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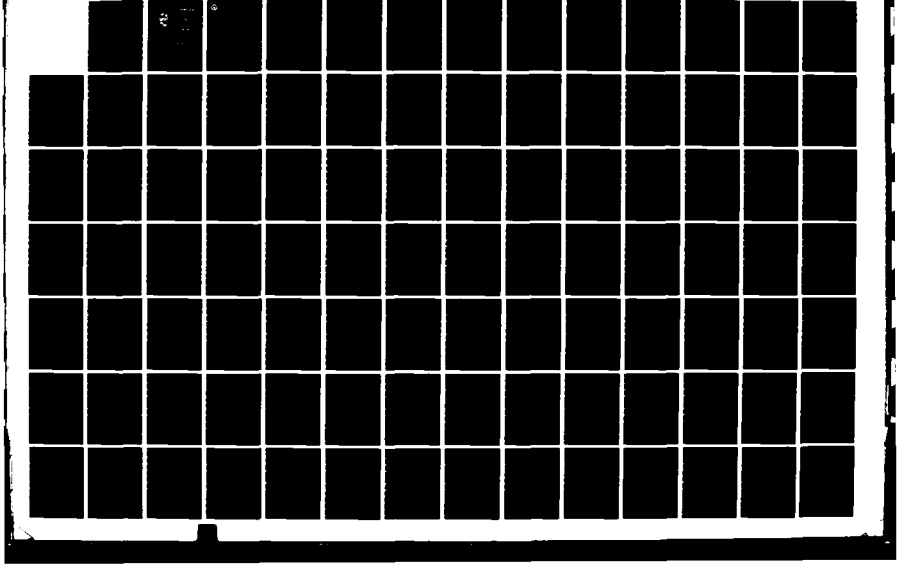

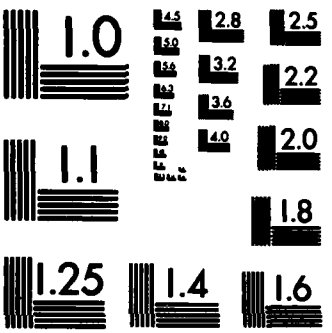

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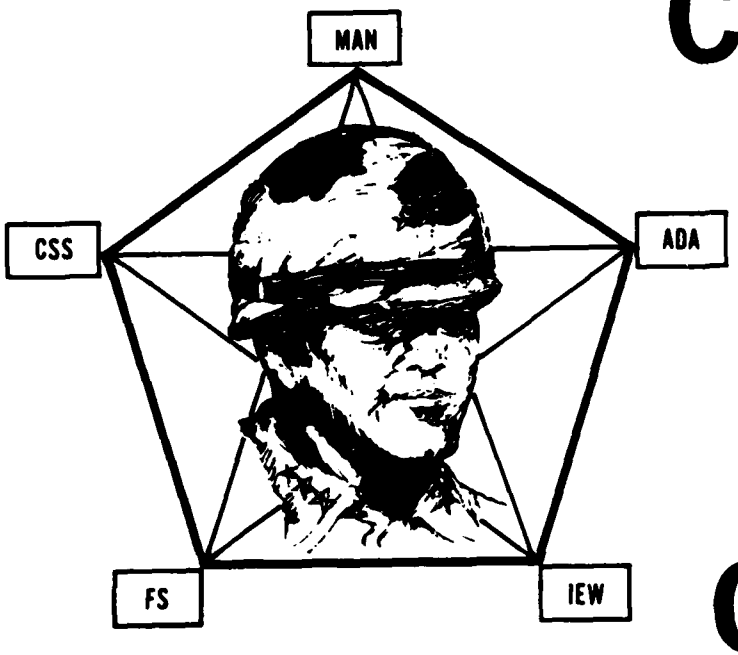

COMMAND AND CONTROL

ACTION PLAN
JULY 1983 UPDATE

UNITED STATES ARMY COMBINED ARMS CENTER

FORT LEAVENWORTH, KANSAS 66027

83-4475TL

DEPARTMENT OF THE ARMY
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS
WASHINGTON, DC 20310

REPLY TO ATTENTION OF DAMO-C4P-T

29 JUN 1983

SUBJECT: Command and Control System Program Review (C2SPR) Action Plan

SEE DISTRIBUTION

1. This letter promulgates the final publication as a separate document the approved Command and Control System Program Review (C2SPR) Action Plan (enclosed). The plan is based on the C2SPR conducted at Ft Leavenworth in December 1981 and represents the combined efforts and concepts of the Vice Chief of Staff of the Army and sixty-five other general officers and civilian equivalents.

2. The final Action Plan IPR for the VCSA was conducted in March 1983 to evaluate the progress made to date. At that time the Vice Chief of Staff agreed that the Army Command and Control (AC2) Working Group would monitor and ensure the proper implementation of the Action Plan. This publication reflects the updated status of actions from proponents' input as of June 1983.

3. The Assistant Deputy Chief of Staff for Operations and Plans (C4) is the HQDA proponent for C2SPR. The POC is LTC J. R. Shaffer, DAMO-C4P-T, AUTOVON 225-9377.

1 Encl

JAMES M. ROCKWELL
Major General, GS
Assistant Deputy Chief of Staff
for Operations and Plans (C4)

DISTRIBUTION:
Per Appendix D, C2SPR Action Plan

83-4475

COMMAND AND CONTROL
ACTION PLAN
1983

US ARMY COMBINED ARMS COMBAT DEVELOPMENT ACTIVITY
US ARMY COMBINED ARMS CENTER
US ARMY TRAINING AND DOCTRINE COMMAND

COMMAND AND CONTROL ACTION PLAN

1983

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EXECUTIVE SUMMARY

1. The first Army Command and Control System Program Review (C²SPR) was held at Fort Leavenworth, Kansas, during 14-16 December 1981. The C²SPR was chaired by the Vice Chief of Staff of the Army and attended by sixty-five other general officers and civilian equivalents. The purpose of the first C²SPR was to recommend to the Army a more effective and survivable tactical command and control system.

2. The C²SPR was based on the definition of command and control from JCS Pub 1. "Command and control is the exercise of authority and direction by a properly designated commander assigned forces in the accomplishment of the mission. Command and control functions are performed through an arrangement of personnel, equipment, communications, facilities and procedures which are employed by a commander in planning, directing, coordinating and controlling forces and operations in the accomplishment of the mission." The functional areas of personnel, equipment, communications, facilities and procedures were considered.

3. The C²SPR opened with a series of background briefings on the threat, status of the C² program, concepts for combat through 2000, and an assessment of the problems. These were followed by four general officer panel presentations, which summarized consideration of a set of major C² issues. Panel coordinators ended their presentations with recommendations to the VCSA for approval.

4. The four general officer panels were organized as follows:

a. Panel I, Command and Control for the Army 1984-1990, was coordinated by MG Jenes, Deputy Commander, CACDA. Panel I objective was to evaluate existing concepts and doctrine which will impact on the Army's command and control system in the 1984-1990 timeframe and determine the concept, materiel, and communication requirements for tactical command and control in 1984-1990 which best balance effectiveness and survivability. Its focus was on the 1990 corps and below with consideration given to the strategic/tactical interface with EAC.

b. Panel II, Command and Control Now, was coordinated by BG(P) Saint, Deputy Commandant, CGSC. The objective was to determine the tactical command and control requirements, achievable now, which best balance survivability and effectiveness in terms of organization, configuration, procedures, and support communications/equipment to speed up the decision process. Panel II concentrated on corps and below with major emphasis on the present day division and near term (1982-1983) solutions.

c. Panel III, Command and Control Training, was coordinated by BG Brown, Deputy Chief of Staff for Training, TRADOC. The objective was to determine the best means of training commanders and their staffs, Army-wide, to maximize the effectiveness of the tactical command and control system. Panel II concentrated on corps and below with emphasis on division and focused on the near term (1982-1984).

d. Panel IV, Tommorrow's Technology in Command and Control, was coordinated by MG Barbers, Commander, CECOM. Panel IV objective was to describe the technologies that should be considered in tactical command and control through the year 2000. Panel IV concentrated on describing the potentials of technological research and development at corps and below, with emphasis on division.

5. A total of 77 recommendations were presented by the panels. Prior to the C^2SPR, the panel recommendations, in draft form, were given a preliminary staffing by DA DCSOPS staff to insure a realistic approach. They were briefed at the conclusion of the SPR as the proposed action plan for validation by the chairman. At the C^2SPR the VCSA; Cdr, TRADOC; and ADCSOPS, C4 were provided copies of the Draft Action Plan for review. During the C^2SPR, the VCSA provided additional guidance, which when converted to tasks, resulted in 82 recommended actions to be accomplished.

6. The recommended actions for improving Army Command and Control were prioritized in accordance with the VCSA's guidance, the Army Command and Control System (ACCS) Architecture, and the Army Command and Control Master Plan (AC^2MP). The resulting five (5) groups of recommended actions form the body of this document. The prioritization methodology is explained in Appendix E.

7. Recommended actions deal with key subject areas such as the Army Command and Control Master Plan (AC^2MP); tactical communications for C^2; the C^2 architecture for use in planning, programming, and budgeting; recommendations for near term POM acquisitions, and improved doctrine and training methods for the field. The Command and Control Action Plan provides the basis for tasking by HQDA.

8. The C^2 Action Plan IPR for the VCSA was held in the CSA Conference Room on 5 August 1982. The C^2 Action Plan was presented by COL E. V. Chandler and attended by representatives of TRADOC, USAREUR, FORSCOM, DARCOM, DCA, ACC and the DA staff. The primary purpose of the briefing was to explain to the VCSA how the action plan was being implemented.

9. The purpose of the VCSA IPR on 7 March 1983 provided a more detailed analysis of the recommendations, actions, tasks and milestones based upon a 1 Dec 82 update. Comparison of selected shortfalls was shown for each panel and action agencies addressed each within their area of responsibility.

INTRODUCTION

1. The Command and Control System Program Review's (C^2SPR) four general officer panels produced seventy-seven (77) recommendations for improving the survivability and effectiveness and Army command and control. Although some were modified during pre-C^2SPR HQDA staffing and in the forum itself, the Chairman, Vice Chief of Staff of the Army (VCSA) approved all panel recommendations. During the C^2SPR, additional guidance was provided by the VCSA resulting in additional recommendations/actions. The five sections which follow contain both panel and VCSA directed actions for a total of eighty-two (82) actions.

2. The recommendations have been prioritized into 5 quintiles or sections (see Appendix E, Prioritization Methodology). There is no priority implied by position within a section. All twenty-four (24) recommendations in Section II are considered first priority actions, the twenty (20) recommendations in Section III are second priority, etc. Likewise, there is no correlation between the priority a recommendation holds and the milestone for its completion. Prioritization is based on the impact that recommendation will have on the improvement to the Army's command and control system rather than the date on which it should be completed.

3. Recommendations include the action which must be taken, (with sub-tasks for some), the action agency by major command, and milestones for accomplishment. Where appropriate, additional data on funding is also provided. Following each complete recommendation action or task, a current status and comment are shown. Where an action has been completed a product name, approval agency and date is indicated in the current status portion. Each recommendation is ended by a 3-part numerical code to denote its source by Panel and Issue; example: II-1-6. The source of that recommendation is Panel II, Issue 1, Recommendation 6. All recommendations are listed in Appendix A. The recommendations/actions provided by the VCSA are referenced as, VCSA and one number; example: VCSA-10. The number is the order in which those additional items were presented in the briefing of the Draft Action Plan for VCSA's validation.

SECTION II

PRIORITY I RECOMMENDATIONS

1. RECOMMENDATION: Command and Control System Program Reviews be held biannually.

ACTION	AGENCY	MILESTONE
Replace the C2SPR approved for next year with periodic IPRs.	HQDA	4Q FY 82 2Q FY 83 (Completed)

CURRENT STATUS: Complete. (DAMO-C4P)

COMMENTS: 4QFY83 IPR has been deleted.

The C^2 Action Plan IPR to the VCSA was presented on 7 March 1983. The C^2 Action Plan tasks will continue to be intensively managed by shortfalls. This was the final IPR and the future management mechanism will be AR 15-21. The C^2 Action Plan will be placed into the AC^2MP in the AC^2 System Development Plan which provides the roadmap to the objective command and control architecture. The AC^2MP will be updated in Dec 83.

Because the subject is so comprehensive and complex, C2SPRs will be held every two years.	TRADOC (ATZL-CAC-A)	3Q FY 84 (Completed)

CURRENT STATUS: VCSA has approved a C2SPR for 3QFY84.

(VCSA-10)

2. RECOMMENDATION: Fully develop AC2MP to support doctrine.

ACTION	TASKS	AGENCY	MILESTONE
Expand scope of AC2MP	Use the AC2MP methodology to develop Army C^2 requirements for use as the C^2 MAA.	TRADOC (ATZL-CAC-A)	31 Dec 82 (Completed)

CURRENT STATUS: Task completed. AC2MP update was completed by 31 Dec 82. This update contains the C2MAA which derived tactical C2 requirements using the AC2MP methodology. (ATZL-CAC-A)

Design AC2MP	Design AC2MP architecture to reflect C2 and COMM requirements for all echelons.	TRADOC (ATZL-CAC-A)	Annually

CURRENT STATUS: The December 83 update to the AC2MP will contain a description of the ACCS Architecture for all echelons. This update is currently on schedule. (ATZL-CAC-A).

	Develop AC2MP architecture to fully support Army requirements for mobilization, deployment, employment, sustainment and training.	TRADOC (ATZL-CAC-A)	31 Dec 83

CURRENT STATUS: The December 83 update to the AC2MP will contain C2 requirements to support mobilization, deployment, employment, training, and sustainment. This update is currently on schedule. (ATZL-CAC-A).

	Incorporate the ABIC into the AC2MP as an annex.	TRADOC (ATZL-CAC-A)	31 Dec 83

CURRENT STATUS: This ABIC is currently being expanded to cover EAC. This expanded ABIC will be incorporated into the December 83 update to the AC2MP. (ATZL-CAC-A).

3. RECOMMENDATION: Continue development of AC2MP methodology for prioritization, fielding and funding of the army command and control systems.

ACTION	TASKS	AGENCY	MILESTONE
Field a coherent C2 system/ architecture.	Insure that systems within the purview of AC2MP are developed against an ACCS requirement.	TRADOC (ATZL-CAC-A)	As required

CURRENT STATUS: In accordance with AR 11-39 (draft), C2 systems will be developed IAW the ACCS Development Plan in the AC2MP. The first ACCS Development Plan was published in the December 82 update of the AC2MP and will be updated and expanded by December 83. (ATZL-CAC-A).

Insure that C2 systems acquisition includes the required integrated Logistics support objectives.	TRADOC (ATZL-CAC-A)	Ongoing

CURRENT STATUS: This is a requirement which must be met at various stages within the acquisition cycle. The ACCS architect reviews this during staffing of requirements documentation. (ATZL-CAC-A).

Insure that the AC2MP methodology provides a fielding strategy for C2 systems.	TRADOC (ATZL-CAC-A)	31 Dec 83

CURRENT STATUS: The methodology for the FY83 AC2MP updates provides for this strategy development. Stragegy will be developed by October 83. (ATZL-CAC-A).

Using this strategy, prioritize C2 requirements systems acquisition, funding and fielding.	HQDA TRADOC (ATZL-CAC-A) DARCOM (DRCDE-SB)	31 Dec 83

CURRENT STATUS: Work ongoing. Milestone will be met (DAMO-C4P).

CURRENT STATUS: Prioritization will be accomplished as part of the FY83 update of the AC2MP to be completed by December 83. (ATZL-CAC-A).

CURRENT STATUS: Work ongoing, milestone will be met (DRCDE-SB).

COMMENTS: The ACCS Development Plan combines the Combat Development and the Materiel Development Plans. The schedules and priorities reflected in the combat development portion of that plan drive the materiel developments. There is a need for the priorities established by TRADOC to be reflected in the program and budgeting cycle so that the funding for systems is in accordance with the priorities.

(I-2-1)

4. RECOMMENDATION: Develop measures of effectiveness (MOE) for determining the effectiveness of elements of CCS2.

ACTION	TASK	AGENCY	MILESTONES
Develop MOE's for all CCS2 systems which tie C2 systems with outcome of the battle.	Review Command and Control Effectiveness Evaluation (C2E2) Study for those portions pertinent to C2E2 MOE and continue development of MOE for CCS2.	TRADOC (ATZL-CAC-A)	Continuing

CURRENT STATUS: C2E2 study report was staffed within TRADOC and forwarded to HQDA on 6 Oct 82 in response to this tasking. Approval of the C2E2 Report by HQ TRADOC completes this task. Development of C2 MOE is continuing, however. CACDA, as part of the AC2MP Update for FY83, is developing MOPs and reviewing MOPs from other mission area analyses conducted with TRADOC. (ATZL-CAC-A).

Develop a methodology for evaluation of CCS2 system with respect to the outcome of the battle.	Review C2E2 Study for those portions pertinent to CCS2 methodology for evaluation and continue development of evaluation methodology for CCS2.	TRADOC (ATZL-CAC-A)	Continuing

CURRENT STATUS: Approval of the C2E2 Report by HQ TRADOC completes this task. Development of C2 evaluation methodologies is continuing, however. CACDA has coordinated with TORA (TRASANA) for development of a CCS2 evaluation methodology and model using the FOURCE model as a basis.

(I-2-2)

5. RECOMMENDATION: Develop priorities for fielding each system.

ACTION	TASK	AGENCY	MILESTONE
Establish C2 system fielding priorities.	Using the AC2MP methodology develop and prioritize Army Command and Control System Capability Requirements (ACR).	TRADOC (ATZL-CAC-A)	31 Dec 82 (tactical level) (completed) 31 Dec 83 (all levels)

CURRENT STATUS: Tactical level prioritization is completed. The FY83 update of the AC2MP will contain ACRs which have been genericized and prioritized. Work is currently on schedule. (ATZL-CAC-IA).

Based on prioritized ACRs and overall system effectiveness, prioritize individual systems for funding purposes.	TRADOC (ATZL-CAC-A)	1 Oct 83

CURRENT STATUS: Task 8 of the approved AC2MP FY83 update methodology provides for this prioritization. Work is currently on schedule. (ATZL-CAC-A).

PM for each C2 system must insure that the system fielding is in consonance with ACRs, ABIC, ROC/LOA and funding.	DARCOM (DRCDE-SB)	As required

CURRENT STATUS: Work ongoing (DRCDE-SB).

COMMENTS: The requirements documents (ROC and LOA) define the systems' required capabilities and the development under AR 1000-1. The requirements represented by ABIC are not complete without the Technical Interface Requirements (TIRs) which TRADOC is currently developing for many of the interfaces. The ACRs are not sufficiently specific to define the requirement without additional amplification. The priorities for the systems' developments are established by TRADOC and HQDA; however, the funding, which drives the funding programs, is not always in consonance with the established priorities.

(I-2-3)

6. RECOMMENDATION: Expedite completion and approval of ROC for millimeter wave radio.

ACTION	TASK	AGENCY	MILESTONE
Complete MM wave radio ROC.	Provide cost data.	CECOM (DRSEL-COM-RM4)	Jun 83 (completed)

CURRENT STATUS: Adjusted cost estimate will be provided by CECOM, based upon new ROC (DRSEL-COM-RM4).

	Write ROC, coordinate, submit to HQDA.	TRADOC (ATZH-CDM)	Oct 83

CURRENT STATUS: The SIGCEN draft ROC for MMWR was approved by the Cdr, SIGCEN, on 28 Feb 83. SIGCEN has mailed the draft ROC to schools and centers for coordination. Input to the Cost and Operational Effectiveness Analysis (COEA) supporting annex from CECOM has been delayed. This delay will push back the coordination and submission task milestone to Oct 83. (ATZH-CDM).

Staff MM wave radio ROC.		HQDA	TBD

(I-6-1)

7. RECOMMENDATION: Fund the current program for MM wave radio (command post radio, AN/GRC-209).

ACTION	TASK	AGENCY	MILESTONE
Fund MM wave radio.	Establish BOIP requirement.	TRADOC (ATZH-CDO)	TBD

CURRENT STATUS: BOIP to be updated based upon new ROC. Completion to TBD (ATZH-CDO).

	Establish funding profile.	DARCOM (DRSEL-COM-RM4)	TBD

CURRENT STATUS: Work ongoing but behind schedule due to TRADOC action. Will be completed 30 days after TRADOC completes ROC action (approved). (DRSEL-COM-RM4).

	Include program in '85 POM procurement.	HQDA	TBD

(I-6-2)

8. RECOMMENDATION: Conduct systems engineering study to determine additional uses and requirements for MM wave radio.

ACTION	TASK	AGENCY	MILESTONE
Explore additional tactical uses for MM wave radio.	Conduct a Study to identify additional applications.	TRADOC (ATZH-CDC) USACC(CC-OPS-PD)	31 Dec 83

CURRENT STATUS: Work on-going, USACC has a supporting role to TRADOC for this recommendation. (CC-OPS-PD).

COMMENTS: USACC has remained active in millimeter wave radio, but in fixed plant applications. Though USACC support has not been requested by TRADOC for tactical applications for EAC, USACC stands ready to exchange information and assist the TRADOC community as required. Request that any ROC's or LR's developed for MMWR and fiber optics in dispersed CP applications be coordinated with USACC and that ROC development reflect EAC applications.

CURRENT STATUS: An advanced excursion of the MAA is underway which has identified MM wave radio as a candidate for a near term down-the-hill FM radio rewriting system for the dispersed command post. The anticipated completion date for this excursion is 31 December 83. Additional MM wave radio requirements may be identified in other MAA efforts. (ATZH-CDC)

Update INTACS study to reflect MM wave radio uses.	TRADOC (ATZH-CDC)	Jun 84

CURRENT STATUS: Work ongoing but behind schedule. The Signal Center has identified problems with the AN/GRC-209 millimeter wave radio which has caused further processing of the Multichannel Command Post Radio (MCPR) ROC & OOP to be delayed. These questionable capabilities will be discussed by CECOM and the Signal Center in July 82. Studies to clarify requirements for short range propagation radio systems for down-the-hill, INTRA-CP, and intervehicular systems for armored formations, etc. are under way. The CECOM/ SIGCEN discussions will focus on potential applications of MMWR technology to meet these requirements, once clarified and revalidated (ATZH-CDC).

COMMENTS: Detailed studies into any additional uses of millimeter wave radio are now scheduled to be undertaken as a part of the Signal Center Mission Area Analysis. Completion date for that portion of the analysis is 31 Dec 83. Change milestone to update the INTACS Study to reflect MM wave radio uses to June 84.

(I-6-3)

9. RECOMMENDATION: Continue exploratory development of MM wave radio.

ACTION	TASK	AGENCY	MILESTONE
Insure expanded exploration of tactical uses for MM wave radio.	Focus RDTE on continued exploratory development of MM wave radio.	DARCOM (DRSEL-COM-RM-4)	As required

CURRENT STATUS: Work ongoing, Milestone will be met (DRSEL-COM-RM-4).

COMMENTS: MMW exploratory and advanced development is being conducted at CECOM on Wireless Intracell Communication System (WICS), MMW Command Post Radio Multiplexer/Combiner, MMW Mobile Intercept Resistant Radio (MISR) and a MMW Armor/Air Covert Net. These efforts are fully funded.

(I-6-4)

10. RECOMMENDATION: Develop and implement distributed data processing and storage in future systems.

ACTION	TASK	AGENCY	MILESTONE
Provide and develop distributed data processing for current and future systems.	Survey current system for distributed data processing capability.	DARCOM (DRSEL-SEI-F)	30 Jun 83

CURRENT STATUS: Work on-going; milestone will be met. (DRSEL-SEI-F).

COMMENTS: Work on the survey of current systems to assess their inherent distributed data processing capability is on-going through contractual effort with MITRE. The current estimated delivery date for the contractual work will permit completion of task by 30 June 1983.

Develop an overall system architecture for a distributed data/ distributed processing system (the Command and Control Information Utility (CCIU)) for command and control, with special attention to three specific applications: Cellular Command Post (CCP), CCS2 Control Element Survivability and Continuity of Operations.	DARCOM (DRSEL-SEI-F)	
a. CCP Twin Cell Backup		Dec 81 (Completed)
b. CCIU Demo-2 Functional		Jun 82 (Completed)
c. CCP cases 2 & 3 demonstrated		Mar 84
d. OPFAC-CONOPS Test description document		Jun 85
e. OPFAC-CONOPS Cases 1, 2, 3 demonstrated		Sep 85
f. CCP & OPFAC-CONOPS Evaluation Document		Mar 86

10. RECOMMENDATION: (cont'd)

CURRENT STATUS: Work on-going but behind schedule. Delay due to combination of inadequate funding level and unanticipated technical difficulties encountered by the contractor (JPL). New milestones shown above reflect revised scope and new dates for each scheduled demonstration.

COMMENTS:

a. Work on development of an overall distributed data/distributed processing architecture for Army Command and Control Systems is underway via a CECOM/CENSEI contractual effort at Jet Propulsion Laboratory. In addition to development of an overall architecture, the JPL effort includes consideration of the use of distributed data/distributed processing for three specific applications; namely, the Cellular Command Post, CCS^2 Control Element Survivability, and Continuity-of-Operations at major operational facilities. Each application will be modeled in a series of cases representing increasing capability and sophistication. These models were defined in an attempt to identify near-term applications for the results of the exploratory development program.

b. The first two milestones have been completed: Case 1 for the Cellular CP Application Model ("CCP Hot Back Up") was demonstrated in December 1981, and the CCIU Demo-2 Functional Requirements Document was completed in June 1982. In addition, the System Architectural Concept Document has been completed and updated once.

c. The CCIU architecture development effort was originally planned on the basis of a $1M funding level per year through FY85. Unfortunately, the funding levels available during both FY82 and FY83 are approximately $500K per year which if continued would force a stretch-out and result in a completion date of FY90 at the earliest.

Insure all 6.2 and 6.3 RDTE address CCS2 functional survivability of tasks.	DARCOM (DRSEL-SEI-F)	As required

CURRENT STATUS: Work ongoing; milestone will be met (DRSEL-SEI-F).

