TO IDENTIFY POTENTIAL TRI-SERVICE PROGRAMS THAT SHOULD BE CONDUCTED SIMILAR TO THE JTCG PROGRAM ON MUNITIONS EFFECTIVENESS. IF SUCH PROGRAMS ARE IDENTIFIED SEEK OSD IMPLEMENTATION.

ANALYSIS INTERFACES WITH ALLIES - RECOMMENDATIONS

Because of the high potential for fostering common understanding of issues of mutual interest it is recommended that current cooperative analysis activities with Allies, both under international agreements and bi-laterally, be encouraged to continue and be expanded as interests and capabilities allow.

RECOMMENDATIONS ON EXTERNAL ANALYSIS INTERFACES

- ANALYSIS INTERFACES WITH ALLIES
  - CONTINUE ACTIVE SUPPORT TO ANALYSIS ACTIVITIES UNDER INTERNATIONAL AGREEMENTS.
  - CONTINUE TO ENCOURAGE AND EXPAND JOINT ANALYSIS EFFORTS WITH SELECTED ALLIES ON A BI-LATERAL BASIS.

CHAPTER 16

ANALYSIS SUPPORT TO THE ARMY IN THE FIELD

ANALYSIS SUPPORT TO THE ARMY IN THE FIELD

An important element of an estimate of how well support is provided to the Army is how well we provide analysis support to the Army in the field. For the purpose of this study the field consists of the Army component of the Unified Commands; e.g., USAREUR, EUSA FORSCOM. In particular an examination was made in terms of support in the areas of training, planning, and operations.

Discussions were held with the heads of the major analysis agencies to determine the efforts presently ongoing in support of the field and those areas in which improvements could be made.

RAA EX

ANALYSIS SUPPORT TO THE ARMY TO THE FIELD

- GIVEN THE ANALYTICAL TALENT BASE IN TERMS OF PEOPLE AND FACILITIES: TO WHAT EXTENT IS SUPPORT GIVEN TO THE FIELD IN:
  - TRAINING
  - PLANNING
  - OPERATIONS
- TO PURSUE ISSUES DISCUSSIONS WERE HELD WITH TRADOC, AMC, THEIR SUBORDINATE AGENCIES, AND VARIOUS OFFICES IN HQDA AND OSA

ANALYSIS SUPPORT TO THE ARMY IN THE FIELD

FINDINGS

The analytical efforts which occupy a majority of the time and talent of the major analytical agencies concern materiel and combat developments to the detriment of support to the field.

In order to more adequately support the field commander it will be necessary to shift more of our talent base to studies which focus on doctrine, tactics, and Organizational and Operational Concepts and which focus on providing analytical techniques in support of training and planning. This shift may entail trade-offs with current requirements for COEA and mission area analyses.

AREAS OF CONCERN

At present no adequate mechanism exists which allows the field commander to task the analytical agencies to perform work in support of his requirements. The work load is such at CAA, CAORA, and TRASANA that unless the directors keep some portion of their talent and time reserved for special requests then they have no capability to repond to requests from field commanders.

A by product of not having a formalized procedure which would allow field commands to request analytical support is the personal request method, e.g. personal friends doing favors if they can find the time and resources.

Many of the problems which face field commanders and would lend themselves to analysis are short term and situation peculiar. Addressal of such problems by a major analysis agency is likely to be unresponsive.

Although some analytical agencies have limited flexibility in managing their resources added requirements for analytical support to the field is a zero sum game. Some other needed work would be sacrificed to support this increase in field support.

