kilometers in contrast to an essential range of 275 kilometers (550 desired) for LRSS.

2. The ABC System is capable of locating only one point in a single operation, while LRSS has a design capability of locating up to 50 points during a single positioning sequence.

3. The ABC System has not been considered suitable for artillery survey use in combat operations because of the vulnerability to ground fires of a helicopter with a flashing beacon hovering over the point being located. If triangulation procedures are followed, the flashing beacon is not required, however, such a survey will not be as accurate and will take longer to perform.

(f) It is estimated that a complete ABC system could be obtained in approximately 90-120 days, at an estimated cost of $40,000 - $50,000, plus the cost of the helicopter. 28/

(g) There are two types of firing charts used by the artillery fire direction center—the surveyed firing chart and the observed firing chart. 29/ The surveyed firing chart is one on which the locations of all key points (battery positions, registration points, observation points) are based on survey. All plotted points are in correct relation to one another and are tied together by map coordinates. The observed firing chart is one on which all locations must be established by firing. Relative locations of the batteries and targets can only be established by adjustment of fire. 29/ For environments, as described in paragraph 4b(1)(a), a map firing chart may be required as a third type. It would be one on which the locations of all key points would be based on only map data. The procedures basically would be to map-spot all critical points and use the map

29/ FM 6-40, Chap 15, para 255.
for the connection survey. The extent of ground survey will
depend primarily on the time available to provide the fire
direction officer with the best available survey data. In areas
of the world where extension of survey control is limited because
of the environment, there appears to be justification for a
re-evaluation of the current doctrine for types of firing charts.

(2) Findings.

(a) The data presented in the ARCOV Report
supports this recommendation.

(b) ARCOV Recommendation Number 5a(2)(b),
Annex C, has potential worldwide application and will be analyzed
in Part 2.

(3) USACDC Recommendation. It is recommended that
ARCOV recommendation number 5a(2)(b), Annex C, be approved and
that:

(a) The Long Range Survey System not be
procured for use in Vietnam until an acceptance test has been
completed.

(b) The Airborne Survey Control System be
provided for Vietnam for interim use until such time as an
acceptable Long Range Survey System is available.

(c) A re-evaluation of current doctrine for
types of firing charts be conducted.
5. (S) COMMAND, CONTROL, AND COMMUNICATIONS
   a. ARCOV RECOMMENDATION NUMBER I.

   "Current doctrine should be expanded to incorporate lessons learned in Vietnam."

   (1) Discussion
   (a) It is concluded in Appendix 1 to Annex D of the ARCOV Report that current US Army doctrine is generally sound, and the recommendation is made that current doctrinal literature be examined for deficiencies and expanded to include lessons learned in Vietnam. This expansion should include, but not be limited to, the doctrinal guidance contained in paragraph 2, Appendix 1 to Annex D, and paragraphs 3a, 4a, and 5a, Section II, Volume I, of the ARCOV Report.

   (b) Applicable manuals are currently being revised by USACDC to update them. The following points enumerated in the above referenced paragraphs of the ARCOV Report are being considered: increased importance of flexibility, orientation on enemy rather than terrain, placing emphasis on independent operations by small units; reorientation of brigade headquarters responsibilities; use of airborne command posts to enhance control of operations; conduct of civic action; reorganization of doctrinal material previously presented regarding airborne operations; and other doctrinal guidance within certain manuals, to include new operational terminology. See paragraph 5, Section III, Part 3 of this review for reference to additional discussion of application of doctrinal recommendations.

   (c) The USACDC Vietnam Essential Elements of Analysis (VEEA) program has as a major goal the rapid isolation and development of new and improved doctrine based upon experience in the combat environment of Vietnam. (Reference No. 66.)

   (2) Findings
   (a) The data presented in Appendix 1 to Annex D of the ARCOV Report supports the recommendation.
This recommendation has possible worldwide application and will be analyzed in paragraph 5a, Section II, Part 2.

USACDC Recommendation. It is recommended that recommendations contained in ARCOV Basic Report, Section II, paragraph 3a, 6a, and 5a, be implemented for Vietnam immediately, and further studied for their worldwide application for low intensity stability operations.

ARCOV RECOMMENDATION NUMBER 3.

"The maneuver battalions in Vietnam should consist of a headquarters and headquarters company and four rifle companies. The organizations are shown in Figures II-16 through II-19, and the implementing MTOE are contained in Annex H, Volume 9."

Discussion

(a) It is concluded in Appendix 2 to Annex D of the ARCOV Report that the strength and organization available to each of the four type battalions is marginal to meet the simultaneous operational requirements for searching, blocking, reserve/reaction, and security forces. It also contains recommendation for elimination of the battalion reconnaissance platoons, increases in ground transportation for certain airborne battalions, and the addition of a fourth rifle company. Analysis of the data showed that reconnaissance platoons are not being employed a majority of the time in their primary role of reconnaissance. Twenty-one of the 22 battalion commanders have used this platoon for base camp security, advanced camp security, command post security, as a reserve/reaction force, or as a rifle platoon. There was only one mission of long range patrolling during the period of evaluation. When a fourth maneuver element was formed, the reconnaissance platoons were used a a nucleus for a fourth maneuver element 81 percent of the time by battalions of the 1st Cavalry Division and 100 percent of the time by all other type battalions. (See Annexes A and D, Volumes 2 and 5, and paragraph 3, Section II, Basic Report, ARCOV.) The requirement for a fourth rifle company has been extensively evaluated and was...
recommended for adoption in the ROAD Evaluation. Data provided in the ARCOV evaluation report further substantiates the requirement. The analysis of the maneuver battalion data provided from the viewpoint of doctrine, materiel, and organization, considered in the light of type of conflict and intensity in which the evaluation was conducted, confirms that certain alterations are required for more efficient operations.

(b) Although the ARCOV data does not address the requirement for a reconnaissance platoon in a four rifle company maneuver battalion, neither does it deny the requirement. Further, the data in Appendix 2 to Annex D of the ARCOV Report (that combat at the battalion level is being initiated by the enemy by ambush 46% of the time and 42% of the time in meeting engagement) certainly point to a requirement for an improved enemy detection capability with the maneuver battalions. A reconnaissance platoon containing a scout element with an admixture of highly trained US troops and indigenous forces would greatly enlarge the battalion's intelligence capability with corresponding reduction, in all probability, of the enemy's ability to ambush and initiate fire. Traditionally, this capability has been performed in the US Army by highly trained reconnaissance personnel using specialized techniques and equipment. This does not necessarily mean mounted reconnaissance nor does it mean that these reconnaissance personnel must be organized into and always operated at the platoon level. The fact that the reconnaissance platoon was only used in 24% of the battalion operations as a platoon in the reconnaissance role (App 10 to Annex A), it is considered that this was directly attributable to the higher priority requirement of providing a fourth maneuver element.

30/ USACDC Evaluation of ROAD Operational and Organizational Concepts.
(c) The forwarding letter from CG USARV clearly and forcefully states the requirement to retain the reconnaissance platoon at battalion level in order to provide a specialized combat intelligence and reconnaissance capability. It is his opinion that an intelligence and reconnaissance platoon is required which will be used for ranger type patrols and pathfinder functions in airmobile operations.

(d) This platoon would consist of a platoon leader, platoon sergeant, and four 8-man, 1/4 ton truck mounted, automatic weapon armed scout squads, using AN/GRC-125 (AN/PRC-25) radio communications. Their primary role would be battalion intelligence and reconnaissance.

(e) Headquarters and Headquarters Company, USACDC nonconcurs with a combined headquarters and headquarters company. The basic report of the USACDC Evaluation of the ROAD Operational and Organizational Concepts concluded that the diversity of functions, administration and combat support, dispersion of elements, and the size of the recommended battalion headquarters and headquarters company results in marginal to inadequate control. (See HQ, USACDC, Evaluation of ROAD Operational and Organizational Concepts (U), SECRET, Basic Report, Para 2c(1)(a).)

(2) Findings

(a) The data presented in the ARCOV Report supports the recommendation that a fourth rifle company be added to the infantry battalions for low intensity conflict.

(b) The data further supports the conclusion that a fourth maneuver element is more important in the environment and intensity of conflict in Vietnam than the reconnaissance platoon in the current battalion configuration.