COMMENTS: a. CENSEI participates in all program reviews conducted concerning CECOM 6.2 and 6.3 RDTE efforts related to functional survivability of CCS^2 tasks.

b. Specific requirements/specifications for application of distributed data/distributed processing in Army Command, Control and Communications (C^3) Systems will be developed under the ACCS System Engineering Program and recorded in the system and subsystem specifications developed under that Program.

c. The Distributed Processing Program Plan which guides the JPL effort was developed by CECOM/CENSEI and coordinated with CACDA.

(I-3-6)

11. RECOMMENDATION: Fund and closely monitor current program for fiber optics.

ACTION	TASK	AGENCY	MILESTONE
Fund fiber optics.	Establish BOIP requirements.	TRADOC (ATZL-CAF-S) (ATZH-CDO)	Jun 84

CURRENT STATUS: BOIP work ongoing but behind schedule. The tasking letter was returned to HQ TRADOC on or about 10 May 82. The tasking letter did not contain the proper items nor the necessary information to complete the BOIPs for the complete fiber optics system, (FOTS) Long Haul (LH). This HQ has requested that HQ TRADOC provide a new tasking and new completion feeder data forms DA 3362B on all items of the FOTS (LH). HQ TRADOC subsequently requested that DARCOM provide the required data. Upon receipt of this data, accurate milestones for completion of this task can be determined. (ATZL-CAF-S).

CURRENT STATUS: CECOM has indicated that the data was completed 24 Jan 83. Based upon this date, the BOIP was submitted to TRADOC in May 83. Approval of final BOIP will be required one year prior to type classification which is scheduled for Jun 85. (ATZH-CDO).

	Establish funding profile.	DARCOM (DRCPM-ATC)	1 Mar 82 (Completed)

CURRENT STATUS: Task completed (DRCPM-ATC).

COMMENTS: RDT&E and OPA have been identified in POM at funded level. Effort is full scale engineering development for a long haul fiber optics transmission system. Funding profile for full scale engineering development of a long-haul fiber optics transmission system has been established. Contract was awarded in Jul 82. Program now under management of Project Manager ATACS.

	Include program in '85-89 POM procurement.	HQDA	1 Jan 83 (Completed)

CURRENT STATUS: Completed (DAMO-C4T)

(I-6-5)

12. RECOMMENDATION: Conduct total system analysis on fiber optics.

ACTION	TASKS	AGENCY	MILESTONE
Explore other uses for fiber optics.	Conduct a study to identify additional applications.	TRADOC (ATZH-CDC) USACC(CC-OPS-PD)	31 Dec 83

CURRENT STATUS: An advanced excursion of the MAA is underway which currently projects an additional use of F O as a back-up-system for dispersed command post inter-communications. The anticipated completion of the excursion will be published in the COMMO MAA in Dec 83. Additional uses of F O system may be identified in other MAA efforts. (ATZH-CDC)

COMMENTS: Two independent commercial analyses have been completed on fiber optics (FO) tactical communication applications. Both published by CORADCOM (CECOM) in June and August 80. (Report Nos 79-077801 and 80-0001-2). These document distribution (26-pair replacement) requirements. BOIP work is well down the road for the long haul FO, while multiplexing problems are pending solution for local distribution. The requirements to conduct a study to identify additional applications and update the INTACS Study to reflect those uses is scheduled to be undertaken as a part of the Signal Center's Mission area analysis. Any special requirements, i.e., cable backup system for dispersed CP interconnection, will be addressed during that period.

CURRENT STATUS: Work on-going, USACC has a supporting role to TRADOC for this recommendation. (CC-OPS-PD).

COMMENTS: USACC has remained active in fiber optics but in fixed plant applications. Though USACC support has not been requested by TRADOC for tactical applications for EAC, USACC stands ready to exchange information and assist the TRADOC community as required. Request any ROC's and LR's developed for MMWR and fiber optics in dispersed CP applications be coordinated with USACC and that ROC development reflect EAC applications.

Update INTACS study to reflect additional uses for fiber optics.	TRADOC (ATZH-CAC)	Jun 84

CURRENT STATUS: Detailed studies into any additional uses of fiber optics is now scheduled to be undertaken as a part of the Signal Center Mission Area Analysis. Completion date for that portion of the Analysis is 31 Dec 83. Change the milestone to update the INTACS Study to reflect Fiber Optic uses to June 84.

Conduct RDTE for additional fiber optic uses.	DARCOM (DRSEL-COM-RM-1)	As required

CURRENT STATUS: Work ongoing, milestones will be met. (DRSEL-COM-RM-1)

COMMENTS: Milestones have been established for the fiber optics 6.2 R&D program as follows:

TASK	MILESTONE
Multi-Wavelength Couplers	Sep 82 (start) Jul 84 (complete)
Low-Loss Cable Connectors	Feb 83 (start) Aug 84 (complete)
Nuclear Hardened Cable	Dec 83 (start) Jul 85 (complete)
Enhanced Temperature Perf. Cable	Jan 84 (start) Aug 85 (complete)

(I-6-6)

13. RECOMMENDATION: Implement the Division/Corps 86 authorizations for liaison sections (personnel and equipment) at corps and division level.

ACTION	AGENCY	MILESTONES
Implement TOE authorizations prescribed in Division and Corps 86 TOEs for liaison sections (personnel and equipment)	HQDA	TBD

CURRENT STATUS: Work completed for Div 86 TOE. Concept development ongoing within TRADOC. Implementation to be accomplished with approval of Corps 86 TOE. (DAMO-FD)

(II-1-6)

14. RECOMMENDATION: Provide divisions and corps with their currently authorized multi-channel resources. Consider increasing multi-channel authorizations. Deviation from DAMPL may be necessary but plan must be approved by HQDA, DCSOPS.

ACTION	AGENCY	MILESTONES
TRADOC analyze adequacy of currently authorized multi- channel assets at division level in light of Division 86 communications concepts	TRADOC (ATZH-CDC)	1 Apr 82 (Completed)

CURRENT STATUS: Completed (ATZH-CDC).

COMMENTS: The TOE's identified the proper amounts of equipment to support the concept of operation for specific type units. The current division signal battalion TOE reflects the amounts of equipment necessary to support the multichannel systems doctrine (FM 11-50). The Division 86 signal battalion documents will reflect the equipment necessary to install the doctrinal multichannel diagram to be incorporated in the new FM 11-50. The question of adequacy of multichannel equipment to support current or Division 86 signal battalion concepts of operation is not a TOE issue, but rather an MTOE issue which can only be resolved at DA level. When MTOE's are prepared for individual units, they often do not authorize the quantities of equipment (and people) called for in the base TOE. These differences exist for reasons such as the authorized level of organization (based on mission and DAMPL priority), the availability of equipment in the inventory, the availability of money to buy new equipment, and the ability of production lines to respond to the demand. Signal units in the field today are operating with resources which resulted from past DA decisions. These decisions have had impacts on multichannel resources at both division and corps level. However, the greatest impact has been at corps level. For example, in VII Corps, the 93rd Signal Brigade must support a combat force equivalent to 3 2/3 divisions. FM 11-92 calls for three area battalions to support a force of this size, yet the brigade has only 3/4 of one area signal battalion. The impact is that the brigade is only able to install, operate and maintain three area signal nodes when it should be providing twelve area signal modes. A similar situation exists in V Corps where three area signal nodes are provided and eight are required. These types of situations must be resolved at DA level. Therefore, it is recommended that this issue be surfaced at DA for resolution with the goals being those of insuring signal units are resourced as closely to the TOE as constraints will allow, that they are organized at an ALO (authorized level of organizations) in keeping with the units supported and that the numbers of signal units in the active force structure are adequate for the combat force supported.

(II-4-2)

15. RECOMMENDATION: Expedite fielding of COMSEC systems (Vinson and Parkhill), fielding should be completed in FY 82.

ACTION	AGENCY	MILESTONES
DA insure FY 82-83 funding for Vinson and Parkhill remains protected	HQDA	Continuing
CURRENT STATUS: Continuing. (DAMO-C4T)		
DA field COMSEC systems to all active divisions in FY 82	HQDA (DAMO-C4T)	FY 84-85
CURRENT STATUS: Work ongoing, milestone will be met (DAMO-C4T).		
DA task INSCOM and JEWC to study enemy radio electronic combat doctrine to determine the susceptibility of secured vs nonsecured nets. DA promulgate fielding plan accordingly.	HQDA	TBD
CURRENT STATUS: Work ongoing milestone TBD (DAMO-C4T).		

(II-4-4)

16. RECOMMENDATION: Develop and demonstrate the dispersed CP network.

ACTION	MILESTONES
Fabricate a dispersed CP to satisfy the requirements of the High Technology Light Division and the other Corps and Divisions of the Army.	
Phase I	
a. Provide an initial surrogate automation capability to the 9th ID.	3QFY83
b. Provide sufficient surrogate communications and automation hardware and software to support the 9ID 3d Brigade and associated Division level support that will participate in the Ft Bliss, Texas demonstration.	1QFY84
Phase II	
a. Subsequent interactive demonstrations of evolutionary communications and automation capabilities will be scheduled approximately every six months.	3QFY84
b. Demonstrate the 9ID "FY85 Flyaway" Distributed Command and Control System.	4QFY85

CURRENT STATUS: Work on-going, milestones as revised above will be met.

COMMENTS:

a. The Program Plan and Acquisition Strategy to conduct the 9th ID Distributed Command and Control System (DCCS) is presently being prepared. General requirements have been agreed to with the 9th ID and the DCCS will support the 9th ID O&O for the Division Command Post. Detailed automation and communication tasking has been defined. Initial government contractor support activities have been initiated and are on schedule. General Officer briefings were scheduled for 1st and 2nd Qtr FY 83.

b. The DCCS will be developed through an accelerated, phased program. Based on maximum use of existing military data processing, communications and display/peripheral equipments already in inventory, production and/or Military adaption of Commercial Items (MACI). The system architecture will be broadly defined to indicate program goals/capabilities needed but will remain flexible, adaptable and expandable to allow growth to meet evolving user/developer needs as system development progresses. This development will be evolutionary and rely heavily on continual user feedback to refine the requirements. A series of objective capabilities (OCs) will be jointly defined by the developer and user. Results of hands-on user experience will be incorporated into the next objective capability to be realized. A fieldable system that will offer a significant improvement over the current methods will be demonstrated by late FY85. This is one of the basic tenets of the evolutionary acquisition strategy.

16. RECOMMENDATION: (cont'd)

c. In each evolutionary development cycle a broadly defined objective capability (OC) is demonstrated and evaluated. In an evolutionary way, system capability is built up in small well-managed steps. Each step builds on existing equipment and previously demonstrated and evaluated capability. The close relationship of the user and provider communities assures that the capability being developed is effective in satisfying user needs. Joint evaluation/assessment at each step provides feedback for technology and concept development. This innovative approach will give the user an incremental improvement more expeditiously and an effective capability in a timely way. The present "traditional" acquisition process tries to solve a total problem which is not fully defined; this process takes too long and does not adequately take into account rapidly changing needs or the dynamics of technology advances and user doctrine evolution.

d. The DCCS will provide the distributed processing (i.e., computers and programs, data communications facilities and a distributed data base) (essential elements of information) to give the commander an efficient, survivable, and responsive command and control capability. Features of the DCCS will be: Militarized automated data processing equipment (ADPE) with ILS support and training in place; Interfaces with planned and existing systems supporting specific functional areas for data acquisition and dissemination; Database processing to assist the command and staff in planning, decision making and reporting; Replicated data bases at Division CP elements and major subordinate commands of the division; Communications capabilities supporting the connectivity requirements of the system.

e. The CECOM D-180 Project, which is planned for initiation in FY83, is being reoriented to specifically focus on the DCCS developments needed to develop the hardware and software prototypes. OPA funds will be required to fund the 9th ID FY85 Flyaway capability. Defense Nuclear Agency (DNA) is partially funding the DCCS effort in order to improve Tactical Command Post survivablity.

f. Funding requirements are presently being determined.

g. The approach and milestones to support Recommendation IV-1-1, "Develop and demonstrate the dispersed CP network", have been revised to support more accurately the requirements of the 9th ID High Technology Light Division.

(IV-1-1)

17. RECOMMENDATIONS: Continue to fund BIDS technology experiments outlined in ADDS Test Bed Plan.

ACTION	AGENCY
Fund selected elements of a 5 year ADDS Experiment Long Range Plan as follows:	DARCOM (DRSEL-COM-D4), TRADOC (ATZH-BDS), FORSCOM (AFOP) (XVIII Airborne Corps) (ADDS Steering Committee) (ADDS Working Group, DARPA)

TASK	MILESTONE			
	FY83	FY84	FY85	FY86
6.2 BID Technology Base including Packet Switched Interfaces (for multichannel and satellite) and Distributed Processing/Data Base Prototypes.	300K	400K	300K	200K
6.3 Testbed Equipment/Experiments	(300K)	400K		
	( ) = Unfunded			
6.3 Large Network Test/Evaluation			500K	1000K
6.3 Testbed Operation and Maintenance	(500K)	372K	1943K	1575K
		(1628K)	(57K)	(425K)

ADDITIONAL DATA

FY 83 - Prototype Multichannel interface and Field Experiment

FY 84 - Prototype Satellite interface and Field Experiment

FY 85 - Graphics I/O distributed mini host and Field Experiment

FY 86 - Testbed exercises

CURRENT STATUS: 6.2 work ongoing on schedule
6.3 work unfunded in FY -83 (DRSEL-COM-D4).

17. RECOMMENDATIONS: (cont'd)

COMMENTS:

(1) Amplifying Remarks Pertaining to Status:

A portion of the FY-83 6.3 work is now funded.

The new breakout is as follows:	FY-83
Testbed Operation and Maintenance	$500K
HARDWARE:	
2 VAX II/780 Computer Systems	(600K)*

*DARCOM Unfunded.

$1.5 Million is required in FY-83 to enable the Army to assume responsibility for its share in continuation of the ADDS Experiment, conducted in accordance with the provisions of a Memorandum of Understanding (MOU) established in July 1978 among DARPA, DARCOM, TRADOC, and FORSCOM represented by the XVIII Airborne Corps. The funding is required to procure hardware and operation and maintenance of the ADDS Experiment. THe hardware will lead to new capabilities in FY-84, while the operation and maintenance will enable current capabilities to be used during FY-83.

(2) Recommendation for changes to the Plan:

a. Show tasks and milestones as follows:

IMPROVED PRIVATE LINE INTERFACES

Initiate procurement	January 1984
Deliver to Ft Bragg	September 1984
User Security Experiments	October 1984 to September 1986

MULTICHANNEL INTERFACES

Initiate Procurement	January 1984
Deliver to Ft Bragg	September 1984
User Experiments	October 1984 to September 1986

SATELLITE INTERFACE

Initiate Procurement	October 1984
Deliver to Ft Bragg	June 1985
User Experiments	July 1985 to September 1986

17. RECOMMENDATION: (cont'd)

b. Show Funding (6.3A Proj. D247) as follows:

	FY84	FY85	FY86
Improved Private Line Interfaces	500K		
Multichannel Interfaces	400K		
TACSAT Interfaces	400K		
User Workstations (Network Oriented Terminals)	200K	200K	
Testbed Engineering Support	500K	500K	500K
Testbed Operation and Maintenance	1000K	1000K	1500K
Testbed Exercises	1000K	1000K	1000K
TOTAL	4000K	2700K	3000K

CURRENT STATUS: Reprogramming of 6.3 funds be initiated to meet ADDS/BIDS FY83 requirements. Reprogramming to restore funds as required be initiated (ATZH-BDS).

CURRENT STATUS:

a. DARPA's share of the experiment funding has been identified. CECOM's share (approx. 1.8m) has not been identified. TRADOC's CEP money was provided by approving message.

b. Phase VI of the ADDS/Packet Radio Concept Evaluation Program (CEP) was approved by TRADOC MSG: Phase VI has eight major objectives. These eight objectives, and maintenance of the experiment network require DARPA and DARCOM (CECOM) funding. Funding for the Administration of the Test Bed is provided by TRADOC through CEP funding. (ATZH-BD)

CURRENT STATUS: This recommendation is under the auspices of TRADOC. HQ FORSCOM is not a participant (AFOP).

(IV-2-1)

18. RECOMMENDATION: Prioritize and fund Distributed Processing Technology. Recommend a high priority to the restoration of 6.2 funds for full and expedited completion of all exploratory distributed processing efforts under this Program. Recommend high priority be given for support to the EDPF, and follow-on efforts.

ACTION	TASK	AGENCY	MILESTONE
Establish the experimental distributed processing capability and pursue the follow on efforts: Secure the distributed data techniques (SDDT) and local environment system architecture (LESA).	(1) Experimental Distributed Process Facility (EDPF):	DARCOM (DRSEL-TCS-S10)	
	a. PDP for EDPF to CECOM Procurement		Jul 81 (Completed)
	b. EDPF Contract Award		May 82 (Completed)
	c. EDPF System/Delivery		Feb 84
	d. EDPF System 2 Completed		Feb 85
	(2) Secure Distributed Data Techniques (SSDT):		
	a. PDP for Secure Distributed Data Techniques (SDDT) to CECOM Procurement.		Jul 84
	b. Contract Award (SDDT)		May 85
	c. Design and Concept Development (SDDT)		Feb 86
	d. Development of Dedicated Secure Distributed Operating System		Feb 87
	e. Development Multi-Level Distributed Operating Systems		Nov 87
	f. Development of Secure Distributed Data Base Management		Nov 88
	(3) Local Environment System Architectures (LESA)		
	a. PDP Local Environment System Architecture (LESA) to CECOM Procurement		May 84
	b. Contract Award (LESA)		Feb 85
	c. Design and Develop Bus Structures and Protocols		Feb 86
	d. Demonstration of Local Networks		Feb 87

18. RECOMMENDATION (cont'd)

CURRENT STATUS: (1)a and (1)b completed. Contract award ((1)b) late (August 1982) due to procurement delay. Previous Command Control Information Utility (CCIU) tasks have been made part of recommendation 10.

(1)d, Feb 84 see (1)a and (1)b above.
(1)g, Feb 85 see (1)a and (1)b above.
(2) Work ongoing, milestones will be met.
(3) Work ongoing, milestones will be met.

COMMENTS: Contract award made in August 1982 instead of May 1982 due to delay in procurement for the following reasons:

a. RFQ closing time had to be extended due to a misrouted proposal which was determined to have been submitted on time and to the high number of requests from industry.

b. Heavy workload of Procurement. This delay in contract award caused a similar slip in associated milestones.

Funding Profile:

		FY83	FY84	FY85	FY86	FY87	FY88	FY89
EDPF Actual	6.2	230	100	125	140	80	65	80
	6.3	400	380	150	150	85	100	100
Required	6.2	230	100	125	140	80	65	80
	6.3	400	380	150	150	85	100	100
Shortfall	6.2	0	0	0	0	0	0	0
	6.3	0	0	0	0	0	0	0
LESA Actual	6.2	0	70	80	50	70	110	100
	6.3	0	1468	1361	1531	1985	2780	1622
Required	6.2	0	70	80	50	70	110	100
	6.3	0	1468	1361	1531	1985	2780	1622
Shortfall	6.2	0	0	0	0	0	0	0
	6.3	0	0	0	0	0	0	0
SDDT Actual	6.2	0	15	80	50	70	110	100
	6.3	0	1377	1520	1347	947	4291	4078
Required	6.2	0	15	80	50	70	110	100
	6.3	0	1377	2137	2571	3634	4291	4078
Shortfall	6.2	0	0	0	0	0	0	0
	6.3	0	0	(617)	(1224)	(2687)	0	0

(IV-2-2)

19. RECOMMENDATION. Develop techniques to present convincing evidence concerning the expected "Spectral pollution" impacts of such systems on the conventional radio and radar systems which operate in the same frequency band*.

ACTION	TASK	AGENCY
Initiate analysis, experimentation and testing to determine the impact of BID technology based systems on the electromagnetic spectrum and the effect on other systems which share the intended frequency band.	Research and rate (in terms of validity) approaches to use to date.	DARCOM (DRSEL-SEI)
MILESTONES		
Establish and execute measurements program to validate highly rated approaches (add on to on-going programs).		Jan 84
Develop "standardized" approaches as handbook and as Army Tactical Frequency Engineering System Software capability.		Jul 84
Research update based on newly available modulation technology.		FY 84
Continue measurements program to validate new approaches.		FY 85
Refine measurements program as required by technology advances, particularly increased modulation sophistication or application.		
Revise and update handbook and ATFES Software as required by technology advances.		FY 86-88

19. RECOMMENDATION: (cont'd)

CURRENT STATUS: Work is ongoing but behind schedule. As a result of examinations conducted after the C^2SPR, it was concluded that additional theoretical and simulation models must be developed and validated in order to accomplish the first milestone. CECOM/CENSEI has initiated a contractual effort with the University of Kansas to develop the additional modeling required; work on the contract commenced in July 1982. The two milestones shown for 1984 accomplishment were due to the additional front end modeling work required (DRSEL-SEI).

COMMENTS:

a. The one year University of Kansas contractual effort, which was initiatied specifically in response to this C^2SPR recommendation, calls for the development of a predictive model for evaluating "spectral pollution" caused by spread spectrum systems and assessing its RF impact on potentially co-existing conventional radio and radar systems. Emphasis is on the 1985-1990 period during which time BID technology based spread spectrum systems are expected to transition to the field. Computer models will be developed for both frequency hopping and direct sequence spread spectrum systems as well as a broad class of potential victim receivers. The computer models will be used initially to determine the impact of PLRS and JTIDS on potential victim receivers selected for a case study. The effort will also include the design of an experiment consisting of laboratory and field measurements to determine values of parameters for the computer predictor models on an as-required basis.

b. The University of Kansas work will also provide a basis for software development, under the Army Tactical Frequency Engineering System (ATFES) Pilot System project, to support field assignment of frequencies for spread spectrum and frequency hopping systems.

c. CECOM/CENSEI is also participating on two national (DOD and Civil) working groups to define allocation/assignment standards for spread spectrum systems. The results of those efforts will be used to augment and guide the University of Kansas contractual work.

* Recommendation and action changed per DARCOM request.

(IV-3-1)

20. RECOMMENDATION: Continue to define communications requirements for the Army portion of the RDJTF. Continue with present action plan.

ACTION	AGENCY	MILESTONE
CSA Approval, Concept for Contingency Corps 86.	TRADOC (ATZL-CAF-S)	1Q FY 82 (Complete)

CURRENT STATUS: Concept approved by Commander TRADOC published Jun 82 525-14 Pamphlet (LTC Reed POC (ATZL-CAF-S).

CSA Approval Concept for Airborne and Air Assault Divisions.	TRADOC (ATZL-CAF-S)	2Q FY 82 (Complete)

CURRENT STATUS: TRADOC DCSDOC Jan 82 determined that the concept need not be published, because of similarity of current concept. New concept will not be published, but be used for force design efforts and follow-on FM updates as appropriate (ATZL-CAF-S).

Analysis of ME III results.	TRADOC (ATOR-CAW-D)	TBD

CURRENT STATUS: The project analysis report has been completed based upon combat assessments and the capacity by forces. A recommendation to TRADOC that the ME III scenario be approved as a TRADOC standard scenario is being staffed. Excursions using ME III for communications analysis TBD. (ATOR-SAW-D)

Develop O&O Plans for Light Forces.	TRADOC (ATZL-CAF-S)	3Q FY 83

CURRENT STATUS: O&O plans for Airborne and Air Assault Divisions have been developed as part of Army 86 study. Those divisions are scheduled to be briefed to CSA in 3QFY83. 9ID is working currently on O&O plans for HTLD structures.

Initiate a CEP for Command Post assemblages.	TRADOC (ATZL-CAC-CI)	2Q FY 83

CURRENT STATUS: Work ongoing, milestone will be met.

COMMENTS: Draft CEP Resume Sheet is currently being worked by XVIII Abn Corps, CACDA-C^3I, ADDS Board, and TCATA. CEP funding to be approximately $140,000 from FY83 budget (ATZL-CAC-CI).

Define new material requirements.	TRADOC (ATZL-CAC-CD)	FY 84

CURRENT STATUS: CECOM has recommended the Marine Corps family of improved high frequency radios (IHFR) to satisfy extended distance communications requirements faced by the RDJTF. PM-ATACs MIPRed funds to Harry Diamond Labs to develop EMP protection to these radios. Hughes was awarded a contract 30 Sep 82 to provide all anti-jam, frequency hopping PIP to the IHFR. PIP is expected to be available in late 85. Letter requirements being staffed at HQ, FORSCOM and DA for long haul communications. (ATZL-CAC-CD).

COMMENTS: ME III scenario for communications analysis TBD.

(IV-4-1)

21. RECOMMENDATION: Continue firm commitment to provide ECCM as required.

ACTION	AGENCY	MILESTONE
Insure that the AC2MP continues to state a firm commitment for ECCM.	Responsible: HQDA Action: TRADOC (ATZL-CAC-CI)	1Q FY 83 (Completed)

CURRENT STATUS: Completed. The AC2MP has identified two major deficiencies which are directed at ECCM:

a. Anti-Jam: States that C2 equipment must be protected against ECM. This includes automation and ISTA systems in addition to communications ECCM, as a training fix, is an identified corrective action to this deficiency.

b. Offensive EW: States that the C2 system (which includes people, systems, and procedures) lacks an adequate ECM capability. Again, ECCM is a proposed corrective action. (ATZL-CAC-CI).

Insure that ECCM features, when required for essential survivable communications, are not traded off for other features in the development process.	Responsible: DARCOM Action: DARCOM (DRDEL-PO-PI) HQDA TRADOC Support: DARCOM	As required

CURRENT STATUS: Action ongoing. All milestones will be met (DAMO-C4P).

CURRENT STATUS: Work ongoing. (DRDEL-PO-PI).

COMMENTS: Sufficient ECCM provisions must be incorporated to meet the current validated threat to communications systems. Past experience has shown that ECCM requirements are not sufficiently specific to preclude the features being traded off for other more viable features. The Army CM/CCM center (located in ERADCOM) is providing a letter to the development community reminding them of the capabilities of the Center (described in DARCOM R 70-4) for assisting in studies and analyses. The need to continuously update the threat during the development cycle will also be addressed in the letter.