RAA EX

ANALYSIS SUPPORT TO THE ARMY IN THE FIELD

FINDINGS:

- IN GENERAL ANALYTICAL EFFORTS HAVE BEEN FOCUSED IN TWO AREAS
  - FORCE DEVELOPMENT
  - MATERIEL AND COMBAT DEVELOPMENTS
- EFFORTS IN SUPPORT OF ESTABLISHING DOCTRINE, TACTICS, AND O&O CONCEPTS HAVE NOT BEEN PURSUED AS ACTIVELY AS POSSIBLE

AREAS OF CONCERN:

- PRESENTLY FIELD COMMANDERS DO NOT HAVE ADEQUATE WAY TO TASK STUDY CENTERS TO PERFORM ANALYSIS
- SOMETIMES THE ONLY WAY FOR FIELD COMMANDERS TO GET ANALYSIS ACCOMPLISHED IS PERSONAL RELATIONSHIP WITH STUDY ACTIVITY CHIEF
- FIELD COMMANDER'S PROBLEMS ARE OFTEN SHORT TERM AND SITUATION PECULIAR AND THEREFORE DIFFICULT TO HAVE SUPPORTED BY LARGE ANALYTIC CENTER
- MORE ANALYTIC SUPPORT FOR FIELD COMMANDS WOULD ENTAIL GIVING UP EFFORTS IN SUPPORT OF OTHER REQUIREMENTS

AREAS OF CONCERN (CONTINUED)

The ORSA cells that presently exist (i.e. USAREUR) are by and large performing valuable functions. There is a need to improve the ability of the cells to tap the information which is generated on a continuing basis by our analytic centers. This goes hand in hand with the expansion of present cells to additional commands. The more knowledge our field commanders have concerning what analysis is going on, the more likely they will be to tap into that analysis at critical times.

AREAS OF STRENGTH

It is a consensus that the training effectiveness analysis now being done by TRASANA is extremely helpful in making decisions on improvement in training methods and helpful in making decisions on the quality and quantity of people.

The recent efforts by CAORA in support of the V Corps GDP and artillery laydown are examples of specific questions applicable to field commanders. Other areas which have been discussed as possible study areas include air space management and REFORGER.

Efforts at the Combined Arms Center to address Air Land Battle and Deep Attack represent a step forward in assessing future doctrine and tactics.

AREAS OF CONCERN (CONTINUED)

- ORSA CELLS ARE VERY USEFUL: POSSIBLE IMPROVEMENTS INCLUDE EXPANSION TO MORE COMMANDS AND ESTABLISHMENT OF BETTER DATA EXCHANGE WITH MAJOR ANALYSES CENTERS

AREAS OF STRENGTH

- TRAINING EFFECTIVENESS WORK BEING ACCOMPLISHED BY TRADOC IS VIEWED AS EXTREMELY USEFUL

- RECENT EFFORTS AT CAORA IN SUPPORT OF V CORPS ARTILLERY AND GDP WERE TIMELY AND HELPFUL

- AIR LAND BATTLE AND DEEP ATTACK ARE STEPS IN THE RIGHT DIRECTION TO SUPPORT IMPROVEMENT IN TACTICS AND DOCTRINE

RECOMMENDATIONS

In order for field commanders to have the ability to task the major analytical centers to perform studies in support of the field, a mechanism needs to be established to facilitate this. A reasonable method to accomplish this would be to allow field commanders to request SPMO in HQDA to provide analytical support. SPMO, with guidance from DUSA-OR and the Technical Advisor to DCSOPS, could pass the requirements to the appropriate analytical agencies. This would keep the analytical agencies from being tasked directly by field commanders yet establish a more formal mechanism than now exists.

Efforts need to continue in support of establishing ORSA cells at the Army component commands of the unified commands. These cells provide a mechanism to respond to analytical questions quickly and provide a potential liaison with CAA, TORA, AMSAA etc.

To facilitate applying analytical techniques to planning and training it would be useful to assign some SC 49 officers to TOE units. This might be done on a trial basis in selected units. It may be that division headquarters is the appropriate level for an ORSA officer.

In conjunction with the second recommendation of establishing ORSA cells at the Army component commands better communications links need to be established between the ORSA cells and the analytic agencies. This could take any number of forms but possibilities include computer linkage or capsulized summaries of on going activities from each end.

