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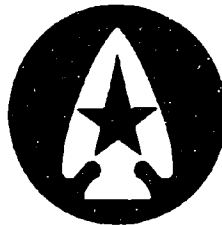
FORT BELVOIR, VIRGINIA 22060

OPERATIONAL REPORT - LESSONS LEARNED

QUARTERLY REPORT



DDC
JUN 1968

MAY 1968

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f06LESSONS LEARNED. 3

f09Operational rept. for period ending 29 May 68. 4

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f22Distribution: No Foreign without approval of Headquarters, Army 8
Combat Developments Command, Fort Belvoir, Va. 22060.

f2920 9

f324 10

f332 11

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f02 15/7 13

f23 (*Army operations, Vietnam), Guerrilla warfare, Counterinsurgency, 14
Infantry, Airmobile operations, Artillery units, Aerial reconnaissance,
Aerial photography, Military intelligence, Refueling in flight (U)
Night warfare, Infrared detectors, Prisoners, Psychological warfare,
Herbicides, CS agents, Mine detectors, Passenger vehicles,
Defoliants, Secret communication systems, Land mines.

f24c 15

f25 *Lessons learned, South Vietnam, Claymore mines. 16

f26c 17

f27This operational report, Lesson Learned, discusses army operations 18
in South Vietnam during the period 14 Mar 68 to 29 May 68.

f28u 19

1473

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DEPARTMENT OF THE ARMY
HEADQUARTERS
UNITED STATES ARMY COMBAT DEVELOPMENTS COMMAND
FORT BELVOIR, VIRGINIA 22060

CDCRE-E

SUBJECT: Operational Reports Lessons Learned.

for period
ending 29 May 68

29 May 1968

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This document contains information affecting the National Defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C., Section 793, and its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

1. References:

a. Paragraph 5b, Army Regulation 525-15, Operational Reports - Lessons Learned, 26 January 1968.

b. USACDC Regulation 71-13, Lessons Learned, 9 January 1967.

2. Attached are copies of the May 1968 USACDC report to Department of the Army on the status of evaluation of Operational Reports - Lessons Learned.

3. Request each addressee review the report to determine if actions contemplated by other addressees require supportive action in areas for which they have proponentcy. Actions so taken will be reported under the provisions of reference 1b, as part of the Lessons Learned Program.

4. The report to Department of the Army is considered to be informational only. Actions required to complete needed changes to doctrine, materiel, or organizations must be undertaken separately. Further, inclusion of an item in the report does not preclude reconsideration of a contemplated action if new information or further review warrants such reconsideration.

FOR THE COMMANDER:

1 Incl
as

R. S. Christian
R. S. CHRISTIAN
Major, AGC
Asst AG

11 (037200)

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CDCRE-T

SUBJECT: Operational Reports - Lessons Learned

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- 2 COUSACDCSA

- 25 CGUSARV, ATTN: G3
- 2 CG AMERICAL DIV, ATTN: G3
- 20 DDC
- 1 CG CONARC
- 1 CG USAMC

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**DEPARTMENT OF THE ARMY
HEADQUARTERS
UNITED STATES ARMY COMBAT DEVELOPMENTS COMMAND
FORT BELVOIR, VIRGINIA 22060**

CDCRE-T

29 May 1968

SUBJECT: Operational Reports - Lessons Learned

Assistant Chief of Staff
for Force Development
Department of the Army
Washington, D. C. 20310

1. Reference: Army Regulation 525-15, Operational Reports - Lessons Learned, 26 January 1968.

2. In accordance with paragraph 5b, reference above, a review has been conducted by the US Army Combat Developments Command (USACDC) of those Operational Reports - Lessons Learned that have been received since the last submission. A listing of the reports reviewed and comments thereon are attached as follows:

a. Inclosure 1: A listing of those reports reviewed since the report of 14 March 1968.

b. Inclosure 2: Comments on items considered to warrant action and the status of those actions.

c. Inclosure 3: Comments on items that appear valid but which require further study.

d. Inclosure 4: Comments on items which are considered to warrant appropriate actions by commands other than USACDC.

e. Inclosure 5: Glossary of terms.

3. In addition to the specific comments included in Inclosures 2 through 4, the following general comments are offered:

a. Reports reviewed in previous quarters are being retained and reviewed in conjunction with those reports recently received. However, Inclosure 1 lists only those reports processed since the last USACDC quarterly report to your headquarters.

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SUBJECT: Operational Reports - Lessons Learned

b. The statement that certain material will be included in future changes or revisions of field manuals or other publications should not be construed as meaning verbatim inclusion as written in this report, nor should it be construed to mean that new material will be used only in those publications mentioned in the report. The inclosed comments convey the general intent; the precise wording and location of material in manuals or other publications will be determined in each case as a separate action.

FOR THE COMMANDER:

5 Incl
as (25 cys)

R. S. Christian
R. S. CHRISTIAN
Major, AGC
Asst AG

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1. Senior Officer Debrief Program, submitted by MG Shelton E. Lollis, former Commanding General, 1st Logistical Command, United States Army Vietnam.
2. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the United States Army Vietnam.
3. Operational Report - Lessons Learned for the period ending 31 January 1968, submitted by the United States Army Vietnam.
4. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the United States Army Vietnam.
5. United States Army Vietnam Pamphlet Number 525-2 "Utilization and Employment of Personnel Detector," dated 23 February 1968.
6. Operational Report - Lessons Learned TWX submitted by the Military Assistance Command Vietnam, 9 January 1968.
7. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the United States Army Vietnam.
8. Counterinsurgency Lessons Learned Number 62, "Salient Lessons Learned, " submitted by the Military Assistance Command Vietnam.
9. Counterinsurgency Lessons Learned Number 66, "Countermeasure for 102 MM, 122 MM, and 140 MM Rockets," submitted by the Military Assistance Command Vietnam.
10. Counterinsurgency Lessons Learned Number 63, "Search and Rescue Operations," submitted by the Military Assistance Command Vietnam.
11. Department of the Army Pamphlet Number 350-16-6, "Training Operations - Lessons Learned," dated 30 September 1967.
12. Special Operational Report - Lessons Learned, dated 8 January 1968, submitted by the Department of the Army.
13. Department of the Army Pamphlet Number 350-15-7, dated 1 January 1968.
14. Department of the Army Pamphlet Number 350-15-9, dated 1 April 1968.
15. USAMEDS Operational Report - Lessons Learned, dated 21 January 1967, submitted by the Office of the Surgeon General.

16. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the I Field Force Vietnam.
17. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the I Field Force Vietnam Artillery.
18. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the I Field Force Vietnam Artillery.
19. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the II Field Force Vietnam.
20. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the II Field Force Vietnam.
21. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the II Field Force Vietnam.
22. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the II Field Force Vietnam Artillery.
23. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 1st Cavalry Division (AM).
24. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 1st Cavalry Division (AM).
25. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Cavalry Division (AM).
26. Combat Operations After Action Report, "The Battle of Ap Gu (Don Vinh), dated 29 April 1967, submitted by the 1st Infantry Division.
27. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Infantry Division.
28. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 25th Infantry Division.
29. Combat Operations After Action Report, Operation "Pershing," conducted 12 February - 19 April 1967, submitted by the 3rd Brigade Task Force, 25th Infantry Division.
30. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 3rd Brigade, 25th Infantry Division.
31. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 4th Infantry Division.
32. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 4th Infantry Division.

33. Combat Operations After Action Report, Operation "Fort Nisqually," conducted 28 November 1966 - 14 May 1967, submitted by the 3rd Brigade, 4th Infantry Division.
34. Combat Operations After Action Report, Operation "Junction City," conducted 22 February - 20 April 1967, submitted by the 3rd Brigade, 4th Infantry Division.
35. Combat Operations After Action Report, Operation "Malheur," conducted 11 May 1967 - 2 August 1967, submitted by the 1st Brigade, 101st Airborne Division.
36. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Brigade, 101st Airborne Division.
37. Combat Operations After Action Report, Operation "Benton," conducted 13-29 August 1967, submitted by the 1st Brigade, 101st Airborne Division.
38. Combat Operations After Action Report, Operation "Hood River," conducted 2-13 August 1967, submitted by the 1st Brigade, 101st Airborne Division.
39. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 173rd Airborne Brigade (Separate).
40. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 173rd Airborne Brigade (Separate).
41. Combat Operations After Action Report, Operation "Fairfax," conducted 7 November - 31 January 1967, submitted by 4th Battalion, 9th Infantry Division.
42. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 9th Infantry Division.
43. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by 9th Infantry Division.
44. Combat Operations After Action Report, Operation "Hoptac XVI," conducted 2-3 May 1967, submitted by the 9th Infantry Division.
45. Combat Operations After Action Report, Operation "Doi Ma Creek," conducted 9-11 April 1967, submitted by the 3rd Brigade, 9th Infantry Division.
46. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 196th Light Infantry Brigade.

47. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 196th Light Infantry Brigade.
48. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the Americal Division (Task Force Oregon).
49. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the Americal Division Support Command.
50. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 199th Infantry Brigade (Separate) (Light).
51. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 199th Infantry Brigade (Separate) (Light).
52. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 145th Combat Aviation Battalion.
53. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 52nd Combat Aviation Battalion.
54. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Aviation Brigade.
55. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 1st Aviation Brigade.
56. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 13th Combat Aviation Battalion.
57. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 10th Combat Aviation Battalion.
58. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 10th Combat Aviation Battalion.
59. Combat Operations After Action Report, Operation "Hong Kil Dong," conducted 9 July - 31 August 1967, submitted by the 10th Aviation Battalion.
60. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 17th Combat Aviation Battalion.
61. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 17th Combat Aviation Battalion.

62. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 12th Combat Aviation Battalion.
63. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 14th Combat Aviation Battalion.
64. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 223rd Combat Support Aviation Battalion.
65. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 223rd Combat Support Aviation Battalion.
66. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 214th Combat Aviation Battalion.
67. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 269th Combat Aviation Battalion.
68. Combat Operations After Action Report, Operation "Junction City," conducted 18 February - 16 March 1967, submitted by the 11th Armored Cavalry Regiment.
69. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 11th Armored Cavalry Regiment.
70. Operational Report - Lessons Learned for the period ending 31 August 1967, submitted by the 1st Battalion, 63rd Armor.
71. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 7th Battalion, 15th Artillery.
72. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 2nd Battalion (175 MM) (SP), 32nd Artillery.
73. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 2nd Battalion, 32nd Artillery.
74. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 1st Battalion, 30th Artillery.
75. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 23rd Artillery Group.
76. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 3rd Battalion, 6th Artillery.
77. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 6th Battalion, 27th Artillery.

78. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 6th Battalion, 14th Artillery.
79. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 2nd Battalion, 11th Artillery.
80. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 1st Howitzer Battalion (105 MM) (SP), 40th Artillery.
81. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Battalion, 40th Artillery.
82. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 1st Battalion, 40th Artillery.
83. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 5th Battalion (AW) (SP), 2nd Artillery.
84. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 7th Battalion, 9th Artillery.
85. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 2nd Battalion, 94th Artillery.
86. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 7th Battalion, 13th Artillery.
87. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Battalion, 27th Artillery.
88. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 1st Battalion, 27th Artillery.
89. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Battalion, 92nd Artillery.
90. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 7th Battalion, 8th Artillery.
91. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 7th Battalion, 8th Artillery.
92. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 3rd Battalion, 16th Artillery.
93. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 4th Battalion, 60th Artillery.

94. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 62nd Engineer Battalion.
95. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 299th Engineer Battalion.
96. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 70th Engineer Battalion (Combat) (Army).
97. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 19th Engineer Battalion (Combat) (Army).
98. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 19th Engineer Battalion.
99. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 18th Engineer Brigade.
100. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 18th Engineer Brigade.
101. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 46th Engineer Battalion.
102. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 577th Engineer Battalion (Construction).
103. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 87th Engineer Battalion (Construction).
104. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 27th Engineer Battalion (Combat).
105. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the United States Army Engineer Command (Provisional).
106. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 79th Engineer Group.
107. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 864th Engineer Battalion (Construction).

108. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 864th Engineer Battalion.
109. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 34th Engineer Group (Construction).
110. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 14th Engineer Battalion (Combat) (Army).
111. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 815th Engineer Battalion.
112. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 554th Engineer Battalion.
113. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 69th Engineer Battalion (Construction).
114. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 2nd Signal Group.
115. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 2nd Signal Group.
116. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 2nd Signal Group.
117. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Signal Brigade.
118. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 39th Signal Battalion.
119. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 459th Signal Battalion (CA).
120. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the United States Army Strategic Communications Command Facility Phu Lam.
121. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 160th Signal Group.
122. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the United States Army STRATCOM Long Lines Battalion South.

123. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 7th Maintenance Battalion (DS).
124. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 62nd Maintenance Battalion.
125. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 188th Maintenance Battalion.
126. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 79th Maintenance Battalion (GS).
127. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the United States Army Support Command, Qui Nhon.
128. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted Tuy Hoa Subarea Command.
129. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 9th Logistical Command.
130. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 9th Logistical Command.
131. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 88th Supply and Service Battalion (DS).
132. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 29th General Support Group.
133. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the United States Army Support Command, Saigon.
134. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the Pleiku Subarea Command.
135. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 34th General Support Group (AM&S).
136. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the Phan Rang Subarea Command.
137. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 2nd Logistical Command.
138. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the United States Army Support Command, Cam Ranh Bay.

139. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the United States Army Support Command, Cam Ranh Bay.
140. Trip Report to the 25th Infantry Division, 19 September 1967, submitted by the USACDC Liaison Detachment, USARV.
141. Trip Report to the 4th Infantry Division, 7 January 1968, submitted by the USACDC Liaison Detachment, USARV.
142. Trip Report to the 5th Special Forces Group, 8 January 1968, submitted by the USACDC Liaison Detachment, USARV.
143. USACDC Liaison Report, "M48A3 Tank Product Improvement Program" dated 27 December 1967, submitted by the USACDC Liaison Detachment, USARV.
144. Trip Report to the 1st Marine Division, 12 January 1968, submitted by the USACDC Liaison Detachment, USARV.
145. Trip Report to the 1st Infantry Division, 13 January 1968, submitted by the USACDC Liaison Detachment, USARV.
146. Trip Report to the IV Corps Unit, 11 December 1967, submitted by the USACDC Liaison Detachment, USARV.
147. Trip Report to the 9th Infantry Division, 18 January 1968, submitted by the USACDC Liaison Detachment, USARV.
148. Trip Report to the Americal Division, 20-21 January 1968, submitted by the USACDC Liaison Detachment, USARV.
149. Trip Report to the Americal Division, 16 February 1968, submitted by the USACDC Liaison Detachment, USARV.
150. Trip Report to the 1st Infantry Division, 18 February 1968, submitted by the USACDC Liaison Detachment, USARV.
151. Letter CDCCS - LV, "Tank Attack on Lang Vei," dated 18 February 1968, submitted by the USACDC Liaison Detachment, USARV.
152. Trip Report to the 173rd Airborne Brigade, 27 January 1968, submitted by the USACDC Liaison Detachment, USARV.
153. Trip Report to the 9th Infantry Division, 14 February 1968, submitted by the USACDC Liaison Detachment, USARV.
154. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the Task Force Oregon.

155. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 1st Military Intelligence Battalion (ARS).
156. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 68th Medical Group.
157. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 55th Medical Group.
158. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 55th Medical Group.
159. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 6th Convalescent Center.
160. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 12th Evacuation Hospital (SMBL).
161. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 18th Military Police Brigade.
162. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the Military Police Group (Criminal Investigation) (Provisional), 18th Military Police Brigade.
163. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 191st Ordnance Battalion (Ammo) (DS/GS).
164. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 64th Quartermaster Battalion (Petroleum Operating).
165. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 262nd Quartermaster Battalion (Petroleum).
166. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 6th Psychological Operations Battalion.
167. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 6th Psychological Operations Battalion.
168. Operational Report - Lessons Learned for the period ending 30 July 1967, submitted by the 394th Transportation Battalion (Terminal).

169. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 394th Transportation Battalion (Terminal).
170. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 14th Transportation Battalion (AM&S) (GS).
171. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 10th Transportation Battalion (Terminal).
172. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 58th Transportation Battalion (AM&S) (AMMC).
173. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Transportation Battalion (AMD) (SBN).
174. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 765th Transportation Battalion (AM&S).
175. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 125th Transportation Command (Terminal A).
176. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 6th Transportation Battalion (Truck).
177. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 36th Transportation Battalion (Truck).
178. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 24th Transportation Battalion (Terminal).
179. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 39th Transportation Battalion.
180. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 39th Transportation Battalion.
181. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Transportation Battalion (AMD) (SBN).

182. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 5th Transportation Command.

183. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 57th Transportation Battalion (Truck).

184. Combat Operations After Action Report, Operation, "Oconee," conducted 31 March - 19 April 1967, submitted by Company C, 5th Special Forces Group (Airborne).

185. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 5th Special Forces Group.

186. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the United States Continental Army Command.

187. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the United States Continental Army Command.

188. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the United States Army, Alaska.

189. Operational Report - Lessons Learned for the period ending 31 January 1968, submitted by the Army Materiel Command.

190. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, October 1966, submitted by the United States Marine Corps.

191. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, January 1967, submitted by the United States Marine Corps.

192. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, June 1967, submitted by the United States Marine Corps.

193. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, August 1967, submitted by the United States Marine Corps.

194. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, April 1967, submitted by the United States Marine Corps.

195. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, September 1966, submitted by the United States Marine Corps.

196. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, August 1966, submitted by the United States Marine Corps.

197. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, December 1966, submitted by the United States Marine Corps.

198. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, February 1967, submitted by the United States Marine Corps.
199. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, March 1967, submitted by the United States Marine Corps.
200. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, May 1967, submitted by the United States Marine Corps.
201. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, July 1967, submitted by the United States Marine Corps.
202. Operational Report - Lessons Learned (SECRET), Marine Corps Bulletin 3480, January 1967, submitted by the United States Marine Corps.
203. Operational Report - Lessons Learned (SECRET), Marine Corps Bulletin 3480, September 1967, submitted by the United States Marine Corps.
204. Operational Report - Lessons Learned (SECRET), Marine Corps Bulletin 3480, February 1967, submitted by the United States Marine Corps.
205. Operational Report - Lessons Learned (SECRET), Marine Corps Bulletin 3480, April 1967, submitted by the United States Marine Corps.
206. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, March 1967, submitted by the United States Marine Corps.
207. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, November 1966, submitted by the United States Marine Corps.
208. "Command Communications," dated January 1968, submitted by the United States Army Vietnam.
209. Seminar Report, "Attack of Fortified Positions In the Jungle," dated 2 January 1968, submitted by the United States Army Vietnam.
210. Handbook for Military Support of Pacification, dated February 1968, submitted by the Military Assistance Command Vietnam.
211. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the II Field Force Vietnam Artillery.
212. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 222nd Aviation Battalion.

213. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 1st Battalion, 63rd Armor.
214. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Battalion, 44th Artillery.
215. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 7th Battalion, 15th Artillery.
216. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 93rd Engineer Battalion (Construction).
217. "Professional Notes: February 1968," submitted by the United States Army Engineer School.
218. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 2nd Maintenance Battalion.
219. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 563rd Supply and Service Battalion (DS).
220. Trip Report to the 25th Infantry Division, 3-9 February 1968, submitted by the USACDC Liaison Detachment, USARV.
221. Operational Report - Lessons Learned, Marine Corps Bulletin 3480, December 1967, submitted by the United States Marine Corps.
222. Combat Operations After Action Report, Operation, "Greeley," conducted 17 June - 11 October 1967, submitted by the 4th Infantry Division.
223. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 36th Signal Battalion (CA).
224. Trip Report to the 4th Infantry Division, 22 November 1967, submitted by the USACDC Liaison Detachment, USARV.
225. Operational Report - Lessons Learned for the period ending 1 October 1967, submitted by the 569th Engineer Company (TOPO).
226. Combat Lessons Bulletin Number 19, dated September 1967, submitted by the United States Army Vietnam.
227. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 2nd Battalion, 11th Artillery.
228. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 39th Engineer Battalion (Combat).

229. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 554th Engineer Battalion (Construction).
230. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 506th Field Depot.
231. Trip Report to the 1st Cavalry Division (Airmobile), 19 September 1967, submitted by the USACDC Liaison Detachment, USARV.
232. Operational Report - Lessons Learned for the period ending 1 October 1967, submitted by the 66th Engineer Company (Topographic).
233. Trip Report to the 25th Infantry Division, 16 November 1967, submitted by the USACDC Liaison Detachment, USARV.
234. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 61st Medical Battalion.
235. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 262nd Quartermaster Battalion (Petroleum).
236. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 459th Signal Battalion.
237. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 184th Ordnance Battalion (Ammo).
238. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 588th Engineer Battalion (Combat).
239. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 10th Transportation Battalion (Terminal).
240. Combat Operations After Action Report, Operation, "Fairfax," conducted 1 December 1966 - 12 January 1967, submitted by the 3rd Battalion, 22nd Infantry, 25th Infantry Division.
241. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 1st Battalion, 30th Artillery.
242. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 1st Battalion, 30th Artillery.
243. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 809th Engineer Battalion (Construction).

244. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 6th Battalion, 32nd Artillery.
245. Pamphlet Number 523-1, "Concept of Employment for Long Range Patrol (LRP) Company," dated November 1967, submitted by the United States Army Vietnam.
246. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 34th General Support Group (AGSS).
247. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the I Field Force Vietnam.
248. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the United States Army Materiel Command.
249. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 278th Supply and Service Battalion (GS).
250. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 2nd Logistical Command.
251. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 1st Signal Battalion.
252. Report of Training Visit to RVN (14-27), dated September 1967, submitted by the United States Continental Army Command.
253. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 46th Engineer Battalion (Construction).
254. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 5th Battalion (AW)(SP), 2nd Artillery.
255. Command Program Report, dated 14 February 1968, submitted by the 1st Signal Brigade (USASTRATCOM).
256. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by the 18th Military Police Brigade.
257. Operational Report - Lessons Learned for the period ending 30 April 1967, submitted by Tuy Hoa Subarea Command.
258. Operational Report - Lessons Learned for the period ending 31 October 1967, submitted by the 39th Transportation Battalion.
259. "A Marine Guide to the Republic of Vietnam," dated April 1967, submitted by the Fleet Marine Force Pacific.

260. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the United States Army Vietnam.

261. Trip Report to the 4th Infantry Division, 14 February 1968, submitted by the USACDC Liaison Detachment, USARV.

262. Operational Report - Lessons Learned for the period ending 31 July 1967, submitted by the 7th Battalion, 15th Artillery.

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1. (U) Reference: Operational Report - Lessons Learned, 3rd Brigade, 4th Infantry Division, 31 January 1967.
2. Item: Firing Battery Security.
3. (C) Unit Comments: The firing battery must have a security force from the infantry attached to it while operating from a FSB. As a minimum security force, an infantry platoon is required, but the final size unit depends upon the tactical situation.
4. (U) USACDC Discussion: Concur with unit's observation.
5. (U) USACDC Action: Change 1, FM 6-20-1, dated 11 December 1967, incorporated the above requirement for security forces.

NOTE: See also page 2.69, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967.

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1. (FOUO) Reference: Trip Report - 1st Air Cavalry Division, 11-14 September 1967, USACDC Liaison Detachment, HQ USARV.
2. (FOUO) Item: Employment of Aerial Artillery.
3. (FOUO) Extracted Comments: According to the Division G-3, Aerial Rocket Artillery (ARA) in the 1st Air Cavalry Division is habitually used to support maneuver elements when outside the range of conventional artillery. If the maneuver element is to remain in the new area overnight, a 155mm howitzer battery will be airlifted to provide fire support. The battery can normally march order for such a move in 30 minutes and can be ready to fire 20 minutes after landing. When a move is planned ahead of time, and targets and firing data have been selected and computed in advance, following the artillery raid technique, the battery can lift off according to schedule and be firing 4-8 minutes after touchdown.
4. (FOUO) USACDC Discussion: The above comments provide added emphasis to the requirement for an aerial artillery weapon capable of delivering both indirect fires from the ground and direct fire from the air or ground. If such a weapon were available today, the 50 minute (plus travel time) response time indicated in the above comment could be reduced significantly.
5. (FOUO) USACDC Action: Draft Proposed changes to the Department of the Army Approved Qualitative Materiel Development Objective (QMDO) for an Aerial Artillery Weapon are being prepared by the USACDC Artillery Agency Changes to this document are being recommended in the following areas:
 - a. Providing equal emphasis to the direct fire and indirect fire roles.
 - b. Providing additional emphasis to the fact that this weapon system will be capable of replacing, in a single system, the direct support howitzers and aerial direct fire rockets used in support of airmobile operations today.
 - c. Deleting reference to a specific aircraft.
 - d. Updating the required characteristics in light of recent state of the artillery developments.