(IV-5-1)

22. RECOMMENDATION: Continue to support ECCM efforts for HF radios and multi-channel LOS.

a. Army Tactical HF radios.

ACTION

Complete ongoing HF ECCM Waveform investigation and submit candidate waveforms to tests using the NBS, or equivalent HF channel simulator.

Input results to the Tri Service Adaptive HF Radio Committee for standardization of an HF waveform and synchronization technique.

An accelerated development schedule could be achieved with parallel development of the radio system with frequency management, modems, adaptive RT techniques and ECCM hardware. A Letter of Agreement, currently in draft, could be used to initiate an Advanced Development program in early FY 83, leading to an IOC in FY 90/91. In either case a significant shortfall occurs during the years of Advanced and Engineering Development.

AGENCY DARCOM (DRSEL-COM-RN-1)

TASK	MILESTONE
Objective HF Radio Program	
HF Technology Assessment	Completed
HF ECCM Investigation	FY81 Start
	Dec 82 (Completed)
Award Contract for HF Simulator	Dec 82 (Completed)
Modem Development	Sep 82 (Start)
	Dec 83 (Complete)
Adaptive HF RT Development (techniques)	May 82 (Start)
	Apr 84 (Complete)
Automatic Frequency Management	Jan 83 (start)
	Apr 84 (Complete)
Complete Wave Form Tests	Jan 85 (Complete)
Submit Results to Tri-Service Committee	Feb 85 (Complete)
HF ECCM Module Development	May 83 (start)
	Oct 85 (complete)
OHFR System Development (AD & ED)	Mar 85 (start)
	Jun 89 (complete)
First Production Award	Dec 89 (start)
	Jun 94 (complete)
Initial Operating Capability	Feb 93 (start)

(IV-5-2)

22a. RECOMMENDATION (cont'd)

CURRENT STATUS: HF Technology Assessment - completed.
HF ECCM Investigation - completed.

COMMENTS: A final design review of ECCM study effort was conducted at Hughes Aircraft on 25 and 26 January 1983. All information required for the follow-on effort was obtained at that design review. The technical part of the ECCM investigation is complete and all data are in hand.

Modem Development - Work ongoing but behind schedule. Late start due to nonavailability of funds. Completion expected in Dec 83.

COMMENTS: Contract award was originally scheduled for Jan 82. Lack of adequate funding forced a delay of the starting date to Sep 82.

Adaptive HF RT Development (Techniques) - Work ongoing, Milestone will be met.
Automatic Frequency Management - Work ongoing, Milestone will be met. (DRSEL-COM-RN-1)

COMMENTS: Since the necessary funding for an accelerated development schedule has not materialized, any references in the plan to such a schedule should be deleted for the sake of realism both with regard to cost and schedule; it is also suggested to show separate AD and ED system development phases, with appropriate milestones as shown below. (If appropriate at the time, the AD phase could be extended and the ED phase dropped):

OHFR System Development (AD) complete	Jan 88
OHFR System Development (ED) complete	Mar 90
First Production Contract Award	Apr 90

22. RECOMMENDATION (cont'd)

b. Army Tactical Multichannel LOS.

ACTION

Initiate funding to provide ECCM capability for UHF (1350-1850 MHz) radio links, via Product Improvement Programs.

AGENCY DARCOM (DRSEL-COM-RM2)

TASK	MILESTONE
ECCM System Design	Feb 83 (Start) Jul 86 (Complete)
Radio Performance Monitor	Feb 84 (start) Jul 86 (complete)
Steerable Null Antenna with Beam Steering (6.2 thru 6.4)	Feb 84 (start) Jul 87 (complete)
Radio Transmission Coding Techniques	Feb 84 (start) Jul 86 (complete)
Solid State Power Amplifier	Feb 84 (start) Jul 86 (complete)
PIP commences	Jul 88 (start)

CURRENT STATUS: Work ongoing, milestones will be met as corrected above. (DRSEL-COM-RM2)

COMMENTS: Techniques are planned for developing upgraded AN/GRC-103 assemblages which will include ECCM.

(IV-5-2)

22. RECOMMENDATION (cont'd)

ACTION

(b.1) Continue to fund the Digital Microwave Radio (DMR) Program.

AGENCY DARCOM (DRSEL-COM-RM-2)

TASK	MILESTONE
Steerable Null Antenna (6.2)	Apr 81 (Start) May 83 (Complete)
Spread Spectrum Modem (6.2)	Apr 81 (Start) Feb 83 (Complete)
Coding Techniques (6.2)	Apr 81 (Start) Feb 83 (Complete)
System Design	Feb 81 (Start) Sep 83 (Complete)
Digital Microwave Radio (A.D. + E. D.)	Jan 84 (Start) Dec 90 (Complete)
First Production Award	Jun 90 (start) Jun 93 (complete)
IOC	Jun 92 (complete)

CURRENT STATUS: Work ongoing, but some milestones are behind schedule due to technical problems encountered by contractor. New milestones are as shown above. (DRSEL-COM-RM2).

COMMENTS: Milestone slippages, as shown for exploratory development (6.2) program will not affect final production schedule.

ACTION

(b.2) Initiate funding to investigate Digital UHF ECCM techniques. These techniques are to include:

Steerable Null Antenna with Beam steering.
Frequency Hopping or Direct Sequence Spreading (Spread Spectrum).
Burst and Random Error Correction.
Adaptive Equalization.

(IV-5-2)

22. RECOMMENDATION (cont'd)

TASK	AGENCY	MILESTONE
R&D System Design Contract	DARCOM (DRSEL-COM-RM-2)	Apr 84 (start) Apr 86 (complete)

CURRENT STATUS: Work ongoing. Milestone will be met. (DRSEL-COM-RM-2).

COMMENTS: R&D effort is planned in task areas starting in FY 84. Preparation of a PDP is now in progress.

(IV-5-2)

23. RECOMMENDATION: Support development of an anti-jam relay satellite network with full global access.

ACTION	AGENCY
Collection of requirements for an improved DSCS system	Responsible: DCA (J800) Action: TRADOC/CACDA Support: DARCOM

CURRENT STATUS: The collection of MILSATCOM requirements is a continuous process and once a year they are submitted to the OJCS for validation. The document that contains these requirements is the MILSTACOM User Requirements Data Base (URDB). The MILSTACOM community has recently updated the URDB which was submitted to the OJCS in Oct 82 for validation.

COMMENTS: Changes to the MILSATCOM URDB should be submitted, as they occur, to DCA, Code J820. The next annual update/validation cycle of the URDB commenced in May 83.

Integration with other services' requirements.	Responsible: JCS Action: DCA (J800) Support: DARCOM

CURRENT STATUS: The collection and integration of all MILSATCOM requirements is a continuous process. All MILSATCOM Users (Army, Navy, AF, Marine Corps, DoD Agencies and other Federal Agencies) must submit their requirements to DCA. DCA combines all these requirements in the MILSATCOM User Requirements Data Base (URDB) which is used for planning. The URDB was updated and submitted to the OJCS in Oct 82.

COMMENTS: Changes to the MILSATCOM URDB should be submitted, as they occur, to DCA, Code J820. The next annual update/validation cycle of the URDB commenced in May 83.

Architect, Size and System Engineer the network.	Responsible: DCA Action: DCA (J800) Support: JCS

CURRENT STATUS: Work is beginning to evaluate requirements, funding and technology for the deployment of the recommended capability (J800)

COMMENT: Strong user support is required to provide the impetus to initiate an improved DSCS system.

Establish the advance development program.	Responsible: DCSRDA Action: DARCOM/AF Systems CMD Support: SATCOMA/ESD

23. RECOMMENDATION: (cont'd)

MILESTONE:	URDB	Sep 83
	IOC	1998

CURRENT STATUS: Work ongoing; milestone will be met. (DRCPM-SC-4B)

COMMENTS: Advance Development Contracts awarded 30 Sep 82 for 30/20 GHz terminal and modulation programs to Harris, GTE and Raytheon.

(IV-6-1)

24. RECOMMENDATION: Address Command and Control for CSS.

ACTION	AGENCY	MILESTONE
Convene a panel whose purpose is to address the near-term C2 problem for CSS.	TRADOC (ATZL-CAR)	2Q FY 83 (Completed)

CURRENT STATUS:

a. Milestone completed. CCS C^2 General Officer panel met 17 Nov, at LOGCEN to ratify solutions resulting from RDF-A, USAREUR, and EUSA panel recommendations. Briefings were scheduled 16 December for the FORSCOM Cdr, 6 Jan for the EUSA Cdr, and 11 Jan for the CINC USAREUR. The TRADOC Cdr was briefed on 17 Jan. The solutions of the CSS C^2 panel were incorporated into the C^2 Action Plan IPR to the VCSA on 7 Mar 83. Near-term solutions will be incorporated into the C^2 Action Plan and will be staffed through TRADOC and HQ DA.

b. Reprogramming alternatives to fund the CSS requirements are currently being identified by HQDA (DCSOPS-C4 and PA&E). TOE's and BOIP's are being revised to include CSS requirements.

(VCSA-3)

SECTION III.

PRIORITY 2 RECOMMENDATIONS

25. RECOMMENDATION: Expedite the development of military computer family.

ACTION	TASK	AGENCY	MILESTONE
Field MCF	Insure MCF development stays on the compressed schedule.	DARCOM (DRSEL-TCS-MCF)	Field MCF NLT 1987.

CURRENT STATUS: Work ongoing; milestone will be met.

COMMENT: The MCF Development is on schedule. Advanced Development Preliminary Design reviews have been completed and implementation of the Advanced Development Models have begun. Planning of the Full Scale Development phase has been initiated. HQ DARCOM has convened an MCF FSD Planning Working Group composed of representatives of DARCOM sub-commands, Project Managers, HQ TRADOC, CACDA and HQDA personnel. The purpose of the Working Group is to determine user system requirements for the MCF FSD Development Specifications and to form an MCF community of interest. An effort has been initiated to ensure that a complete software environment is available for users of MCF computers. Upgraded Advanced Development Models will be developed and will be available for Project Managers' use for software development. Initial models developed under this effort will be used for the Ada Language System target for MCF and for the development of the MCF Operating System.

Funding Profile:

		FY83	FY84	FY85	FY86	FY87	FY88	FY89
Hardware:								
Actual	6.3	9732	7333	67955	17823	20167	18793	19639
	6.4	0	21262	20673	9032	9507	17699	18495
Required	6.3	11865	16333	13194	21403	20167	18793	20665
	6.4	3050	21262	20673	9032	9507	17699	29187
Shortfall	6.3	(2133)	(9000)	(5912)	(3580)	0	0	(1026)
	6.4	(3050)	0	0	0	0	0	(10962)
Software (MCFOS):								
Actual	6.2	510	770	1835	1086	2200	3930	5566
	6.3	864	2002	3104	3166	3343	5535	6988
Required	6.2	510	770	1835	1086	2200	3930	5566
	6.3	864	2902	4404	4516	5550	5535	6988
Shortfall	6.2	0	0	0	0	0	0	0
	6.3	0	(900)	(1300)	(1350)	(1707)	0	0

25. RECOMMENDATION: (cont'd)

Funding Profile (cont'd)

Software (DBMS):								
Actual	6.2	100	250	500	200	200	300	315
	6.3	154	115	100	605	1095	1590	2265
Required	6.2	100	250	500	200	200	300	315
	6.3	557	1715	1600	1805	1895	1590	2265
Shortfall	6.2	0	0	0	0	0	0	0
	6.3	(403)	(1600)	(1500)	(1300)	(800)	0	0

Ensure program is resourced so that compressed schedule is met. — HQDA — TBD

CURRENT STATUS: Awaiting House Budget resolution milestone TBD. (DAMO-C4R)

(I-3-5)

26. RECOMMENDATION: To ensure standardization, the impact of ADA and the MCF program must be addressed at all major program milestones.

ACTION:

Ensure that computer resource management planning is being done to transition to Ada and MCF as soon as possible.*

AGENCY: DARCOM (DRCDE-SB)

MILESTONES: Concurrent with fielding MCF (1987).

CURRENT STATUS: Work ongoing. (DRCDE-SB)

COMMENTS: The requirement for developing plans to transition to Ada and MCF is being included in the Computer Resource Management Plans (CRMPs). CRMPs will be reviewed at every major decision milestone in the development cycle to ensure that maximum advantage is being taken of the advances emerging from the Ada and MCF technology. Congress has withheld the engineering development funds for MCF in FY83 pending the completion of an OSD Study on the objectives and alternatives of the military computer technology.

*Action changed per DARCOM request.

(IV-9-1)

27. RECOMMENDATION: Develop standard report formats using the BAA V approved 85 minimum battlefield information needs.

ACTION	AGENCY	MILESTONE
CACDA produce Data Element Dictionary based on the 85 mission battlefield information needs.	TRADOC (ATZL-CAC-CI)	Feb 82 (Completed)
DA include standardization of reports in Army-wide standardization program.	HQDA	Oct 82 (Completed)

CURRENT STATUS: HQDA has initiated a change to AR 34-3 which indicates to the field that DA policy is that all tactical reports will be standardized to support AirLand Battle and automation (DAMO-C4L).

TRADOC develop standard report formats based on the BAA V approved 85 minimum battlefield information needs for incorporation in the CCS[2]	TRADOC (ATZL-CAC-CI)	Aug 83

CURRENT STATUS: Work ongoing as Technical Interface Requirements are developed (ATZL-CAC-CI).

COMMENTS: To accomplish this milestone the SIGMA Technical Requirements must be analyzed and completed by Aug 83.

TRADOC evaluate in terms of JINTACCS.	TRADOC (ATZL-CAC-CI)	Aug 83

CURRENT STATUS: Work ongoing (ATZL-CAC-CI).

COMMENTS: SIGMA Technical Interface Requirements (TIR's), TRADOC's expression of the standard report formats, are used to develop the Force Level Information Plan (FLIRP) and the SIGMA Data Element Dictionary (DED). The DED identifies the JINTACCS data element standard, where one exists, that satisfies the requirements of the FLIRP and TIR's. The FLIRP is a compendium of information units which are the structure of the TIR. The process of updating the FLIRP and the DED is continual and is based on receipt of the SIGMA TIR's from proponents. This process is used by TRADOC to evaluate the TIR's in terms of JINTACCS standards at the data element level.

CGSC incorporate report formats, content and frequency of report submission into appropriate doctrinal literature.	TRADOC (ATZL-SWC-S)	As published

CURRENT STATUS: Standardized reports not received. FM 101-5 (Final Draft), May 1982, contains examples of standard reports known at time of publication. FM 101-5 is projected for fielding in December 1983. Revisions will be incorporated in changes as input is received (ATZL-SWC-S).

(II-3-1)

28. RECOMMENDATION: Expedite fielding battle simulations - inter/intra system using state-of-the-art technology.

ACTION	AGENCY	MILESTONE
Resource with personnel and funds the Army Training Battle Simulation System (ARTBASS) and Computer Assisted Map Maneuver Simulation II (CAMMS II) to allow expeditious development, production and distribution.	HQDA TRADOC (ATZL-SWN-T)	Dec 84

CURRENT STATUS: Funding provided for each (DAMO-TRS).

CURRENT STATUS:

a. CAMMS II - The CAMMS II developmental test was conducted at Fort Hood, Texas in December 1982. Test results indicated serious problems existed in the simulation system. On 3 February 1983 a decision to discontinue current developmental work on CAMMS II was made.

b. ARTBASS - Work is ongoing but behind schedule. Developmental testing (DT) was delayed. IOC now projected for December 1984.

COMMENTS: ARTBASS DT was concluded March 1983. Prototype delivery scheduled for mid-April 1983. Operational Test (OT) II is scheduled for May-June 1983. DEVA IPR projected for December 1983.

Develop revised fielding program for ARTBASS in conjunction with contractors.	TRADOC (ATZL-SWN-T)	3Q FY 83

CURRENT STATUS: Work is ongoing but behind schedule due to delay in DT. Expect completion by 3QFY83. (ATZL-SWN-T)

COMMENTS: PM TRADE notified proponent that sole source authorization has been approved. Action underway to obtain production proposal to identify long lead time items and establish maximum production rates.

Investigate state-of-the-art technology and methodology to develop a capability to support division and corps exercise.	TRADOC (ATZL-SWN-T)	4Q FY 84

(III-2-2)

CURRENT STATUS: Work is ongoing but behind schedule due to the failure of the candidate system, CAMMS II. Expected completion of corps simulation requirement definition is 4QFY83. (ATZL-SWN-T).

COMMENTS: CAORA investigating alternative methodologies in anticipation of CGSC developed requirements.

28. RECOMMENDATION: (cont'd)

ACTION	AGENCY	MILESTONE
Develop and field, manual computer assisted and computer driven simulations supportive of combat service support objectives.	TRADOC (ATTG-PA)	Ongoing

COMMENTS: The question of proponency for Combat Service Support Simulations is still being staffed at TRADOC. (ATTG-PA)

Develop and field a standardized family of manual simulations for use at command echelons Battalion thru Corps.	TRADOC (ATZL-SWN-T)	Jun 84

CURRENT STATUS: Work is ongoing but behind schedule due to resource constraints. Expected IOC is June 1984. (ATZL-SWN-T).

COMMENTS: The project coordination sheet (PCS) between Combined Arms Operations Research Activity (CAORA) and Battle Simulations Directorate (BSD), Command and General Staff College was signed on 23 January 1983 which provides for completion of the standard family of manual simulations, FIRST BATTLE: Battalion through Corps.

(III-2-2)

29. RECOMMENDATION: Develop a standard family of I/O devices for MCF to satisfy requirements of the CCS^2 architecture.*

AGENCY: DARCOM (DRSEL-TCS-MCF)

ACTION:

Near term - Add 1553 interfaces to an existing printer, keyboard display, secondary memory and auxiliary memory device to provide interim peripherals for use with the first production models and for GFE to MCF FSED contractors for DT-II MCF computer testing.

Far term - Provide complete family of standard peripheral devices using the MCF microcomputer as the embedded processor.

	TASK	MILESTONE
1.	Add MCF interface to printer, keyboard display, secondary memory and auxiliary memory.	Dec 83 - Nov 84
2.	Production of MCF interfaced printer, keyboard display, secondary memory and auxiliary memory.	Jan 85 - Nov 85
3.	Start AD of Large Screen Display	Oct 84
4.	Start FSD of Large Screen Display	Oct 86
5.	Start Production of Large Screen Display	Oct 89
6.	Start AD of Mass Memory Device	Oct 86
7.	Start FSD of Mass Memory Device	Oct 89
8.	Start Production of Mass Memory Device	Oct 92

CURRENT STATUS: Work ongoing but behind schedule. Funds were required for use in accomplishing recommendation 25. Original tasks and milestones were changed accordingly. No technical barriers exist to the initiation of development of a family of standard peripheral devices under the MCF program. Current thinking, however, indicates that Project Managers should develop peripheral devices for their systems. The role of the MCF program is to ensure that such peripheral devices are properly interfaced to MCF computers and can serve in multiple applications. The MCF program will only address the development of peripheral devices that contain significant risk so that no Project Manager need risk the success of his system. Examples of such devices are Large Screen Display using thin film electroluminescent (TFEL) technology (to be initiated under the MCF program in Advanced Development in FY85) and all-electronic mass memory (to be initiated in FY87).

29. RECOMMENDATION: (cont'd)

Based on requests from CACDA and TRADOC and funding from DARCOM, ETDL has begun an accelerated 6.2 effort for the large screen display development. This effort consists of the development of drivers and drive mechanisms indigenous to the large screen TFFL display. FY83 and continuing for FY84 and FY85, the 6.2 effort is being accomplished by the Electronic Devices and Technical Lab by ERADCOM. ERADCOM is working out the Thin Film Electroluminescent (TFEL) technology. In FY85, the 6.3 effort will begin on the advanced development of the large screen display. Money was pulled out of this effort initially for the PLASMA technology but was later returned. (DRSEL-TCS-MCF)

(3) Funding Profile:

		FY83	FY84	FY85	FY86	FY87	FY88	FY89
Near Term	6.3	0	1255	0	0	0	0	0
Actual	6.4	0	0	0	0	0	0	0
Required	6.3	0	3655	0	0	0	0	0
	6.4	0	0	0	0	0	0	0
Shortfall	6.3	0	(2400)	0	0	0	0	0
	6.4	0	0	0	0	0	0	0
Far Term:								
Actual	6.3	0	0	5955	350	1877	7878	14093
	6.4	0	0	0	0	9495	15840	0
Required	6.3	0	1000	12194	2450	6587	7878	15956
	6.4	0	0	0	0	9495	15840	10000
Shortfall	6.3	0	(1000)	(6239)	(2100)	(4710)	0	(1863)
	6.4	0	0	0	0	0	0	(10000)

COMMENTS: Recommendation 25 is for the MCF computer program and is higher priority than MCF I/O devices, since without the computers the I/O devices are of no use.

*Recommendation changed per DARCOM request.

(IV-8-4)

30. RECOMMENDATION: Utilize user concept testing to refine techniques for user access to data.

It is recommended that appropriate human interfaces be developed for user level access to computer stored data. These interfaces could take the form of menu driven prompting, high resolution graphics, or display.

At the HTLD at Ft Lewis, WA, a number of state-of-the-art commercial terminals will be utilized to allow users to enter, access, and modify tactical military data. The specific details of the interface will be coordinated with and approved by the HTLD-9ID personnel. Current plans call for a PDP-11/44 minicomputer with 67 mega byte disk coupled with a Color Graphic Corp. (CGC). CGC-7900 graphics terminal to be the primary data processing storage for the HTTB-9ID. However, smaller machines, such as the Apple II, Apple III, Casio FX-702P units may be utilized as auxiliary entry/display device. Additional military terminals, such as the TCT and TCS will be utilized as available and if desired.

AS PART OF HTLD

( ) = unfunded

	FY82	FY83	FY84	FY85
Terminal/ADP	.7M	2.0M	2.2M	---
Testbed support	.5M	1.55M	2.169M	1.5M
	(1.2M)	3.469M	4.369M	(1.5M)

AGENCY: DARCOM (DRSEL-SEI), FORSCOM (AFOP-TA)

TASK	MILESTONE
Ensure that both hardware and interface initiatives taken by CECOM are coordinated with the 9ID HTLD.	FY 82 (Completed)
Define CCP architecture as applied to data processing. Define user level application software.	FY 82 (Completed)
Implement initial version of application software. Conduct experiments with user.	FY 83
Implement enhanced version of application level software. Conduct field experiments with user.	FY 84
Conduct field experiments with user.	FY 85

CURRENT STATUS: Work on-going; milestone will be met (DRSEL-SEI).

(IV-7-1)

30. RECOMMENDATION: (cont'd)

COMMENTS:

a. Both FY82 milestones have been completed. All CECOM hardware, software, and interface initiatives concerning the 9ID HTLD (and HTTB) have been coordinated in-depth with the 9ID. Coordination of the initiatives for the HTLD was completed in April 1982. The complement of hardware to support access to data was expanded to include real or slow scan TV, large screen display, video disk for map backgrounds of TV or displays, facsimile (GXC-7A and/or UXC-4), and UGC-74. The basic functional analyses of dispersed cellular configurations were completed in March 1982. The approach for development of user level applications software was agreed among CACDA, HTTB, and CECOM in June 1982. Planning for implementation of the initial version of the application software and conduct of experiments with the 9ID has been completed.

b. Plans for implementing the enhanced version of the application software and conducting field experiments with the user in FY84 have been completed. In FY85, it is planned to continue both the field experiments with the user and the refinement of data access procedures for the dispersed CP and the externals to Division Main.

c. This program is being executed under Project D-180 which is oriented toward design, development and acquisition of a Distributed Command Control System for the 9ID High Technology Light Division. (See Recommendation 16)

CURRENT STATUS: HQ DARCOM has the lead on this issue. As information/documentation is received from those commands. FORSCOM will initiate action as appropriate (AFOP-TA).

(IV-7-1)

31. RECOMMENDATION: Publish product line catalogue for computer resources to include computers, peripheral devices, terminals and software.*

ACTION	AGENCY	MILESTONE
Complete DARCOM catalog.	DARCOM (DRSEL-TCS-ED)	30 Sep 82 (completed)
Disseminate catalog to all system developers, DARCOM-wide.	DARCOM (DRSEL-TCS-ED)	30 Sep 82 (completed)
Review and update, to keep catalog current.		Periodically (as required)
Assist developers in review of requirements vs. catalog items.		As needed

Publish product line catalogue for computer resources to include computers, peripheral devices, terminals and software.

CURRENT STATUS: Completed tasks 1 and 2. 14 copies of DARCOM Standard Product Line Catalog for Computer Resources disseminated 18 Oct 82 under DARCOM letter of distribution. 28 additional copies disseminated 5 Nov 82.

Work ongoing for tasks 3 and 4 and will be accomplished as required. (DRSEL-TCS-ED)

COMMENTS: Currently, a market survey is being conducted DARCOM-wide and items are expected to be identified for addition to the catalog. The catalog was staffed at HQ, DARCOM and distribution was made. Updates to the catalog are scheduled semi-annually. DARCOM technical personnel are available to assist developers in the selection of standard items on a continuing basis.

Funding Profile:

D101 (6.3)	FY83	FY84	FY85	FY86	FY87	FY88	FY89
Actual	200	210	1220	1460	1700	1760	1900
Required	200	1210	1220	1460	1700	1760	1900
Shortfall	0	(1000)	0	0	0	0	0

*Recommendation changed per DARCOM request.

(IV-8-1)

32. RECOMMENDATION: Enforce DARCOM Regulation regarding Computer Resource Management Plans.*

ACTION:	AGENCY	MILESTONE
Ensure Computer Resource Management Plans (CRMP) are taking advantage of standardized items of euqipment where appropriate.*	DARCOM (DRCCE-SB)	As required

CURRENT STATUS: Work ongoing. (DRCDE-SB).