(c) The data neither supports nor refutes the requirement for a reconnaissance platoon. Although the ARCOV Report recommends deletion of the infantry battalion reconnaissance platoon...
as a part of the trade-off for the fourth rifle company, at the same time it supports the requirements for the reconnaissance function.

(d) In the event that the reconnaissance platoon is eliminated and a fourth rifle company is added, it can be anticipated that those command post and base camp security missions which had been performed in part by the reconnaissance platoon will be assigned to one of the rifle companies, reducing the number of fully effective maneuver elements available for accomplishment of the primary mission of the battalion.

(e) Based on the considerations discussed in para 5b(1)(b),(c), and (d), above, it is concluded that an intelligence and reconnaissance platoon is required.

(f) The MTOE headquarters and headquarters company which combines administrative and combat support functions will result in a unit that will be too large and have too many diverse functions for efficient operations.

(g) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

(3) USACDC Recommendation.

(a) It is recommended that so much of ARCOV Recommendation Number 3 which reads four rifle companies be approved.

(b) It is recommended that the headquarters and headquarters company MTOE be divided into a headquarters company and a combat support company.

(c) That the present reconnaissance platoon recommended with the MTOE's be retained and be organized as follows:
Intelligence and Reconnaissance Platoon, Platoon Headquarters

Platoon Leader, Lieutenant 1
Platoon Sergeant, E-7 1
Scout Driver 1
Scout Observer 1
TOTAL 4

4-Intelligence and Reconnaissance Squads

Squad Leader, E-6 4
Assistant Squad Leader, E-5 4
Scout Driver 8
Scout Observers 16
TOTAL 32
OVERALL TOTAL 36

Equipment: Major Items of Equipment

1/4-Ton Trucks 9
AN/GRC-125 (AN-PRC-25) 5
M60 Machine Gun 8
M16E1 Rifles 36
XM-148 Grenade Launcher 9

Attachment:

Binocular 6 x 30 10
Compass Lensatic 36
Bayonet-Knife (Rifle M16) 36
Cook Set, Field + 5 man 9
Stove Gasoline Mountain 9

C. ARCOV RECOMMENDATION NUMBER 4.

"That additional study should be made of the base camp problem to ascertain the best means of providing post, camp, and station type services and equipment, while relieving the combat units of these responsibilities to the extent feasible."

1-III-27
(1) Discussion

(a) The nature of combat operations in Vietnam requires the manning and security of a varying number of base, advanced base, and combat operational facilities within both the Tactical Area of Responsibility (TAOR) and the Area of Operations (AO). The data provided in the ARCOV Report indicates that this requirement strips the maneuver battalion of the equivalent of one rifle company in strength.\textsuperscript{31/} The division and brigade camps require the same type support; however, it is in the fighting strength of the maneuver battalion line companies that the degradation of combat power is most severely felt. (See paragraph 5k, Appendix 2 to Annex D, Volume 5, ARCOV).

(b) It is emphasized in the ARCOV Report that as the tactical complexes grow and become more sophisticated, this growth and sophistication will add to the support problem and reduce service support effectiveness and combat effectiveness.\textsuperscript{32/}

(2) Finding. The data presented in the ARCOV Report supports this recommendation.

(3) USACDC Recommendation. This command is taking immediate steps on a priority basis to address this potential gap in current doctrine and organization.

d. ARCOV RECOMMENDATION NUMBER 5b(1), ANNEX D.

"That aerial command posts be made available to battalion commanders during all types of operations."

(1) Discussion

(a) The ARCOV Report contains a conclusion that a requirement exists for availability of aerial command posts during all types of operations. The nature of the enemy, and character of the area of operations as well as missions assigned demands

\textsuperscript{31/} ARCOV Report, Annex D, para 5k, 1.
\textsuperscript{32/} ARCOV Report, Annex E, para 2c.
the utmost in command prowess in battalion commanders. Aerial command posts enhance the commander's ability to bring his prowess to bear on the accomplishment of the unit mission. In addition, the aerial command post will allow him to take maximum advantage of the battalion's combat capability, and to offset the disadvantage of poor radio reception on the ground. The following additional advantages accrue to the battalion commander: improved radio net operation, (battalion and brigade FM command nets), increased opportunity to see the battalion area of operations in order to assist and direct his companies from a superior vantage point, capability to quickly get to a trouble spot where he may directly influence the action, and increased opportunity to exploit success. (See paragraph 4g, Appendix 4, Annex D, ARCOV Report.)

(b) A close review of the data in the ARCOV Report, as well as paragraphs 3b and c (Airborne Command Posts, Battalion and Brigade) in Appendix 4 to Annex D, ARCOV Report, indicates the data was collected from 20 different battalions participating in 55 battalion operations. Aerial command posts were used by all battalions evaluated on 49 of the 55 operations. The battalion commanders concluded that aerial command posts were considered not only desirable, but absolutely necessary for operations. Review of paragraph 3c, Brigade Airborne Command Posts, Appendix 4, Annex D, ARCOV Report, confirms that insufficient data on the use of aerial command posts by brigades were gathered to make a complete analysis. All brigades of the 1st Cavalry Division have aerial command posts assigned and make extensive use of them during operations. Data presented showed that the three brigade commanders in the 1st Infantry Division Brigade, during four brigade operations, used an aerial command post an average of three hours daily. This time was in addition to
flights made to visit battalion command posts on the ground. Unfortunately, no data is available on the airborne brigades, however, it is reasonable to assume that the airborne brigade commanders are making extensive use of aerial command posts.

(2) Findings
(a) The data supports the conclusion that airborne command posts were extensively used by battalion and brigade commanders on all types of operations.
(b) ARCOV Recommendation Number 5b(1), Annex D, has potential worldwide application and will be analyzed in Part 2.

(3) USACDC Recommendation. It is recommended that aerial command posts be made available to committed battalion and brigade commanders for all types of operations; from assigned aircraft in the 1st Cavalry Division, and from augmentation to supporting aviation units for other divisions and separate brigades.

e. ARCOV RECOMMENDATION NUMBER 5c(2), ANNEX D.
That battalions, brigades, both divisional and separate, and division staffs be augmented by an S5/G5 staff section consisting of, as a minimum:

Battalion S5 Section
  1 Captain
  1 Sergeant E-7

Brigade S5 Section
  1 Major S5
  1 Captain Asst S5
  1 E7 Admin Supervisor
  2 E4 Clerk Typists
  2 E3 Drivers

Division G5 Section
  1 Lt Col G5
  1 Major Asst G5
  1 Captain Asst G5
  1 E7 Admin Supervisor
  2 E4 Clerk Typists
  2 E3 Drivers

1-III-30
(1) Discussion. The data provided in Appendix 3, Annex D, ARCOV Report, establishes this requirement for Vietnam and justifies the recommendation. S5 sections must be assigned to battalion and brigade staffs if Army doctrine is to be followed and missions are to be accomplished. Present operations are hampered because of the absence of this capability within the staff organization at the various levels of command. Analysis of the data presented indicated that the S5 responsibility at battalion level has been accomplished as a major additional duty for a staff officer (S2 or S3 section), and that nine of the 22 battalion commanders recommended addition of an S5 section. Continuing S5 activities in the battalion tactical areas of responsibility were examined within the framework of brigade and division programs and it is concluded that there is a continuing requirement for future operations. It is in the battalion operational area where our combat efforts are most deeply imbedded in the minds of the Vietnamese people. The data indicates all battalions are required, by the realities of the operations, to conduct a wide range of civil affairs activities and maintain continuing civic action programs within their assigned tactical areas of responsibility. Examination of the data provided indicates the need for S5/G5 sections at brigade and division level to be so urgent that they have already been organized by direction of the commander concerned (paragraph 3c, Appendix 2, Annex D, Vol 5, ARCOV Report). The data supports this recommendation (paragraphs 2d and 3, Appendix 7, Annex D, Vol 5, ARCOV Report). Addition of civil affairs augmentation to the division will require approximately 63 spaces per division.

(2) Findings

(a) Staff organizations are inadequate to properly plan and supervise civil affairs and civic actions. The data presented in the ARCOV Report supports this recommendation
for low intensity conflict. Although the ARCOV Report does not specifically recommend a battalion S5 section, the MTOE's contain it and the data proves such a requirement exists at battalion, as well as brigade and division level.