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1. (U) Reference: Operational Report - Lessons Learned, 1st Battalion, 30th Artillery, 30 April 1967.

2. (U) Item: Artillery Survey.

3. (U) Unit Comments:

a. Discussion: Artillery units in Vietnam have been called on to displace to locations where no survey control is available. Many of these locations are inaccessible by road and the artillery unit is lifted in with helicopters. It is not always possible for survey personnel to accompany the firing elements on the initial displacement but rather are usually brought forward two or three days later. The need for establishment of accurate location and direction is immediate to provide accurate fires.

b. Observation: Firing battery officers and senior NCO's should know the various methods of establishing and improving location and direction. Instruction on three point resection and astronomical observation should not only be given to survey personnel but also to the above mentioned personnel in firing batteries. These methods, when used by firing batteries, will provide more accurate data until survey personnel can be brought to the location.

4. (U) USACDC Discussion: This comment and related comments from other reports point to the need for re-evaluation of organizational concepts and related MOS specifications applied to the firing battery. Current MOS specifications and related subject schedules and training programs may not provide adequately for the combination of fire direction and survey skills needed at firing battery level.

5. (U) USACDC Action:

a. The unit's observation will be considered during regularly scheduled revisions to pertinent MOS specifications and TOE.

b. This item has been forwarded to USAAMS for action they deem appropriate.

NOTE: See also page 3.17, USACDC Lessons Learned Report to Department of the Army, dated 23 August 1967, and page 2.20, USACDC Lessons Learned Report to Department of the Army, dated 28 November 1967, pages 2.47-2.48, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968, and pages 2.9 and 4.1 of this report.

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1. (U) Reference: Operational Report - Lessons Learned, 145th Combat Aviation Battalion, 30 April 1967.

2. (C) Item: Infrared Light for Firefly.

3. (C) Unit Comments:

a. Discussion: Current firefly results are affected by tactics now employed by the Viet Cong to counter this system. Once the light ship is seen, the Viet Cong take cover and remain hidden until the light ship has passed. The employment of infrared searchlights would, along with currently available viewer devices, increase the surprise element and the overall effectiveness of the system.

b. Observation: Flexible searchlights similar to those found on tanks could be used for this purpose. A removable filter would allow the standard white light to be employed once the enemy has been located by infrared means.

4. (C) USACDC Discussion:

a. A contract was awarded in February 1968 for six models of a helicopter mounted high intensity searchlight that will incorporate an infrared capability. The first unit is expected to be delivered in November 1968 and be available for deployment to Vietnam.

b. FM 31-36 (TEST), Night Operations, discusses the use of the infrared searchlight (Xenon) in this type operation. Research and development efforts are being conducted to provide night vision aerial surveillance systems and target acquisition and control systems which will replace the current firefly system. These systems are being developed under the SEA NITEOPS Program.

5. (C) USACDC Action: This item of equipment will be incorporated into the Troop Test, SEA NITEOPS, now scheduled to begin on or about July 1969. This test will evaluate proposed BOI and doctrine of employment to be used in Vietnam. The USACDC Aviation Agency will provide input for the plan of test of aviation units equipped with the developmental night vision equipment. Developmental programs will be monitored and assistance provided in writing test reports.

NOTE: See also page 3.19, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967; page 2.23, USACDC Lessons Learned report to Department of the Army, dated 23 August 1967, and pages 2.24, 3.34, and 3.40, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967.

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1. (U) Reference: Pamphlet, "Battlefield Reports - A Summary of Lessons Learned," USARV, 18 January 1968.
2. (U) Item: Fire Missions within 200 meters of friendly troops.
3. (FOUO) Extracted Comments:
 - a. Discussion: When a fire mission is to be adjusted within 200 meters of friendly troops, all pieces that will fire for effect are fired in adjustment. In this manner, the observer will know the pattern of all the rounds and can adjust them accordingly. To request this, the observer includes the information in his initial fire request, i.e., "close 200 meters, south."
 - b. Observation: This alerts the firing battery to the proximity of fires to friendly troops and will ensure their safety.
4. (U) USACDC Discussion: The problem of US casualties from their own fires in Vietnam was addressed in a letter on that subject from the office of the Army Chief of Staff. Among the problem areas identified in that letter, were casualties resulting from inexperienced forward observers' miscalculations in adjusting close-in fires. It is felt that the above procedure can complement efforts to correct this problem area.
5. (U) USACDC Action: This item has been forwarded to USAAMS for appropriate action.

NOTE: See also pages 2.7 and 2.9, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and pages 2.2, 2.41, 2.42, 2.49, 2.50, and 2.51, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968.

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1. (U) Reference: Operational Report - lessons Learned, 1st Battalion, 30th Artillery, 30 April 1967.

2. (U) Item: Check System for Minimum Quadrant Elevation.

3. (U) Unit Comments:

a. Discussion: The computation of minimum quadrant elevation is a standard procedure used by all artillery units. Battery executive officers and chiefs of sections maintain this data to insure that all rounds fired are above the minimum quadrant elevation. The requirement to provide a 6400 mil capability necessitates the establishment of minimum quadrant elevations throughout the 6400 mil circle.

b. Observation: Based on traverse capabilities of the particular weapon involved, the 6400 mil circle is divided into segments for which minimum quadrant elevations are computed. Minimum quadrant elevation cards established for each sector of fire are bulky and detailed. A simplified method may be used in the fire direction center to obtain an additional safety check. On the firing chart, sectors can be marked off and the minimum quadrant elevation by charge for each sector posted to the chart. The check chart operator, in addition to checking the range and deflection to the target can then check the announced quadrant against the minimum quadrant elevation posted on the firing chart.

4. (U) USACDC Discussion: This item complements items entitled, "Firing Chart (Scale 1/25,000) 6400 mils," and "6400 Mil Firing Chart," previously received. It is valuable in that it illuminates the safety problem associated with the 6400 mil gunnery problem.

5. (U) USACDC Action: This item has been forwarded to USAAMS for action they deem appropriate.

1. (U) Reference: Operational Report - Lessons Learned, 2nd Battalion, 11th Artillery, 31 July 1967.

2. (U) Item: Observer Procedures.

3. (U) Unit Comments:

a. Discussion:

(1) Forward observers have found that adjustment of artillery rounds in mountainous terrain requires a different approach. Rounds should be adjusted vertically, especially on mountain slopes, rather than adding or dropping in range.

(2) When firing medium artillery close to friendly troops in dense jungle, forward observers have achieved better results in opening the canopy by firing a converged sheaf. This procedure is utilized in the fire for effect phase of the mission, and it eliminates less effective results obtained when a normal dispersion of pieces is utilized.

b. Observation: Forward observers have experienced different methods of adjusting artillery rounds in mountainous terrain and in dense jungle. These methods are not the normal type used.

4. (U) USACDC Discussion: This technique should be considered for possible integration into service school programs of instruction.

5. (U) USACDC Action: This item has been forwarded to USAAMS for appropriate action.

1. (U) Reference: Newsletter, I Field Forces Vietnam Artillery, dated January 1968.
2. (U) Item: FADAC Operator Maintenance.
3. (U) Extracted Comments: The following maintenance tips have been extracted from the FADAC Newsletter, FADAC Assistance Team, Pacific, dated 18 December 1967.
 - a. The large air filter under the keyboard and the five air filters located on the underside of the computer must be cleaned by the operator on a daily basis; more often under extremely dusty conditions. Cleaned in soapy water, the filters are rinsed in clean water and air dried.
 - b. The exhaust louvers at the rear of the computer must be free of obstruction to allow free flow of air. The rear cover should not be installed when operating the computer in RVN.
 - c. All caps on cable connectors should be installed securely. A periodic inspection should be performed to check for accumulation of moisture under the caps, connectors at both ends of the power cable must be kept clean and free of moisture.
4. (U) USACDC Discussion: Operational Reports from Vietnam indicate that extreme environmental conditions in Vietnam contribute to maintenance problems with the FADAC. This item is felt to offer some remedies to that situation. Therefore, it is felt to be worthy of consideration for incorporation in pertinent POI's.
5. (U) USACDC Action: This item has been forwarded to USAAMS for appropriate action.

1. (U) Reference: Operational Report - Lessons Learned, I Field Force Vietnam Artillery, 31 October 1967.

2. (U) Item: Corps Arty Survey Planning in II CTZ.

3. (U) Unit Comments:

a. Discussion: As discussed in previous lessons learned, the survey planning in II CTZ adheres to the principles outlined in FM 6-2, but is quite formal and detailed. The following factors deserve special emphasis. They have been important to the success of the IFFORCEV Arty survey program.

(1) Reconnaissance: The most important factor is the initial survey reconnaissance. This should be conducted by the I FFORCEV Survey Officer in a UH-1D helicopter. On the reconnaissance the general sites of the survey control points (SCPs) are selected on the ground; a survey scheme is developed based on actual intervisibility of proposed SCPs; accessibility to each SCP by means of wheeled vehicles is determined; and maximum effort is made to extend survey control to as many occupied areas or base camps as possible.

(2) Operations Order: Following the reconnaissance, publish a survey operation order which outlines the survey scheme, makes provisions for security, provides for logistical support, and establishes necessary guidelines and procedures to be followed.

(3) Weather: II CTZ has two distinct monsoon seasons. In the spring and summer months the interior and western highlands regions receive heavy rainfall and the coastal regions have dry weather. In the fall and winter months the reverse is true. Because of this, survey projects in II CTZ can be conducted throughout the year in predominately dry areas that provide the maximum visibility for survey operations.

(4) Distance: Throughout the past eight months, a planning guide of 7,000 meters per day with an allowable 10 percent rerun of the total distance has been used to plan survey projects. These guidelines have allowed adequate time for completion of the survey if the previously listed three items have been considered.

(5) Equipment: All surveys have been conducted using the DME-MC-8s. Periodic calibration of these instruments is necessary.

(6) Training: The training of personnel has been a relatively minor factor in survey planning in II CTZ. However, parties consisting of new personnel have been assigned projects in relatively secure areas and with very few terrain problems whenever possible.

b. Observation: A planning guide of 7,000 meters of survey per day can be used in II CTZ if the steps outlined in the above discussion are followed.

4. (U) USACDC Discussion: This item verifies the correctness of principles outlined in FM 6-2 and provides local guide figures which may be universally applicable.

5. (U) USACDC Action: This item has been forwarded to USAAMS for consideration in revising FM 6-2.

NOTE: See also pages 2.47-2.48, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968; and pages 2.3 and 4.1 of this report.

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1. (U) Reference: Pamphlet, "Battlefield Reports - A Summary of Lessons Learned," USARV, 18 January 1968.

2. (U) Item: Starlight Scopes.

3. (FOUO) Unit Comments:

a. Discussion: The effectiveness of Starlight Scopes in port security operations is reduced by excessive artificial lighting created by port operations or ships anchored in the harbor.

b. Observation: Starlight Scopes do not lend themselves to effective utilization in areas with excessive artificial lighting.

c. Source: 92nd Military Police Battalion.

4. (FOUO) USACDC Discussion:

a. The degradation of Starlight Scopes caused by excessive artificial lighting is acknowledged.

b. Reference is made to TC 23-11, Starlight Scope, Small Hand-Held or Individual Weapons Mounted. Paragraph 4c(9) describes the lens cap as having three small pin holes drilled around its center to allow daylight use of Starlight Scope.

c. As many additional small holes as needed may be made in lens cap by using units to increase the amount of light entering the Starlight Scope when ambient light levels are too high to permit normal night use. These additional holes may be covered with tape for daylight use.

d. The Starlight Scope can be done away with and searchlights, or other powerful light sources, used to increase the ambient light levels for unaided observation.

5. (FOUO) USACDC Action: This item has been forwarded to USAAB for action they deem appropriate.

NOTE: See also page 2.42, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967; pages 2.1-2.2, and 3.34, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967; page 3.35, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and pages 2.13 and 3.22 of this report.