COMMENTS: Computer Resource Management Plans (CRMP) are being reviewed for systems being developed. Particular emphasis is being placed on the use of standard product line equipment and the plans for transitioning to Ada and the MCF. A new Army Regulation is being prepared to more definitively describe the information to be included in the CRMPs and to provide for review of the CRMPs at each major decision milestone during the systems development.

*Recommendation and action changed per DARCOM request.

(IV-8-3)

33. RECOMMENDATION: Learn to use minicomputers.

ACTION	AGENCY	MILESTONE
Field units experiment with the use of commercial minicomputers.	FORSCOM (AFOP-TA) USAREUR (AEAGC-C3) WESTCOM (APOP-OP)	1QFY85

CURRENT STATUS: Work ongoing, milestone will be met (AEAGC-C3).

COMMENTS:

UNIT	SYSTEM	COMMENTS
V Corps	Staff Planning and Decision Support System (SPADS)	Systems continue to be utilized in exercises to further define technical training requirements and technical performance characteristics.
VII Corps	Automated Information Distribution System (AIDS)	Equipment has been fielded and is in hands of user. First exercise use to occur in Wintex 83.
3 ID	MARNE C2 systems	Equipment has been fielded, utilized during REFORGER. System interaced to TCT/TCS. Procedures continue to be refined.
8 ID	Division Staff Planning and Division Support System	System continues to be utilized in exercises to further refine techniques training and technical performance characteristics. Also performing coordinated garrison use of system for similar systems.

CURRENT STATUS: Ongoing (AFOP-TA).

COMMENTS: This is a continuous action that evolves from new concepts/doctrine being field tested.

(VCSA-8)

33. RECOMMENDATION (cont'd)

CURRENT STATUS: Ongoing. (APOP-OP)

COMMENTS: The 25th Inf Div and the 45th Spt Gp have been issued Training Management Control System (TMACS) minicomputers for training management purposes. Several other commercial micro and mini-based computer systems are currently in procurement as interim measures until tactical systems under development are fielded.

Maintain an evolutionary approach and document results.	TRADOC (ATZL-CAC-A)	FY 82 (Completed)

CURRENT STATUS: Work ongoing, original milestone met. (ATZL-CAC-A).

COMMENTS: Numerous CEPs and staff automation projects currently under the proponency of CACDA-C3I are providing the training base. CACDA is working with CGSC (ACTS) to insure training is incorporated into the CGSC curriculum.

Keep OSD and Congress advised of our direction.	HQDA	FY 82 (Completed)

CURRENT STATUS: DOD has provided several briefings on this subject. The DA DCSOPS has recently briefed the SACS on numerous items to include minicomputer.

COMMENT: Although tasking has been completed for action plan purposes, DCSOPS will continue the effort to keep OSD and Congress advised.

(VCSA-8)

34. RECOMMENDATION: Develop communications doctrine from support base to foxhole. Submit to JCS, through DA, joint requirements as seen by the Army.

ACTION	TASK	AGENCY	MILESTONE
Define Army C^2 communications requirements for joint operations.	Development of Plan for COMSR to include EAC needs.	TRADOC (ATZH-CAC-IC) USACC (CC-OPS-PD)	1 Dec 82 (completed)

CURRENT STATUS: Management action plan completed 30 Aug 82 (ATZH-CAC-IC).

Perform strategic Army COMSR study.	USACC (CC-OPS-PD)	1 Dec 83
Coordinate and meld tactical, EAC, and strategic COMSR into US Army COMSR.	TRADOC USACC (CC-OPS-PD)	30 Apr 84

CURRENT STATUS: Work on-going, milestone will be met. USACC has a supporting role to TRADOC for this recommendation. (CC-OPS-PD).

COMMENTS: CACDA has developed a statement of work for a contractual effort that would update the COMSR data base from the tactical arena to the sustaining base. This effort was not funded by DA. USACC, through analysis of previously documented needline requirements will partially document a portion of the theater user requirements as a part of this commands communications MAA effort. The methodology of developing and inputing requirements into COMSR and validation of COMSR has proven inadequate in the past. A new method must be developed to identify user requirements that is workable and which serves as a suitable data base for mission essential user requirements. Not until this happens will USACC be able to highlight shortfalls between actual capacities and user requirements. USACC is willing to participate in efforts to develop and improve methodology with TRADOC.

Update INTACS to reflect EAC requirements.	TRADOC (ATZH-CDI)	30 Apr 84

CURRENT STATUS: Work ongoing and milestone is expected to be met. Completion requires DA Staff, USACC, FORSCOM, TRADOC and others, input to reflect EAC requirements. (ATZH-CDI).

Approve Army COMSR and submit to DCA.	HQDA	1 Aug 84

CURRENT STATUS: Work ongoing. Milestone will be met (DAMO-C4P).

(I-1-2)

35. RECOMMENDATION: Develop policy and procedures to ensure functional survivability of command and control functions.

ACTION	TASK	AGENCY	MILESTONE
Change combat development Regulation AR 71-9.	Ensure ROCs are written with specific C^2 CONOPS provisions.	HQDA	4QFY83

CURRENT STATUS: Work on-going. AR 71-9 is currently being staffed. Staffing scheduled to be completed 4QFY83. (DAMO-RQR).

COMMENTS: AR 71-9, Combat Developments, has been delayed to allow for a synchronous revision with AR 70-1, Material Acquisition. It is imperative that these two regulations are harmonious. Milestone should be changed to reflect staffing completion dates.

(I-3-1)

36. RECOMMENDATION: Integrate alternate methods of operations into Army training and evaluation programs.

ACTION	TASK	AGENCY	MILESTONE
Develop alternative methods of operation for existing systems.	Identify most appropriate method of operation in degraded modes.	TRADOC FORSCOM (AFOP-TA)	FY 84

COMMENT: Based upon a CACDA analysis and supported in the C^2 MAA, CACDA has determined the need for development of C^2 procedures to operate in a degraded mode. This was a deficiency and was documented in the C^2 MAA as well as in this Action Plan. All battlefield functional areas, however, must be considered for ARTEP modification. The problem must be refocused at TRADOC. Expected completion date would be FY 84. (ATZL-CAC-A)

Update ARTEPs	Rewrite ARTEPs to insure that units can perform their mission with degraded C^2 systems.	TRADOC	FY 84

CURRENT STATUS: Recommendation deleted per HQ TRADOC.

(I-3-2)

37. RECOMMENDATION: Establish alternative methods of operation for each of the five CCS^2 operational facilities.

ACTION	TASK	AGENCY	MILESTONE
Insure the five operational facilities of the CCS^2 concept have detailed CONOPS.	Develop most appropriate method of ensuring functional survivability of each operational facility.	TRADOC (ATZL-CAC-A)	1 Dec 82 (completed)

CURRENT STATUS: Development of the method is complete but implementation is ongoing. The CCS2 provides for CONOPS through its structure. Utilizing distributed processing and storage of information, the information required by the force commander to successfully execute the AirLand Battle is resident in at least 2 or more functinal areas. This provides CONOPS in that should any segment be destroyed, the information resident and processed therein is still capable of being extracted and used via one or more of the remaining four segments. Technical Interface Requirements (TIRs) are being developed which specify the exact information exchange requirements to insure this interface can be successfully executed. As such, the CCS2 forms the tactical architecture for C2. Currently, there are two major C2 deficiencies which address this issue: CONOPS and data distribution and interoperatibility. Both deficiencies address the need to provide CONOPS through distributed storage and processing of information. Materiel, Doctrine, Force Structure, and Training solutions are being developed to correct these deficiencies.

(ATZL-CAC-A) (I-3-3)

38. RECOMMENDATION: Develop graceful degradation ("Fail-Soft" characteristics) into all future systems.

ACTION	TASK	AGENCY	MILESTONE
Insure CONOPS in all future systems.	ROC specifications must prioritize C^2 functional tasks necessary for successful operation in the degraded mode.	TRADOC (ATZL-CAC-A)	As required
	Insure O&O concept fully addresses functional survivability.	TRADOC (ATZL-CAC-A)	System dependent

CURRENT STATUS: CONOPS is addressed in Recommendation 37. All O&O concepts and requirements documents developed for C2 systems are reviewed to ensure CONOPS through redundancy or operational concept. This review is provided by the C3I Directorate within CACDA. This review is governed under the auspices of AR 11-39 which makes the AC2MP an official checkpoint in the C2 requirement approval process. (ATZL-CAC-A).

Develop built-in test equipment for C^2 systems.	DARCOM (DRCPM-TMDE-L)	System dependent

CURRENT STATUS: Work on-going, milestone will be met.

COMMENTS: CECOM is currently surveying all Army elements to determine the success/failure to built-in-test applications. The results will provide the basis for the Army-wide technology programs in the area of testability with emphasis on built-in-test. (DRCPM-TMDE-L).

Exploit technologies which provide fail-soft characteristics.	DARCOM (DRCPM-TMDE-L)	As opportunity occurs

CURRENT STATUS: Work on-going, milestone will be met. (DRCPM-TMDE-L)

COMMENTS: The Army Test, Measurement & Diagnostic Technology Laboratory is working in concert with the computer Research Division of CENTACS and the ETDL of ERADCOM to develop a practical overall general purpose system level test methodology for VHSIC. Fault tolerant design and design for testability diciplines are also being explored to provide graceful degradation methodologies for use in emerging weapon systems.

(I-3-4)

39. RECOMMENDATION: Indorse JINTACCS standards for Intra-Army use.

ACTION	TASK	AGENCY	MILESTONE
Indorse JINTACCS standards for intra-Army use.	Publish a US Army position paper on JINTACCS standards use intra-Army.	HQDA	1 Apr 82 (completed)

CURRENT STATUS: Completed (DAMO-C4L).

COMMENTS: DAMO-C4L sponsored a meeting 27-29 April 82, subject: Implementation of JINTACCS Standards. The group reviewed responsibilities and planned actions concerning Army adoptions and implementations of JINTACCS Standards. Agreement was reached concerning a series of follow-up actions that would be taken by the participants. A second meeting 17-18 Aug 82 reviewed progress in these action areas in order to provide a basis for development of an action plan to determine how, when, and to what level JINTACCS will be used intra-Army (Item 41). Most items were adequately addressed. CECOM/CENSEI initiated a contractual effort to perform an analysis to identify the JINTACCS message standards that must be accommodated in functional segments of the Army's Command Control and Subordinate Systems (CCS2) architecture at Corps and Division. The group concluded that a basis for an action plan had been established and future activities should become part of agenda items in the Army Command and Control (AC2) working group.

(I-4-1)

40. RECOMMENDATION: Implement JINTACCS at the completion of compatability and interoperability testing.

ACTION	TASK	AGENCY	MILESTONE
Insure JINTACCS testing adequately reflects Army needs.	Review the configuration-management and testing of JINTACCs standards.	TRADOC (ATZL-CAC-CI) DARCOM (DRSEL-SEI)	IAW jointly-established JINTACCS schedules.

CURRENT STATUS: Ongoing. (ATZL-CAC-CI)

COMMENTS:

a. TRADOC is cooperating fully with DARCOM (CECOM, CENSEI) in the implementation of DARCOM's "New Directions" concept for improving the effectiveness of JINTACCS testing. This concept was implemented 18-22 Jan 82, with an Army Table-Top Test for the evaluation of the JINTACCS Operations Control functional segment. The Table-Top Test methodology was again implemented for the development of an Army position on the JINTACCS Fire Support standards, 18-22 Oct 82. This methodology to date has provided a much more comprehensive analysis of Army requirements for joint interoperability. This methodology, however, currently serves to supplement Developmental Certification Testing, previously compatability and interoperability testing, and does not serve as a replacement for the more formal DCT process.

b. Participation in JINTACCS testing by both DARCOM and TRADOC will be required until joint implementation IAW with jointly established JINTACCS schedules. Therefore, the milestone should be revised to accurately reflect the Army's commitment to configuration managment and testing of JINTACCS standards.

CURRENT STATUS: Work on-going; milestone will be met. (DRSEL-SEI).

ACTION	TASK	AGENCY	MILESTONE
	Review Intra-Army standardization needs.	TRADOC (ATZL-CAC-A) DARCOM (DRSEL-SEI)	IAW Jointly Established JINTACCS Schedules

CURRENT STATUS: Work ongoing (ATZL-CAC-A).

COMMENTS:

a. Intra-Army standardization needs are partially being considered in the course of continued US Army participation in the JINTACCS program. However, only those Army requirements which have Joint Services acceptability can be included in JINTACCS standards. Continuing effort is required by DARCOM and TRADOC to insure that Intra-Army requirements are considered for entry into JINTACCS standards.

40. RECOMMENDATION: (cont'd)

b. The status of Army requirements versus the final edition of JINTACCS standards is a keypoint to insure that Intra-Army requirements are as nearly complete as possible. Therefore, the JINTACCS schedule will continue to drive the review of Intra-Army standardization needs.

c. Action is required by HQDA to implement JCS SM-82, 4 Feb 82, Subject: Implementation of Interface Design Standards to Achieve Joint Interoperability of Tactical Command and Control Systems. This SM requires that the Air Operations and Intelligence functional segments be implemented at the joint OPFACS upon successful completion of the 1983 OED and subsequent joint approval of the Air Operations and Intelligence standards, possibly in early 1984. HQDA assessment and direction of the implementation is probably required to insure a coordinated effort with the Army.

CURRENT STATUS: Work on-going; milestones will be met (assuming timely completion of SIGMA TIR's). (DRSEL-SEI).

Implement JINTACCS	Insure comm protocols can handle message functions.	DARCOM (DRSEL-SEI)	IAW Jointly Established JINTACCS Schedules

CURRENT STATUS: Work ongoing; milestone will be met. (DRSEL-SEI).

COMMENTS

a. Effort is required for each functional segment of JINTACCS; namely, Intelligence, Air Operations, Operations Control, Fire Support, Amphibious, and TADIL-J. All JINTACCS testing accomplished to date (Intelligence Developmental Certification Testing, Intelligence Operational Effectiveness Demonstration, Intelligence Configuration Management Testing, and Air Operations Compatibility and Interoperability Tests) has adequately reflected Army needs. Preparatory work is now underway for Army participation in the remaining JINTACCS test phases; it is anticipated that all remaining JINTACCS tests will adequately reflect Army needs.

b. Three forms of testing are included in the JINTACCS Program; namely, Developmental Certification Testing (DCT), Operational Effectiveness Demonstrations (OED's), and Configuration Management Testing (CMT). CECOM/CENSEI is responsible for Army participation in the joint C&I Tests and CMT activities; FORSCOM is responsible for Army participation in the OEDs.

c. All JINTACCS testing activities are scheduled on a joint basis. A separate DCT is conducted for each JINTACCS functional segment. The OED's are scheduled on a biannual basis (OED-81, OED-83, OED-85); each OED includes demonstration of the use of the standards included in all JINTACCS segments for which DCT had been completed prior to that OED. Configuration Management Testing is conducted on an as-required basis following completion of DCT to evaluate adequacy of design changes and to obtain joint certification that new systems are compliant with the agreed JINTACCS Standards.

(I-4-2)

40. RECOMMENDATION: (cont'd)

COMMENTS (cont)

d. As a result of the discussions concerning JINTACCS testing that occurred during BAA-V, CECOM/CENSEI developed a proposal which defined a revised testing approach which is considered to be both more efficient in use of resources and time and more effective with respect to satisfaction of Army needs. Although the proposal was not accepted by the JINTACCS Executive Agent due to the extent of required changes, one aspect of the proposal pertaining to the use of Table Top exercises was accepted and has been successfully employed in connection with the upcoming evaluation of the standards included in the JINTACCS Operations Control segment. The Table Top approach was exercised on both a joint and intra-Army basis thereby maximizing consideration of Army needs. Use of the Table Top exercise approach for the remaining JINTACCS segments is anticipated.

e. Based upon a review of Army baseline documentation and the Army Problem Trouble Reports that resulting from the Table Top Exercises and formal JINTACCS Testing, CECOM/CENSEI, acting on behalf of the Army, has submitted numerous Developmental Interface Change Proposals (DICPs) to correct the deficiencies that have been identified by the Army.

f. To assure that the JINTACCS standards are compatible with Intra-Army requirements, a contractually supported effort has been initiated to conduct an in-depth analysis of the JINTACCS Standards, the SIGMA Data Element Dictionary, the Force Level Information Requirements Plan, and the national/joint/international standards now included in the Army Data Standardization Program to identify any incompatibilities or inconsistencies.

g. Although initial Army testing of JINTACCS was limited to consideration of manual message preparation and processing, the following actions have been taken by CECOM/CENSEI to include automated and semi-automated operation:

1. Developed TCT application software for preparation and transmission/receipt of JINTACCS Air Operations messages during the AIR OPS C&I Test Program.

2. Initiated development of TCS/TCT application software for preparation and transmission/receipt of JINTACCS Intelligence messages during OED-83.

3. Initiated development of TACFIRE application software to permit TACFIRE participation in the JINTACCS Fire Support C&I testing.

h. CECOM/CENSEI has developed a proposal to employ TCS/TCT equipment during OED-83 to permit Army evaluation of both the manual and semi-automated modes of JINTACCS message transfer. FORSCOM has indicated non-concurrence in the proposal because the TCS/TCT equipments are not part of their current inventory. CECOM/CENSEI believes that it is appropriate to include the

(I-4-2)

40. RECOMMENDATION: (cont'd)

COMMENTS (cont)

TCT/TCT in OED-83 since there is a very high probability that the equipment will be fielded in the mid/late 1984 time frame, which is coincident with the likely date for mandatory use of JINTACCS Air Operations and Intelligence formats in joint operations, and since the necessary JINTACCS message handling software will be available for incorporation in the TCT/TCS prior to that date. As a compromise, FORSCOM has indicated that it could support use of the TCS/TCT equipment on intra-Army links to permit the desired evaluation of the semi-automated mode provided that TRADOC included that mode in their intra-Army operational concept. Details will be addressed during development of the Outline Test Plan for the intra-Army evaluation of JINTACCS Standards.

i. The Army's review of JINTACCS message development procedures and its assessment of the adequacy of the proposed standards and communications protocols is an ongoing effort which is proceeding in conjunction with the scheduled JINTACCS functional segment testing and resultant DICP analyses and actions. All Army activities have been accomplished on schedule and in a credible manner. The milestone schedules should be changed to read "In accordance with JINTACCS Schedules."

(I-4-2)

41. RECOMMENDATION: Determine how, when and to what level JINTACCS will be used intra-Army.

ACTION	TASK	AGENCY	MILESTONE
Develop actions necessary to integrate JINTACCS into US Army use.	Develop specific action plan for integration of JINTACCS standards intra-Army.	HQDA (DAMO-C4L) TRADOC (ATZL-CAC-CI) DARCOM (DRSEL-SEI-I) MACOMs	Oct 83

CURRENT STATUS: Work on-going; milestone will be met. (DAMO-C4L)

COMMENTS:

a. Draft Action Plan currently being staffed at DA.

b. Issuance of the DA-approved action plan is scheduled for Oct 83.

CURRENT STATUS: Work on-going. (ATZL-CAC-CI)

COMMENTS:

a. A draft action plan has been developed. The plan has two phases. Phase I began Dec 82. Phase I includes actions initiatied with the development of the plan. Phase II includes those actions initiated following formal issuance of the plan.

b. The draft plan was distributed by Feb 83. Formal coordination of this plan was completed and forwarded to DA by April 83. (ATZL-CAC-CI)

CURRENT STATUS: Work on-going. (DRSEL-SEI-I)

COMMENTS:

a. CECOM/CENSEI has initiatied a contractually supported task to perform an analysis to identify the JINTACCS message standards that must be accommodated in functional segment of the Army's Command Control Subordinate System (CCS^2) architecture, at Corps and Division, in order to accomplish standard data exchange with non-Army Operational Facilities (OPFACS). The assessment is based on the agreed joint operational requirements as identified in the approved JINTACCS Technical Interface Concept and reflected in the currently documented approved/proposed JINTACCS Standards. The results of the analysis will indicate which JINTACCS standards must be implemented at each CCS^2 Control Element and where within each CCS^2 Subordinate System the JINTACCS standards should also be implemented to avoid translation and/or conversion requirements. The results of this analysis will provide a background picture from which application of JINTACCS standards, either in whole or in part, for purely intra-Army purposes can be easily identified.

41. RECOMMENDATION: (cont'd)

COMMENTS: (cont'd)

b. The contractual analysis to identify JINTACCS standards for Army standard data exchange with non-Army OPFACS was completed on 31 Jan 83. The analysis entitled, "JINTACCS Standards Implementation" is currently undergoing Army-wide coordination and review. In addition, a parallel contractual effort is underway for development of ACCS data element standards. A completion date of 16 Mar 83 has been delayed pending USACS formal concurrence or alternative proposals relative to recommended dispositions of issues related to ACCS interoperability standards. CENSEI is also awaiting comments from TRADOC on the final draft version of ACCS data element standards.

c. HQDA, DAMO-C4L, has assumed responsibility for the action plan. The plan was discussed at a meeting of the JINTACCS Implementation Working Group on 30-31 Mar 83 at Fort Monroe, VA.

(I-4-3)

42. RECOMMENDATION: Identify and institutionalize the few best electronic counter-countermeasure techniques for communications.

ACTION	AGENCY	MILESTONE
Task Joint EW Center to identify vulnerabilities of current communications systems to enemy radio electronic combat	TRADOC (ATCD-CT)	Mar 82 (Completed)
CURRENT STATUS: Action completed.		
Task Signal Center and School to consolidate defensive EW techniques against key vulnerabilities	TRADOC (ATCD-CT)	Apr 82 (Completed)
CURRENT STATUS: Action completed.		
Signal Center and School publish updated defensive EW doctrine	TRADOC (ATZH-DTL)	Jun 83
CURRENT STATUS: Preliminary draft of updated communications defensive electronic warfare doctrinal manual, FM32-30, is being written (completed by Jan 83). Coordinating draft will be completed by Jun 83. Staffed field manual will be fielded by Dec 85.		
Signal Center and School provide defensive EW training packages to Army Service Schools and field units	TRADOC (ATZH-TDE)	3QFY86
CURRENT STATUS: Pending completion of approved EW Doctrine Action expected to be completed by 3QFY 86. (ATZH-TDE).		

(II-1-3)

43. RECOMMENDATION: Provide procedures for electronically-produced, video-displayed, rapidly transmitted graphics to allow information exchange without gathering for conferences or briefings.

ACTION	AGENCY	MILESTONE
CACDA include procedures for expedited flow of information as part of the dispersed CP operational concept. The minimum essential information should capitalize on a "brief or report on demand/exception" philosophy	TRADOC (ATZL-CAC-CI)	Continuing

CURRENT STATUS: Work is still ongoing. Milestone should be changed to "continuing" because on-going evolutionary programs will continue to provide updated information. (ATZL-CAC-CI).

COMMENTS: Information flow and decision graphics were documented during the May 82 DCP test by 9ID. Other field initiatives are providing data in this area also. All efforts are being closely monitored to insure incorporation of user validated requirements.

CGSC publish as a part of dispersed CP doctrine	TRADOC (ATZL-SWC-S)	Dec 84

CURRENT STATUS: Work ongoing, but behind schedule. Publication of doctrine cannot precede development of the dispersed CP operational concept by CACDA, presently scheduled for completion in May 1983. The operational concept must be fielded, field evaluated, feedback obtained from the field, and comments incorporated in published doctrine. Work will be completed by Dec 84. (ATZL-SWC-S)

COMMENTS: Decision graphics, as developed in 8ID, one approach to this problem, are included in the draft of FM 101-5-1, to be published in coordinating draft in Dec 83. Additionally, RB 101-999 (T), Staff Officers Handbook, published as a reference book for CGSC resident instruction, includes discussion of decision graphics. See recommendation II-3-2.

(II-1-5)

44. RECOMMENDATION: The following equipment items are available now and should be integrated in today's tactical communications systems.

ACTION	AGENCY	MILESTONE
DA program FY 84-89 POM funds provide resources for purchase of the following items of equipment: 120 x AN/PRC-104 @ $21k = $ 2.5M 48 x AN/GRC-193 @ $39k = $ 1.9M 1800 x AS-2259 @ $1.6k = $ 2.9M 6564 x OE-314 @ $4.9k = $32.2M 6200 x OE 303 @ $2.4k = $14.9M 5309 x TD 1288/89 @ $16k $85.0M 58 x AN PRM 34 @ $2.4k = $ .2M TOTAL $139.6M	HQDA	May 82 (Completed)
DA cite as unfinanced requirement the need for 460 sets of commercial FAX. Resource the requirement in FY 82 through reprograming.	HQDA	Jun 82 (Completed)

CURRENT STATUS: Action initiated in Jul 82. FY83 and FY84 funds have been reprogrammed and distribued as follows (DAMO-C4P):

USAREUR - $288k
FORSCOM - 840k
WESTCOM - 72k
$1200k

Provide BOIP to HQDA and DARCOM	TRADOC	May 82 (Completed)
Lease commercial FAX.		Sep 82 (Completed)
	USAREUR FORSCOM WESTCOM	

CURRENT STATUS: USAREUR will lease 47 FAX for the two corps: 23 for V Corps and 24 for VII Corps. In addition, USAREUR will lease 140 more for EAC units, (2 AD, FWD). Total to be leased 187 in multiyear contracts subject to funding of 288K in FY83/84. This is leased with option to buy and includes paper, toner, aluminum transit cases. They will be the 3M-Model 9136. C^2SPR indicated 50 per corps; DA guidance indicated less GXC-7A fielding.

CURRENT STATUS: FORSCOM is in the process of leasing commercial fax. The BOIP has been identified as follows: 168 for divisions; 52 for corps; 25 for separate brigades; and 9 for special forces groups. Total number leased, 254 (AFOP-OX).

(II-4-3)

44. RECOMMENDATION: (cont'd)

CURRENT STATUS: As currently configured, there is a WESTCOM C2 Commercial Facsimile capability which consists of the Command Center and five major subordinate command headquarters. This capability is non-secure. At the division level, the 25ID presently leases 2 to 5 machines for use in exercises.

COMMENTS: An additional 37 machines for the 25ID currently undergoing contract/leasing actions (expected delivery date NLT 20 Dec 82). Proud Saber/ MOBEX 83 was the first major exercise in which WESTCOM elements utilized the facsimile in command and control. Allocations of machines to Corps-level and other Echelons Above Corps (EAC) units are being developed.