(b) This recommendation has worldwide application and will be analyzed in Part 2.

(c) USACDC Recommendation. It is recommended that battalions, divisional, and separate brigade staffs in Vietnam be augmented by an S5 staff section and that the existing division G5 sections be augmented with additional personnel.

f. ARCOV RECOMMENDATION NUMBER 5b(11), ANNEX D.

"That a lightweight, reliable, single sideband radio be developed which can be operated during both foot and vehicular movement."

(1) Discussion.

(a) Appendix II to Annex D of the ARCOV Report concludes that a requirement exists for a lightweight, reliable, single sideband radio for use in battalion command oriented nets. This requirement has been acknowledged by Department of the Army by purchase and shipment to Vietnam of the AN/PRC-74 (Hughes "MANPACK") Radio Set, which is a lightweight (29 pounds) single sideband radio set, with a 50-150 mile range; and by an approved Qualitative Materiel Requirement (QMR) for such a radio (Department of the Army approved QMR for Radio Set, Manpacked, SSB, Medium and High Frequency, dated 16 January 1963, (AN/PRC-62)).

(b) Two hundred and seventy sets will have been produced by 30 April 1966. Two hundred and fifty sets will have arrived in Vietnam by the end of July and Army Materiel Command negotiations are underway to purchase another seven hundred and fifty sets for Vietnam.33/ Further discussion of the AN/PRC-62 follows under Part 2, para 5a.

33/ DA Materiel Plan, June 1965, Vol II, Part II.
(2) Findings
(a) The data presented in the ARCOV Report verifies this known deficiency.
(b) This recommendation has potential worldwide application and will be analyzed in Part 2.

(3) USACDC Recommendations. It is recommended that ARCOV Recommendation Number Sb(11), Annex D, be approved.

8. ARCOV RECOMMENDATION NUMBER Sb(13), ANNEX D.
"That the communication equipment of brigades and divisions be analyzed to determine the specific equipment that can be deleted or replaced after action is taken on battalion equipment recommendations."

(1) Discussion
(a) The ARCOV evaluation team evaluated all of the communications equipment currently in the hands of battalions, brigades, and the divisions serving in Vietnam. The communications resources were examined at all echelons within the battalion, brigade, and division, and analyzed against the degradation due to environmental conditions of terrain, climate and the enemy to determine if these resources satisfied the requirement for command control and support of combat operations. Further, a determination was attempted to ascertain if lighter, less bulky equipment, including nonstandard and reconfigured items might be substituted to increase efficiency and the capabilities of combat means. (See para 49, App 11, Annex D, Command, Control, and Communications, ARCOV Report.)

(b) The methodology followed was to establish criteria for the mobility of commands, battalions, and brigades for operations in Vietnam. (See Annex B, Mobility, and Appendix 11 to Annex D, Command, Control, and Communications, ARCOV Report.) This criteria specified that the assault elements of the infantry battalion be airmobile by utility type helicopters, and the assault elements of brigade forces (to include signal battalion
support) be airmobile by medium helicopters. An evaluation was then made to determine what communications capability was required at each echelon for command and control (See Appendix 9, Annex 9, ARCOV Report.)

(c) The authorized communications equipment at each echelon was examined to insure that the mobility and capability requirements were satisfied. Since many items of equipment are found at more than one echelon, each item was evaluated under the most demanding mobility and capability requirements. Analysis of the data presented when considered in the light of the criteria for the evaluation confirms that considerable product improvement and replacement of certain communications equipment is warranted. Detailed conclusions are found at App 9, 10, 11 of Annex D, ARCOV Report.

(2) Findings. The data presented in the ARCOV Report supports this recommendation.

(3) USACDC Recommendation. It is recommended that ARCOV Recommendation Number 5b(13), Annex D, be approved.
6. (S) SERVICE SUPPORT

a. ARCOV RECOMMENDATION NUMBER 6b, ANNEX F.

"The number of organizational maintenance personnel for UH-1 helicopters be increased by 287 personnel in the 1st Cavalry Division."

(1) Discussion

(a) The recommendation is documented in the text of the ARCOV Report as it pertains to the operational procedures and back-up supply support of the 1st Cavalry Division.

(b) The aircraft maintenance system employed by the 1st Cavalry Division emphasizes the performance of organizational maintenance in the field with minimum maintenance equipment. Direct support aircraft maintenance effort and equipment backs up the organizational maintenance of the limited facilities available at An Khe. The non-divisional aviation units emphasize organizational and direct support maintenance as a combined effort at the operating aircraft unit level at relatively sophisticated base airfields.

(c) The 1st Cavalry Division has a lower ratio of organizational maintenance personnel to aircraft for UH-1 helicopters than do other aviation units in Vietnam (1.3:1 for the 1st Cavalry Division versus 2.3:1 for separate airmobile companies).34/ The DA standard ratio of organizational maintenance personnel to aircraft is 1.7:1 versus 1.3:1 for the 1st Cavalry Division.35/ In addition, the maintenance manhour per flying hour ratio for the 1st Cavalry Division is lower than other aviation units. It would require approximately 121 additional aircraft maintenance personnel to bring the 1st Cavalry Division to the same maintenance manhour per flying hour ratio as other aviation units in Vietnam. However, the ARCOV Report

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34/ ARCOV Report, Annex F, Appendix 1, para 6a.
35/ ARCOV Report, Annex F, Appendix 1, para 6c.
analysis is based upon the situation peculiar to Vietnam and the ARCOV recommendation has been concurred with by the CG USARV, as being necessary. See additional discussion in Part 2, Section II, Paragraph 6.

(2) Findings

(a) This recommendation is applicable only to the 1st Cavalry Division (AM) in Vietnam.

(b) ARCOV recommendation, para 6b, Annex F, ARCOV Report has potential worldwide application and will be analyzed in Part 2, Section II.

(3) USACDC Recommendation. It is recommended that the number of aircraft maintenance personnel authorized the 1st Cavalry Division be increased as indicated in para 6a, Part 2, Section II.
1. (U) INTRODUCTION. This section contains the USACDC review and analysis of the minor recommendations made in the ARCOV Report. In addition, it contains certain USACDC recommendations which were generated by the review and analysis of the ARCOV data, discussion, and findings as they pertain to Vietnam. Those recommendations having potential worldwide applicability are analyzed with regard to that potential in Part 2 of the USACDC review and analysis.

2. (S) INTELLIGENCE
   a. ARCOV RECOMMENDATION NUMBER 5a(1), ANNEX A.
      "A course of instruction should be provided in the Army Officer Service School System to train MOS 9301 Combat Intelligence Staff Officer (G2/S2) personnel."
      USACDC concurs in this recommendation.
   b. ARCOV RECOMMENDATION NUMBER 5b(3), ANNEX A.
      "Two OV-1A aircraft should be added to each ASTA (aerial surveillance and target acquisition) platoon."
      (1) Discussion.
      (a) Analysis of ARCOV data indicated that in terms of aerial surveillance, visual means was the most responsive and effective means of providing information.\footnote{ARCOV Report, Annex A, App 5, para 2a(5)(a).} Aerial photography was generally the next most effective means of collecting information.\footnote{ARCOV Report, Annex A, App 5, para 2a(5)(b).} The data does not reflect the amount of visual surveillance accomplished by the OV-1 series aircraft. Considerable surveillance was provided by other aerial means; i.e., helicopters, O-1, and USAF.
(b) The reason advanced for this recommendation is to reduce exposure of the OV-1B and OV-1C aircraft to enemy fire by using them only for SLAR and IR missions while using the OV-1A aircraft for visual reconnaissance and photographic missions. It should be noted that a capability exists to perform visual and photographic missions from all three models of the OV-1 series aircraft. Adding two more expensive aircraft to duplicate an existing capability does not appear to be an economical use of resources. Discussion in the ARCOV Report does not fully support a requirement for additional OV-1 aircraft.

(c) Current Army plans dictate the purchase in FY 69 of an improved OV-1 (MOHAWK) capable of conducting photographic missions. Procurement of this aircraft will continue to provide the surveillance/acquisition means sought by the addition of two OV-1A aircraft.

(2) Findings. Data does not support the addition of two OV-1 aircraft to each ASTA platoon.

(3) USACDC Recommendation

It is recommended that no OV-1A aircraft be added to the aerial surveillance and target acquisition platoons.

c. ARCOV RECOMMENDATION NUMBER 5b(4), ANNEX A.