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1. (U) Reference: Operational Reports - Lessons Learned, 14th Combat Aviation Battalion, 30 June 1967.
2. (U) Item: Helicopter Refueling in Field Locations.
3. (U) Unit Comments (Summary): Several large (more than one company) combat assault operations were recently conducted within this battalion. On these operations, intermediate refueling areas were established to provide a rapid refueling service close to the area of operations. The refueling points were established in an open, secure area as close to the center of operations as possible. Though each refueling facility established was different from the others, they did have three common characteristics. First, the facility had to provide refueling points for more than six helicopters at a time. Second, the refueling was accomplished with 100 GPM pumps with 1200 gallon tank trucks as backup. Third, the field refueling points were usually set up for only one day. Personnel used to man these refueling points included airmobile company POL men, battalion S-4 personnel, and security platoon men.
4. (FOUO) USACDC Discussion: The Supply-75 Study postulates a concept for forward area refueling of Army aircraft. This concept envisions the use of 100 GPM pumps to refuel helicopters in forward areas similar to the refueling facilities discussed above. The USACDC Supply Agency is also working on a closed circuit pressurized refueling system which is being monitored by the USACDC Aviation Agency.
5. (U) USACDC Action: This refueling concept was considered in developing input to the TBOI for the 100 GPM pump and filter separator.

NOTE: See also page 3.18, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967; and page 3.7, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968.

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1. (U) Reference: Operational Reports - Lessons Learned, 5th Special Forces Group (Airborne), 1st Special Forces, 31 July 1967.
2. (U) Item: Night Observation from O-1E Aircraft.
3. (C) Unit Comments (Summary): An experiment was conducted with an aerial observer utilizing the starlight scope from an O-1E aircraft during late evening flights. Flying at an altitude of 1000 feet to 1500 feet above the ground objects were very distinguishable. The success of this experiment culminated in the sighting and eventual destruction of one enemy truck by tactical air. The only limitation noted was the inadequacy of light necessary to navigate at low altitudes.
4. (C) USACDC Discussion: FM 31-36 (TEST), Night Operations, discusses the use of starlight scopes to increase the capability of aerial observers during limited visibility. Night observation is one of the primary objectives of the SEA NITEOPS Program. Image intensification systems, which will be established for airborne application, are being developed. These systems will have a greater range and a wider field of view than the now employed starlight scope.
5. (U) USACDC Action: The USACDC Aviation Agency will monitor development of airborne night vision systems. Input for the plan of test of aviation units equipped with these systems will also be provided by the USACDC Aviation Agency. This item will also be used in justification of starlight scopes for silent aircraft in aviation company TOE.

NOTE: See also page 2.42, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967; pages 2.1-2.2, and 3.34, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967; page 3.35, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and pages 2.11 and 3.22 of this report.

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1. (U) Reference: Operational Reports - Lessons Learned, 1st Infantry Division, 30 April 1967.
2. (U) Item: Landing Zone (LZ) Clearing.
3. (C) Unit Comments (Summary): A requirement exists for an adequate means to clear an unoccupied LZ of grasses and shrubs to facilitate heliborne assaults. Several methods were employed, only one which is feasible and simple: starting fires with incendiary grenades dropped from aircraft. One incendiary grenade dropped from a helicopter flying 500 feet above the ground is sufficient to burn grassy areas 100 meters by 50 meters in a 5 knot wind within approximately 30 minutes during the dry season.
4. (C) USACDC Discussion: There is a requirement for a means of clearing LZ not only of grasses and shrubs but also of booby traps and other hazards as well. Careful consideration must be given, however, to the hazards created by ashes and residue left on the LZ as a result of burning grasses and shrubs as described in the unit comment. These ashes may be blown about by the rotor wash of landing helicopters causing a critical situation for pilots because of the resultant poor visibility conditions. There are two systems, Helicopter Trap Weapons (HTW) and Fuel Air Explosive (FAE), presently being developed to provide a capability for clearing landing zones.
5. (U) USACDC Action: The USACDC Aviation Agency has been tasked to develop the concepts and/or recommended techniques for employment of the HTW and FAE systems.

NOTE: See also page 2.17, USACDC Lessons Learned report to Department of the Army, dated 18 January 1968; pages 2.5, 2.10, and 4.3, USACDC Lessons Learned report to Department of the Army, dated 23 August 1967; and page 3.32, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967.

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1. (U) Reference: Operational Reports - Lessons Learned, 1st Brigade, 101st Airborne Division, 30 April 1967.

2. (U) Item: Illuminated Airmobile Raid.

3. (U) Unit Comments (Summary): The successful execution of an illuminated night airmobile raid emphasizes the value of this tactic in achieving surprise as well as desirability of aviation units achieving the capability to support such an operation. Successful execution must include the following techniques:

a. Organization of the PZ by pathfinders placing lamps at each touchdown point. This facilitates movement of troops and aircraft on the PZ.

b. Ignition of flares on order of the mission commander as the first flight is on short final into the LZ. Continuous illumination is then utilized to facilitate the landing of aircraft, assist ground troops in movement, and aid in the observation of the target area.

c. Planning the air corridor into the objective area so that critical azimuth changes can be made above friendly installations on the ground.

4. (U) USACDC Discussion: Current doctrine for the airmobile raid contained in FM 57-35 is considered adequate. FM 31-26 (TEST) indicates that the illuminated airmobile attack is made when the possibility of surprise is remote, but that surprise may be gained by withholding illumination until the landing phase of the operation as discussed in the unit comment. Although the illuminated airmobile raid is feasible, it should be used only after careful consideration of the possible loss of surprise which is essential to a successful raid. Development of the Airborne Battlefield Light Equipment System will enhance the capability for conducting night airmobile operations and raids.

5. (U) USACDC Action: A DPSDR for the Airborne Battlefield Light Equipment System has been prepared.

NOTE: See also page 2.11, USACDC Lessons Learned Report to Department of the Army, dated 17 May 1967, and pages 2.18 and 3.37, USACDC Report to Department of the Army, dated 23 August 1967.

1. (U) Reference: Operational Reports - Lessons Learned, 13th Combat Aviation Battalion, 30 April 1967.

2. (U) Item: Airborne Integral Smoke Generator.

3. (U) Unit Comments (Summary): A minimum of two (2) integral smoke generators should be allotted to each assault helicopter company to obtain the optimum smoke screen on the target for the maximum duration.

4. (U) USACDC Discussion: Final Report. Improved Integral Smoke Generator (ACS-35/67I), ACTIV, 20 June 1967, recommended a BOI to Headquarters, USARV of two (2) systems per airmobile company or comparable aviation unit utilizing UH-1 aircraft. This report was the basis for an ENSURE requirement for 120 systems presently being procured for RVN.

5. (U) USACDC Action: USACDC recommended that the XM-52 integral smoke generator be type classified LP only to fulfill ENSURE requirement in RVN. Recommendation was also made that research and development be continued on a project to fulfill requirements of DA approved SDR for a ground line source of smoke.

NOTE: See also pages 2.6 and 2.58, USACDC Lessons Learned report to Department of the Army, dated 23 August 1967 and pages 2.1 and 3.8, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967.

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1. (U) Reference: Operational Report - Lessons Learned, 1st Cavalry Division (Airmobile), 30 April 1967.

2. (U) Item: Maintaining Contact and Initiative.

3. (C) Unit Comments:

a. Once contact is made and our forces encounter strong resistance, the procedure of pulling back or out of the village and calling for supporting fires causes our forces to lose the initiative and spirit of battle and permits the enemy to regroup or escape from the village.

b. In forming an encirclement to trap the enemy in a village, the delay in getting elements to an area and setting up positions causes an even greater loss on the initiative of our forces. When contact has been established with the enemy, every effort must be made to maintain it, while other elements maneuver to cut off his routes of escape.

4. (U) USACDC Discussion: A favorite tactic of the Viet Cong, once friendly units have pulled back to allow for fire support, is to break contact and attempt to withdraw from a village complex, or exfiltrate through the defenses. Village encirclement must be planned and executed quickly with the entire area sealed off as quickly as possible. Speed, pressure, and initiative are essential to prevent the guerrilla from escaping.

5. (U) USACDC Action: The requirement for maintaining contact and offensive initiative has worldwide doctrinal application, but is particularly appropriate in counter guerrilla operations when the enemy is so elusive. The lesson learned will be incorporated in the stability operations portion of Infantry unit and other appropriate field manuals.

NOTE: See also pages 3.8 and 3.28, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967; and page 2.70, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967.

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1. (U) References:

a. Professional Knowledge Gained from Operational Experience in the Republic of Vietnam, United States Marine Corps Bulletin 3480, February 1967.

b. Professional Knowledge Gained from Operational Experience in the Republic of Vietnam, United States Marine Corps Bulletin 3480, July - September 1967.

c. Combat Lessons Bulletin #20, "Viet Cong Infrastructure," United States Army Vietnam, October 1967.

2. (U) Item: Use of Selected Chieu Hoi and Host Country Forces with US units.

3. (C) Extracted Comments:

a. One concept involves the Vietnam National Police, Special Branch Police and US Military Police working within a protective screen provided by US infantry units. These special units, normally attached to each brigade of the US division, have the mission of locating, identifying, and apprehending members of the Viet Cong infrastructure.

b. An effective method involves the use of carefully selected Chieu Hoi returnees who voluntarily participate in counter guerrilla searches and psywar operations. These former Viet Cong help ferret out enemy hiding places, caches, and mines, identify Viet Cong guerrillas, and broadcast pro-government propaganda.

4. (U) USACDC Discussion: Numerous advantages lie in the use of voluntary Viet Cong returnees and the incorporation of selected host country forces into our units for specialized purposes. Not only is this an aid to overcoming the language barrier, but allows maximum value to be gained from local customs, taboos, intelligence information, and distribution of propaganda.

5. (U) USACDC Action: This particular technique is especially effective in counter guerrilla operations and will be incorporated in FM 31-16, and stability operations portions of other doctrinal manuals.

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1. (U) References:

a. Trip Report on visit to 173d Airborne Brigade, USACDC Liaison Officer, US Army Vietnam, 27 January 1968.

b. Trip Report on visit to Americal Division, USACDC Liaison Officer, US Army Vietnam, 22 January 1968.

c. Trip Report on visit to 9th Infantry Division, USACDC Liaison Officer, US Army Vietnam, 18 January 1968.

d. Trip Report on visit to 1st Infantry Division, USACDC Liaison Officer, US Army Vietnam, 15 January 1968.

2. (U) Item: Infantry Mortars at Fire Support Bases.

3. (C) Extracted Comments:

a. Usually one 81mm mortar accompanies the rifle company when moving. The remaining mortars are used in the Fire Support Base (FSB).

b. There are three 81mm mortars in each weapons platoon, and they are used primarily in the Fire Support Base. The mortars are not normally carried in the offense. The brigade has 16 4.2 inch mortars which are primarily used in the Fire Support Base.

c. The four mortars in the heavy mortar platoon are controlled by the battalions and are normally used in battalions' fire support base for defense and H & I fires.

4. (U) USACDC Discussion: Because of the difficult terrain in Vietnam, usually necessitating dismounted infantry operations and corresponding lightening of individual loads, the company and battalion mortars are left behind. They are effective for fire support, however, when emplaced at the nearest fire support base. Fire support bases, in themselves, are a Vietnam innovation, having been established to provide secure positions for artillery supporting units.

5. (U) USACDC Action: The techniques of emplacing infantry unit mortars at fire support bases in a counter guerrilla environment will be incorporated in doctrinal manuals during next scheduled changes or revisions, and identified as an alternate method of mortar emplacement for special situation. This does not invalidate the principle of conventional massing of fires for other situations.

NOTE: See also page 3.21, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967.

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1. (U) References:

a. Operational Reports - Lessons Learned, 52d Aviation Battalion, 30 April 1967.

b. Operational Reports - Lessons Learned, 1st Infantry Division, 30 April 1967.

c. Operational Reports - Lessons Learned, 1st Cavalry Division (Airmobile), 30 April 1967.

2. (U) Item: Mining and Booby Trapping of Landing Zones.

3. (C) Unit Comments:

a. Mining and booby trapping of landing zones has increased. This is particularly true of LZs that have been used previously. Adequate preparation by field artillery and aerial rocket artillery is necessary if security of the LZ is questionable.

b. Several landing zones used by this battalion were found to be booby trapped or mined. All these landing zones had been previously used by American forces, but were abandoned for periods of three days or more. These areas should have had preparatory fires placed in the center of the LZ to detonate any emplaced mines or booby traps.

c. Areas previously occupied by US combat units are likely to be heavily mined.

4. (C) USACDC Discussion: Use of artillery and tactical air preparations is one method of neutralizing a suspected booby trapped or mined LZ. Other methods may be used as well, depending on the time available, size and location of the LZ, type of fire support allocated, etc. The point to remember is the high probability of enemy emplacement of mines and/or booby traps on LZs formerly occupied by US forces, and to be alert to this if we anticipate using these LZs again.