ANALYSIS SUPPORT TO THE ARMY IN THE FIELD

RECOMMENDATIONS

- FIELD COMMANDS BE PROVIDED A METHOD TO TASK STUDY EFFORTS TO BE PERFORMED. SPMO SHOULD BE THE HQDA FACILITATOR FOR ACCOMPLISHING THIS TASK.

- SUPPORT EFFORTS TO MAN ORSA CELLS AT THE ARMY COMPONENT COMMANDS OF THE UNIFIED COMMANDS.

- EXAMINE THE POSSIBILITY OF ASSIGNING SC 49 OFFICERS IN SOME TOE UNITS TO SUPPORT APPLICATION OF ANALYTICAL TECHNIQUES TO PLANNING AND TRAINING

- EXAMINE POTENTIAL METHODS TO IMPROVE THE ABILITY OF THE ORSA CELLS TO ACCESS INFORMATION BEING GENERATED BY MAJOR ANALYTICAL AGENCIES

APPENDIX A

TASKING LETTER

DEPARTMENT OF THE ARMY
OFFICE OF THE ADJUTANT GENERAL
WASHINGTON, DC 20310

HQDA Ltr 5-84-1

REPLY TO
ATTENTION OF

DACS-DMO (5 Sep 84)

5 September 1984

Expires 31 December 1984

SUBJECT: Review of Army Analysis Extended

SEE DISTRIBUTION

1. Purpose. This letter officially establishes the Review of Army Analysis Extended Study Group. The study group will review Army analysis policies, procedures, programs and organizations and provide recommendations to the Secretary of the Army (SA) and Chief of Staff, Army (CSA).

2. References.

a. AR 5-5, Army Studies and Analyses.

b. AR 5-14, Managing Analytical Support Services.

c. DA Pam 5-5, Guidance for Army Study Sponsors, Sponsor's Study Directors, Study Advisory Groups, and Contracting Officer Representatives.

d. Final Report, Review of Army Analysis, April 1979, Special Study Group, Vol. 1: Main Report, Vol. 2: Appendixes C-M.

3. Background.

a. In July of 1978, the Under Secretary of the Army (USA), requested that a study be conducted to review Army analysis. The study team was charged with developing the recommendations for improvement of Army analysis with specific focus on resources, organizations, and procedures for analysis. The study team was formed under the direction of the Deputy Under Secretary of the Army for Operations Research (DUSA(OR)). Members included the Technical Advisor to the Deputy Chief of Staff for Operations and Plans (Deputy Director of the study) and representatives from the

Office of the Deputy Chief of Staff for Personnel, the Office of the Deputy Chief of Staff for Operations and Plans, the Office of the Comptroller of the Army, Concepts Analysis Agency (CAA), Training and Doctrine Command (TRADOC), and Army Materiel Command (AMC). Additional support was provided by the US Army Management Systems Support Agency and the US Army Engineer Studies Agency. The study group's final report was published in two volumes in April 1979. About 40 actions, distributed over nine categories, were proposed for the Headquarters, Department of the Army and major Army commands as follows:

- Army Study Program and Study System (4 actions)
- Studies of Forces and Certain Force-Wide Issues (3 actions)
- Studies of Combined Arms and Support Organizations (4 actions)
- Studies of Functional Systems, Units, and Requirements for Item Systems (5 actions)
- Studies of Item Level Systems (5 actions)
- Models, Data, and Data Bases (6 actions)
- Personnel Qualifications (4 actions)
- Quality Assurance (8 actions)
- Use of Operations Research in Operational Commands (1 action)

b. The Joint Select Committee (SELCOM) (Augmented) approved the central thrust, philosophy, and goals of the study on 22 March 1979. All recommendations (proposed actions) were approved except for those related to an Army Study Council and the numbers and transfers of personnel resources. Further review of the personnel matters was to be undertaken by the Director of the Army Staff (DAS) and the Director of Management (DM). The proposed Army Study Council functions were to be carried out by the Joint SELCOM (Augmented).

c. In a 5 June 1984 memorandum to the DAS, the USofA proposed a revisit to the review of Army analysis and stated "Because analysis is so important to our work, I believe its health should

be reviewed periodically. The USofA requested that the original review be extended to include interrelationships with test and evaluation, intelligence, costing, and vulnerability/lethality, aspects not included previously. OP B-2

d. The terms of reference for the review are at enclosure 1.