"The design of the AN/TAQ-1 infrared surveillance information center should be modified to increase its line-of-sight range."

(1) Discussion. The ARCOV Report supports the statement that terrain limitations have greatly limited the effective employment of the AN/TAQ-1. The transmission of infrared sensings from the acquiring aircraft to the information center on the ground is limited to line-of-sight. This limitation is due to the use of a very high frequency carrier wave for the transfer of data. The infrared sensor must be operated at relatively low altitudes above the ground if best results are to be obtained. In many areas of Vietnam, hills or dense jungle interferes with the transfer of infrared data.
data by interrupting the line of sight between the low flying aircraft and the ground sensor terminal. Airborne telemetry systems for acquiring information are under study.  

(2) Findings  
(a) Terrain in Vietnam frequently precludes effective data-link (AN/TAQ-1) operations.  
(b) Airborne telemetry systems for acquiring information are under study.  

(3) USACDC Recommendation  
It is recommended that the current examination and evaluation of the telemetry data-link systems be continued.

d. ARCOV RECOMMENDATION NUMBER 5b(1), ANNEX A.  
"A Polaroid type camera system with a six and twelve inch focal length and a Polaroid type copier/enlarger should be provided each maneuver battalion S2 section."

(1) USACDC concurs in the recommendation.  
(2) This recommendation has possible worldwide application and will be examined in Part 2, Section II.

e. ARCOV RECOMMENDATION NUMBER 5b(9), ANNEX A.  
"That equipment used by the USASA units providing support to maneuver battalions conducting combat operations in Vietnam be decreased in weight to make it man-portable and its range be increased."

USACDC concurs in this recommendation.

f. ARCOV RECOMMENDATION NUMBER 5b(7), ANNEX A.  
"Ambient light intensification devices (starlight scopes) should be made available in required numbers as rapidly as possible."

(1) USACDC concurs in this recommendation.  
(2) This recommendation has possible worldwide application. If evaluation demonstrates that the equipment is effective this equipment should be considered for Army wide use.

g. ARCOV RECOMMENDATION NUMBER 5b(8), ANNEX A.


1-IV-3
"An improved version of the AN/MPQ-4A countermortar radar is required."

This recommendation is addressed in paragraph 4a.

Section III (Firepower).

h. ARCOV RECOMMENDATIONS NUMBER 5c(1), 5c(2), and 5c(3),

ANNEX A.

"The personnel authorization of divisional brigade S2 sections should be increased. 5c(1)

The authorized personnel in the S2 section of the 1st Brigade, 101st Airborne Division, should be increased. 5c(2)

The authorized personnel in the G2 section of the 1st Cavalry Division (AM) and the 1st Infantry Division should be increased. 5c(3)"

(1) Discussion

(a) General. Information in the ARCOV Report shows that the conduct of combat intelligence operations placed requirements on the division and brigade intelligence sections in excess of the resources authorized by TOE for these sections. The one exception is in the S2 section of airborne brigade (separate), (173d Abn Bde (Sep) which is authorized more personnel than the other brigade S2 staffs). Requirements which are unique to combat operations in Vietnam are: 5/

1. Extensive tactical areas of responsibility (TAOR).

2. Supervision of some forty collection agencies.

3. Extensive aerial surveillance requirements.

4. Requirements to continually operate split brigade command posts for long duration and over extensive distances.

5. Liaison requirements with ARVN and civil authorities.

6. Frequent need to adjust to different areas of operations.

(b) Staff Augmentations. To permit effective intelligence staff operations units employed the following augmentations:

1. Division Level
   1st Infantry Division: 5 officers and 2 EM
   1st Cavalry Division (AM): 4 EM
   The 1st Infantry Division required a greater augmentation because its brigade headquarters are not collocated with the division headquarters as is the case in the 1st Cavalry Division (AM).

2. Brigade Level
   1st Cavalry Division (AM).
   1st Brigade, 101st Airborne Infantry Div: 1 officer and 2 EM.
   1st Brigade, 101st Airborne Infantry Div: (divisional brigades): 2 officers and 3 EM.

3. TOE increases required in terms of MOS and grade cannot be identified in the ARCOV Report. The operational demands upon the combat intelligence system coupled with the unique aspects of the combat operations, and the presence of inexperienced intelligence personnel resulted in other than effectively managed combat intelligence systems. The unique nature of combat intelligence operations in a low intensity conflict requires the highest proficiency of personnel in their respective positions. Tactical operations are so short in duration (5 to 30 days) that the S2 at brigade and battalion level is afforded little time to become oriented and familiar with each new enemy and terrain situation. Further, the short duration of the combat operations affords limited, if any, time for the development of a productive combat intelligence cycle. Low intensity conflict in an unsophisticated environment affords continual contact with the local populace who offers a considerable information collection potential. The unit intelligence staff sections must be capable of exploiting the unique and diversified
combat intelligence opportunities in this type of conflict. The civil affairs responsibilities, because of marginal relevancy to intelligence, are frequently delegated to the S2 officer at brigade and battalion level. Approval of the USACDC Recommendation to establish a TOE S5 section at brigade and battalion level should considerably reduce the S2's extensive involvement in civil affairs matters. (See Part I, Sect. III, para 5e for discussion concerning S-5 functions).

(2) Findings

(a) The environment, type of tactical deployment and the uniqueness of combat intelligence operations in Vietnam considerably expand the staff requirements for the division and brigade.

(b) The staff requirements vary considerably according to tactical deployment and overall concept of operations.

(c) Intelligence staff sections at division and brigade are augmented in order to accomplish intelligence functions.

(d) Specific type (MOS and grade) of augmentations are not identified.

(e) USACDC concurs in ARCOV Recommendations Number 5c(1), 5c(2), and 5c(3) for application in Vietnam.

(3) USACDC Recommendations.

It is recommended that the recommendation contained in para 5c(1), 5c(2), and 5c(3), Annex A of the ARCOV Report be approved for Vietnam.

i. USACDC GENERATED RECOMMENDATION.

That a documents analyst capability be provided the military intelligence detachment attached to division and brigade units.

(1) Analysis of ARCOV data indicates that considerable intelligence results from the acquisition and processing of captured enemy documents. The amount of these acquired documents ranged from single items to thousands.

7/ ARCOV Report, Annex A, App 2, para 2a(2) and 2a(3); App 11.
(2) This recommendation has potential worldwide application and will be addressed in Part 2, Section II.

j. USA CDC GENERATED RECOMMENDATION.

That doctrine reflect that company size units will normally conduct reconnaissance missions during battalion operations in Vietnam.

(1) Discussion

(a) Data in the ARCOV Report indicates that in the preponderance of combat operations the battalion reconnaissance Platoons were employed in utility type roles; that is roles other than reconnaissance type missions. In the majority of operations the reconnaissance platoon, antitank platoon, and other headquarters elements were combined and performed as a fourth rifle company. It should not be inferred from this information that there is no requirement for a reconnaissance platoon in the battalion. The battalion commanders employed the reconnaissance platoon in this utility role because this was a higher priority than was the conduct of reconnaissance.

(b) The nature of the combat operations from May 1965 through March 1966 were such that the rifle companies and, in fact, the battalion as a whole, were continually conducting reconnaissance type operations. To date one of the basic type of battalion operations conducted in Vietnam is described as "search and destroy." Generally, the areas of operations in which the battalions deployed required a reconnaissance capability considerably beyond that of the TOE reconnaissance platoon. The enemy situation, rugged terrain, and heavy foliage further contributed to the difficulty of accomplishing these missions. Therefore, the battalion commanders deployed rifle companies in such a manner that rifle Platoons maneuvered as reconnaissance units. As the mission and tactical situation have dictated, rifle companies have on occasions established and operated from a patrol base as set forth in tactical doctrine. Generally, the nature of ground reconnaissance missions

8/ FM 31-16, Counterguerrilla Operations, Chapter 5, para 72.
conducted at battalion level were beyond the capability of the reconnaissance platoon.

(c) Historically, combat operations have demonstrated that a battalion has a need for a force capable of gathering information, performing security, screening, and contact tasks. The battalion should be able to deploy such a force without degrading the tactical integrity of a rifle company. The battalion reconnaissance platoons are performing these missions in Vietnam. 21 As additional areas and road nets are cleared of enemy, there will be further requirements to conduct motorized convoy and reconnaissance missions.