5. (C) USACDC Action: This lesson learned concerning airmobile operations on landing zones previously occupied by friendly forces, will be incorporated in the next review of FM 57-35, Airmobile Operations. The USACDC Aviation Agency is monitoring a Naval Weapons Center development, entitled Helicopter Trap Weapon, which will be tested by the Aviation Test Board.

NOTE: See also page 3.20, USACDC Lessons Learned Report to Department of the Army, dated 18 March 1968.

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1. (U) Reference: Professional Knowledge Gained from Operational Experience in the Republic of Vietnam, US Marine Corps Bulletin 3480, March 1967.
2. (U) Item: Avoiding Stereotyped Airmobile Operations.
3. (C) Extracted Comments: Every effort must be made to keep from stereotyped helicopter operations. Although LZ preparations normally include either artillery, fighter strikes or both, this pattern should be shifted occasionally by using a short but devastating strike by armed helicopters immediately before the first assault element touches down.
4. (C) USACDC Discussion: With the large number of airmobile assaults that have been conducted in Vietnam, and which will continue with the airmobile concept, emphasis must be placed on effective variations, so that a predictable pattern is not set. Other possibilities, in addition to those mentioned above, are the use of naval gunfire support when available, assaults in conjunction with preplanned B-52 strikes, night airmobile operations, and surprise assaults, with no preparation fired at all. If the greatest flexibility and imagination are not employed, the risk of enemy ambush on the LZ will be considerable.
5. (U) USACDC Action: This lesson learned will be incorporated in FM 57-35, Airmobile Operations, in the same manner as other airmobility lessons learned, e.g., LZ deception measures, excessive aerial reconnaissance and security during LZ extractions. Additionally, it will be evaluated for inclusion in the airmobile portion of other doctrinal manuals.

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1. (U) Reference: Operational Report - Lessons Learned 5th Special Forces Group, 15 August 1967.

2. (U) Item: Small Unit Tactics.

3. (C) Unit Comments: In the area surrounding My Phuoc Tay many village guerrilla teams, consisting of between 20 to 30 men, were located throughout the area of operations. Upon seeing a company size force of CIDG (Civilian Irregular Defense Group) on a daylight search and destroy operation, the VC element would withdraw. The terrain throughout the operational area consisted of rice paddies and numerous canals, bordered by heavy vegetation. This enabled the enemy to observe the size of the CIDG elements while they were still 2000 to 3000 meters away from the enemy positions, allowing ample time to decide whether to engage or withdraw. To counter this, the following method was used: While conducting daylight search and destroy operations, the lead platoon always moved at least one terrain feature in front of the main body. This meant that it was a tree line and a canal line in front of the main force at all times. Because of this, the VC were only able to observe a force of between 20 to 30 men at one time. This would give the appearance of a platoon size operation, and the enemy would choose to engage rather than flee. The special instructions given to the lead platoon were to always stay in contact once it was initiated and to move in as close as possible to the enemy positions. As soon as a firm contact was made, artillery fire from the 155mm howitzers located at My Phuoc Tay would seal off the enemy's escape routes. While this was being done, the main CIDG force was still concealed in the next wood line away from the firefight. The ability to flank a fixed enemy position in this kind of terrain was the key to success on this type of operation. While the lead platoon kept the enemy force in contact, artillery sealed off the escape routes, thus keeping the enemy in their bunkers or killing many of them as they tried to escape. The main CIDG elements were thus able to attack successfully from the enemy's flank and overrun his positions.

4. (U) USACDC Discussion: None

5. (U) USACDC Action: This item has been forwarded to the USASWS for inclusion in FM 31-73 and use in appropriate instructional courses, and will be retained for consideration or inclusion in FM 31-21, Special Forces Operations.

NOTE: See also page 3.9, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967.

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1. (U) Reference: Operational Report - Lessons Learned, 135th Military Intelligence Group, 31 July 1967.
2. (U) Item: Indigenous Absenteeism Early Warning System.
3. (C) Unit Comments: Care must be exercised to subject indigenous absenteeism to close scrutiny, since an extremely large number of unwarranted indigenous employee absentees could possible indicate a planned attack on a US installation by VC (Viet Cong) forces. Experience has shown that VC have security leaks and relatives of VC have good knowledge of impending attacks on US installations.
4. (U) USACDC Discussion: This lesson learned reinforces existing US Army Special Forces doctrine on unconventional warfare. Absenteeism on a planned basis is encouraged as a subtle sabotage measure in that it impacts on production rates and totals and, therefore, hurts the development effort. Subversive forces seeking to win or maintain friends among the populace, deliberately but carefully alert selected individuals or elements of impending operations to secure their safety.
5. (U) USACDC Action: This item will be retained for consideration in FM 31-21, Special Forces Operations, and FM 31-23, Stability Operations - US Army Doctrine.

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1. (U) Reference: Operational Report - Lessons Learned 5th Special Forces Group, 15 August 1967.
2. (C) Item: Attack on Lang Vei, 4 May 1967.
3. (C) Unit Comments: No artillery was employed during the first hour of the enemy attack. A considerable amount of time elapsed before on-call artillery at Camp Khe Sanh was registered accurately enough to provide any supporting fires. The artillery fire plan is an integral part of the camp reaction plan, and it must be exercised occasionally to insure effectiveness. Commanders should take the time to plan and coordinate carefully with their supporting units. In order to be timely and effective, the artillery must have a current fire plan for the camp and be afforded an opportunity to conduct registrations periodically in the target area. When alerts are called and there is preplanned artillery within range, the support artillery FDC (Fire Direction Center) should be alerted as well as the camp personnel, and where possible the camp should call for some concentration fires or at least illuminating flares.
4. (U) USACDC Discussion: None.
5. (U) USACDC Action: This item has been forwarded to USASWS for possible inclusion in FM 31-73 and use in appropriate courses of instruction, and retained for consideration in FM 31-21, Special Forces Operations.

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1. (U) Reference: Operational Report - Lessons Learned, 10th Combat Aviation Battalion, 4 January 1967.
2. (C) Item: Selection of Alternate Landing Zones for Combat Assaults.
3. (C) Unit Comments: The landing zones selected for combat assaults normally receive preparatory fires from tactical air, artillery or gunships. In many instances these preparatory fires ignite the scrub bush or grass setting the landing zone ablaze, making it difficult and sometimes impossible to land troops and supplies in the primary landing area. Wherever possible an alternate landing zone must be selected in the event that the primary landing zone becomes unsafe for landing.
4. (U) USACDC Discussion: None.
5. (U) USACDC Action: This item has been forwarded to USASWS for possible inclusion in FM 31-73 and for use in the MATA course of instruction. It will also be considered for inclusion in FM 31-23, Stability Operations - US Army Doctrine.

NOTE: See also page 3.29, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967; and page 2.33, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967.

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1. (U) Reference: Operational Report - Lessons Learned, 5th Special Forces Group, 15 August 1967.
2. (U) Item: Signalling Aircraft at Night.
3. (C) Unit Comments: Colored smoke cannot be seen at night, and the use of flares gives away the unit's position. During a night extraction under the light of aircraft flares, it was discovered that a signal mirror could be utilized to signal friendly aircraft. Pilots reported that the emission of reflected light was strong and more than adequate for signalling purposes. An important advantage over other lights is that the signal is directional.
4. (U) USACDC Discussion: None.
5. (U) USACDC Action: This item has been forwarded to USASWS for possible inclusion in FM 31-73 and appropriate training, and will be considered for inclusion in FM 31-21, Special Forces Operations.

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1. (U) Reference: Operational Report - Lessons Learned 199th Infantry Brigade, 18 October 1967.
2. (U) Item: Leaflets.
3. (C) Unit Comments: A close look at the mass produced leaflets provided by JUSPAO (Joint US Public Affairs Office), and other agencies, revealed that they did not fit our area of operations or were inaccurate in many ways. On several leaflets, ARVN soldiers are pictured with their arms around the shoulders of a recent Rallier (a VC who has returned to the CVN). In the picture, the ARVN soldier is at least a foot taller. This distortion of fact distracts from the leaflets. Other leaflets show Viet Cong wearing trapezoid shaped hats with a red star in front or they show them in full uniform. In actual fact, the Viet Cong wear no uniform. If they wear hats at all, they commonly wear the ordinary conical hat, with no distinguishing markings. Some cover separate themes making them entirely too lengthy, hard to read, and hard to understand. Leaflets must be designed with the area of their intended use in mind and must be factually accurate.
4. (U) USACDC Discussion: This item validates current doctrine concerning pretesting propaganda against a sample target to assure optimum effect of propaganda when employed against the target audience.
5. (U) USACDC Action: This item has been forwarded to USASWS for use in PSYOP and other appropriate courses of instruction, and will be retained for consideration in FM 33-1, Psychological Operations - US Army Doctrine.

NOTE: See also page 2.18, USACDC Lesson Learned report to Department of the Army, dated 18 January 1967, and pages 2.28, 3.11-3.12 and 3.14 of this report.

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1. (U) Reference: Battlefied Reports - A Summary of Lessons Learned, US Army Vietnam, 18 January 1968.
2. (U) Item: Chieu Hoi Enticement.
3. (C) Extracted Comments: Psychological warfare leaflets concerning Chieu Hoi consist mainly of written enticements which the average VC cannot read, or cartoons which he does not accept. The interrogation of Chieu Hoi shows a high illiteracy rate, and indicates that several of the major reasons for rallying consist of the following:
 - a. Constant hardships such as living in trenches and being constantly on the move.
 - b. Constant fear of artillery fire and air strikes.
 - c. Constant hard work and lack of compensation.
 - d. Loneliness, separation from their families.
 - e. Lack of, or scarcity of food.
 - f. False promises by the VC cadres regarding compensations and rewards.

Utilizing these reasons, an approach is being made to have photographs of actual scenes of Chieu Hoi and even ARVN families in a comfortable home with ample food and clothing, depicted in leaflet form. Each photograph would include a caption in simple Vietnamese which they could understand. Leaflets of this type would have a greater psychological impact on the average VC as he will be able to better understand the intended meaning of the message, thereby increasing the possibilities of his rallying.

4. (U) USACDC Discussion: Uncovering the motivating forces of a target audience should be the paramount consideration in any PSYOP. Too often appeals are developed that do not touch upon the sensitive areas in the personality and culture of the target audience. The time must be taken to uncover the motivating forces and then they must be developed into an appropriate appeal if the PSYOP is to have its optimum effect.
5. (U) USACDC Action: This item has been forwarded to USASWS for use in PSYOP and other courses of instruction, and will be retained for consideration in FM 33-1, Psychological Operations - US Army Doctrine.

NOTE: See also page 2.18, USACDC Lessons Learned report to Department of the Army, dated 18 Jan 67, and pages 2.27, 3.11-312 and 3.14 of this report.

1. (U) Reference: ORLL 57th Transportation Bn (Truck), 31 October 1967.
2. (U) Item: Shortcomings in TOE structure.
3. (U) Unit Comments: TOE 55-17F and 55-18F authorize only one SP4 dispatcher per company. Twenty-four hour operations require two dispatchers per company.
4. (U) USACDC Discussion: USACDC agrees that two dispatchers are required for the above TOE and also in similar TOE designed for a 24-hour operation.
5. (U) USACDC Action: USACDC will place two dispatchers in such units in the next scheduled study of the MACRIT program.

1. (U) Reference: Operational Report - Lesson Learned, 1st Signal Brigade (USASTRATCOM), 30 April 1967.
2. (U) Item: Technical Bulletin 55-46.
3. (U) Unit Comments (Summary): The report recommends that pertinent transportability data for vehicle-mounted communications equipment be included in TB 55-46, Standard Characteristics for Transportability of Military Vehicles and Equipment.
4. (U) USACDC Discussion: None.
5. (U) USACDC Action: An extract of the referenced report was forwarded on 24 April 1968 to the US Army Transportation Engineering Agency for action as appropriate.

1. (U) References:

a. Operational Report - Lessons Learned, 10th Transportation Battalion (Terminal), 31 October 1967.

b. Operational Report - Lessons Learned, 11th Transportation Battalion (Terminal), 30 April 1967.

2. (U) Item: Low Mast Forklift Trucks.

3. (U) Unit Comments (Summary): Both units report an urgent need for low mast forklift trucks for operation in the tween decks of cargo vessels.

4. (U) USACDC Discussion: The immediate problem has been met by ANC's modification of over 100 4,000-pound, gasoline-operated, forklift trucks. The collapsed mast height of these forklift trucks is 68 inches and the load height 100 inches.