4. Composition.

a. The Office of the Chief of Staff, Army (OCSA) will sponsor the study.

b. The DUSA(OR) and the Technical Advisor to the Deputy Chief of Staff for Operations and Plans will serve as co-directors. Findings and recommendations will be reported to the CSA and the USofA.

c. The study group will be composed of about 15 analysts provided by Army study agencies. Military and civilian administrative personnel will support the group.

5. Responsibilities.

a. The responsibility of this study group will be to assess actions taken as a consequence of the prior Review of Army Analysis and to recommend specific improvements in policy, procedure, programs and organizations.

b. The co-directors will--

(1) Direct the study and furnish final recommendations to the CSA and the USofA by 1 October 1984, with a final report to follow.

(2) Report any significant developments or problematic Army support to the DM, OCSA.

(3) Coordinate all requests for Army resources other than those provided by OCSA with the DM.

c. The Director of the Army Staff will monitor the study group effort and direction.

d. The Chief, Administrative Division, Executive Services Office, OCSA, will furnish administrative and logistical support

to the study group as required.

e. The Director of Management will--

(1) Serve as the Army Staff focal point and overall coordinator with the Army Staff and MACOMs for resources requested by the study director.

(2) Assist the study director in initiating the study, pending the establishment of the study group.

6. Direction and Control.

a. Documents and reports required are contained in chapter 3, AR 5-5.

b. The study group is authorized direct access to the Secretariat, Army Staff agencies, MACOMs, and field activities to obtain information and support relative to the study.

c. The study directors are authorized to release the members when it is determined that their expertise is no longer needed.

d. Participants on the study group are shown at enclosure 2.

BY ORDER OF THE SECRETARY OF THE ARMY:

Enclosures

ROBERT M. JOYCE
Major General, USA
The Adjutant General

SUBJECT: Review of Army Analysis Extended

DISTRIBUTION:

OFFICE, SECRETARY OF THE ARMY
HQDA(DACA-ZA)
HQDA(DACS-ZA)
HQDA(DALO-ZA)
HQDA(DAMA-ZA)
HQDA(DAMI-ZA)
HQDA(DAMO-ZA)
HQDA(DAPE-ZA)
COMMANDERS
  US ARMY MATERIEL COMMAND
  US ARMY TRAINING AND DOCTRINE COMMAND

TERMS OF REFERENCE

2 July 1984

TERMS OF REFERENCE
Review of Army Analysis Extended
(RAAEX)

1. PURPOSE: The purpose of this review is to further improve the contribution made by analysis to illumination of issues of interest to the Army and to the solution of Army problems building upon the improvements initiated with the Review of Army Analysis conducted in 1978.

2. OBJECTIVES: The objectives of the review are to:

a. Assess the extent to which the actions taken as a consequence of the prior review have improved the contribution made by analysis to illumination of issues of interest to the Army and to the solution of Army problems.

b. Identify practicable actions which would improve the following:

(1) 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.

(2) Quality of Work - Army analyses should be pertinent, consistent, valid, and credible.

(3) Productivity - Army analyses should be efficiently conducted and resources should be at least adequate to minimal needs.

(4) Organizational Arrangements - The Army analysis community and supporting activities 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.

(5) Support to the Army in the Field - The Army analysis community should provide support to the functions of training, planning, and operations.

3. SCOPE: The scope of the review is as follows:

a. Types of Analysis - All analyses defined as studies in AR 5-5, and other operations research/systems analysis activities of the Army.

b. Organizations - Primary attention will be given to those elements of the HQDA, DA FOA, DARCOM, and TRADOC, which are involved directly in Army studies and analyses or which employ operations research techniques habitually and to a significant degree in support of their work.