(2) Findings.

(a) As a result of the combat situation and demands upon the battalion resources, the reconnaissance platoon has performed in other than basic reconnaissance roles.

(b) Ground reconnaissance missions in battalion area of operations are frequently beyond the capability of the reconnaissance platoon.

3. (5) MOBILITY

a. ARCOV RECOMMENDATION NUMBER 5a(2), ANNEX B.

"Paragraph 6(3)(a) and (b) of FM 1-100 'Army Aviation' which defines the terms 'direct support' and 'general support' as applied to Army aviation should be expanded to give more definitive guidance concerning requirements for liaison and responsibilities of ground and aviation unit commanders in airmobile operations. A definition of the concept of 'reinforcing' as applied to Army aviation support should be added to FM 1-100."

(1) USACDC concurs in this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

b. ARCOV RECOMMENDATION NUMBER 5a(3), ANNEX B.

"Army aviators should be instrument qualified in assigned aircraft before arrival in Vietnam."

10/ Not used.
(1) USACDC concurs in this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

c. ARCOV RECOMMENDATION NUMBER 5b(1), ANNEX B.

"The following items should be developed to reduce the load carried by infantryman in Vietnam.
(a) A lighter helmet providing protection comparable to that of the existing helmets.
(b) A two quart collapsible canteen to replace the two canteens presently carried.
(c) A lightweight patrol ration which does not require boiling water in preparation.
(d) A collapsible carrier for use in the rifle company to carry mortars and ammunition on operations."

(1) USACDC concurs in this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

d. ARCOV RECOMMENDATION NUMBER 5b(3), ANNEX B.

"Replacement of present UH-1D aircraft with new production aircraft with the T-53-L-13 engine should be expedited."

(1) USACDC concurs in this recommendation for Vietnam.

(2) This recommendation applies initially only to combat actions in Vietnam.

(3) USACDC comments

(a) Information obtained from the Army Materiel Command indicated that the priorities and basis for issue of the T53-L-13 engine are as follows:

1. First Priority: The UH-1B helicopters that are to be used for medical evacuation coming off the production line during December 1966.

2. Second Priority: The UH-1D squad carrier helicopters coming off the production line during February or March 1967.

(b) A Department of the Army policy has not been established for the replacement of T53-L-11 engines presently in Vietnam.11/  

e. USACDC GENERATED RECOMMENDATION. That doctrine be revised to state that a one company airlift capability consisting of utility helicopters remain in direct support of a committed infantry/airborne brigade during airmobile operations until the termination of the operations.

(1) USACDC recommendation is based on the following ARCOV conclusion:

"Retaining a one company airlift capability in direct support of a brigade committed by air assault provides a capability of being immediately responsive to tactical air movement requirements, except in the 1st Cavalry Division which requires the capability of air lifting the assault elements of an infantry battalion simultaneously. (Appendices 1 and 3)."12/

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

f. USACDC GENERATED RECOMMENDATION. That doctrine be revised to state that medium cargo helicopters be available to infantry/airborne brigades and divisions during airmobile operations to enable them to move artillery units when required.

(1) USACDC recommendation is based on the following ARCOV conclusion:

"Medium helicopter lift support should be available to all four evaluated units to move artillery when required by the tactical situation. (Appendix 1)"13/

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

g. USACDC GENERATED RECOMMENDATION. That doctrine should state that the lowest combat echelon capable of controlling and coordinating the entire airmobile operation should have operational control (direct support) of the aerial vehicles.

(1) USACDC recommendation is based on the following ARCOV conclusion:

The lowest echelon capable of controlling and coordinating the entire airmobile operation should have operational control (direct support) of the aerial vehicles. (Appendix 3)

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

h. USACDC GENERATED RECOMMENDATION. That doctrine be revised to state that transportation units equipped with armored personnel carriers (M-113) be available to support operations of US Army units.

(1) USACDC recommendation is based on the following ARCOV conclusions:

Although armored personnel carriers should not be substituted for wheeled vehicles at battalion level, additional APC's can be used effectively in support of the 1st Cavalry Division, 1st Infantry Division, 173d Airborne Brigade, and 1st Brigade, 101st Airborne Division for the following missions: (Appendix 6).

(a) Road clearing and security operations.
(b) Search and destroy operations in the delta or low land coastal plain region.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

i. USACDC GENERATED RECOMMENDATION. That doctrine be revised to state that the majority of wheeled vehicles assigned to the infantry divisions and airborne brigades deployed to Vietnam or scheduled for deployment during low intensity conflict be retained for necessary mobility for tactical area of responsibility (TAOR) missions and sustained combat.

(1) USACDC recommendation is based on the following ARCOV conclusion:

If the number of ground vehicles organic to the combat, combat support, and combat service support units is materially decreased, a greater air movement capability will be required for operation within the division/brigade TAOR. (Appendix 8).

15/ ARCOV Report, Annex B, para 4c(8).
"Airborne units require ground vehicle augmentation for sustained combat and TAOR missions. (Appendix 8)."17/

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II, para 6a(3).

j. USACDC GENERATED RECOMMENDATION. That the following be incorporated into appropriate doctrinal literature: In low intensity conflict airmobile operations will be common for airborne and infantry units as well as for airmobile units and will require extensive use of helicopters to deploy, resupply, and extract maneuver forces within the area of operations (AO), and that during the conduct of low intensity conflict, the aerial deployment of maneuver and fire support elements will enhance the flexibility and mobility of the infantry/airborne battalion.

(1) USACDC recommendation is based on the following ARCOV Report doctrinal findings:

"(3) Mobility. Operations in Vietnam have required extensive use of helicopters to deploy, resupply, and extract maneuver forces within the area of operations. Aerial deployments of maneuver and fire support elements have enhanced the mobility of the infantry battalions in theater. See Annex B, Vol 3, Mobility.18/

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

4. (S) FIREPOWER

a. ARCOV RECOMMENDATION NUMBER 5a(1)(a), ANNEX C.

"Equip riflemen of all maneuver battalions assigned to Vietnam with the M16 (M16E1) rifle."

(1) USACDC concurs with the recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

17/ ARCOV Report, Annex B, para 4c(5).
18/ ARCOV, Basic Report, Section II, para 3a(3).
b. ARCOV RECOMMENDATION NUMBER 5a(1)(b), ANNEX C.

"Replace all .45 caliber pistols with M16 (M16E1) rifles except those carried by battalion staff officers and machine gunners."

(1) USACDC concurs with this recommendation for Vietnam, pending evaluation of the Colt CAR-15.
(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

c. ARCOV RECOMMENDATION NUMBER 5a(1)(c), ANNEX C.

"Develop a dual purpose weapon for the grenadier."

(1) USACDC concurs with this recommendation for Vietnam.
(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

d. ARCOV RECOMMENDATION NUMBER 5a(1)(d), ANNEX C.

"Reduce the weight of the 81mm mortar."

(1) USACDC concurs with this recommendation for Vietnam.
(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

e. ARCOV RECOMMENDATION NUMBER 5a(1)(e), ANNEX C.

"Develop a capability to project smoke rounds to ranges of 350 meters at squad and platoon level, either by developing a 40mm smoke grenade or by providing a rifle grenade capability to the M16 (M16E1) rifle."

(1) USACDC concurs with this recommendation for Vietnam.
(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

f. ARCOV RECOMMENDATION NUMBER 5a(2)(c)1 and 2, ANNEX C.

"Develop an aerial artillery system with the following characteristics:

1. 4.5" aerial rocket with shell and fuze option appropriate for use against personnel targets and hard targets.

2. Provision for a changeable cluster so that each aerial artillery helicopter can be armed selectively."

1-IV-13
(1) USACDC concurs with this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

a. ARCOV RECOMMENDATION NUMBER 5a(2)(e), ANNEX C.
   "Develop a selective ammunition system for the 2.75" rocket with Shell HE, WP, and HEAT with fuze options to produce air or delay burst."

(1) USACDC concurs with this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

b. ARCOV RECOMMENDATION NUMBER 5a(2)(a), ANNEX C.
   "Develop a high velocity spotting round or tracer round for use with the 40mm helicopter armament system."