5. (U) USACDC Action: TOE 55-117 will be changed in order to make low mast equipment available.

1. (U) Reference: Operational Report - Lessons Learned, 2d Maintenance Battalion (DS), 30 April 1967.

2. (U) Item: Repair Skills.

3. (U) Unit Comments (Summary): One of the observations of the commander was on the lack of sufficient repair skills, e.g., instrument, fire control, refrigeration, and radio repairmen

4. (U) USACDC Discussion:

a. In Change 1, FM 29-22, the role of fire control and instrument repairmen was changed from that of providing direct exchange service to that of actual maintenance on these items. Change 1 to TOE 29-206F will increase the number of repairmen in that unit to meet the expanded requirement.

b. As to refrigeration specialists, TOE 29-206F authorizes only one individual of this occupational specialty within a unit supporting refrigeration equipment, which is normally distributed over a large geographical area. The deficiency is recognized and will be considered in the development of future TOE.

c. Maintenance of signal equipment is currently the subject of a MACRIT study. It is possible that substantial increases in radio repairmen will be justified by this study in the future development of TOE.

5. (U) USACDC Action: Actions other than those cited above will depend on the findings of the MACRIT study.

1. (U) References:

- a. Operational Report - Lessons Learned, 1st Infantry Division.
- b. Battlefield Reports - A Summary of Lessons Learned, USARV, 18 January 1968.
- c. Operational Report - Lessons Learned, 125th Transportation Command.

2. (U) Item: Failure of Commercial Packaging of Non-perishable Subsistence.

3. (U) Unit Comments (Summary): References a and b are reiterations of problems reported by several other units on the rapid deterioration of commercial packaging of non-perishable subsistence items due to weather conditions and lack of covered storage. This aggravates both spoilage and pilferage. Reference c, suggests an expedient solution.

4. (U) USACDC Discussion: The improvement of packaging is a continuing concern of both CDC and AMC and improvements are steadily effected.

5. (U) USACDC Action: A limited repacking capability as addressed in reference c, above, is currently included in responsibilities of supply personnel in units.

1. (U) Reference: Operational Report - Lessons Learned Number 2-67, Department of the Army.
2. (U) Item: Reduction of Weight and Bulk of Subsistence.
3. (U) Unit Comments: The 1st Brigade, 101st Airborne Division, suggests use of rice, powdered soup, and LRRP rations in conjunction with C ration.
4. (U) USACDC Discussion: The recommendation to provide lightweight convenience foods and meals for use by long range patrols, and units involved in clandestine operations is currently under development. The best item available, pending the development and standardization of the "food packet, meal, ready-to-eat, individual," is the packet, "Subsistence, long range patrol."
5. (U) USACDC Action: The USACDC Supply Agency has an SDR current on a "combat ration, meal, individual, ready-to-eat" which addresses this question.

1. (U) Reference: Operational Report - Lessons Learned, 1st Infantry Division.
2. (U) Item: Shortage of 5000-Gallon POL vehicles.
3. (U) Unit Comments (Summary): Increase TOE allowance of 5000-gallon tankers in Supply and Transport Battalion of DISCOM.
4. (U) USACDC Discussion: This matter has been under study and test for some time. An increase in the TOE allowance of these vehicles has been authorized by Department of the Army.
5. (U) USACDC Action: Nine additional 5000-gallon FSV will be added to the division Supply and Transport Battalion TOE.

1. (U) Reference: Operational Report - Lessons Learned, 1st Logistical Command.
2. (U) Item: Air Supply.
3. (U) Unit Comments: A C-130 aircraft fitted with two 2000-gallon collapsible tanks can be used as an emergency bulk refueler in forward areas.
4. (U) USACDC Discussion: Although supply doctrine emphasizes the use of any adaptable means of supply of bulk petroleum products, this specific application has not been identified.
5. (U) USACDC Action: The USACDC Supply Agency will investigate the potential of this idea, and after coordination with the Air Force will incorporate any approved use in future doctrinal publications.

1. (U) References:

a. Operational Report - Lessons Learned, 98th Quartermaster Battalion.

b. Operational Report - Lessons Learned, 14th Inventory Control Center.

2. (U) Item: Class I Supply Point Operation.

3. (U) Unit Comments (Summary):

a. The battalion reports congestion because of proximity of Class I storage site and ration breakdown point, and administrative delays in clearance.

b. The ICC suggests requirement to simplify Class I supply point administration.

4. (U) USACDC Discussion: These areas are under constant consideration by command and management. The general guidance now available should enable local commanders to meet special conditions.

5. (U) USACDC Action: Revisions to doctrinal publications will emphasize adequate space requirements for Class I operations.

1. (U) References:
 - a. Operational Report - Lessons Learned, 70th Engineer Battalion.
 - b. Operational Report - Lessons Learned, 14th Inventory Control Center.
2. (U) Item: Liaison
3. (U) Unit Comments (Summary):
 - a. The reporting battalion cites disruption of normal supply procedures by "crash" requirements and suggests continuous user-supplier liaison to mitigate or avoid this.
 - b. The ICC suggests the need of such liaison between the center and the units supported by it.
4. (U) USACDC Discussion: The need of such contacts has been both implicitly and expressly considered in both operational and managerial doctrine publications.
5. (U) USACDC Action: This subject will be continuously studied and its application further accentuated in future doctrinal literature.

1. (U) Reference: Operational Report - Lessons Learned, 18th Military Police Brigade, 31 July 1967.

2. (U) Item: Radio AN/PRR-9 and AN/PRT-4.

3. (U) Unit Comments: Due to lightweight and ease of handling, these radios were well suited for Sentry Dog Handlers. Receiver set was attached to helmet, transmitter to the vest which allowed the Sentry Dog Handler to perform his mission and still maintain the capability of immediate radio contact with the backup force.

4. (U) USACDC Discussion: This requirement has been validated by several reports over the period of commitment of such Sentry Dog Teams in Vietnam.

5. (U) USACDC Action: Communications equipment will be included in the next scheduled revision to Functional Dog Teams PB and PC, TOE 19-500G.

1. (U) Reference: Operational Report - Lessons Learned, Military Police Group (Criminal Investigation) (Provisional), 31 October 1967.
2. (U) Item: Use of Helicopters for Operations by Criminal Investigators.
3. (U) Unit Comments: Use of a helicopter by criminal investigation teams enable a raid to have surprise and speed with a resultant recovery of a great deal of Government/PX and contraband items. Such use should be considered in future doctrine.
4. (U) USACDC Discussion: None.
5. (U) USACDC Action: Concept for utilization will be incorporated into applicable section of FM 19-4, Military Police Support Theatre of Operations, a planned consolidation of FM 19-2-1 (Test), Military Police Support Field Army Support Command (FASCOM) and FM 19-3-1 (Test), Military Police Support, TASCOC due FY 692.

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1. (U) Reference: Combat Lessons Bulletin Nr 14 (C), dated June 1967, USARV, (incl to OR-LL, 31 Oct 67).
2. (C) Item: Jeep-Mounted Mine Detectors.
3. (C) Extracted Comments: The 1st Engineer Battalion field tested a jeep-mounted mine detector consisting of a 6-foot detector head mounted on the front bumper of a jeep. The jeep was capable of being remote-control operated and moved forward at 5-10 mph. The vehicle came to an automatic halt when the head passed over a metallic object. The unit recommended that the detecting head be at least 8 feet wide.
4. (C) USACDC Discussion: Twenty-one of these jeep-mounted mine detectors for mounting on the M38A1, and 138 for mounting on the M151 have been ordered by MERDC. These devices have a 6 1/2 foot detector head and are primarily metallic detectors. In addition, MERDC is developing two 12 foot search heads for shipment to Vietnam.
5. (C) USACDC Action: CDOG para 638d(1) states a requirement for a Mine Detector, Vehicular Mounted. A revised QMR to replace this paragraph is currently being processed by USACDC. (DPQMR Mine Detector-Vehicular Mounted, ACN 1938.) In addition, a proposed QMDO for a Vehicular Mounted Mine Neutralizer has been forwarded to DA with recommendations for approval (ACN 1932).

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1. (U) References: Operational Reports - Lessons Learned

- a. 19th Engineer Battalion (Combat), 30 April 1967.
- b. 70th Engineer Battalion (Combat), 30 April 1967.
- c. 558th Engineer Battalion (Const), 30 April 1967.
- d. 159th Engineer Group (Const), 31 July 1967.

2. (U) Item: Material Handling Equipment (MHE).

3. (U) Unit Comments (Summary): Engineer Battalions, Combat and Construction, in RVN are engaged in heavy construction projects such as base camps and logistical facilities. Very large quantities of Class IV materials are handled daily. Under such circumstances, TOE cranes and wreckers have to be diverted from their primary mission or many additional man-hours are required to manually load and off-load these materials. Some of the units have been able to obtain either forklifts or their use on a temporary or part-time basis.

4. (U) USACDC Discussion: USACDC Engineer Agency has recognized the need for MHE in the battalions and has recommended the addition of a 10,000 lb capacity Rough Terrain Forklift to the Construction Battalions (TOE 5-115) and the addition of a 6000 lb capacity Rough Terrain Forklift to the divisional and non-divisional combat battalions. These items are to be utilized by the battalion S-4 for supply work.

5. (U) USACDC Action: The BOI for these items is now being staffed at HQ, USACDC prior to forwarding to DA for approval.

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1. (U) References:

- a. Department of the Army Pamphlet No. 350-15-7, 1 January 1968.
- b. Operational Report - Lessons Learned, 5th Battalion (AW) (SP), 2d Artillery.

2. (U) Item: Automatic Weapons Employment.

3. (C) Unit Comments (Summary): Various automatic weapons ground role employment techniques, as used in Vietnam, are described in general terms. These ground role employment techniques include the following:

- a. Perimeter security.
- b. Convoy escort.
- c. Security of road clearing parties and road outposting.
- d. Blocking force or flank security.
- e. Direct fire support or H&I fires.
- f. Search and destroy.
- g. Village seal.
- h. Mobile reserve or ready reaction force.
- i. Heli-lift operations.

4. (U) USACDC Discussion: In preparation for revision of Field Manual 44-2 Air Defense Artillery Employment (Automatic Weapons), the USACDC Air Defense Agency sent questionnaires to interested agencies and units, including the 5th Battalion 2d Artillery. In reply to questions on techniques for ground employment of automatic weapons, the 5th Battalion, 2d Artillery submitted substantially the same comments as those indicated in paragraph 3 above.

5. (U) USACDC Action: Applicable portions of data obtained as a result of questionnaires have been extracted and included in the draft revised version of FM 44-2. FM 44-2 is scheduled for submission to DA TAG in 1st quarter, FY 69.

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1. (U) Reference: Report of USCONARC Training Visit to RVN, 14-27 September 1967.
2. (U) Item: Intelligence Training.
3. (FOUO) Extracted Comments: Several G2 and S2 indicated a need to train order of battle and intelligence analysts in the techniques of determining the significance of information and intelligence in terms of what it means to the commander. Such personnel generally are excellent record keepers but do not have the capability to evaluate the information in terms of its significance. Interrogators are presently trained in techniques applicable to Caucasians; however, the techniques of interrogating Asiatics must be emphasized. Counterintelligence personnel must be taught the fundamentals of their role in combat intelligence. A feeling exists among G2 and S2 that counterintelligence school training is oriented to the aspects of conducting personnel security investigations.
4. (U) USACDC Discussion: Intelligence training is primarily the responsibility of the United States Army Intelligence School which received a copy of this report. This agency has discussed the counterintelligence combat intelligence training with the US Army Intelligence School and positive steps are being taken to strengthen the training in this field.
5. (U) USACDC Action: The portion of the report dealing with the role of interrogators and counterintelligence in combat intelligence is doctrine and is included in field manuals 30-15, Intelligence Interrogations, and the revised 30-17, Counterintelligence Operations, now at TAG for publishing.

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1. (U) Reference: Operational Report - Lessons Learned, 1st Military Intelligence Battalion (ARS), 31 January 1968.

2. (U) Item: Hand-Held Photographic Support.