DA protect current funding for AN/PRM-34 and AN/GRM-114 radio test sets and insure full fielding	HQDA	Sep 82 (Completed)

CURRENT STATUS: Completed.

COMMENT: PRM-34 is being procured to insure full fielding according to the current issue plan. A contract was awarded in Sep 82 for AN/GRM-114 with delivery scheduled to begin in Feb 83 (DAMO-C4T).

(II-4-3)

SECTION IV

PRIORITY 3 RECOMMENDATIONS

45. RECOMMENDATION: Augment and field test a corps-level organization to accomplish tactical deception.

ACTION	AGENCY	MILESTONES
Force Development Directorate, CACDA, evaluate 21-man deception element proposed by JEWC to be placed at corps level	TRADOC (ATZL-CAC-IE)	Jul 83

CURRENT STATUS: The JEWC TOE was reviewed by FDD, CACDA, however, based on a 2 Nov 82 decision by the CSA, a deception element will be placed at division vice corps. Personnel, organization structure, and materiel requirements are currently being examined. Change milestone to Jul 83. (ATZL-CAC-IE).

FORSCOM field test and validate the 21-man deception elements at corps level	FORSCOM TRADOC (ATZL-CAC-IE)	Dec 83

CURRENT STATUS: To be initiated (HQ FORSCOM).

COMMENTS: FORSCOM action delayed pending completion of TRADOC/CACDA actions and CSA HTLD IPR, 6 Aug 82. Milestones should be reset by TRADOC.

CURRENT STATUS: TO&E of a division deception element will be accomplished by the 9ID HTLD. Time for testing is undetermined and will rely upon actions taken IAW item 1 above. Change milestone to Dec 83. (ATZL-CAC-IE).

TRADOC incorporate deception element TOE into the force structure	TRADOC (ATZL-CAC-IE)	Jul 83

CURRENT STATUS: Prior to force structuring, the concept and a proposed organization are being evaluated by the HTTB. (ATZL-CAF-S).

CURRENT STATUS: Action is ongoing. Based upon a Management Action Plan developed during the 18 Nov 82 meeting at HQ DA, DAMO-RQI has the lead in identifying force structure spaces for fielding a deception capability at division level. Change milestone to Jul 83. (ATZL-CAC-IE).

C^3I is proponent for deception. All reference to corps level unit should be changed to division level unit based upon CSA 2 Nov 82 decision.

DA resource and field a deception unit at each corps	HQDA	Jan 85

CURRENT STATUS: Work has stopped on deception unit at each corps based on CSA guidance to put units at Div level. A separate action plan has been prepared for CSA approval (DAMO-RQR). (II-2-3)

46. RECOMMENDATION: Merge FM 21-30 (Military Symbology) with FM 101-5-1 (Operational Terms and Graphics) and add a section on decision graphics.

ACTION	AGENCY	MILESTONES
CACDA develop decision graphics	TRADOC (ATZL-CAC-A)	Mar 82 (Completed)

CURRENT STATUS: Initial phase completed 8 Mar 82 (ATZL-CAC-A).

COMMENTS: Initial phase identified limited decision graphics to be incorporated into new FM 21-30. Follow-on phase is currently ongoing using inputs from field users to validate and develop additional decision graphics.

CGSC publish appropriate doctrine relative to decision graphics and include it in manuals pertaining to symbology, terminology and graphics	TRADOC (ATZL-SWC-S)	Dec 83

CURRENT STATUS: Work ongoing. Revised FM 101-5-1, which merges FM 101-5-1 and FM 1-30 and adds a section on decision graphics, will be published as a coordinating draft in Dec 83. This draft has gone through several states of revision causing the milestone to be changed from March to December 83. Final publication will follow field use and incorporation of comments. (ATZL-SWC-S).

COMMENTS: A section on decision graphics has been included in RB 101-999 (T), Staff Officers Handbook, used to support CGSC resident instruction, and distributed on a limited basis to selected active and reserve component units and service schools for comment. Published December 1981.

(II-3-2)

47. RECOMMENDATION: Develop and teach decision graphics.

ACTION	AGENCY	MILESTONES
CACDA develop decision graphics for incorporation in CCS2	TRADOC (ATZL-CAC-A)	Mar 82 (Completed)

CURRENT STATUS: See recommendation II-3-2, page IV-2. (ATZL-CAC-A).

CGSC publish appropriate doctrine relative to decision graphics and include it in manuals pertaining to symbology, terminology and graphics	TRADOC (ATZL-SWC-S)	Mar 83 (Completed)

CURRENT STATUS: See recommendation II-3-2, page IV-2. (ATZL-SWC-S).

CATRADA provide training packages relative to decision graphics to Army Service Schools	TRADOC (ATZL-TDU-R)	Jul 82 (Completed)

CURRENT STATUS. Completed (ATZL-TDU-R).

COMMENT: The doctrine developed by CGSC is contained in the Graphics Chapter of the Staff Officers Field Manual, which was fielded in early 1982. All schools have copies of the manual.

(II-1-4)

48. RECOMMENDATION: Publish a temporary "cookbook" providing guidance to the field for deception to enhance command and control survivability. Follow-on by refining that information and publishing it in the appropriate doctrinal literature.

ACTION	AGENCY	MILESTONES
CAC draft tactical deception operational concept	TRADOC (ATZL-CAC-IE)	(Completed)
CAC obtain approval of tactical deception operational concept	TRADOC (ATZL-CAC-IE)	Apr 82 (Completed)
Task TRADOC centers and schools to gather datarelative to deception techniques designed to enhance command and control survivability from field units and publish as a temporary "cookbook" providing "how to" instruction for field commanders	TRADOC (ATZL-CAC-IE)	Dec 82 (Completed)
CGSC incorporate data from "cookbook" into FM 90-2 as appropriate	TRADOC (ATZL-SWC-S)	Jun 84

CURRENT STATUS: Work ongoing. On 29 December 1982, the TRADOC Centers and Schools were tasked to gather data for a "cookbook" on tactical deception. This was a topic of discussion during the 17-18 January 1983 Tactical Deception meeting hosted by CACDA. The results of this action will be used to develop the Tactical Deception "cookbook" and its contents, as appropriate, will be incorporated into FM 90-2. Coordinating draft was forwarded Apr 83 to other commands for comments. Responses on the cookbook were required NLT 16 May 83. All TRADOC centers and schools are required to provide comments and/or input on the cookbook. The "cookbook" will be incorporated into the rewrite of FM 90-2 in Jan 84. (ATZL-CAC-IE)

(II-2-1)

49. RECOMMENDATION: Support personnel requirements of post deployment software support and for field support of all information processing systems.

ACTION	AGENCY	MILESTONES
Expand training curriculum to include subject areas such as data base, microprocessors, and programing languages such as ADA and BASIC. This training should be taught on a skill level basis.	Responsible: TRADOC Action: TRADOC(DCST) Support: DARCOM (DRSEL-TCS-SSD)	2QFY 83 (Completed)

CURRENT STATUS: Action ongoing (ATTG-OT).

COMMENTS:

a. At present ADA is offered only through contractor training. SSC is working a request for resources and equipment to teach ADA in FY83. As proponent for ADP specialties, SSC is examining course to insure that technical training includes appropriate skills in data base, ADA and systems for operators, programers and managers.

b. This is being done in concert with the proponent schools faced with unique automation systems (e.g., field artillery, air defense, signal and intelligence). These initiatives are part of an overall training strategy for automation that is beng developed by SSC.

c. Replies to LTG Merritt message, 230800Z Sep 83, indicate most schools have included, or will include, ADP training in Basic and Advance Courses. SSC has developed a computer-literary training package which is being made available to all schools to help them target on specific ADP systems training. Cdr, SSC, is preparing a decision briefing for the DCG-C TRADOC to assess course length extensions and cost increases in ADP training for officers.

Increase level of basic technical training to insure that personnel have the basic technical skills that can be applied to the many different types of automation equipment in use by the Army.	Responsible: TRADOC Action: TRADOC (ATZL-CAC-A)(ATTG-PA) Support: DARCOM (DRSEL-TCS-SSD)	TBD

CURRENT STATUS: Action ongoing (ATTG-PA).

COMMENTS: This action will be addressed as part of an overall training strategy that is being developed by SSC.

As skill levels of automation support personnel increase, ensure increasingly complex assignment to make use of developed skills.	Responsible: HQDA (DAPE-MP) Action: MILPERCEN Support: TRADOC (ATZL-CAC-A)	As required

(IV-10-1)

49. RECOMMENDATION: (cont'd)

CURRENT STATUS: Soldier Support Center is supplying (ATZL-CAC-JC).

COMMENTS: CACDA's responsibility is to monitor PDSS overall to assure that the PDSS effort continues to remain on schedule. The responsibility for developing these actions lies between the Deputy Commander for Systems and Training and TRADOC. The status of this recommendation has been requested from TRADOC but not received in time for inclusion in this submission.

CURRENT STATUS: Work ongoing. (DAPC-ZA).

COMMENTS: Current and planned force alignment initiatives increasingly support grade and skill match with validated requisitions during the nomination and assignment process. Proper documentation of programmed and budgeted TOE/TDA manpower by MACOMs will insure that the available inventory is being utilized in such a manner as to maximize the development and utilization of skill gained through training and previous assignment experience.

ACTION	AGENCY	MILESTONES
Evaluate career programs to insure that they provide the career progression and monetary incentives needed to retain these specially skilled personnel.	MILPERCEN	As required

CURRENT STATUS: Work ongoing. (DAPC-ZA).

COMMENTS: A detailed analysis of all MOS to identify infeasible grade structures based on career progression parameters is being conducted by the Military Personnel Center. MACOM documentation guidance in the form of MOS/Grade ceilings to insure feasibility and career progression opportunity will be provided as a result of the analysis. MACOM documentation will be reviewed subsequent to MOC windows to insure compliance with this documentation guidance. Retention bonus levels are continuously reviewed to provide the maximum retention benefit for budgeted funding based on ODCSPER priorities.

CURRENT STATUS: Above actions belong to other commands (DRSEL-TCS-SSD).

COMMENTS: The Center for Tactical Computer Systems (CENTACS), CECOM, has had nine (9) graduates (74F's) of the Kessler AFB programming course who are working in the Communications Software Support Center.

(IV-10-1)

50. RECOMMENDATION: Develop improved personnel management for automation support personnel.

ACTION	AGENCY	MILESTONES
Refer to previous Issue: Automated Support Personnel are a Scarce Commodity. Recommendation: Support personnel requirements of post deployment software support and for field support of all information processing systems.	Responsible: HQDA (DAPE-MP) Action: MILPERCEN	TBD

CURRENT STATUS: Work ongoing, (DAPC-ZA).

COMMENTS: Force alignment through the generation of skill level one training requirements, reclassification, promotion, and monetary incentive management will result in sufficient personnel manpower by grade and skill to meet documented requirements.

(IV-10-2)

51. RECOMMENDATION: Man and equip the signal organization as outlined in Div 86 force structure.

ACTION	TASK	AGENCY	MILESTONE
Insure signal organization provides C2 signal support.	Approve draft TOE for Div 86 Sig Bn.	HQDA	May 82 (Completed)

CURRENT STATUS: Completed. However, a revision to the draft TOE has been submitted which is currently being staffed at DA. A new milestone will be determined (DAMO-C4P).

QUESTION: (DAMO-C4R) Fund acquisition of signal equipment in 85-89 POM. Current Status?

Fund acquisition of signal equipments.	HQDA	Include in 85-89 POM. (Completed)

CURRENT STATUS: Completed (DAMO-C4R).

Provide personnel to fill signal force.	Responsible: DAPE-MP Action: MILPERCEN	As required.

CURRENT STATUS: Work ongoing, milestone will be met (DAPC-ZA).

COMMENTS: SSC-NCR has completed a draft Functional Review (FR) for Signal MOS. The FR is currently being staffed with signal proponents and other staff agencies for comments. When published the FR will identify potential personnel problems both equipment and organizationally related within the signal community. The Military Personnel Center, as a part of the process for developing FY training requirements, assesses the personnel posture of all MOS for the current FY and for 20 quarters into the future. Based on documented authorizations, probable authorization changes, approved Space Imbalanced MOS manning levels, and current inventory projected through future years, an accession/training requirement is developed along with reenlistment and reclassification controls to attain the inventory necessary to meet future personnel requirements. Key to the success of personnel support of personnel requirements of post deployment software support and for field support of all information processing systems is the early and accurate identification and documentation of personnel requirements by proponents and MACOMs.

Relook number of radios.	TRADOC ATZL-CAC-CC	May 82 (Completed)

CURRENT STATUS: The Div 86 Radio Scrub was completed (ATZL-CAC-CC) in 1st Qtr, FY80.

(I-2-4)

52. RECOMMENDATION: Fully support and resource improvements to existing power sources as outined in power generation report-out.

ACTION	TASK	AGENCY	MILESTONE
Suppression of IR and noise signatures	Determine which generators in current inventory do not meet required IR and noise level standards.	TRADOC DARCOM (DRCPM-MEP)	30 Apr 82 (Completed)
	Conduct special IPR on Acquisition Strategy for 15/30/60 KW diesel sets.	DARCOM (DRCPM-MEP)	30 Nov 82 (Completed)

CURRENT STATUS: Rescheduled to 30 Nov 82, due to documentation and scheduling problems. Completed 14 Mar 83. (DRCPM-MEP).

COMMENTS: IPR addressed several power sources requirements in addition to 15/30/60 KW diesel set. IPR directed that the 15/30/50 kW signature suppression program proceed as rapidly as practicable with prototype testing leading to an NDI decision.

Prototype contract FUE	DARCOM (DRCPM-MEP)	4QFY83 89

CURRENT STATUS: Requirements Document is being rewritten. Rescheduled milestone: 4QFY83. (DRCPM-MEP).

COMMENTS: FUE scheduled for FY89.

Prioritize generators for application of IR and noise suppression kits.	TRADOC (ATZA-CD)	Ongoing
Write requirements for IR and noise suppressions.	TRADOC (ATZA-CD)	1 Aug 82 (Completed)

CURRENT STATUS: Initial prioritization was completed 3QFY82 in coordination with PM-MEP for the development of new program strategy. A comprehensive prioritization is expected as a product of the ongoing TRADOC Power Sources Study NLT 1 Sep 83. A draft LR for Signature Suppression of Engine Driven Generator Sets was forwarded to DARCOM (MERADCOM) on 7 Sep 82 for coordination and cost data. (ATZA-CD)

Establish generator suppressors RDTE funding profile.	DARCOM (DRCPM-MEP)	1 Aug 82 (Completed)

52. RECOMMENDATION: (cont'd)

CURRENT STATUS: Milestone completed 1 Aug 82, work is on-going. One FY83 contract awarded for experimental hardware on 10kW 60Hz set. (DRCPM-MEP).

ACTION	TASK	AGENCY	MILESTONE
	Requirements document staffing.	HQDA	TBD

CURRENT STATUS: Work ongoing (DAMO-RQR).

	Fund RDTE in FY 85 POM	HQDA	Included in ADPM 1 Oct 82 (Completed)

CURRENT STATUS: Completed (DAMO-RQL).

Provide power conditioners to permit use of commercial and allied power sources.	Determine type of power conditioners required.	TRADOC (ATZA-CD) DARCOM (DRCPM-MEP)	30 Apr 82 (Completed)

CURRENT STATUS: Work ongoing. See Current Status Milestones 1 Sep 83 below. (ATZA-CD).

CURRENT STATUS: Completed 30 Apr 82. (DRCPM-MEP).

	Special IPR on Acquisition	30 Nov 82 (Completed)

CURRENT STATUS: The IPR was held on 30 Nov 82 with an additional discussion session on 16 Dec 82. The final session was held on 14 Mar 83 with the members voting to approve the proposed acquisition strategy for power conditioners provided that TRADOC revalidate the requirements and MERADCOM conduct an IPR at conclusion of the survey and assessment currently under contract. (DRCPM-MEP)

COMMENTS: This IPR is in conjunction with other C2SPR power sources.

	Initial Contract 10/15 KW size	2QFY83

CURRENT STATUS: Work ongoing but behind schedule to allow for technology assessment. Survey of technology and availability scheduled for 1QFY82 but slipped to 2QFY83. (DRCPM-MEP).

	DEVA IPR	FY89

52. RECOMMENDATION: (cont'd)

CURRENT STATUS: Work ongoing. Milestone will be met. (DRCPM-MEP).

Prioritized power conditioner requirements.	TRADOC (ATZA-CD)	1 Sep 83
Update the requirement document for power conditioners.	TRADOC (ATZA-CD)	1 Sep 83

CURRENT STATUS: LOA and work schedule need to be updated. Information needed to accomplish the tasks will be extracted from the TRADOC Power Sources Study. The type of power conditioners indicated in the current LOA is subject to verification/change based on study results. The estimated completion date for all the tasks is 1 September 83., This date has been updated based upon current study milestone projections. (ATZA-CD).

ACTION	TASK	AGENCY	MILESTONE
	Establish funding profiles.	DARCOM (DRCPM-MEP)	1 Aug 82 (Completed)
CURRENT STATUS: Completed. (DRCPM-MEP).			
	Staff requirements document.	HQDA	TBD
CURRENT STATUS: Work ongoing (DAMO-RQR).			
	Fund RDTE/procurement in FY 85 POM.	HQDA	1 Oct 82 Include in ADPM (Completed)
CURRENT STATUS: Completed (DAMO-RQL).			
Provide long-life, safe, throw-away batteries.	Determine type of batteries required.	TRADOC/ (ATZA-TSM-G) DARCOM (DELET-P)	30 Apr 82 (Completed)
	Review existing requirement documents.	TRADOC (ATZA-TSM-G)	1 Aug 82 (Completed)
CURRENT STATUS: Milestones were met. (ATZA-TSM-G).			

52. RECOMMENDATION: (cont'd)

COMMENTS: This is a SIGCEN proponency action with coordination of the Office of TSM-G. LOA is in draft. Information needed to accomplish the tasks will be extracted from the TRADOC Power Sources Study. The type of batteries to be included in the LOA is subject to verification/change based on study results. The estimated completion date for all the tasks is 1 September 83. This has been coordinated with DARCOM, ERADCOM, Electronics Technology and Devices Laboratory, 14 July 82.

ACTION	TASK	AGENCY	MILESTONE
	Establish funding profile.	DARCOM (DELET-P)	1 Aug 82 (completed)

CURRENT STATUS: Completed. (DELET-P).

COMMENTS: The funding profile shown below has been included as a 6.2 program (Project AH94) in the FY84-88 POM. It is currently unfunded.

	FY83	FY84	FY85	FY86	FY87	FY88	
Cost ($000)	-	775	1050	1210	1300	1250	
	Include battery RDTE/ procurement in FY 85 POM.				HQDA		1 Oct 82 Include in ADPM (Completed)

CURRENT STATUS: Completed (DAMO-RQL).

(I-5-1)

53. RECOMMENDATION: Establish procedures to discipline the acquisition process for power sources by:

a. Insuring full analysis of power requirements for each mission area.

ACTION	TASK	AGENCY	MILESTONE
Review each mission area to determine exact power needs.	Analyze TOE Power Requirements*	TRADOC (ATZA-CD) (ATZA-TSM-G)	Feb 83 (Completed)
Construct a management data base of total needs/ capabilities to support the mission areas.	List in combat developments module Phase I Data Base the C2 system power source requirement and capability.	TRADOC (ATZQ-CD) (ATZA-TSM-G)	Sep 83

CURRENT STATUS: Task (1) completed. Task 2 should be completed by 1 Sep 83. (ATZA-CD) (ATZA-TSM-G).

b. Insuring total systems management during all phases of power source development.

Develop concepts criteria for power source development.	Provide O&O concepts for power needs.	TRADOC (ATZA-CD) (ATZA-TSM-G)	Sep 83
	Convert O&O concepts to descriptive characteristics.	TSM-Generators	Sep 83

CURRENT STATUS: Work for both tasks is ongoing; but they are dependent on the Power Sources Study data reduction and construction of management data base. Completion date for this task is estimated at 1 September 83. (ATZA-CD) (ATZA-TSM-G).

Review and update existing requirements documents.	Conduct LOA/ROC/LR survey and list deficiencies vs power source concept.	TRADOC (ATZA-CD)	2QFY84
	Write LOA/ROC/LR amendments to address deficiencies found in survey.	TRADOC (ATZA-CD)	2QFY84

(I-5-2b)

*Task changed per TRADOC request.

53. RECOMMENDATION (cont'd)

CURRENT STATUS: Work for above tasks is ongoing. Tasks will be completed with the use of a management data base which is scheduled for completion by 1 September 83. Estimated completion date is 2QFY84 for both tasks. (ATZA-CD).

ACTION	TASK	AGENCY	MILESTONE
	Approve LOA/ROC/LR amendments.	HQDA	TBD
Prepare requirements documents for future power source concepts.	Write generic ROCs that encompass the power source concept.	TRADOC (ATZA-CD)	TBD

CURRENT STATUS: This action is contigent upon identification of new concepts not currently addressed in requirements document. (ATZA-CD).

	Approve ROC.	HQDA	TBD
Enforce policy to insure inclusion of power analyses in all system requirements.	Require ROCs to be rewritten that do not specify power requirements.	TRADOC (ATZA-TSM-G)	As required

CURRENT STATUS: Work ongoing and is a continuing process (ATZA-TSM-G).

	Review all ROCs to insure they properly address power requirements.	HQDA	As required.

(I-5-2 a/b)

54. RECOMMENDATION: Upgun MPs to increase their capability to provide CP security.

ACTION	AGENCY	MILESTONES
TRADOC revise TOE authorizations for MP units to include MK-19 40mm machine gun	TRADOC (ATZL-CAF-S)	Continuing

CURRENT STATUS: Action ongoing. The MK-19 type classification date has not been established and equipment is not authorized to be placed in the TOE until it is type classified standard. Upon type classification, equipment is automatically placed in the appropriate TOE Consolidated Change Table (CCT) by HQ TRADOC. DA DCSOPS determines type classification. Implementation is by DARCOM. (ATZL-CAF-S)

DA revise FY 82 POM to provide assets for purchase of 425 MK-19	HQDA	Sep 82 (Completed)

CURRENT STATUS: Completed (DAMO-RQA).

COMMENTS: First 900 guns go to HTLD. Remainder earmarked for CS & CSS units.

Funding Profile:

(Mil)

82	83	84	85	86	87	88
5.2	22.9	2.6	14.2	15.0	13.2	14.1

DARCOM purchase and field MK-19 as above	DARCOM (DRSCM-WG)	FY85

CURRENT STATUS: Work ongoing, milestone will be met. (DRSCM-WG).

COMMENTS:

a. BOIP #79-0078F has been approved by DA for MK-19 to replace .50 Cal and 7.62mm. Total Army requirement is approximately 13,000 to include MPs and combat support and combat service support units. Approximately 7,500 are required for MPs.

b. Currently in FY 84-88 POM programmed 1,589 weapons and $58.9M which does not come near satisfying MP needs or total Army requirement.

c. Reprogramming in the amount of $5.2M has been aproved in FY82 for the purchase of 190 weapons. Reprogramming for FY83 in the amount of $19.0M is being initiated for the procurement of 741 weapons. These procurements are to equip the 9ID.

d. There is no stockpile of ammunition to support this weapon and no ammunition forecast for production.

e. MPs could not get the weapon until FY 85 at the earliest.

f. DA staff (DCSOPS/DSRDA) action is required to insure funding and program for MK-19 are included in FY 84-88 POM.

(II-4-1)

55. RECOMMENDATION: Develop and demonstrate an integrated power and environmental control system.

ACTION	AGENCY	MILESTONES
Tech Base Program to explore feasible technology	DARCOM (DRCPM-MEP)	FY 83

CURRENT STATUS: Program not funded in FY83. Program is to be funded in FY84 and FY85.

COMMENTS: Transitions to 6.3B in FY85.

Initial 6.3B contract	TRADOC (ATZA-CD)	FY 84

CURRENT STATUS: A development program is planned which includes the four ACTION items and will provide a prototype demonstration in FY85. Work has not been started due to lack of FY82/83 funding. 6.3 funds are expected for FY84. (ATZA-CD).

(IV-12-2)

56. RECOMMENDATION: Accelerate development of undetectable power sources.

ACTION	AGENCY	MILESTONES
Special IPR on acquisition strategy	DARCOM	Oct 82-30 Nov 82 (Completed)
Initiate thermoelectric program.	(DRCPM-MEP)	2QFY83 (Completed)

CURRENT STATUS: Work on-going. Milestone was met. Program was initiated at a special IPR held on 30 Nov 82, and 14 Mar 83. (DRCPM-MEP).

COMMENTS: Next milestone will be 4QFY83, to transition 500 watt ThermoElectric Generator (TEG) to engineering development. Followed by award of engineering contract for 500 watt TEG in 1QFY84. Initiation of advanced development of a 1.5 kW TEG is planned for FY84.

Initiate Stirling (generator set) program.	DARCOM (DRCPM-MEP)	2QFY83 (Completed)

CURRENT STATUS:

a. 5kW Stirling Engine Driven Generator Set: Government testing and evaluation of the commercial unit leased under contract DAAK-20-82-C-0185 will be completed in April. Over 800 hours of operation was accumulated during this evaluation period. Solicitation to procure 10 militarized 5kW Stirling Engine Driven Generators for Phase II developer and user evaluation has been prepared and will be released to industry in April 1983.

b. 3kW Free Piston Stirling Engine Linear Alternator Generator Set: Contract DAAK-70-82-R-1212 was awarded 29 September 1982 to Mechanical Technology, Inc. (MTI) to design and fabricate two 3kW Free Piston Stirling Engine Driven Engine Linear Alternator generator sets for testing.

(IV-12-1)

57. RECOMMENDATION: Increase priority and funding levels for power source development.

ACTION	AGENCY	MILESTONES
Coordinate the impact of the requirement on each mission area.	HQDA DARCOM (PM-MEP) TRADOC (TSM)	Continuing

CURRENT STATUS: Work ongoing (DAMO-C4P).