(1) USACDC concurs with the development of a target marking/tracer round for use with the 40mm helicopter armament system for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

c. ARCOV RECOMMENDATION NUMBER 5b(1)(a), ANNEX C.
   "Eliminate the 90mm recoilless rifle from the rifle company."

(1) USACDC concurs with this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

d. ARCOV RECOMMENDATION NUMBER 5b(1)(b), ANNEX C.
   "Eliminate the 3.5" rocket launcher from the rifle company."

(1) USACDC concurs with this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

e. ARCOV RECOMMENDATION NUMBER 5b(1)(c), ANNEX C.
   "Eliminate the 106mm RR from the rifle company."

(1) USACDC concurs with this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.
1. ARCOV RECOMMENDATION NUMBER 5b(1)(d), ANNEX C.
   "Eliminate flamethrowers from the rifle company and maintain them at battalion level, one in support of each rifle company."
   (1) USACDC concurs with this recommendation for Vietnam.
   (2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

m. ARCOV RECOMMENDATION NUMBER 5b(1)(e), ANNEX C.
   "Retain a minimum of four 106mm recoilless rifles at battalion level."
   (1) USACDC concurs with this recommendation for Vietnam.
   (2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

n. ARCOV RECOMMENDATION NUMBER 5b(1)(f), ANNEX C.
   "Add one M60 machine gun to the weapons squad."
   (1) USACDC concurs with this recommendation for Vietnam.
   (2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

o. ARCOV RECOMMENDATION NUMBER 5b(1)(g), ANNEX C.
   "Add three ammunition bearers to the weapons squad."
   (1) USACDC concurs with this recommendation for Vietnam.
   (2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

p. ARCOV RECOMMENDATION NUMBER 5b(1)(h), ANNEX C.
   "Add one ammunition bearer to each 81mm mortar squad."
   (1) USACDC concurs with this recommendation for Vietnam.
   (2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

q. ARCOV RECOMMENDATION NUMBER 5b(1)(i), ANNEX C.
   "Increase the rifle strength of the infantry battalion."
   (1) USACDC concurs with this recommendation for Vietnam.
   (2) The object of this recommendation will be achieved through the addition or a fourth rifle company recommended by ARCOV
Recommendation No. 3.

(3) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

r. ARCOV RECOMMENDATION NUMBER 5b(1)(j), ANNEX C.

"Eliminate the ENTAC from all units in Vietnam."

(1) USACDC concurs with this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

s. ARCOV RECOMMENDATION NUMBER 5a(2)(f) and 5b(2), ANNEX C.

"Augment division and brigade units with sufficient corps (army) meteorological sections to provide metro support to artillery units in TAOR's or AO's pending development of a more suitable meteorological system and develop a meteorological data gathering system that will provide data for remote areas."

(1) USACDC concurs with this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

t. ARCOV RECOMMENDATION NUMBER 1 as it pertains to firepower.

"Current doctrine should be expanded to incorporate lessons learned in Vietnam."

(1) USACDC concurs with this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and specific doctrinal changes for specific field manuals will be analyzed in Part 2, Section II.

5. (S) COMMAND, CONTROL, AND COMMUNICATIONS

a. ARCOV RECOMMENDATION NUMBER 5b(2), ANNEX D.

"That a compact, lightweight radio with a range of three to five kilometers be developed to replace radio set, AN/PRC-6."

(1) USACDC concurs in this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

(3) The radio set AN/PRC-6 has been found totally unreliable, hard to maintain and repair, and its range is adversely affected by jungle or heavily wooded areas. These radios are so
unreliable that units no longer carry them on operations. (See para 2, App 10, Annex D, ARCOV Report).

(4) Radio set AN/PRR-9 and AN/PRT-4 have been developed to replace the AN/PRC-6, however, these radios do not meet the recommended 3-5km range requirement. They are scheduled for evaluation in Vietnam, and 50 sets are programmed to arrive in country during July 1966.19/

b. ARCOV RECOMMENDATION NUMBER 5b(7), ANNEX D

"That all vehicular FM radios in the infantry battalion be replaced by radio set, AN/GRC-125, in conjunction with the issue of power amplifier, AM-4306."

(1) USACDC concurs in this recommendation for Vietnam.

(2) The logic in this recommendation is based upon the realities of combat operations in Vietnam and applies equally to operations in low intensity conflict where the area of operations is characterized by high humidity and atmospheric temperature, a poor road net and mountainous and jungle terrain. The fact of life is that all of our tactical radio sets are too heavy for the men who have to carry them. Infantry battalion FM radio sets must be manportable in order to be of any value in Vietnam. (See para 1b, App 10, 2b(1), App 11, Annex D, ARCOV Report)

(3) This recommendation has possible worldwide application for low intensity warfare and will be discussed in Part 2.

c. ARCOV RECOMMENDATION NUMBER 5b(3), ANNEX D

"The Handset-H-138, (AN/PRC-25) to be replaced by a more compact, moisture resistant handset that can be clamped to the user's uniform."

(1) USACDC concurs in this recommendation for Vietnam.

(2) The mouthpiece of the present handset has been breaking off and is not moisture proof. An equipment modification to correct the deficiency is presently underway by the Project Manager for Selected Tactical Radios, US Army Materiel Command.20/

d. ARCOV RECOMMENDATION NUMBER 5b(4), ANNEX D

"That a compact, lightweight speaker for use with radio set AN/PRC-25 be developed. (Similar to LS-454/U, but smaller and lighter.)"

(1) USACDC concurs in this recommendation for Vietnam.
(2) This recommendation has possible worldwide application and will be discussed in Part 2.

e. ARCOV RECOMMENDATION NUMBER 5b(5), ANNEX D

"That Power Amplifier, AM-4306/PRC-25, be made available to battalions in Vietnam as soon as possible."

(1) USACDC concurs in this recommendation for Vietnam.
(2) This recommendation applies as an urgent matter to combat operations in Vietnam, and has possible worldwide application, and will be analyzed in Part 2.
(3) This amplifier will more than double the range of the AN/PRC-25 radio, thus providing a man packed (38.5 pounds when combined with radio) radio set comparable to the AN/VRC-12 series of radios in range. It will improve the battalion FM nets. The data presented supports the urgent requirement for this item in Vietnam. (Para 2b(1), App II, Annex D, ARCOV Report).

f. ARCOV RECOMMENDATION NUMBER 5b(6), ANNEX D

"That a durable antenna that conforms to the body of the radio operator be developed as a replacement for the RC-271/AN/PRC-25."

(1) USACDC concurs in this recommendation for Vietnam.
(2) Paragraph 2d(3), App 10 to Annex D, ARCOV Report, states that 4 of 19 communications officers reported that the antenna AT-271, used with AN/PRC-25 radio, readily identifies radio operators as prime targets for snipers. Additionally, the long antenna impedes movement in dense undergrowth. It is recommended that this problem be brought to the attention of Project Manager for Selected Tactical Radios for consideration as a possible area for product improvement.
(3) This recommendation has possible worldwide application and will be analyzed in Part 2.
g. ARCOY RECOMMENDATION NUMBER 5b(8), ANNEX D

"That Switchboard, SB-86, be improved or replaced by a more reliable field switchboard."

(1) USACDC concurs in this recommendation for Vietnam.

(2) A modification work order (MWO) is being prepared by the U. S. Army Materiel Command to correct discrepancies in this switchboard. The MWO, when published, will be disseminated worldwide.21/

h. ARCOY RECOMMENDATION NUMBER 5b(10), ANNEX D

"That a lightweight ground-plane antenna be developed to replace the RC-292."

(1) USACDC concurs in this recommendation for Vietnam.

(2) A partial solution to the radio range problem is the development of a long wire antenna to increase AN/PRC-25 range. Such a development is now in progress. When completed, the replacement antenna will be issued on a worldwide basis.22/

(3) An initial limited procurement delivery to Vietnam and service test is programmed for October 1966.21/

i. ARCOY RECOMMENDATION NUMBER 5b(9), ANNEX D

"That a lightweight speech scrambler system for radio communications from battalion to brigade be developed (FM Voice Radio)."

(1) USACDC concurs in this recommendation for Vietnam.