3. (C) Unit Comments:

a. During the reporting period, the Battalion has rendered increased hand-held camera support to requesting units in Vietnam. The value of hand-held photography is widely accepted as a supplement to other aerial imagery, as well as to other intelligence sources. The use of light reconnaissance aircraft in conjunction with hand-held 35mm cameras enables low-level unique angle photography to be taken which will reveal camouflaged huts and other structures which would not have been visible on conventional photography. This support has been rendered by actual dispatch of Tactical Exploitation Teams (TET), which consist of highly skilled imagery interpreters and reproduction specialists, supplied on request to a unit for a specific mission. Also, the Battalion has loaned equipment and provided processing support, in addition to providing training to personnel of other units in photographic techniques, to enable these units to implement an organic hand-held camera program. Due to the time lapse in obtaining results from Air Force imagery, many commanders are requesting hand-held missions and organic Army photography in lieu of Air Force missions. This, in part, is the reason for the noticeable increase in the number of hand-held missions.

b. Detachment B provided hand-held aerial photographs of hamlets in the Hoi An sub-sector from which agent/informer sources could relate the actual structure in which VC or VC equipment or supplies were housed. The police could make arrests by going directly to the suspect building, giving the occupants little or no warning. This method of debriefing has proven highly successful and is being expanded.

c. The hand-held camera program in Vietnam has progressed to the stage where it can now be evaluated with regard to possible Army-wide implementation. The achievements of the program should be documented within Department of the Army, so that the program can be readily implemented in other tactical or training situations that may arise. The photographic equipment utilized in the program should be standardized, included in the TOE authorizations of appropriate units, and made available through normal supply channels.

4. (U) USACDC Discussion:

a. While the hand-held camera program does produce needed information, it should be considered a supplement to other types of aerial photography.

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The program is not intended to replace imagery produced by the Army aerial surveillance companies or by the Air Force. The Intelligence Agency agrees with the 1st Military Intelligence Battalion (ARS) that programs should be included in doctrinal publications, but primarily for use during stability operations.

b. An abbreviated performance characteristic for a hand-held surveillance camera system, self-developing, is presently at USACDC headquarters with a recommendation for Army-wide implementation. The camera will utilize Polaroid film and have a capability for producing a negative. The characteristic was based on a USARV Ensure Action requirement for the camera. 35mm film was not considered, due to the lack of resolution when enlarged and lack of a self-developing capability.

5. (U) USACDC Action: The aerial hand-held camera program will be included in the next revision of FM 30-31, Stability Operations-Intelligence (U), and FM 30-20, Aerial Surveillance-Reconnaissance, Field Army, which are scheduled for forwarding to The Adjutant General during 3d Qtr, FY 69, and 2d Qtr, FY 69, respectively.

NOTE: See also page 3.23, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967; page 3.31, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; page 2.30, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968, and pages 4.18 and 4.19 of the report.

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1. (U) Reference: Operational Report - Lessons Learned, 1st Military Intelligence Battalion (ARS), 31 January 1968.

2. (U) Item: Enlargement of Aerial Photography.

3. (C) Unit Comments:

a. Only a limited enlargement capability is incorporated into the ES-38 photographic darkroom group. The EN-36A enlarger can make enlarged prints from 70mm and 5 inch film, but not from 9 inch film. A means was needed to produce enlarged segments from 9"X9" and 9"X18" negatives. Detachment A developed a system of enlarging segments of negatives of these sizes by modifying a standard Lucky enlarger (commercial cost - \$37.00). A moveable lens system is used to scan the desired area of the negative. Sections have been enlarged up to 10 times without encountering severe grain problems. Enlargements of greater areas of aerial photographs could be accomplished by using a 4"X5" format camera to photograph the desired areas. The resulting negative could then be projected to whatever size enlargement is required. Since enlargement requirements are relatively limited, satisfactory results can be obtained with the modified Lucky enlarger.

b. The production of 8"X10" enlargements of 35mm negatives is a relatively slow process. Time is required to develop, wash, and dry the prints. However, the EN-36A enlarger of the ES-38 group can be adapted to project images from 35mm film by using components of the standard Lucky enlarger. The metering and exposure regulation system of the EN-36A enlarger can be utilized to adjust the 35mm enlargements. The entire roll of 35mm film can be projected onto a 200 foot roll of paper, which can then be processed through the EH-48A processor. In this manner, the prints are developed, washed, and dried in a continuous process. It has been noted that the prints obtained by use of this process are of lesser quality than those produced by the normal method, due to lack of proper lens filters. The prints are adequate, however, for interpretation purposes. This method is three to four times faster than the standard process. When high quality prints are not required and speed of processing is essential, the modified EN-36A enlarger can be used to make standard enlargements from 35mm film.

4. (U) USACDC Discussion: The USACDC Intelligence Agency agrees with the discussion of the 1st Military Intelligence Battalion (ARS) relative to the inadequacies of the ES-38, photographic darkroom group. An enlargement capability to handle all types of film produced by the hand-held camera program should be included in the next procurement of the ES-38.

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5. (U) USACDC Action: Action is being taken to include monitoring of the ES-38 equipment under the USACDC Study of the Army Test and Evaluation Program. The recommendation for the enlargement capability will be forwarded to the cognizant Army Materiel Command Project Manager.

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1. (U) Reference: Operational Report - Lessons Learned, 3d Brigade Task Force, 25th Infantry Division, 30 April 1967.
2. (U) Item: 40mm CS Round
3. (C) Unit Comments: Recommend that a standard 40mm CS round be developed for standard issue to combat units.
4. (C) USACDC Discussion: ENSURE Item #36.2 is the E24 CS Riot Control Cartridge. This item is fired hand-held or with the M79 grenade launcher. The container emits CS smoke for approximately 15 seconds. Twenty thousand E24 munitions are scheduled for Vietnam. The E24 is expected to be evaluated by ACTIV after April 1968. In addition to the E24, ENSURE Item #87.3 is the Cartridge, 40mm CS XM651/XM651E1. The projectile is filled with a CS pyrotechnic mixture which emits CS smoke for approximately 30 seconds. Effective range is 30 to 200 meters. The cartridge is fired by the M79 grenade launcher. This munition was made available for evaluation in Vietnam in August 1967.
5. (U) USACDC Action: A revised draft proposed SDR for Cartridge, 40mm, Tactical CS (ACN 13219) has been prepared and is being staffed.

NOTE: See also pages 2.52, 2.53 and 2.57 of this report.

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1. (U) Reference: Operational Report - Lessons Learned, submitted by Headquarters US Army Vietnam, 31 October 1967.

2. (U) Item: Chemical Employment Concepts.

3. (C) Extracted Comments from USARV Chemical Conference: There is no fixed chemical employment doctrine in RVN. Units are experimenting with varying employment concepts in order to determine those that can best satisfy the requirements of the tactical commander. The presently available arsenal of Chemical Munitions is inadequate to support operational requirements. A promising new family of riot control agent CS munitions is being developed and will shortly be made available for operational evaluation in RVN. These munitions will enhance the ability of US forces to engage in combat operations, and will add a new dimension to the battlefield.

4. (C) USACDC Discussion:

a. The ACSFOR CS Evaluation Team, which was in Vietnam from 14 January to 20 March 1968, evaluated the new CS munitions which were available in RVN during the period the team was in RVN. The results of this evaluation are not available at this time. Further evaluations are scheduled by ACTIV in the area of CS munitions.

b. Requests for exceptional Essential Elements of Analysis (EEA) have been forwarded to RVN on various CS employment techniques. The results of this request are not complete at this time.

5. (U) USACDC Action: USACDC will:

a. Take action as required upon receipt of the ACSFOR CS Evaluation Team report.

b. Take action as required upon receipt of the ACTIV evaluations.

c. Evaluate the EEA received from RVN for required action.

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1. (U) References: Operational Report - Lessons Learned

a. 45th Engineer Group (Const), 30 April 1967.

b. 1st Cavalry Division (AM), 30 April 1967.

2. (U) Item: Specialized Engineer Construction Equipment.

3. (U) Unit Comments:

a. There have been numerous instances where shortages of certain specialized items of equipment hindered construction. All battalions are now engaged in road, airfield or depot expansion projects where compaction equipment is absolutely necessary. The combat battalions do not have the required compaction equipment to carry out earth-moving construction projects. The most critical shortages are 35-ton compactors, sheepfoot rollers, wobbly-wheeled rollers, 10-ton steel-wheeled rollers, asphalt finishing rollers and water distributors.

b. The Engineer Command stated that the contractor assets, in-country, would be distributed among troop units. These assets include all types of engineer construction equipment.

4. USACDC Discussion: In December 1967 and February 1968, a team from ACSFOR made a trip to RVN to discuss MTOE actions. OCE had a representative on that team. As a result of these visits, five Class IV equipment pools will be set up in RVN and operated on an area basis. These pools will contain various types of standard and nonstandard construction equipment necessary for the varied missions in RVN. This equipment will come from in-country assets as well as additional shipment from CONUS.

5. USACDC Action: The USACDC Engineer Agency is currently evaluating modern compaction equipment in an effort to update these items. Recommendations will be forwarded to ACSFOR within the next sixty days.

1. (U) Reference: Trip Report to 1st Air Cavalry Division 11-14 September 1967, USACDC Liaison Detachment, USARV, 19 September 1967.

2. (U) Item: M79 CS Ammunition.

3. (U) Extracted Comments: This ammunition is well liked and the division wants more. Personnel state it can be placed in the entrance to a bunker from 200 meters thus obviating the requirement for the infantryman to crawl to throwing range. Although it does not drive the NVA out of a bunker, it makes them too sick to fight. The NVA is now using a cheap gas mask. These come apart at the seams from the heat; however, it is expected they will correct this deficiency shortly.

4. (U) USACDC Discussion: This employment of riot control agents is already covered in FM 3-10.

5. (U) USACDC Action: Doctrine for employment for the M79 CS Ammunition (Cartridge 40mm CS XM651/XM651E1) will be considered for inclusion in appropriate publications. The draft proposed SDR for Cartridge, 40mm, Tactical CS (ACN 13219) is being staffed. The degree of protection against riot control agents which is eventually achieved by VC and NVA forces will affect approval of this D7SDR.

NOTE: See also pages 2.49, 2.53 and 2.57 of this report.

1. (U) Reference: Letter, CDCCS-LV, USACDC Liaison Detachment USARV, subject: Employment of Riot Control Agents (U), 22 February 1968.

2. (U) Item: Employment of Riot Control Agents.

3. (U) Extracted Comments:

a. During an airmobile assault and reconnaissance in force during Operation AKRON V on 13 January 1968, Co B, 2/47th Infantry, 9th Infantry Division was engaged in heavy contact at YS275835. We were engaged by a well entrenched Viet Cong force occupying a defensive bunker system of battalion size.

b. During the contact, the VC repeatedly withstood artillery and air strikes without withdrawing from his positions. The positions he occupied consisted of a fighting trench surrounding the bunker system and fighting bunkers with at least 3' of overhead cover consisting of logs and earth. The area was double canopy jungle, one level at 25' and the other at 100'.

c. During one frontal assault, I had my men don their protective masks and had two of my M-79 grenadiers utilize the new CS projectile for the M-79. This shell proved to be the opening wedge which allowed us to overrun the enemy force while he was attempting to flee the bunkers. The weapon is accurate enough to lay this projectile directly into an enemy bunker.

d. The grenadiers covered the forward area of the bunker system with accurate CS fire, and the enemy fire slackened greatly. In fact we assaulted initially with our masks on and moved in so quickly that we caught many enemy inside their bunkers. We used about 35 CS projectiles and I consider that they were a key factor in our ability to overrun the enemies strong defensive position with a smaller force.

4. (U) USACDC Discussion: None

5. (U) USACDC Action: This item will be considered for incorporation in FM 3-10. The revised draft proposed SDR for Cartridge, 40mm, Tactical CS (ACN 13219) is being staffed.

NOTE: See also pages 2.49, 2.52 and 2.57 of this report.

1. (U) Reference: Operational Report - Lessons Learned, submitted by United States Army Vietnam, 31 July 1967.

2. (U) Item: Use of Non-toxic Agent (CS) Within an Underground Complex.

3. (U) Unit Comments: CS Agent is extremely effective in dislodging the enemy from the numerous hiding places within a cave. If the enemy is there, the CS will cause him to reveal his position or cause him to exit his hiding place. The "Mighty Mite" was unsuccessful because of the vast size of the cave and its numerous egresses. There was no way to seal the cave effectively to insure penetration of the agent when using the "Mighty Mite." Drafts and air currents were unpredictable and frequently prevented the "Mighty Mite" from forcing the agent into the lower portion of the rock cavities.

4. (U) USACDC Discussion: The M106 Riot Control Agent Dispenser (Mighty Mite) is an agricultural backpack sprayer-duster adapted for use by the Army and has recognized limitations as described above. An ENSURE request (#34) has been submitted and approved for a large capacity blower for use in flushing large complex tunnel systems. Edgewood Arsenal is currently conducting the developmental effort on this item. In the absence of a large capacity blower units in Vietnam have employed the E8 tactical CS launcher in some large tunnels and caves.