Insure visibility during requirement priority process and coordinate the impact on each area.	HQDA DARCOM (PM-MEP) TRADOC (TSM)	Continuing

CURRENT STATUS: Work ongoing (DAMO-C4P).

CURRENT STATUS: Work ongoing (DRCPM-MEP).

COMMENTS: A comprehensive plan to improve visibility and funding of power sources has been prepared by PM-MEP with MERADCOM and ERADCOM input and has been coordinated with TRADOC and DA. A portion of the program remains unfunded. This is a continuing and iterative process.

CURRENT STATUS: Work is ongoing and continuous. An FY83 augmentation proposal and FY 84-88 POM in support of C^2SPR power generation priorities has been coordinted and approved by DARCOM and HQDA. Continued visibility and support is being sought at each staffing level. This has been coordinated with DARCOM Project Manager, Mobile Electric Power, 14 July 82 (ATZA-CD/TSM-G).

Provide adequate funding.	HQDA

CURRENT STATUS: Work ongoing (DAMO-C4P).

(IV-13-1)

SECTION V

PRIORITY 4 RECOMMENDATIONS

58. RECOMMENDATION: Develop an Army C2 doctrine from support base to foxhole.

ACTION	TASK	AGENCY	MILESTONE
Define C2 doctrine	Publish FM 100-5 Operations.	TRADOC (ATZL-SWC/ ATZL-SWT)	30 May 82 (Completed)
	Publish FM 100-16 Echelons Above Corps.	TRADOC (ATZL-CAF-S)	1QFY84
	Publish FM 100-15 Corps Operations.	TRADOC (ATZL-SWC/ ATZL-SWT)	1 Jul 83
	Publish FM 101-5 Staff Organization and Operations.	TRADOC (ATZL-SWC/ ATZL-SWT)	31 Dec 83

CURRENT STATUS: Work ongoing but behind schedule (ATZL-SWC/ATZL-SWT).

FM 100-5: Completed. FM 100-5, Operations, published 20 August 1982. Approval agency: TRADOC.

FM 100-15: Coordinating draft published December 1981. Publication and fielding scheduled for 4QFY83.

FM 100-16: Coordinating draft sent to field 15 June as interim doctrine. Scheduled to remain in field for one year. This final draft is scheduled for completion 4QFY83 (additions submitted by ATZL-CAF-S).

FM 101-5: Candidate final draft published with limited distribution May 1982. Presently under revision; publication scheduled 31 December 1983.

COMMENTS: Initial milestone was not met because of doctrinal changes in other FMs that required a review and revision of FM 101-5.

Insure FMs for Div and lower echelons operations are consistent with C2 doctrine.	TRADOC (C&GSC)	Update as required
Develop Army C2 doctrine for joint operations.	HQDA TRADOC (ATDO-S) REDCOM (RCC4S-T)	Apr 84

CURRENT STATUS: Work ongoing but behind schedule.

(I-1-1)

AD-A133 044 COMMAND AND CONTROL ACTION 1983 UPDATE(U) ARMY COMBINED 2/2
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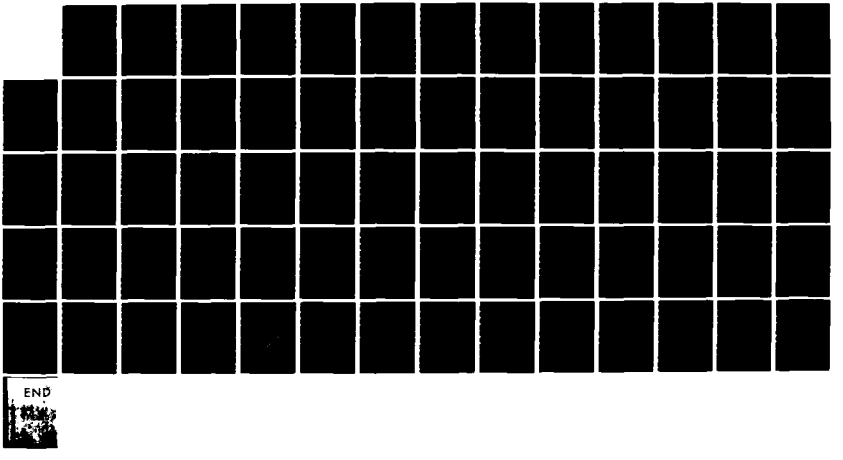
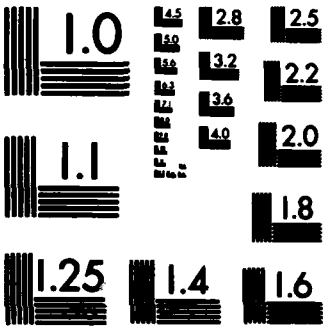




58. RECOMMENDATION: (cont'd)

COMMENTS: Army C^2 doctrine for joint operations is included in FM 100-16 (DRAFT) and FM 11-23 (DRAFT). Joint Communications doctrine will not be approved until the Joint Multi-Channel Trunking and Switching System (JMTSS) is approved in the joint arena. The JMTSS will be discussed at the next JCS C^3 Conference. Following that, it will be the subject of joint action. In the meantime, REDCOM has published the system manual for employing TRI-TAC equipment in the joint communication system.

CURRENT STATUS: Work ongoing. Milestone will be met (RCC4S-T).

COMMENTS: USREDCOM has developed a draft C2 pamphlet for joint operations. The pamphlet is currently under staff review and will be coordinated with TAC/TRADOC in 2QFY83.

ACTION	TASK	AGENCY	MILESTONE
	Present to JCS joint doctrine as seen by the Army.	HQDA	1 Apr 84

CURRENT STATUS: Work ongoing. Milestones will be met (DAMO-C4P).

(I-1-1)

59. RECOMMENDATION: Provide divisions with dispersed CP doctrine.

ACTION	AGENCY	MILESTONES
CACDA develop dispersed CP operational concept	TRADOC (ATZL-CAC-CI)	Mar 82 (Completed)

CURRENT STATUS: Action completed. Concept evaluated by 9ID during the May 82 DCP Evaluation was not the Operational Concept developed by CACDA. The 9ID is currently developing a new operational concept which operates in a "massed" main CP configuration. Development of a capability to disperse CP is not scheduled to resume until CY 84. (ATZL-CAC-CI).

Test concept at HTLD	HQDA	May/Jun 82 (Completed)

CURRENT STATUS: Complete (DAMO).

COMMENTS: State of the art technology not available in May 82 test. Has been included in HTLD test plan.

CGSC publish CP doctrine	TRADOC (ATZL-SWC-S)	Dec 84

CURRENT STATUS: Work ongoing but behind schedule. Publication of doctrine cannot precede development of the dispersed CP operational concept by CACDA. The operational concept must be fielded, field evaluated, feedback obtained from the field, and comments incorporated in published doctrine. Work will be completed by Dec 84 (ATZL-SWC-S).

COMMENTS: Planning considerations for dispersal of command posts are being addressed in CGSC resident instruction as feedback is obtained from field testing. Such instruction will be expanded as more information becomes available. Additionally, command post dispersion is cited as one of the factors concerning effectiveness and survivability to be considered in establishment of command posts in FM 101-5 (Final Draft), May 1982. FM 101-5 is scheduled for publication in December 1983.

(II-1-1)

60. RECOMMENDATION: Expedite the writing of doctrine on rear area combat operations.

ACTION	AGENCY	MILESTONES
CGSC publish rear area combat operations doctrine	TRADOC (ATZL-CAD-LE)	TBD

CURRENT STATUS: Work ongoing but behind schedule. Coordinating draft of FM 90-14 remains on hold pending TRADOC publication of revised operational concept. The RAP Interim Operational Concept was approved by Cdr, TRADOC for worldwide staffing on 29 Nov 82. Upon final concept approval by Cdr, TRADOC, the concept will be forwarded to CGSC for doctrine development and to the Force Design Directorate, CACDA, for force structuring. (ATZL-CAD-LE)

(II-1-2)

61. RECOMMENDATION: Publish a Staff Officer's Handbook for Army-wide use.

ACTION	AGENCY	MILESTONES
CGSC publish an unclassified, abbreviated, single-source reference book containing information concerning US Army organization, weapons, and staff organizations, functions, procedures, as well as threat organization, weapons and doctrine. Handbook should be reduced in size for easy handling and a compendium of FM 101-5, the Divisional "How to Fight" manuals and other references critical to the day-to-day operations of a staff officer.	TRADOC (ATZL-SWC-S)	Jan 82 (completed)
Distribute to Army Staff School students for initial evaluation.		Jan 82 (completed)
Staff Army-wide (allowing for field use)		Feb 82-Dec 82 (Completed)
Modify as required		Jan 83 (Completed)
Distribute Army-wide		3QFY83

CURRENT STATUS: RB 101-999(T), Staff Officers Handbook, was published Dec 81, for use to support CGSC resident instruction, and was distributed on a limited basis to selected active and reserve component units and service schools for comment. Approval agency: USACGSC. This handbook will be sent to the printer March 83 with distribution set for 3QFY83.

(II-1-7)

62. RECOMMENDATION: Re-introduce the 1:100,000 scale map for division level planning. Retain the 1:50,000 scale map for operations.

ACTION	AGENCY	MILESTONES
TRADOC re-validate Army requirement for 1:100,000 scale maps	TRADOC (ATZA-CD)	Oct 82 (Completed)
Investigate less expensive solution such as photoreduction of 1:50,000.	TRADOC (ATZA-CD) DARCOM (DRCDE-SB) HQDA	TBD

CURRENT STATUS:

a. Action completed October 82. (ATZA-CD)

b. Work ongoing, no milestone can be forecast.

COMMENTS:

a. There is a recognized U.S. Army requirement for 1:100,000 scale maps. It is a DMA standard product produced for areas where US commanders have stated a requirement, such as in Korea and Panama, and is under consideration for the RJDTF areas.

b. This recommendation is an issue mainly concerning maps of NATO countries. 1:100,000 scale maps are not standard in NATO, where production of maps (1:50,000) is a host nation responsibility. TRADOC has been unsuccessful in getting USAREUR to state a requirement to HQ, EUCOM for 1:100,000 maps. This must be done before DMA will present a U.S. Army requirement to NATO.

c. Recommend that the action be given to DMA and the milestones changed to read TBD. This recommendation was coordinated with HQDA (DAMI-ISP) on 12 July 82.

CURRENT STATUS: No further action required. (DRCDE-SB)

COMMENTS: As reported previously, DARCOM has no capability to photoreduce the 1:50,000 scale map. DARCOM requests to be deleted as Responsible Agency for this action.

DA initiate staffing within the Army, MACOMS and NATO, if required	HQDA	TBD
DA provide resources to Defense Mapping Agency (DMA) if required.	HQDA	TBD

62. RECOMMENDATION (cont'd)

DMA commence standard production of 1:100,000 scale maps.	HQDA	TBD

COMMENT: *The problems of producing maps of Europe are numerous. They include:

a. EUCOM, which must validate need for 1:100,000 maps in Europe, feels that 1:50,000 maps of eastern Europe must be updated first.

b. EUCOM has expressed the view that other areas (e.g., Norway and Italy) have mapping shortfalls which should be addressed prior to producing the 1:100,000 map.

c. For tactical purposes, NATO agreements establish 1:50k, 1:250k and 1:1m as standard, and essential.

d. The NATO agreements also provide that mapping cannot be done without approval of the country to be mapped.

e. Mapping capabilities of our NATO allies are over-taxed. They could not undertake the new scale without major assistance from the Defense Mapping Agency. (TRADOC response to Cdr, TRADOC, question on the requirement for 1:100,000 map.)

(II-3-3)

63. RECOMMENDATION: Train commanders and staffs to fight the deep battle and the close-in battle as integral parts of the AirLand Battle.

ACTION	AGENCY	MILESTONES
CGSC publish doctrine to support the AirLand Battle concept.	TRADOC ATZL-SWC-S	Apr 82 (Completed)

CURRENT STATUS: FM 100-5, Operations, was published 20 August 1982, approval agency: TRADOC. With the publication of FM 100-5, the Army's basic operational concept for the AirLand Battle has been established. This manual forms the foundation and basis for developing Army doctrine, training, organization and material systems. (ATZL-SWC-S).

FORSCOM/USAREUR/WESTCOM train commanders and staffs in the conduct of the AirLand Battle.	FORSCOM (AFOP-TA) USAREUR (AEAGC-ATC/ AETT-TD-TM) WESTCOM (APOP-OP)	Continuing

CURRENT STATUS: Continuous action. (AFOP-TA)

COMMENTS: As this is an integral part of training, no milestones or tasks can be assigned. Recommend this initiative be closed.

CURRENT STATUS: Work ongoing, milestone will be met (AEAGC-ATC/AETT-TD-TM).

COMMENTS: USAREUR will be able to increase "hands-on" training in conduct of AirLand Battle as TRADOC increases AirLand Battle doctrine training at battalion/brigade pre-command course and officer basic and advanced course. USAREUR will train commanders and staffs to fight AirLand Battle through use of CPX, CFX, etc. Personnel, facilities, and time are not available for resident instruction in USAREUR.

CURRENT STATUS: TRADOC Pamphlet 525-5, the AirLand Battle and Corps 86, has been received in this command and will be a reference for programming future training (APOP-OP).

(II-5-1)

64. RECOMMENDATION: Develop tailored command and control related training packages for individual and collective training (e.g., TACFIRE, CEWI, Targeting Cells, RACO).

ACTION	AGENCY	MILESTONES
Establish task force to determine training package requirements.	TRADOC (ATZL-TDU-R)	2Q FY 82 (Completed)

CURRENT STATUS: Completed. CATRADA had the lead on this action and the outcome of this task force in intensifying training package requirements is the Combined Arms and Service Training (CAST). (ATZL-TDU-R).

Prepare and evaluate training support material.	TRADOC (appropriate proponents)	3Q FY 83
Produce and field tailored C2 training packages.	TRADOC/MACOMs	4Q FY 83

CURRENT STATUS: Work to be started upon receipt of training package from TRADOC (APOP-OP)(WESTCOM).

CURRENT STATUS: Work ongoing (AEAGC-ATC/AETT-TD-TM/AEAGB).

COMMENTS: TACFIRE and BCS have training programs that provide both individual and collective training which will be utilized by USAREUR. Training packages for targeting cells have yet to be developed, although individual training is occurring within various headquarters. CEWI command and control training can be better served by a battalion/brigade training team rather than a field tailored C^2 package in view of varied relationships of CEWI units to supported units.

CURRENT STATUS: USREDCOM is developing joint pamphlets to enhance all services C^2 procedures, but has no current plans to develop Army specific individual and collctive training packages. JINTACCS training responsibilities have been tasked by JCS to USCINCRED. These training requirements would result in the development of C^2 related individual and collective training packages for Army and Joint operational facilities. (RCJ5-T)(RCC4S-T)

CURRENT STATUS: HQ TRADOC has the lead on this issue. As information/documentation is received FORSCOM will initiate action as appropriate. (AFOP-TA). (III-1-1)

65. RECOMMENDATION: Expedite publication and fielding of FM 25-4, How to Plan, Conduct and Control Training Exercises, which incorporates a menu of training techniques.

ACTION	AGENCY	MILESTONES
Begin preliminary subject matter research	TRADOC (ATTG-ATB) (Appropriate Proponents)	2Q FY 82 (Completed)
CURRENT STATUS: Completed. (ATTG-ATB)		
Develop draft FM	TRADOC (Appropriate Proponents)	3Q FY 82 (Completed)
CURRENT STATUS: Completed. (ATTG-ATB)		
Coordinate draft FM	TRADOC/MACOM's	1Q FY 83 (Completed)
CURRENT STATUS: Completed. (ATTG-ATB) (APOP-OP) (WESTCOM)		
CURRENT STATUS: Completed. (AEAGC-T) (USAREUR)		
Publish FM or change to FM	TRADOC (ATTG-ATB)	Sep 83
CURRENT STATUS: Work on going (ATTG-ATB).		

COMMENTS: Staffing of the FM 25-4 was delayed due to additional requirements added. Currently, staffing has been completed and TRADOC/MACOM comments are being incorporated. Distribution to field units is expected by Sep 83. Milestone should be changed to reflect this date (ATTG-ATB).

66. RECOMMENDATION: Expand use of TACSIM as an exercise driver.

ACTION	AGENCY	MILESTONES
As Stated	TRADOC (ATZL-TDU-E) REDCOM (RCJ3-EX) MACOM's	Ongoing with incorporation into Gallant Knight 82 (CPX, 2Q FY 82)

CURRENT STATUS: Completed (ATZL-TDU-E).

COMMENTS: TACSIM is used as an exercise driver as a matter of routine. Currently, TACSIM is being expanded by combining it with the intelligence module of the Air Force EXCAP system. TCATA is working with the 1st Cavalry Division to integrate TACSIM into a division level exercise in Oct 82. TACSIM will be used to support JTX GALLANT NIGHT 83 (18-22 Mar 83), FOCUS LENS (Aug 83), CRESTED EAGLE (9-15 Mar 84), and BOLD STAR 84 (May-Jun 84).

CURRENT STATUS: Completed for Gallant Knight 82 (Feb 82) (RCJ3-EX)(REDCOM). Used also for GALLANT EAGLE 82 (Apr 82).

COMMENTS: Work ongoing for GK 83.

CURRENT STATUS: TACSIM will be included in Gallant Knight 83 (AFOP-OCJ)(FORSCOM).

CURRENT STATUS: Work ongoing, but behind schedule. TACSIM requested for WINTEX 83, a major USAREUR exercise, but denied due to JCS priority to REDCOM exericse (AEAGB-PTR)(USAREUR).

COMMENTS: WINTEX 83 is a major NATO and USAREUR exercise for which TACSIM could play a key role; however, JCS gave priority to REDCOM exercise during that time period. USAREUR is requesting for later exercise.

CURRENT STATUS: This Comd does not participate in Gallant Knight. However, max use of tactical simulations (CAMMS) during CPX play is applied (APOP-OP) (WESTCOM).

Evaluate use of TACSIM	TRADOC (ATZL-TDU-E)	4Q FY 82 (Completed)

CURRENT STATUS: Completed. (ATZL-TDU-E).

Coordinate improvements as required		1Q FY 83 (Completed)

CURRENT STATUS: Work ongoing, milestone was met. (ATZL-TDU-E)

(III-2-3)

67. RECOMMENDATION: Develop unit training packages for Division and Corps scenarios.

ACTION	AGENCY	MILESTONE
Organize a special action group to develop training packages for a heavy Corps in Europe with application in Reforger 83 CPX.	TRADOC (ATZL-TDU-E) REDCOM/MACOM's	2Q FY 82 (Completed)

CURRENT STATUS: Work ongoing but behind schedule. The special action group has been formed (Exercise Management Division, UTSD, CACDA), but entry into REFORGER 83 planning has not been gained. This action will not occur in conjunction with REFORGER 83 (ATZL-TDU-E).

COMMENTS: Efforts are continuing on this issue with a milestone of participating in the REFORGER 84 planning/development process.

CURRENT STATUS: This item does not pertain to REDCOM. Request REDCOM be deleted from Action Agency (RCJ3-E).

CURRENT STATUS: This item does not pertain to WESTCOM and was inadvertently listed because of the MACOM title listed under "Agency" (APOP-OP)(WESTCOM).

CURRENT STATUS: Work stopped (AEAGC-C3)(USAREUR).

COMMENTS: CINCUSAREUR decision made that no CPX activity will occur in REFORGER 83. Additionally, USAREUR philosophy is to avoid CPX preview of FTX to present a more realistic approach to tactical play. Consideration should be given to developing package for application in CRESTED EAGLE 84.

CURRENT STATUS: TRADOC has the lead. FORSCOM will initiate action as approp ate. (AFOP-TA). (III-3-1)

68. RECOMMENDATION: Develop the unit training packages for Division, designed for selected priority systems (e.g. BDS, TACFIRE, BCS, TCS/TCT).

ACTION	AGENCY	MILESTONE
Form Special Action Group to select priority systems and concepts.	TRADOC/MACOM's (ATTG-PA)	2Q FY 82 (Completed)
Select one Division Europe and a Division with RDJTF mission for implementation.	TRADOC/MACOM's (ATTG-PA)	2Q FY 83 (Completed)
Field "test" training packages.	TRADOC/MACOM's	System IOC Dependent

CURRENT STATUS: System integration packages are not developed for priority systems. The C^2 Action Plan must be synchronized with the TRADOC at 1990 Action Plan. Priority system must be selected by IOC for system integration packages. Proponents must be informed that they are to prepare unit training packages in coordination with CAC. (VCSA IPR, 7 Mar 83)

Evaluate training packages.	TRADOC/MACOM's	System IOC Dependent

CURRENT STATUS: Training packages will be evaluated when the priority system is fielded. This will be system IOC dependent.

CURRENT STATUS: This item pertains to Europe and the RDJTF and will not involve WESTCOM elements (first four milestones)(APOP-OP).

Conduct a joint development command and control training conference to demonstrate an AirLand battle command and control training system to tactical commanders.	TRADOC/REDCOM (ATTG) MACOM's	TBD

CURRENT STATUS: FORSCOM hosted a training conference at Ft. Leavenworth 4-6 April 83 for the development and implementation of near term tactical concepts and procedures required to support AirLand Battle doctrine during fielding of new equipment and transition to DIV 86. Systems integrated training was prepared for discussion. Coordination with MACOMs is on-going for a joint training conference. The date of this conference is TBD.

CURRENT STATUS: As a result of July 82 MTM demonstration, decision was made to concentrate MTM on OPLAN/CONPLAN Evaluations and develop a separate system for exercise Control and Joint Tactics Techniques and Procedures (JTTP) evaluation. By end Sep 83 a MTM baseline program development effort will be completed. During FY 84 a Module System will become available as a baseline program. In May 84, during BOLD STAR 84, a separate system will be employed to support joint exercise planning/control and JTTP analysis (RCASG).

68. RECOMMENDATION: (cont'd)

Proliferate training packages to field.	TRADOC (ATTG) (Appropriate (Proponents)	4Q FY 83

CURRENT STATUS: Work ongoing on all milestones (AEAGC-ATC/AETT-TD-TM).

COMMENTS: TRADOC has developed unit training package for some selected priority systems currently fielded in USAREUR. TACFIRE efforts appear to be comprehensive and promise to be fruitful. Entire action must be led by TRADOC and USAREUR will support, given sufficient lead time to blend these activities into overall master schedule of training. It should be noted that no single division in USAREUR has both FAIDS and TCT/TCS fielded; in fact, to date, these systems are not fielded in the same corps.

CURRENT STATUS: For all of the above actions, TRADOC has the lead. FORSCOM will initiate action as appropriate. (AFOP-TA).

(III-3-2)

69. RECOMMENDATION: Extend FCX to integrate intelligence and fire support interface.

ACTION	AGENCY	MILESTONE
USAREUR continue its development of the FCX and develop methods for the integration of total systems (e.g. Intel and FS) interface so that system training exercises can be conducted in local training areas.	TRADOC/(ATTG-ATB) USAREUR (AEAGC-C3)	FCX Total System Exercise 3QFY83

CURRENT STATUS: Work ongoing.

a. The FCX is a medium to high cost, manpower-intensive, live fire exercise that is normally conducted at company team level on a reduced scale range employing both direct and indirect fires with sub-caliber devices.

b. During Jan 83, ATB, TRADOC, awarded a contract to BDM (Monterey, CA) to develop an FCX to cover basic fire control, procedures and techniques at the company level. The first actual on-the-ground CONUS run FCX occurred at Salina, KS. Units of the ARMR VIII (MG Ricassi) will participate.

c. BDM is presently working on incorporating Battalion C^2 procedures into the FCX which will include the integration of intelligence. Once the FCX is refined, BDM will then publish a "how to" manual which will standardize the FCX Army wide.

d. The C^2SPR recommendation to extend FCX to integrate intelligence and fire support interface will be accomplished by 3QFY83.

CURRENT STATUS: Milestone met (AEAGC-C3).

COMMENTS: FCX methodology has been further refined for BN level use by the integration of Pegasus. USAREUR philosophy of training permits division commanders to utilize available tools but does not direct the use of FCX. Within 8ID, FCX methodology is in use on all maneuver battalions which performed a Bn/Task Force FCX during 4QFY82. For TRADOC documentation, suggest coordination with 8ID POC, Major Lynch, G-3 Training, BAD Kreuznach, 6477/7203.

(III-4-1)

70. RECOMMENDATION: CFX in JTX.

ACTION	AGENCY	MILESTONE
Form special action group to develop CFX methodology	TRADOC(ATZL-TDU-E) REDCOM/MACOM's	2Q FY 82 (Completed)

CURRENT STATUS: Completed (ATZL-TDU-E).

COMMENTS: The special action group consists of the Exercise Management Division, UTSD, CACDA; J-5 Evaluation, REDCOM; and Current Operations Division, DCSOPS, FORSCOM.

CURRENT STATUS: Continuing to work with TRADOC on this enhancement (AFOP-OCS) (FORSCOM).

CURRENT STATUS: Milestone is surpassed. Formulation of the special action group is predicated on TRADOC/REDCOM initiatives (APOP-OP) (WESTCOM).

Conduct a JTX in the CFX mode within GALLANT EAGLE (83) or a similar exercise	TRADOC (ATZL-TDU-E) REDCOM (RCJ3-EX) USAREUR (AEAGC-C3)	2Q FY 83 (Completed)

CURRENT STATUS: Completed (ATZL-TDU-E).

COMMENT: Exercise GALLANT EAGLE 82 (1-6 April 82) was conducted in the CFX mode. Future plans are to continue the use of CFX in JTX.

CURRENT STATUS: Completed Apr 82. Will conduct CFX and refine methodology in GALLANT KNIGHT 83. (RCJ3-EX)

CURRENT STATUS: Methodology has been developed and used by USAREUR units (AEAGC-C3).

COMMENTS: CFX offers an ability to reduce maneuver damage, tailor level of command to be exercised, and provide a low overhead, realistic training exercise of various levels of command.