(2) This requirement is acknowledged and is being fulfilled by the introduction into Vietnam of voice security equipment (TSEC KY-8, 28, and 38) for the PRC-25 and VRC-12 family of FM radios. This action was undertaken on the basis of a National Security Agency and Army Security Agency decision. Worldwide Basis of Issue has been developed by HQ, US Army Combat Developments Command and forwarded to the Department of the Army.23/


22/ DA Approved SDR for a Tactical Extended Range Antenna System for Manpack Radio Sets, 9 Aug 65

j. USACDC GENERATED RECOMMENDATION. That a review of the USACDC data base be made to determine the adequacy of the battalion, brigade, and division staff sections for continuous operations in low intensity conflict worldwide, and appropriate recommendations be forwarded to Department of the Army with the USACDC Study-Combined Arms 70.

(1) Discussion

(a) It is concluded in Appendix 3 to Annex D of the ARCOV Report that the staff organizations of the four type infantry battalions were inadequate to properly plan and supervise civil affairs and civic action, both on tactical operations and in the Tactical Area of Responsibility (TAOR). Otherwise, battalion staffs were adequate for operations in Vietnam. Further, it is concluded in Appendix 7, Annex D, of the ARCOV Report, that the S5 capabilities of brigades, both separate and divisional, as well as the G5 capabilities of divisions, as presently constituted, are inadequate to satisfy the requirement for civil affairs and civic action. These conclusions and subsequent USACDC comment and recommendations are addressed elsewhere in this review of the ARCOV Report.

(b) It is concluded in Appendix 7, Annex D, of the ARCOV Report, that divisions and separate brigades have performed missions in Vietnam that were not in their TOE statements of capability. These missions have required staff augmentation to provide continuous operational capability. The ARCOV Report contains a conclusion that an increase is required in the S2 sections at brigade and G2 sections at division. Deficiencies in the remaining staff sections are not addressed except as pertains to civil affairs - civic action.

(2) Findings

(a) Review of the data contained in the ARCOV Report indicates that some staff sections, particularly the intelligence staff sections, may require augmentation for continuous operations in low intensity conflict.
(b) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

k. USACDC GENERATED RECOMMENDATION. The AN/GRR-5 radios authorized in battalions be retained for operations in Vietnam.

(1) Discussion. ARCOV Conclusion, 4b(20), Annex D, ARCOV Report contains the statement that the AN/GRR-5 radios are not required in battalions for operations in Vietnam. There is no recommendation to this effect in the ARCOV report. Because of the danger of escalation there is a requirement for the AN/GRR-5 and the warning net of which it is a part. Specific USACDC recommendations will accompany the Early Warning TACOM Follow-on Study when forwarded to the Department of the Army during the Summer 1966.

(2) Finding. The AN/GRR-5 warning net radio should be retained pending completion of USACDC Early Warning Study.

6. (S) SERVICE SUPPORT

a. ARCOV RECOMMENDATION NUMBER 5b(1), ANNEX E.

"Two reliable 6000-pound capacity rough terrain forklift trucks be added to the division and separate brigade TOE for each forward support element."

(1) USACDC concurs in this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

b. ARCOV RECOMMENDATION NUMBER 5c(1), ANNEX E.

"An ammunition officer, Captain, MOS 74514, be added to the separate airborne brigade TOE."

(1) USACDC concurs in this recommendation for Vietnam.

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

c. ARCOV RECOMMENDATION NUMBER 5c(2), ANNEX E.

"One E-5 supply Specialist, MOS 76K4P, be added to the infantry battalion TOE."

1-IV-21
(1) USACDC concurs in this recommendation for Vietnam.
(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

d. ARCOV RECOMMENDATION NUMBER 5c(3), ANNEX E.

"That anesthetic and x-ray equipment and appropriate personnel be added to the TOE of the medical clearing companies of the 1st Infantry Division, 173d Airborne Brigade, and 1st Brigade, 101st Airborne Division."

(1) USACDC concurs in part with this recommendation for Vietnam.
(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

e. ARCOV RECOMMENDATION NUMBER 5b(3)(b), ANNEX E.

"Non-rigid (poleless) litters be issued to rifle company aid men."

(1) USACDC concurs in this recommendation for Vietnam.
(2) This recommendation has potential application in all close terrain and will be analyzed in Part 2, Section II.

f. ARCOV RECOMMENDATION NUMBER 6c, ANNEX F.

"The ratio of direct support maintenance personnel to UH-1 helicopters not be changed unless such change is indicated by further evaluation to be conducted by the 1st Cavalry Division."

(1) USACDC concurs in this recommendation for Vietnam.
(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

g. USACDC GENERATED RECOMMENDATION. That doctrine and organization for medical service support operations be updated to reflect changes caused by extensive use of Army aircraft for the evacuation of casualties.

(1) This USACDC recommendation is supported by the data in the ARCOV Report.24/

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

h. USACDC GENERATED RECOMMENDATION. That the Airmobile Division be augmented with attached truck transportation units for resupply and sustained operations in the TAOR.

(1) This USACDC recommendation is supported by data in the ARCOV Report.25/  

(2) This recommendation has possible worldwide application and will be analyzed in Part 2, Section II.

i. ARCOV RECOMMENDATION NUMBER 5a(1), ANNEX E.

"Consideration be given to issue of sufficient maps to permit issue to rifle squad leaders in fantry battalion rifle companies." 

(1) USACDC concurs in this recommendation for Vietnam.  

(2) Experience in Vietnam has indicated that a requirement exists to issue maps to squad leaders.26/ Current doctrine states that the division supply and transport battalion obtains bulk stocks of maps for the division from the support map depot, distributes them to divisional and attached units, and stores the division reserve map stocks.27/ Requirements are computed by the division engineer under the staff supervision of the ACoS G2 and distribution of maps within the division is in accordance with priorities of allocation made by the G2. The guide for estimating map requirements recommends two copies per platoon for combat engineer and infantry units. Allowances for airborne units are the same as for equivalent ground troops. Doctrine further states that the number of copies of each sheet required at each echelon may be computed using planning factors or developed experience factors.28/

25/ ARCOV Report, Volume I, Section II, para 4a(7).  
26/ ARCOV Report, Annex E, Appendix 1, Tab A, para 7.  
27/ FM 54-2, The Division Support Command, Hq, DA, Sep 65, para 83.  
j. ARCOV RECOMMENDATION NUMBER 5a(2), ANNEX E.

"Aidmen organic to the infantry battalion and rifle companies be trained at the level of Special Forces aidmen (MOS 91B30)."

(1) USACDC concurs in part with this recommendation for Vietnam.

(2) The mission of the company aidman and the special forces aidman is entirely different. The primary difference is the requirement for special forces aidmen to work with indigenous personnel, instruct them in elementary medical procedures, and render medical aid as required. Normally, the special forces aidman works without the immediate back-up medical support that is readily available to the company aidman. His functions may be compared with those of a missionary without a medical degree. On the other hand, the company aidman is primarily concerned with providing emergency medical care for casualties, arranging for medical evacuation, and performing other administrative duties such as the initiation of medical tags. In Vietnam, because of the extensive use of air evacuation of wounded, the company aidman normally administers the only medical treatment casualties receive before they arrive at a medical clearing company. In addition, the company aidman may be required to work with indigenous personnel and provide medical assistance similar to that provided by special forces aidmen. In concert with stability operations, civic action programs will require treatment of indigenous personnel by company aidmen. Some company aidmen organic to the infantry battalions and rifle companies should be trained at the level of special forces aidmen (MOS 91B30).

k. ARCOV RECOMMENDATION NUMBER 5a(3)(a), ANNEX E.

"Special services facilities be made available at brigade and division base camps."

(1) USACDC concurs with this recommendation for Vietnam.

30/ CG, 173d Abn Bde, Ltr, AVAB-CG, dtd 18 Feb 66, Subj: Debriefing of Officers Returning from Field Assignments (U), para IV.
(2) The evaluation indicates that special services equipment, games, cards, books, etc., are readily available down to rifle company level in all units. Special services shows have been furnished to the evaluated units on an average of one per month. Movies are readily available and utilized by all units. The data, however, indicates that special service facilities (buildings, shelters) are limited.

1. ARCOV RECOMMENDATION NUMBER 5a(3)(b), ANNEX E.

"Adequate quartermaster shower and laundry facilities be made available to all combat units in Vietnam."

(1) USACDC concurs in this recommendation for Vietnam.