(III-4-2)

71. RECOMMENDATION: Corps level JTX.

ACTION	AGENCY	MILESTONE
MACOM's continue activities to insure Corps participation in all joint training exercises and where possible in combined exercises.	REDCOM/MACOM's	Ongoing

CURRENT STATUS: Work ongoing, milestone will be met (RCJ3-EX).

COMMENTS: Corps participating in all FY 83 JRX's. Programmed in all but one JRX in FY 84. All in FY 85-87 programmed.

CURRENT STATUS: N/A (ATZL-TDU-E).

COMMENT: Corps level play in JTX is institutionalized.

CURRENT STATUS: Work ongoing, milestone will be met (AEAGC-EX).

COMMENTS: USAREUR Corps are fully committed with corps level joint and combined exercises, including three USAREUR-wide (ABLE ARCHER, WINTEX and REFORGER).

CURRENT STATUS: Ongoing action (AFOP-OCJ).

CURRENT STATUS: Participation in JTX's are already programmed in future exercises. In addition, the 25th Inf Div will participate in future I Corps exercises (APOP-OP).

(III-4-3)

72. RECOMMENDATION: Intensify an Army Artificial Intelligence program.

ACTION	AGENCY	MILESTONE
Identify current and proposed programs using AI concepts.	DARCOM (DRCDE-SB)	2Q FY 82 (Completed)

CURRENT STATUS: Completed 1 Jul 82 (DRCDE-SB).

COMMENTS: Artificial intelligence programs are being conducted or proposed at the following commands:

CECOM: Center for Tactical Computer Systems (Programs in 6.2 and 6.3).

ERADCOM: Harry Diamond Laboratories (6.1 program)
Night Vision Laboratories (6.2 and 6.3 program)
Atmospheric Sciences Laboratory (6.2 program)
Signal Warfare Laboratory

Robotics programs are being worked at the Human Engineering Laboratory, TACOM, ERADCOM, and MERADCOM.

Artificial intelligence programs are currently addressing applications in Command and Control, Pattern Recognition, Target Cuing, and Self-Healing Networks.

Set up Army Artificial Intelligence Steering Committee.	HQDA	3Q FY 82 (Completed)

CURRENT STATUS: Completed (DAMA-CSC).

Identify lead organization for AI R&D	DARCOM (DRXRO-EL)	3Q FY 82 (Completed)

CURRENT STATUS: Completed - The Army Research Office was designated the lead organization for AI R&D in Aug 82 (DRXRO-EL).

(IV-11-1)

73. RECOMMENDATION: Have all requirements documents reflect provisions for standard I/O devices.

ACTION	AGENCY	MILESTONE
Amend the checklist for ROC review to include screening for standard I/O products.	TRADOC/DARCOM (DRCDE-SB)	2Q FY 83 (Completed)

CURRENT STATUS: Completed. The following line item addition is to be entered to all checklists: "Screen for Standard Productive input/output (I/O) devices (Standard devices will be used whenever practical. Fully justified requests for waivers will be submitted to HQ, DARCOM, ATTN: DRCDE-SB.)"

COMMENTS: Revision of ARs 1000-1 and 70-1 are expected to be completed in 2QFY83. Contract to update the handbook is scheduled to be let by Jan 82 with delivery of the handbook scheduled by end of 3QFY83. DARCOM elements provide technical assistance in the preparation of requirements documents on a continuing basis.

The second action, "Continue current process, which insures proper preparation of requirements documents", deleted at DARCOM request because of the lack of a finite action to report on.

(IV-8-2)

74. RECOMMENDATION: Ensure that there are combat arms officers who understand automation.

ACTION	AGENCY	MILESTONE
DCSPER look at assignment policies to assist in solving the problem.	Responsible: HQDA Action: TRADOC	Continuing

CURRENT STATUS: Work ongoing (DAPE-MP).

COMMENT: Change milestone to continuing.

Train commanders so that they understand the algorithms and the software of their automated systems.	TRADOC (ATTG-OT)	FY 83

CURRENT STATUS: Actions ongoing (ATTG-OT).

COMMENTS:

a. Soldier Support Center held an ADP Proponency Conference in Jan 82 and addressed this issue along with other related actions. Work is being done with proponent schools to increase the numbers of officers holding SC 53 specialty, to develop ADP familiarization courses in OBC and OAC, and to restructure the ADP officers course. All of these initiatives are part of an overall training strategy for automation that will be presented to HQ TRADOC in 4th Qtr FY82.

b. DCG-C, HQ TRADOC sent message to all commandants requesting they determine what automation training is required for officers on a specialty-by-speciality basis and the level (OBC or OAC) for the training. Responses to message are being submitted to DCST.

(VCSA-5/7)

SECTION VI.

PRIORITY 5 RECOMMENDATIONS

75. RECOMMENDATION: Develop educational programs and training exercises on use of JINTACCS.

Action	Task	Agency	Milestone
Integrate JINTACCS into the Army education system.	Develop ARTEP standards for JINTACCS use.	TRADOC (ATZL-TDC-D)	1 Oct 83
	Include JINTACCS in all service school POI's.	TRADOC (ATZL-TDC-D)	1 Oct 83

CURRENT STATUS: Work ongoing, milestone can be met for two of the five operational segments, Intell and Air ops, that will have been compatibility and interoperability tested and demonstrated during the Operational Effectiveness Demonstration (OED) 1983. The remaining three segments are due to be tested and demonstrated during OED '85. Each of the applicable service schools has participated in the review of prototype training materials as they have been produced by the contractor (ATZL-TDC-DC).

(I-4-4)

76. RECOMMENDATION: Integrate tactical deception training in all career level officer schools.

ACTION	AGENCY	MILESTONE
CACDA provide training materials to integrate tactical deception training into all career level officer schools	TRADOC (ATZL-CAC-I)	Jul 83

CURRENT STATUS: Work is ongoing. Results of CASS will provide guidance as to how much is currently taught and what needs to be taught. The Combined Arms Training Integration Department (CTI), CGSC is monitoring the Combined Arms Sufficiency Study and will initiate action to develop or upgrade its tactical deception instruction at the Command and General Staff College. This will become a basis for providing guidance to integrate tactical deception into all career level officer schools. Change milestone to Jul 83. (ATZL-CAC-I)

(II-2-2)

77. RECOMMENDATION: Blue Flag/Red Flag linkage.

ACTION	AGENCY	MILESTONE
Form a special joint working group with the Air Force to invesigate ways to enhance Army participation in Blue Flag and possible Red Flag/ Blue Flag linkage.	TRADOC (ATZL-TDU-E) REDCOM (RCJ3-E) MACOM's	3Q FY 82 (Completed)

CURRENT STATUS: Completed. (ATZL-TDU-E)

COMMENTS: On 2 Nov 82 a BLUE FLAG Action Officer Conference was held at HQ FORSCOM. Current plans for enhancement include combining BLUE FLAG with Army corps level exercises (i.e., GALLANT KNIGHT, GOLDERN SABER, etc.). HQ FORSCOM confidential message dated 022111Z Nov 82, subject: JCS-JTX Program, has proposed the combining of JTX's (BLUE FLAG, LOGEX and major Army corps level exercises). The proposed combined JTXs were based on compatible exercise design factors of purpose and objectives, scenario, and force packages/troop list.

CURRENT STATUS: Work ongoing but behind schedule due to the Army War College summer feasibility demonstration of the McClintic Theater Model. Completion due 4QFY83. Meeting March 83 planned with REDCOM & BLUE FLAG to enhance better BLUE FLAG/RED FLAG linkage. (RCJ3-E)

CURRENT STATUS: Completed (AEAGC-EX)(USAREUR).

COMMENTS: A USAREUR representative has examined the feasibility of entering into BLUE FLAG and RED FLAG/BLUE FLAG linkage. Having so investigated, it appears imprudent for this command to pursue this goal, given the limited gains to be realized by USAREUR Units. Recommend TRADOC pursue this initiative and USAREUR reenter after the groundwork is laid by TRADOC.

CURRENT STATUS: Concept has been discussed with TRADOC and TAC. Ongoing Staff Action (AFOP-OCJ)(FORSCOM).

COMMENTS : Presently no definite action regarding either Red flag or Green flag link with Blue flag has been proposed. A number of enhancements for Army participatants in Blue flag are being pursued.

(III-4-4)

78. RECOMMENDATION: Investigate NTC Phase II linkage.

ACTION	AGENCY	MILESTONE
Form a special action group to investigate feasibility and provide an action plan with milestones for Phase II development of NTC.	TRADOC (Appropriate Proponents) (ATTG-PA)	4Q FY 82 (Completed)

CURRENT STATUS: The action group is formed and currently working the NTC Phase II development. Phase I IOC is expected in FY83 and Phase II is FY 86. (ATTG-PA).

(III-4-5)

79. RECOMMENDATION: Provide sufficient resources to support development, testing, refinement, and implementation.

ACTION	TASKS	AGENCY	MILESTONE
Support JINTACCS development and implementation.	Provide sufficient personnel for JINTACCS program, and other intra-Army standardization efforts.	DARCOM(DRSEL-SEI) TRADOC(ATZL-CAC-CI) FORSCOM(AFOP-FM)	As required

CURRENT STATUS: Work on-going; milestones will be met. (DRSEL-SEI)

COMMENTS:

a. CECOM/CENSEI serves as the Army's Command, Control, Communications (C^3) System Engineer under the AC^2MP with responsibility both for the intra-Army ACCS System Engineering/Standardization Program and for Army participation in the development, testing and maintenance of JINTACCS Standards. As a result of BAA-V and a special Army PDIP for the ACCS System Engineering Program, a DA decision was made to increase CENSEI's authorized strength by 52 civilian spaces broken down into two increments; an initial increment of 30 spaces followed by an FY83 increment of 22 spaces.

b. The initial increment of 30 spaces was received in mid-1981. However, hiring for the high grade spaces included in that increment was delayed because HQDA did not provide for the corresponding increase in the high grade ceiling that had been previously established for CENSEI. At the end of CY-1982, CECOM took action to permit those high grade spaces to be filled on a temporary basis. All spaces have now been filled.

c. The increment of 22 spaces programmed for FY-83 has not been received by CECOM. The issue is being pursued by HQ DARCOM. Authorization and fill of the 22 spaces are essential for the successful execution of the ACCS System Engineering Program and the Intra-Army Implementation of the JINTACCS Standards.

d. CENSEI has demonstrated a capability to accomplish the objectives of the JINTACCS and ACCS System Engineering programs; the previously identified increases in personnel authorization remain valid and should be effected to assure successful accomplishment of Army objectives.

e. Army RDTE funding requirements for Army implementation of JINTACCS Standards were identified by CECOM/CENSEI in the DA/DARCOM RDTE Summer Review held at CECOM in June 1982. Funding to support Army implementation actions are identified against Project D309; funds for the joint arena are carried against D310.

f. FY83 Funding Guidance for both the JINTACCS (Army) and ACCS System Engineering Program are consistent with the requirements identified during DA/DARCOM RDTE summer review.

79. RECOMMENDATION: (cont'd)

g. FY-94 Funding Guidance for JINTACCS (Army) is adequate for accomplishment of assigned Army responsibilities. FY-84 Funding Guidance for the ACCS System Engineering Program reflects a major cut which detrimentally impacts on the ability to successfully accomplish that program. The required reprogramming activities necessary to sustain the program were presented during the DA/DARCOM Summer Review.

(I-4-5)

CURRENT STATUS: Work ongoing (ATZL-CAC-CI).

COMMENTS: To date TRADOC centers and schools have provided personnel required for JINTACCS testing support. Currently under consideration are resource requirements to support intra-Army efforts.

CURRENT STATUS: Work ongoing, milestone will be met (AFOP-FM).

ACTION	TASKS	AGENCY	MILESTONE
	Provide appropriate funding for JINTACCS program to insure Army funds are not spent in joint arena.	HQDA	30 Mar 82 (Completed)

CURRENT STATUS: Completed 30 Mar 82 (DAMO-C4J).

COMMENTS: Since the CSA is the executive agent for the JINTACCS program, the Army is responsible for some funding in the Joint arena. However, in order to separate executive agent funding from Army funding, two task numbers have been established: D309 (Army funding) and D310 (Executive Agent funding).

(I-4-5)

80. RECOMMENDATION: Approve realignment of MOS structure for power generation/maintenance.

ACTION	TASKS	AGENCY	MILESTONE
Realign the MOS structure and maintenance responsibility.	Approve and implement the current TRADOC proposal.	Responsible: HQDA Action: TRADOC (ATZA-TDI)	Dec 82 (completed)

CURRENT STATUS: Action completed. A decision briefing was presented to LTG Thurman on 20 Dec 82 to approve the MOS structure for 52D. LTG Thurman approved the structure on 30 Dec 82 and it will be effective October 83 (ATZA-TD).

COMMENT: Letter of Notification (LON) to change AR 611-201 is being prepared by the Soldier's Support Center National Capital Region. LON was published 2Q83. Change will be effective 1 October 1983 with change 20 to AR 611-201.

(I-5-3)

81. RECOMMENDATION: Fund RDTE efforts as outlined in Panel IV. (See recommendations IV-12-1, IV-12-2, and IV-13-1).

ACTION	TASKS	AGENCY	MILESTONE
Support RDTE identified by Panel IV.	Provide funding and personnel resources necessary to complete RDTE recommendations.	HQDA	FY 84-88 POM (Completed)

CURRENT STATUS: Completed (DAMO).

COMMENT: Delete action. Redundant with IV-12-1, IV-12-2, and IV-13-1.

(I-5-4)

82. RECOMMENDATION: Investigate MP strength.

ACTION	AGENCY	MILESTONE
Relook at the cut of MP's in Division 86.	TRADOC (ATZL-CAF-S)	FY 82 (Completed)

CURRENT STATUS: Relooked by Task Force 86. MP's increased and upgunned in Div 86. Action complete 28 March 82 (ATZL-CAF-S).

(VCSA-9)

APPENDIX A

RECOMMENDATIONS LISTED BY SOURCE

APPENDIX A

RECOMMENDATIONS LISTED BY SOURCE

PANEL I - COMMAND AND CONTROL FOR THE ARMY 1984-1990.

1. ISSUE: The middle-links in the Army's command and control architecture are all ill defined.

RECOMMENDATIONS:

a. Develop an Army C2 doctrine from support base to foxhole.

b. Develop communications doctrine from support base to foxhole. Submit to JCS, through DA, joint requirements as seen by the Army.

c. Fully develop AC2MP to support doctrine.

2. ISSUE: The development, acquisition, and fielding strategies for the automation and communication systems needed to implement the objective CCS2 are not coordinated to maximize combat effectiveness.

RECOMMENDATIONS:

a. Continue development of AC2MP methodology for prioritization, fielding and funding of the army command and control systems.

b. Develop measures of effectiveness for determining the effectiveness of elements of CCS2.

c. Develop priorities for fielding each CCS2 system.

d. Man and equip the signal organization as outlined in Div 86 force structure.

3. ISSUE: There currently exists no requirement for system developers to present to Army decision makers alternative methods for information processing and transmission systems to operate in degraded modes.

RECOMMENDATIONS:

a. Develop policy and procedures to insure functional survivability of command and control functions.

b. Integrate alternate methods of operations into Army training and evaluation programs.

c. Establish alternative methods of operation for each of the five operational facilities (OPFACS).

d. Develop graceful degradation ("Fail-Soft") characteristics into all future systems.

e. Expedite the development of military computer family.

f. Develop and implement distributed data processing and storage in future systems.

4. ISSUE: There is currently no Army position on the intra-Army use of JINTACCS (Joint Interoperability of Tactical Command and Control Systems) standards.

RECOMMENDATIONS:

a. Indorse JINTACCS standards for intra-Army use.

b. Implement JINTACCS at the completion of compatability and interoperability testing.

c. Determine how, when and to what level JINTACCS will be used intra-Army.

d. Develop JINTACCS educational programs and training exercises.

e. Provide sufficient resources to support development, testing, refinement, and implementation.

5. ISSUE: Need for Community Discipline and Adequate Priorities and Funds to Correct Deficiencies pertaining to power sources.

RECOMMENDATIONS:

a. Fully support and resource improvements in existing power sources as outlined in power generation report-out.

b. Establish procedures to discipline the acquisition process by insuring:

- o Full analysis of power requirements in each mission area.
- o Total systems management during all phases of power source development.

c. Approve realignment of MOS structure.

d. Fund RDTE efforts as outlined by Panel IV.

6. ISSUE: Interim equipment needs.

RECOMMENDATIONS:

a. Expedite completion and approval of MM wave radio ROC.

b. Fund the current MM wave radio program.

c. Conduct MM wave radio systems engineering study to determine additional uses and requirements.

d. Continue exploratory MM wave radio development.

e. Fund and closely monitor current fiber optics program.

f. Conduct total fiber optics system analysis.

PANEL II - COMMAND AND CONTROL NOW

1. ISSUE: Operational command and control processes and procedures which can be implemented within realistic TOE personnel and equipment constraints.

RECOMMENDATIONS:

a. Provide divisions with dispersed CP doctrine.

b. Expedite the writing of doctrine on rear area combat operations.

c. Identify and institutionalize the few best electronic counter-countermeasure techniques for communications.

d. Develop and teach decision graphics.

e. Provide procedures for electronically-produced, video-displayed, rapidly transmitted graphics to allow information exchange without gathering for conferences or briefings.

f. Implement the Division/Corps 86 authorization for liaison sections (personnel and equipment) at corps and division level.

g. Publish a Staff Officers Handbook for Army-wide use.

2. ISSUE: Deception as a technique to enhance survivability.

RECOMMENDATIONS:

a. Publish a temporary "cookbook" providing guidance to the field for deception to enhance command and control survivability. Follow-on by refining that information and publishing it in the appropriate doctrinal literature.

b. Integrate tactical deception training in all career level officer schools.

c. Augment and field test a corps-level organization to accomplish tactical deception.

3. ISSUE: The need for standardization of procedures and facilities.

RECOMMENDATIONS:

a. Develop standard report formats using the BAA V approved 85 minimum battlefield information needs.

b. Merge FM 21-30 (Military Symbology) with FM 101-5-1 (Operational Terms and Graphics) and add a section on decision graphics.

c. Re-introduce the 1:100,000 scale map for division level planning. Retain the 1:50,000 scale map for operations.

4. ISSUE: Off-the-shelf interim equipment needs.

RECOMMENDATIONS:

a. Upgun MP's to increase their capability to provide CP security.

b. Provide divisions and corps with their currently authorized multi-channel resources. Consider increasing multi-channel authorizations.

c. The following equipment items are available now and should be integrated in today's tactical communications systems: TACSAT, HF radios, antennas, etc.

d. Expedite fielding of COMSEC systems (Vinson and Parkhill), fielding should be completed in FY 82.

5. ISSUE: Issues of commander influence.

RECOMMENDATION:

Train the commanders and staff officers to fight the deep battle and the close-in battle as integral parts of the AirLand Battle.

PANEL III - COMMAND AND CONTROL TRAINING

1. ISSUE: Integration of individual and collective command and control training tasks - inter/intra system.

RECOMMENDATION:

Develop tailored command and control related training packages for individual and collective training (e.g., TACFIRE, CEWI, Targeting Cells, RACO).

ISSUE: Development of a "menu" of training techniques flexible to Commanders' needs.

RECOMMENDATIONS:

a. Expedite publication and fielding of FM 25-4, How to Plan, Conduct and Control Training Exercises, which incorporates a menu of training techniques.

b. Expedite fielding of battle simulations - inter/intra system using state-of-the-art technology.

c. Expand use of TACSIM as an exercise driver.

3. ISSUE: Provision of training packages tailorable to unit METT.

RECOMMENDATIONS:

a. Develop unit training packages for division and corps scenarios.

b. Develop recommended unit training packages for Division, designed for selected priority systems (e.g., TACFIRE, FIREFINDER, BCS, TCS/TCT).

4. ISSUE: Development of structured training environments.

RECOMMENDATIONS:

a. FCX extended to integrate intelligence and fire support interface.

b. CFX in JTX.

c. Corps level JTX.

d. Blue Flag/Red Flag linkage.

e. Investigate NTC Phase II linkage.

PANEL IV - TOMORROW'S TECHNOLOGY IN COMMAND AND CONTROL

1. ISSUE: Advanced networking technology to eliminate critical nodes has not been defined.

RECOMMENDATION:

Develop and demonstrate the dispersed CP network. The above outlined two-phase program needs to be implemented in order to provide the needed near term and far term communication capabilities for the survivable Dispersed Command Post.

2. ISSUE: Support user/developer concept testing.

RECOMMENDATIONS:

a. Continue to fund BIDS technology experiments outlined in ADDS Test Bed Plan.

b. Prioritize and fund Distributed Processing Technology. Recommend a high priority to the restoration of 6.2 funds for full and expedited completion of all exploratory distributed processing efforts under this Program. Recommend high priority be given for support to the EDPF, and follow-on efforts.

3. ISSUE: Spread Spectrum Allocation Constraints.

RECOMMENDATION:

Assure adequate spectrum supportability for Battlefield Information Distribution technology based systems.

4. ISSUE: Unique communications requirements for the RDF(A) Contingency Corps are emerging.

RECOMMENDATION

a. Continue to define communications requirements for the Army portion of the RDF. Continue with present action plan.

5. ISSUE: ECM Threat becoming more severe with time.

RECOMMENDATION:

Continue firm commitment to provide ECCM as required.

6. ISSUE: ECM threat becoming more severe with time.

RECOMMENDATION:

Continue to support ECCM efforts.

7. ISSUE: Extended Range Operations in Hostile Environment.

RECOMMENDATION:

Support development of an anti-jam relay satellite network with full global access.

8. ISSUE: Inadequate support for user/developer input/output devices concept testing.

RECOMMENDATION:

Utilize user concept testing to refine techniques for user access to data.

9. ISSUE: Lack of standardized I/O devices.

RECOMMENDATIONS:

a. Publish interim product line catalogue for I/O devices. It is recommended that the product line catalog effort be continued as effected to attempt to reduce near term proliferation of peripheral devices.

b. Have all requirements documents reflect provisions for standard I/O devices.

(1) Amend the checklist for ROC review to include screening for standard I/O products.

(2) Continue current process, which insures proper preparation of requirements documents.

c. Enforce DARCOM Computer Resource Management Plan.

d. Develop a standard family of I/O devices to satisfy requirements of the CCS^2 architecture. Develop a standard family of I/O peripheral devices as members of the Military Computer Family. These peripherals will interface with the MCF processors using one of the standard MCF interfaces; MIL-STD-1553B, the bit serial, binary data, point-to-point interface compatible with EIA RS-232-C, RS-449, and similar interfaces, or the high speed 16-bit word parallel, point-to-point interface.

10. ISSUE: Emerging system may rekindle assaults on the need for standardization.

RECOMMENDATION:

To insure standardization, the impact of ADA and the MCF program must be addressed at all major program milestones.

11. ISSUE: Automation Support Personnel are a scarce commodity.

RECOMMENDATION:

Support personnel requirements of post deployment software support and for field support of all information processing systems.

12. ISSUE: Automation Support Personnel are a scarce commodity.

RECOMMENDATION:

Develop improved personnel management for automation support personnel.

13. ISSUE: Lack of focus of artificial intelligence initiatives.

RECOMMENDATION:

Intensify an Army Artificial Intelligence Program.

14. ISSUE: Behind in Tech Base Initiatives Leading to Technological Choices by 1985 to Produce Undetectable, Stand-Alone, Power Sources by 2000.

RECOMMENDATION:

Accelerate development of undetectable power sources.

15. ISSUE: Behind in Tech Base Initiatives Leading to Technological Choices by 1985 to Produce an Integrated Power and Environmental Control System by 2000.

RECOMMENDATION:

Develop and demonstrate an integrated power and environmental control system.

16. ISSUE: Inadequate Visibility and Emphasis in Priority and Funding.

RECOMMENDATION:

Increase priority and funding levels for power source development.

SYSTEM PROGRAM REVIEW CHAIRMAN - VCSA

1. ACTIONS.

a. Convene a panel whose purpose is to address the near-term command and control problem for CSS in the same fashion Panel II did for division and corps.

b. Commanders must understand algorithms and the software of their systems. Figure out a way to do that.

c. We must tackle the problem of insuring that there are combat arms officers who understand automation problems.

d. Field units experiment with the use of commercial mini-computers. Keep OSD and Congress advised of our direction. Maintain an evolutionary approach and document results.

e. MP strength: Let's relook at the cut of Division 86 MPs.

f. The C^2SPR work has been comprehensive and certainly complex. In place of another C^2SPR next year, convene periodic IPRs to review progress in accomplishing the action plan. C^2SPRs are adequate every two years.

2. GENERAL GUIDANCE.

a. Keep in mind that the commander is the heart of the C^2 system.

b. We need to suppress our appetite for more communications and power.

c. Command and Control System Program Reviews be held biannually.