(2) ARCOV data supports a requirement for improved bath and laundry service. A review of current field manuals indicate that doctrinal material covering bath, and laundry services is adequate. Laundry service is provided by the general support group of the support brigade.

m. ARCOV RECOMMENDATION NUMBER 5a(3)(c), ANNEX E.

"Clothing exchange service be furnished to the combat units at the shower points."

(1) USACDC concurs in this recommendation for Vietnam.

(2) ARCOV data supports a requirement for clothing exchange service at shower points. A review of current field manuals indicates that doctrinal material covering clothing exchange services is adequate. Clothing exchange service is normally provided at bath points.

n. ARCOV RECOMMENDATION NUMBER 5b(2), ANNEX E.

"Continued emphasis be placed on expediting repair parts supply to the division and separate brigades in Vietnam."

(1) USACDC concurs with this recommendation for Vietnam.

(2) Analysis of the ARCOV data indicates that maintenance problems, excluding aircraft maintenance, are primarily due to a
shortage of repair parts. Units state that doctrine is adequate; however, because of a repair parts shortage, units have requested increases in ASL/PLL and maintenance floats.

o. ARCOV RECOMMENDATION NUMBER 5b(3)(a), ANNEX E.

"If recommendation in paragraph 5a(2) is approved, aidmen trained at level of MOS 91B30 be issued the M5 aid kit."

(1) USACDC concurs in this recommendation for Vietnam.

(2) The supporting data in the evaluation indicates a requirement for the M5 Aid Kit (Special Forces) to replace the M3 kits now authorized for the number of Special Forces trained battalion and company aidmen finally approved.

p. ARCOV RECOMMENDATION NUMBER 6e, ANNEX F.

"The comparative effectiveness of the aircraft maintenance system employed by the 1st Cavalry Division versus the system employed by the separate aviation units be continuously evaluated after supply fill (ASL) has raised the 1st Cavalry Division to a comparable level with other aviation units in Vietnam, to determine if organizational changes are warranted at the direct support aircraft maintenance level."

(1) USACDC concurs in this recommendation for Vietnam.

(2) Over the entire evaluation period (Oct 1965 - Feb 1966) the 1st Cavalry Division has operated with a lower percentage of parts on hand for day-to-day operations than have other aviation units. This is considered to be directly attributable to the 1st Cavalry Division entering Vietnam with approximately 35 percent of their authorized stockage list (ASL). Other units in Vietnam have had a significantly higher (79 to 65) percent of their authorized stockage list.31/ To effectively compare the aircraft maintenance system employed by the 1st Cavalry Division with the system employed by the separate aviation units an evaluation is warranted. It is considered that a valid comparative evaluation commonly be conducted when the ASL fill rate of the

31/ ARCOV Report, Annex F, Appendix 2, para 3a(7).
1st Cavalry Division is approximately equal to that of other units.

q. ARCOV RECOMMENDATION NUMBER 6f, ANNEX F.

"Maintenance float aircraft be provided to Vietnam in sufficient quantities to permit their utilization in accordance with current maintenance management procedures and directives."

(1) USACDC concurs in this recommendation for Vietnam.

(2) The maintenance float concept envisions the use of float aircraft to replace unit aircraft down for maintenance for an extended period, normally in excess of 72 hours. Because of operational aircraft requirements, float aircraft have been increasingly used to replace combat losses, heavily crash damaged aircraft, and for issue in excess of authorized allowances, rather than following current maintenance procedures and directives. This procedure has completely depleted the stock of float aircraft.

r. ARCOV RECOMMENDATION NUMBER 6g, ANNEX F.

"Aircraft be programmed and made available to Vietnam to provide sufficient replacement for those lost due to combat damage, crash damage, and issue in excess of current authorized allowances."

(1) USACDC concurs in this recommendation for Vietnam.

(2) Analysis of the ARCOV evaluations indicate the requirement for more replacement aircraft to be programmed into Vietnam. The depletion of all float aircraft bears out this requirement. As of 1 March 1966, all float aircraft had been issued due to combat damage, crash damage, and issue in excess of current authorized allowances.

s. ARCOV RECOMMENDATION NUMBER 3.

"The maneuver battalions in Vietnam should consist of a headquarters and headquarters company and four rifle companies. The organizations are shown in Figures II-16 thru II-19, and the implementing MTOE are contained in Annex H, Volume 9."

(1) As pertains to the location of the company mess teams in the proposed MTOE, contained in Annex H, ARCOV Report, USACDC 1-IV-27
non-concurs in the proposed transfer of the company mess teams from battalion level to the rifle company.

(2) Discussion

(a) Under current doctrine and organization, company mess teams are consolidated under the battalion support platoon. The cellular organization of these teams gives them the capability of operating a consolidated mess, or of being detached to support individual companies as determined by the battalion commander.

(b) The ROAD evaluation (Basic Report, Incl 5, Combat Service Support, para 5E(2)) states that "the consolidated messes are considered adequate and should be continued as presently organized."

(c) USACDC Recommendation: No change in current organization of the mess sections in the infantry battalion be approved.
SECTION V
ORGANIZATION CHARTS

1. The purpose of this section is to present illustrative organizational structures of the four types of infantry battalions as reflected in the ARCOV Report.

2. The following charts depict the infantry battalions as they are presently organized and as proposed by the ARCOV Report. Figures reflect total personnel and major items of equipment:
   a. Figure 1-V-1. Infantry Division, Infantry Battalion TOE 7-15E.
   b. Figure 1-V-2. Infantry Division, Infantry Battalion MTOE 7-15E (ARCOV).
   c. Figure 1-V-3. Separate Airborne Brigade, Infantry Battalion (ABN) TOE 7-35E.
   d. Figure 1-V-4. Separate Airborne Brigade, Infantry Battalion (ABN) MTOE 7-35E (ARCOV).
   e. Figure 1-V-5. Airborne Division, Infantry Battalion (ABN) TOE 7-35F.
   f. Figure 1-V-6. Airborne Division, Infantry Battalion (ABN) MTOE 7-35F (ARCOV).
   g. Figure 1-V-7. Airmobile Division, Infantry Battalion TOE 7-55T.
   h. Figure 1-V-8. Airmobile Division, Infantry Battalion MTOE 7-55T (ARCOV).

3. The following chart depicts the Intelligence and Reconnaissance Platoon as proposed by USACDC:
   Figure 1-V-9. Proposed Intelligence and Reconnaissance Platoon.
Infantry Division TOE 7E
Infantry Battalion TOE 7-15E

Figure 1-V-1. INFANTRY DIVISION, INFANTRY BATTALION
Infantry Division TOE 7E
Infantry Battalion MTOE 7-15E (ARCOV)

VEHICLES
- 34 Trk 1/4 Ton
- 4 Trk 1/4 Ton Amb
- 36 Trk 3/4 Ton
- 13 Trk 2 1/2 Ton
- 1 Trk Wrecker 2 1/2 Ton
- 1 Trk Tk Fuel Svc 2 1/2 Ton
- 25 Tlr 1/4 Ton Amph
- 32 Tlr 3/4 Ton
- 12 Tlr 1 1/2 Ton
- 1 Tlr 1 1/2 Ton Water

WEAPONS
- 44 Mg 7.62mm
- 13 Mg .50 cal
- 111 Lchr Gren 40mm
- 12 Mort 81mm
- 4 Mort 4.2"
- 4 Rifle 106mm
- 740 Rifle 5.56mm
- 193 Pistol .45 cal

COMMUNICATIONS EQUIPMENT
- 2 AN/GRC-106
- 13 AN/GRC-125
- 72 AN/PRC-6
- 84 AN/PRC-25
- 1 AN/VRC-24
- 1 AN/VRC-46
- 10 AN/VRC-47
- 2 AN/VRC-49

OTHER
- 4 Radar Set AN/PPS-4

Figure 1-V-2. INFANTRY DIVISION, INFANTRY BATTALION
Separate Airborne Brigade TOE 57-100E
Infantry Battalion (ABN) TOE 7-35E

Figure 1-V-3. SEPARATE AIRBORNE BRIGADE, INFANTRY BATTALION (ABN)
Separate Airborne Brigade TOE 57-100E
Infantry Battalion (ABN) MTOE 7-35E (ARCOV)*

Figure 1-V-4. SEPARATE AIRBORNE BRIGADE, INFANTRY BATTALION (ABN)