APPENDIX B

RECOMMENDATIONS LISTED ACCORDING TO ACTION AGENCY TO BE TASKED AND PRIORITIES

APPENDIX B

RECOMMENDATIONS LISTED ACCORDING TO ACTION AGENCY TO BE TASKED

HQDA

1. Develop an Army C^2 doctrine from support base to foxhole. (I-1-1)*

2. Develop communications doctrine from support base to foxhole. (I-1-2)*

3. Continue development of AC2MP methodology for prioritization, fielding and funding of the army command and control systems. (I-2-1)*

4. Man and equip the signal organization as outlined in Div 86 force structure. (I-2-4)

5. Develop policy and procedures to ensure functional survivability of command and control functions. (I-3-1)

6. Indorse JINTACCS standards for intra-Army use. (I-4-1)

7. Provide sufficient resources to support development, testing, refinement, and implementation of JINTACCS. (I-4-5)

8. Fully support and resource improvements in existing power sources as outlined in power generation report-out. (I-5-1)

9. Establish procedures to discipline the acquisition process by insuring:

   a. Full analysis of power requirements in each mission area.
   b. Total systems management during all phases of power source development. (I-5-2)

10. Approve realignment of MOS structure to support power generation/maintenance. (I-5-3)

11. Fund RDTE efforts in support of power generation. (I-5-4)

12. Fund the current MM wave radio program. (I-6-2)

13. Fund and closely monitor current fiber optics program. (I-6-5)

*Source: Panel I, Issue 1, Recommendation 1

14. Implement the Division/Corps 86 authorization for liaison sections (personnel and equipment) at corps and division level. (II-1-6)

15. Augment and field test a corps-level organization to accomplish tactical deception. (II-2-3)

16. Develop standard report formats using the BAA V approved 85 minimum battlefield information needs. (II-3-1)

17. Re-introduce the 1:100,000 scale map for division level planning. Retain the 1:50,000 scale map for operations. (II-3-3)

18. Expedite the development of the military computer family. (II-3-5)

19. Upgun MP's to increase their capability to provide CP security. (II-4-2)

20. Provide divisions and corps with their currently authorized multi-channel resources. Consider increasing multi-channel authorizations. (II-4-2)

21. The following equipment items are available now and should be integrated in today's tactical communications systems: HF Radio, TACSAT, Antennae, TACFAX. (II-4-3)

22. Expedite fielding of COMSEC systems (Vinson and Parkhill), fielding should be completed in FY 82. (II-4-4)

23. Expedite fielding battle simulations - inter/intra system using state-of-the-art technology. (III-2-2)

24. Continue firm commitment to provide ECCM as required. (IV-5-1)

25. Support development of an anti-jam relay satellite network with full global access. (IV-6-1)

26. Support personnel requirements of post deployment software support and for field support of all information processing systems. (IV-10-1)

27. Develop improved personnel management for automation support personnel. (IV-10-2)

28. Intensify an Army Artificial Intelligence Program. (IV-11-1)

29. Increase priority and funding levels for power source development. (IV-3-1)

30. Tackle the problem of ensuring there are combat arms officers who understand automation. (VCSA-5/7)

31. Learn to use minicomputers. (VCSA-8)

TRADOC

1. Develop an Army C2 doctrine from support base to foxhole. (I-1-1)

2. Develop communications doctrine from support base to foxhole. Submit to JCS, through DA, joint requirements as seen by the Army. (I-1-2)

3. Fully develop AC2MP to support doctrine. (I-1-3)

4. Continue development of AC2MP methodology for prioritization, fielding and funding of the army command and control systems. (I-2-1)

5. Develop measures of effectiveness for determining the effectiveness of elements of CCS2. (I-2-2)

6. Develop priorities for fielding each CCS2 system. (I-2-3)

7. Integrate alternate methods of operations within the CCS^2 system into Army training and evaluation programs. (II-3-2)

8. Establish alternate methods of operation for each of the five operational facilities (OPFACS). (II-3-3)

9. Implement JINTACCS at the completion of compatability and interoperability testing. (I-4-2)

10. Determine how, when and to what level JINTACCS will be used intra-Army. (I-4-3)

11. Develop JINTACCS educational programs and training exercises. (I-4-4)

12. Provide sufficient resources to support development, testing, refinement, and implementation. (I-4-5)

13. Fully support and resource improvements in existing power sources as outlined in power generation report-out. (I-5-1)

14. Establish procedures to discipline the acquisition process by insuring:

a. Full analysis of power requirements in each mission area.
b. Total systems management during all phases of power source development. (I-5-2)

15. Expedite completion and approval of MM wave radio ROC. (I-6-1)

16. Fund the current program for MM wave radio. (I-6-2)

17. Conduct MM wave radio systems engineering study to determine additional uses and requirements. (I-6-3)

18. Fund and closely monitor current program for fiber optics. (I-6-5)

19. Conduct total system analysis for fiber optics. (I-6-6)

20. Provide divisions with dispersed CP doctrine. (II-1-1)

21. Expedite the writing of doctrine on rear area combat operations. (II-1-2)

22. Identify and institutionalize the few best electronic counter-countermeasure techniques for communications. (II-1-3)

23. Develop and teach decision graphics. (II-1-4)

24. Provide procedures for electronically-produced, video-displayed, rapidly transmitted graphics to allow information exchange without gathering for conferences or briefings. (II-1-5)

25. Publish a Staff Officers Handbook for Army-wide use. (II-1-7)

26. Publish a temporary "cookbook" providing guidance to the field for deception to enhance command and control survivability. Follow-on by refining that information and publishing it in the appropriate doctrinal literature. (II-2-1)

27. Integrate tactical deception training in all career level officer schools. (II-2-2)

28. Augment and field test a corps-level organization to accomplish tactical deception. (II-2-3)

29. Develop standard report formats using the BAA V approved 85 minimum battlefield information needs. (II-3-1)

30. Merge FM 21-30 (Military Symbology) with FM 101-5-1 (Operational Terms and Graphics) and add a section on decision graphics. (II-3-2)

31. Re-introduce the 1:100,000 scale map for division level planning. Retain the 1:50,000 scale map for operations. (II-3-3)

32. Upgun MP's to increase their capability to provide CP security. (II-4-1)

33. Provide divisions and corps with their currently authorized multi-channel resources. Consider increasing multi-channel authorizations. (II-4-2)

34. Train the commanders and staff officers to fight the deep battle and the close-in battle as integral parts of the AirLand Battle. (II-5-1)

35. Develop tailored command and control related training packages for individual and collective training (e.g., TACFIRE, CEWI, Targeting Cells, RACO). (III-1-1)

36. Expedite publication and fielding of FM 25-4, How to Plan, Conduct and Control Training Exercises, which incorporates a menu of training techniques. (III-2-1)

37. Expedite fielding of battle simulations - inter/intra system using state-of-the-art technology. (III-2-2)

38. Expand use of TACSIM as an exercise driver. (III-2-3)

39. Develop unit training packages for division and corps scenarios. (III-3-1)

40. Develop unit training packages for Division, designed for selected priority systems (e.g., TACFIRE, FIREFINDER, BCS, TCS/TCT). (III-3-2)

41. FCX extended to integrate intelligence and fire support interface. (III-4-1)

42. CFX in JTX. (III-4-2)

43. Corps level JTX. (III-4-3)

44. Blue Flag/Red Flag linkage. (III-4-4)

45. Investigate NTC Phase II linkage. (III-4-5)

46. Continue to fund BIDS technology experiments outlined in ADDS Test Bed Plan. (IV-2-1)

47. Continue to define communications requirements for the Army portion of the RDJTF. Continue with present action plan. (IV-4-1)

48. Continue firm commitment to provide ECCM as required. (IV-5-1)

49. Support development of an anti-jam relay satellite network with full global access. (IV-6-1)

50. Have all requirements documents reflect provisions for standard I/O devices. (IV-8-2)

51. Support personnel requirements of post deployment software support and for field support of all information processing systems. (IV-10-1)

52. Develop improved personnel management for automation support personnel. (IV-10-2)

53. Develop and demonstrate an integrated power and environmental control system. (IV-12-2)

54. Increase priority and funding levels for power source development. (IV-13-1)

55. Address Command and Control for CSS. (VCSA-3)

56. Tackle the problem of ensuring there are combat arms officers who understand automation. (VCSA-5/7)

57. Investigate MP strength. (VCSA-9)

58. Command and Control System Program Reviews to be held biannually. (VCSA-10)

DARCOM

1. Fully develop AC2MP (Engineer Development) to support doctrine. (I-1-3)

2. Continue development of AC2MP methodology for prioritization, fielding and funding of the army command and control systems. (I-2-1)

3. Develop priorities for fielding each system. (I-2-3)

4. Develop graceful degradation ("Fail-Soft") characteristics into all future systems. (I-3-4)

5. Expedite the development of military computer family. (I-3-5)

6. Develop and implement distributed data processing and storage in future systems. (I-3-6)

7. Implement JINTACCS at the completion of compatability and interoperability testing. (I-4-2)

8. Provide sufficient resources to support development, testing, refinement and implementation. (I-4-5)

9. Fully support and resource improvements in existing power sources as outlined in power generation report-out. (I-5-1)

10. Establish procedures to discipline the acquisition process by insuring:

a. Full analysis of power requirements in each mission area.
b. Total systems management during all phases of power source development. (I-5-2)

11. Expedite completion and approval of ROC for MM wave radio. (I-6-1)

12. Fund the current program for MM wave radio. (I-6-2)

13. Continue exploratory MM wave radio development. (I-6-4)

14. Fund and closely monitor current program for fiber optics. (I-6-5)

15. Conduct total system analysis for fiber optics. (I-6-6)

16. Upgun MP's to increase their capability to provide CP security. (II-4-1)

17. Provide divisions and corps with their currently authorized multi-channel resources. Consider increasing multi-channel authorizations. (II-4-2)

18. Develop tailored command and control related training packages for individual and collective training (e.g., TACFIRE, CEWI, Targeting Cells, RACO). (III-1-1)

19. Expand use of TACSIM as an exercise driver. (III-2-3)

20. Develop unit training packages for division and corps scenarios. (III-3-1)

21. Develop recommended unit training packages for Division, designed for selected priority systems (e.g., TACFIRE, FIREFINDER, BCS, TCS/TCT). (III-3-2)

22. CFX in JTX. (III-4-2)

23. Corps level JTX. (III-4-3)

24. Blue Flag/Red Flag linkage. (III-4-4)

25. Develop and demonstrate the dispersed CP network. The two-phase program needs to be implemented in order to provide the needed near term and far term communication capabilities for the survivable dispersed command post. (IV-1-1)

26. Continue to fund BIDS technology experiments outlined in ADDS Test Bed Plan. (IV-2-1)

27. Prioritize and fund Distributed Processing Technology, with high priority to all exploratory distributed processing efforts and support to the EDPF, and follow-on efforts. (IV-2-2)

28. Assure adequate spectrum supportability for Battlefield Information Distribution technology based systems. (IV-3-1)

29. Increase priority and funding levels for power source development. (IV-3-1)

30. Continue firm commitment to provide ECCM as required. (IV-5-1)

31. Continue to support ECCM efforts. (IV-5-2)

32. Support development of an anti-jam relay satellite network with full global access. (IV-6-1)

33. Utilize user concept testing to refine techniques for user access to data. (IV-7-1)

34. Publish interim product line catalogue for I/O devices. (IV-8-1)

35. Have all requirements documents reflect provisions for standard I/O devices. (IV-8-2)

36. Enforce DARCOM Computer Resource Management Plan. (IV-8-3)

37. Develop a standard family of I/O devices to satisfy requirements of the CCS^2 architecture. (IV-8-4)

38. To insure standardization, the impact of ADA and the MCF program must be addressed at all major program milestones. (IV-9-1)

39. Intensify an Army Artificial Intelligence Program. (IV-11-1)

40. Accelerate development of undetectable power sources. (IV-12-1)

41. Develop and demonstrate an integrated power and environmental control system. (IV-12-2)

FORSCOM

1. Provide sufficient resources to support development, testing, refinement, and implementation of JINTACCS. (I-4-5)

2. Augment and field test a corps-level organization to accomplish tactical deception. (II-2-3)

3. Train the commanders and staff officers to fight the deep battle and the close-in battle as integral parts of the AirLand Battle. (II-5-1)

4. Integrate alternate methods of operations into Army training and evaluation programs. (I-3-2)

5. Develop tailored command and control related training packages for individual and collective training (e.g., TACFIRE, CEWI, Targeting Cells, RACO). (III-1-1)

6. Expand use of TACSIM as an exercise driver. (III-2-3)

7. Develop unit training packages for division and corps scenarios. (III-3-1)

8. Develop unit training packages for division designed for selected priority systems (e.g., TACFIRE, FIREFINDER, BCS, TCS/TCT). (III-3-2)

9. CFX in JTX. (III-4-2)

10. Corps level JTX. (III-4-3)

11. Blue Flag/Red Flag linkage. (III-4-4)

12. Continue to fund BIDS technology experiments outlined in ADDS Test Bed Plan. (IV-2-1)

13. Utilize user concept testing to refine techniques for user access to data. (IV-7-1)

14. Learn to use minicomputers. (VCSA-8)

USAREUR

1. Train the commanders and staff officers to fight the deep battle and the close-in battle as integral parts of the AirLand Battle. (II-5-1)

2. Develop tailored command and control related training packages for individual and collective training (e.g., TACFIRE, CEWI, Targeting Cells, RACO). (III-1-1)

3. Expand use of TACSIM as an exercise driver. (III-2-3)

4. Develop unit training packages for division and corps scenarios. (III-3-1)

5. Develop unit training packages for Division, designed for selected priority systems (e.g., TACFIRE, FIREFINDER, BCS, TCS/TCT). (III-3-2)

6. FCX extended to integrate intelligence and fire support interface. (III-4-1)

7. CFX in JTX. (III-4-2)

8. Corps level JTX. (III-4-3)

9. Blue Flag/Red Flag linkage. (III-4-4)

REDCOM

1. Develop tailored command and control related training packages for individual and collective training (e.g., TACFIRE, CEWI, Targeting Cells, RACO). (III-1-1)

2. Expand use of TACSIM as an exercise driver. (III-2-3)

3. Develop unit training packages for division and corps scenarios. (III-3-1)

4. Develop unit training packages for Division, designed for selected priority systems (e.g., TACFIRE, FIREFINDER, BCS, TCS/TCT). (III-3-2)

5. CFX in JTX. (III-4-2)

6. Corps level JTX. (III-4-3)

7. Blue Flag/Red Flag linkage. (III-4-4)

WESTCOM

1. Train the commanders and staff officers to fight the deep battle and the close-in battle as integral parts of the AirLand Battle. (II-5-1)

2. Develop tailored command and control related training packages for individual and collective training (e.g., TACFIRE, CEWI, Targeting Cells, RACO). (III-1-1)

3. Expand use of TACSIM as an exercise driver. (III-2-3)

4. Develop unit training packages for division and corps scenarios. (III-3-1)

5. Develop unit training packages for Division, designed for selected priority systems (e.g., TACFIRE, FIREFINDER, BCS, TCS/TCT). (III-3-2)

6. CFX in JTX. (III-4-2)

7. Corps level JTX. (III-4-3)

8. Blue Flag/Red Flag linkage. (III-4-4)

DCA

1. Support development of an anti-jam relay satellite network with full global access. (IV-6-1)

USACC

1. Develop communications doctrine from support base to foxhole. Submit to JCS, through DA, joint requirements as seen by the Army. (I-1-2)

APPENDIX C

PRIORITIZATION METHODOLOGY

APPENDIX C
PRIORITIZATION METHODOLOGY

1. The following methodology was utilized in prioritizing the recommendations from the C2SPR. This methodology was based on the VSCA guidance, the Army Command and Control System (ACCS) Architecture, the 1982 C2 POM funding strategy via the ACCS management structure, the Army Command and Control Master Plan (AC^2MP and recent DA guidance.

2. The methodology was performed in 6 steps as shown on Figure 1. It focused on the C2SPR panel recommendations and used the specific actions under each recommendation in determining the major thrust of that recommendation.

a. Step 1: Each recommendation was functionally categorized as an aid to help determine the exact task, i.e., procedure, doctrine, acquisition, development of a requirement, evaluation or methodology, training management, prioritization, or a personnel action.

b. Step 2: After determining the exact task in step 1, each recommendation was analyzed and first placed in the following major categories and then into the appropriate sub-categories within each major category:

(1) CCS2 (Maneuver control, ADA, FS, I/EW, CSS).

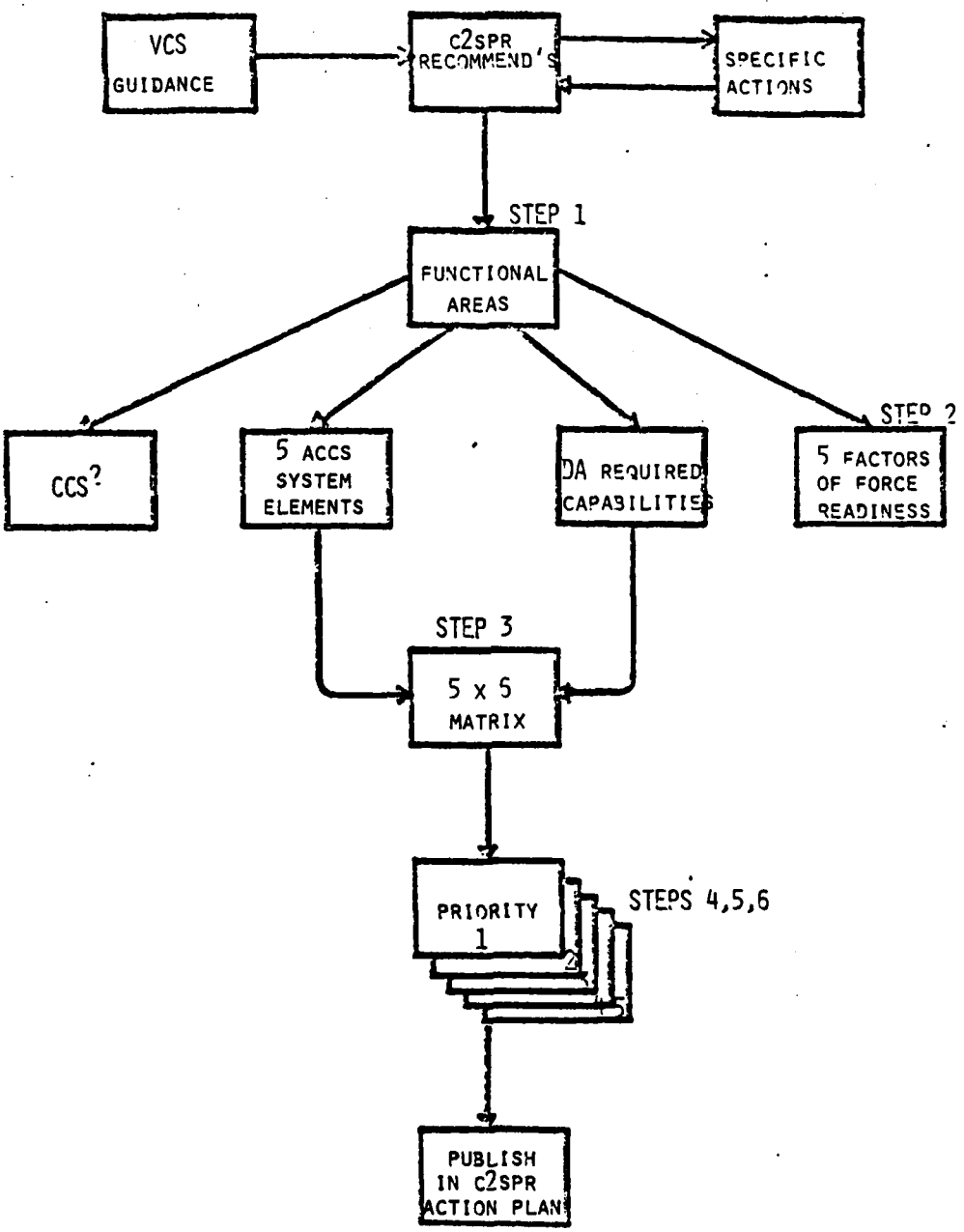
(2) DA required cpabilities from ACCS (structuring, manning, training, equipping, financing, moving, supporting, intel, and operations).

(3) 5 system elements from the AC2MP (commo, ISTA, data collection and processing (DC&P), and command aids).

(4) 5 factors of force readiness (mobilization, deployment, employment, sustainment, and training).

It was found that all recommendations could be placed in one or more of the sub-categories of the DA required capabilities and the 5 system elements from the AC2MP, whereas, they often could not be placed in the sub-categories of the CCS2 or the 5 factors of force readiness. As a result of this placement, the DA required capabilities and 5 system elements from the AC2MP emerged as the dominant categories and were used in the subsequent steps.

c. Step 3: Based on the result of step 2, a 5x6 matrix was developed with the 5 system elements from the AC2MP on the horizontal axis, and the DA required capabilities on the vertical axis (see figure 2). The DA required capabilities were reduced from 9 to 6 with the merging of structuring, financing, moving, and supporting into a single category titled Other, based on the analysis in Step 2. Each recommendation was then placed in the appropriate box of the matrix. Many recommendations were placed in more than 1 box based on their initial placement identified in step 2.



Methodology

FIGURE 1

BASIC MATRIX

5 SYSTEM ELEMENTS / DA REQUIRED CAPABILITIES	COMMO	DC&P	ISTA	CMD AIDS	FACILITIES
EQUIPPING					
OPERATIONS					
TRAINING					
MANNING					
INTELLIGENCE					
OTHER (MOVING, STRUCTURING, SUPPORTING, FINANCING)					

Basic 5x6 Matrix

FIGURE 2

d. Step 4: The components of the 5 system elements and the DA required capabilities were then prioritized as follows:

(1) 5 system elements:

(a) Commo was #1 based on VCSA's guidance during the C2SPR.

(b) DC&P was #2 and ISTA, #3 based on ACCS Architecture evaluation conducted in producing the proposed update to the FY81 AC2MP. This evaluation showed that DC&P acquisition was lagging behind ISTA in both the near and far term.

(c) Command Aids was #4 and Facilities, #5. Command Aids was determined to play a greater role in assisting the commander perform C^2 functions than Facilities.

(2) DA Required Capabilities:

(a) Equipping was #1, again based on the VCSA guidance.

(b) Operations was #2 based on an architectural assessment which showed the need to solve doctrinal problems to improve operational readiness.

(c) Training was #3. Given a resource contrained environment, improved training would improve operational readiness.

(d) Manning was #4, based on the C2SPR issues which cited the need for resources to improve operational readiness. Training and manning could have been reversed in priority order. However, based on the fact that operational readiness could be improved with the current resources through training, it was decided that training receive a higher priority than manning.

(e) Intelligence was #5. It was not a direct concern of the majority of recommendations at the C2SPR. However, its effect on operational readiness warranted its placement above those capabilities listed in (f) below.

(f) Other (structuring, financing, moving, and supporting) was #6. These are important Army functions but collectively had very few recommendations in the C2SPR.

The 5 system elements were then assigned relative weights based on their priority, i.e., Commo was priority #1 and had a weight of 5, DC&P was 2 with a weight of 4, etc. This was then done for the DA Required Capabilities with Equipping as priority #1 with a weight of 6, Operations as priority #2 with a weight of 5, etc. After all relative weights were assigned, each box was given a score which was the sum of the respective row and column. This score

allowed all boxes to be by row prioritized with the higher scores having higher priority numbers, i.e., a score of 11 had a priority of 1, see figure 3.

RELATIVE WEIGHTS

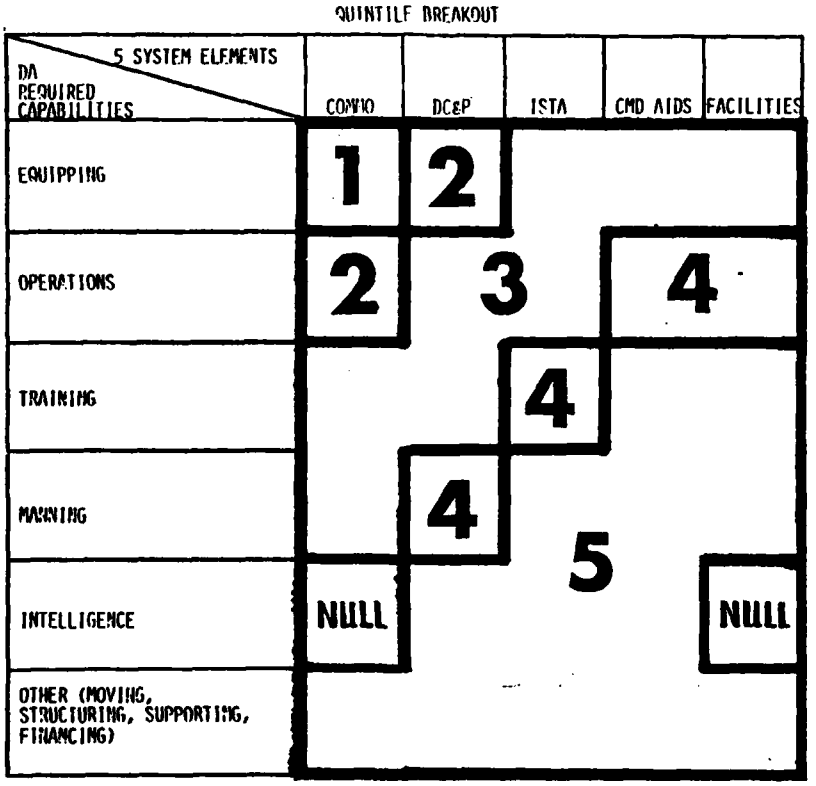
5 SYSTEM ELEMENTS / DA REQUIRED CAPABILITIES		5 COMMO	4 DC&P	3 ISTA	2 CMD AIDS	1 FACILITIES ← RELATIVE WEIGHT
EQUIPPING	6	1 / 11	2 / 10	4 / 9	7 / 8	11 ← PRIORITY NUMBER / 7 ← SUM OF RELATIVE WEIGHTS
OPERATIONS	5	3 / 10	5 / 9	8 / 8	12 / 7	16 / 6
TRAINING	4	6 / 9	9 / 8	13 / 7	17 / 6	21 / 5
MANNING	3	10 / 8	14 / 7	18 / 6	22 / 5	25 / 4
INTELLIGENCE	2	15 / 7	19 / 6	23 / 5	26 / 4	28 / 3
OTHER (MOVING, STRUCTURING, SUPPORTING, FINANCING)	1	20 / 6	24 / 5	27 / 4	29 / 3	30 / 2

Relative Weights

FIGURE 3

e. Step 5 consisted of placing each recommendation in only 1 box based on its highest priority.

f. Step 6: The recommendations were broken into approximate quintiles as shown in figure 4. Originally, all recommendations were arranged in a sequential priority order from 1 to 82. However, this method of prioritization would have allowed little if any flexbilityy in the accomplishment of specific actions cited under each recommendation. The recommendations were then placed into approximate quintiles and prioritized within each quintile. Although this gave flexibility to the implementation of specific actions, it also required comparing recommendations against each other to determine a prioritized level of importance. To allow maximum flexibility and still show a prioritized level of importance, the recommendations were randomly placed with each quintile in no priority order. These recommendations by quintile priority are found in the body of the Command and Control Action Plan.



Quintile Breakout

FIGURE 4

APPENDIX D

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JUNE 1983 UPDATE
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(ACSC-TP)	1
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