5. (U) USACDC Action: Progress of development on the large capacity blower is being monitored.

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1. (U) Reference: Operational Report - Lessons Learned, Office of the Chemical Officer, 9th Infantry Division, 2 November 1967.
2. (U) Item: Emission time of the E158 CS Cluster.
3. (C) Unit Comments: Due to the short emission time of the E158 CS Cluster, best results can be obtained by dropping a group of several E158 CS Clusters at intervals of 15 to 20 minutes.
4. (C) USACDC Discussion: The burning time of the E49 Canister in the E158 CS Cluster is 7-19 seconds. ENSURE item #160, Dispenser, CS/CN for UE-1 Aircraft will have the capability of generating smoke/CS/CN, or any combination of the agents. This system should provide additional flexibility for delivery of CS. Evaluation of the prototype of this delivery system began in November 1967 by the 25th Infantry Division. The evaluation of other CS artillery munitions will take place in RVN during 15 January - 14 April 1968. These munitions will provide additional flexibility for improved delivery of CS.
5. (U) USACDC Action: The evaluation of all CS munitions will continue to be monitored for possible incorporation in publications and other actions which may be required.

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1. (U) Reference: Operational Report - Lessons Learned II Field Force, Vietnam, Artillery, 31 July 1967.
2. (U) Item: Installation of Speech Security Equipment T/SEC-KY-8.
3. (C) Unit Comments: During this reporting period the communications platoon installed a Secure Speech (FM) link between this headquarters and the two subordinate groups, using Speech Security Equipment T SEC-KY-8. This equipment provides direct secure communications between the S3 Sections of the 23d and 54th Artillery Groups. Two precautions to observe during the installation of Speech Security Equipment T/SEC-KY-8 are:
 - a. Insure the proper Adapter Card is installed. The Adapter Card used for all configurations of the AN/VRC-12 family of RM radios is the ONO20399-1.
 - b. To make the Receiver Transmitter RT-524 compatible with the KY-8 place the X-MODE-NORMAL switch, (S-400 1) located on the back of assembly A4000, in the X-MODE position. Switching or changing filters as described in TM 11-5820-20 is not required. Proper utilization of Speech Security Equipment insures a rapid, direct, and secure means of communications between units.
4. (U) USACDC Discussion: TM-5820-401-20, rather than 11-5820-20, was published by USAECOM. During a discussion of the unit comment with the Communications and ADP Division, Director of Maintenance Engineering, USAECOM (AMSEL-ME-NMP-CR), it was suggested that engineers from that office analyze the validity of the unit comment, and if warranted, change the instructions in the TM accordingly.
5. (U) USACDC Action: Because of the immediate interest expressed by USAECOM, the unit comment has been extracted and forwarded directly to that headquarters for comment and action deemed appropriate.

NOTE: See also page 4.4, USACDC Lessons Learned report to Department of the Army, dated 21 February 1967; and page 2.17, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968.

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1. (U) Reference: Operational Report - Lessons Learned, US Army Vietnam, 30 April 1967.
2. (U) Item: Grenade Launchers.
3. (U) Unit Comments (Summary): This report cites problems connected with the XM148 Grenade Launcher.
4. (U) USACDC Discussion: None.
5. (U) USACDC Action: Problems concerning the XM148 are being solved by developments taking place in response to an SDR for a 40mm Detachable Grenade Launcher (ACN 6475).

NOTE: See also pages 2.49, 2.52 and 2.53 of this report.

1. (U) Reference: Trip Report to 5th Special Forces Group, USACDC Liaison Officer, USARV, 8 January 1968.

2. (U) Item: AN/PPS-5.

3. (U) Extracted Comments (Summary): The trip report discussed changes/modifications to the PPS-5 thought to be desirable by the visited unit.

4. (U) USACDC Discussion: None.

5. (U) USACDC Action:

a. The recommended changes/modifications to the AN/PPS-5 were sent to AMC for consideration. Copies were also provided to DA, OCRD, and ACSFOR. Information received from AMC indicates that ECOM has the information and is developing a position.

b. The recommendation concerning the 360 degree sweep antenna capability is being handled as a separate action. By letter, 13 March 1968, USACDC recommended to ACSFOR that:

(1) A 360 degree capability not be considered for worldwide application.

(2) Upon request from active or inactive field commands, the 360 degree capability should be provided through ENSURE type procedures by the use of modification kits.

NOTE: See also page 2.56, USACDC Lessons Learned report to Department of the Army, dated 23 August 1967.

1. (U) Reference: Operational Report - Lessons Learned, 2d Signal Group, 31 October 1967.
2. (U) Item: Generators.
3. (U) Unit Comments (Summary): This report cites a high incidence of malfunctions of the governor actuator on the Hol-Gar 30 KW generator. Approximately 40% of all deadlined 10 KW generators require replacement of the magneto to restore them to operation.
4. (U) USACDC Discussion: Concur with the USARV recommendation contained in paragraph 2f, page 56. The difficulties noted further confirm the requirement for a family of military design electric power units having an increased reliability.
5. (U) USACDC Action: A DPQMR for a family of military designed electric power plants is currently being processed (ACN 11592).

NOTE: See also pages 3.3 and 3.4 of this report.

1. (U) Reference: Letter, CDCCS-LV, subject: Tank Attack on LANG VEI, submitted by the USACDCLO to HQ USARV, 18 February 1968.
2. (U) Item: LAW.
3. (U) Extracted Comments (Summary): The letter cites the need for improving the 66mm LAW, which gave a disappointing performance in the attack.
4. (U) USACDC Discussion: The need to product improve the functional reliability of the M72 66mm LAW has been recognized. A product improvement program to accomplish this objective has been implemented. Confirmatory tests are being conducted by TECOM to insure the acceptability of system improvements. AMC will propose Type Classification/Limited Production of the product improved LAW as soon as these tests are accomplished. The need to improve the LAW effectiveness performance (range and penetration of targets) has also been recognized.
5. (U) USACDC Action: A PQMDO to facilitate a significant increase in range, accuracy, and target penetration capability was submitted to DA on 21 March 1968. (PQMDO for an Improved Lightweight Antitank Weapon, ACN 1992.)

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1. (U) Reference: Counterinsurgency Lessons Learned No. 66, US Military Assistance Command, Vietnam, 10 November 1967.
2. (U) Item: Mortar Rounds and Low Trajectory Projectiles.
3. (U) Unit Comments: The referenced publication cites a need for a radar to detect low trajectory projectiles.
4. (U) USACDC Discussion: None.
5. (C) USACDC Action: The USACDC Artillery Agency is currently preparing a QMDO for a system which would have the capability to detect, acquire, and destroy mortar rounds while in flight. As envisioned, the system would also have the capability (desirable) to detect, acquire, and destroy, while in flight, low trajectory projectiles and rockets, such as described in the report (ACN 13369).

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1. (U) Reference: Trip Report on visit to 4th Infantry Division
10-12 February 1968, USACDC Liaison Officer, USARV, 14 February 1968.

2. (U) Item: Steel Helmets.

3. (U) Extracted Comments: If the steel helmet is improved, lighter weight should be sought, rather than greater protection. One commander felt that the area of protection should be increased, at the temples and neck, rather than the degree of protection afforded the present area, but still felt that lighter weight was a more important. He also felt that various sizes of helmet should be provided (as with US Army flight helmets and German Army steel helmets).

4. (U) USACDC Discussion: None.

5. (U) USACDC Action: The present steel helmet will be replaced by a lighter helmet being developed in response to the DA approved QMR for a System of Lightweight Individual Combat Clothing and Equipment, ACN 6285. The desired area of coverage has not been finalized, and there is no plan to provide various sizes.

1. (U) Reference: Operational Report - Lessons Learned, 4th Infantry Division, 31 July 1967.

2. (U) Item: Airlifting Engineer Equipment.

3. (U) Comments: The weight of the D6B requires that the track, blade and power control unit (PCU) be disassembled to reduce the weight to 13,500 pounds, if it is to be lifted by a CH-54 helicopter. Often, because of the altitudes and resulting air density found in the Central Highlands, the weight must be lightened still more by removing and transporting separately the seat, lights, stack and aircleaner. Any protruding parts and components must be secured. When airlifting the tracks, bars should be fabricated and used as spacers for the tracks so they do not twist. There is a need for a bulldozer-type tractor capable of being airlifted in one sortie by a CH-47 "Chinook" helicopter. This with additional attachments such as a side mounted chain saw must be capable of performing the arduous task of cutting and clearing landing zones in the Central Highlands.

4. (U) USACDC Discussion:

a. There are three known bulldozer-type tractors available which are capable of being airlifted, without disassembly, in one sortie by the CH-47 series helicopter under HOGE, 4000 feet/95°F conditions. The following bulldozers are considered capable of performing the task of cutting, with appropriate attachments, and clearing landing zones in the Central Highlands of RVN:

<u>MODEL</u>	<u>ITEM</u>	<u>WEIGHT</u>
M450	Tractor	9600 lbs (4.85)
D4	Tractor	15500 lbs (7.75T)
TD340	Tractor	7350 lbs (3.67T)

b. The external payload lift capability of the CH-47 helicopter at operating conditions of HOGE, 4000 feet/95°F are as follows:

<u>MODEL</u>	<u>LIFT</u>
CH-47A	5.2 T
CH-47B	5.5 T
CH-47C	9.3 T

5. (U) USACDC Action: A PQMR has been prepared for a "Family of Standardized Engineer Construction Equipment" which will be available in the Army system in 1975 and will provide a dozer and other earthmoving equipment, easily sectionalized, which will have a maximum weight of 15000 lbs (7.5 T).

1. (U) References:

- a. Operational Report - Lessons Learned, 46th Engineer Battalion.
- b. Operational Report - Lessons Learned, 41st Signal Battalion.
- c. Operational Report - Lessons Learned, 4th Infantry Division.

2. (U) Item: Construction Material.

3. (U) Unit Comments:

a. Reference a suggests plastic bags for cement to prevent damage or destruction resulting from weather.

b. Other cited units suggest bags of plastic material as desirable for construction of revetments, etc., because of deterioration of burlap bags due to climatic conditions.

4. (U) USACDC Comments:

a. Shipment of moisture absorbing materials through varying temperature and climatic conditions is a subject of continuing study by development and procurement agencies. Proper storage practices will mitigate damage but cannot completely eliminate it.

b. Sandbags should have a useful life of one year and two years desired.

c. In tropical or semi-tropical areas synthetic or highly treated fiber bags are needed to meet this requirement.

d. Untreated burlap sandbags are satisfactory for use in areas such as ROK for a one-year performance.

e. Where it is required to use untreated burlap bags for bunkers, general base camp defense, supports for culverts, roads, etc., that the sandbag be used with a ten per cent (10%) fill of cement, if available, vs sand. Such a fill for the sandbags will hydrate with rain or spray and leave a solid construction even after the sandbag itself has deteriorated.

f. Acrylic, polypropylene, fiberglass, and many other sandbags have been and are being tested by MERDC. The acrylic and polypropylene sandbags have shown the greatest promise to date.

g. Large quantities of acrylic and polypropylene bags are now being purchased for shipment to Vietnam.

5. (U) USACDC Action: USACDC will continue to provide user comments and monitor the testing and development of sandbags.

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1. (U) Reference: Operational Report - Lessons Learned, USARV, 31 October 1967.

2. (U) Item: Combat Development Items.

3. (U) Unit Comments:

a. The 2½-ton truck, drop side cargo body, has been evaluated for 90 days. Tests indicate increased cargo moving capability. Transportation units reflect enthusiasm toward this new item. Operational quantities will be requested.

b. The evaluation of the CAR-15 Submachine Gun (XM 17731) (ENSURE 9) was completed on 18 September 1967. The final report indicated that the weapon was suitable for use in Vietnam and recommended that it be adopted as the standard weapon for selected individuals. The evaluation report and a recommended basis of issue for US units is being prepared.

4. (U) USACDC Discussion: N. e.

5. (C) USACDC Action:

a. (U) 2½-Ton Truck. A number of 2½-ton and 5-ton trucks have been sent to USARV for evaluation. AMC is about to develop the test program in conjunction with CDC to insure that adequate testing is accomplished prior to requesting type classification and subsequent changes made to production vehicles.

b. (C) CAR-15 Submachine Gun. Based on ENSURE, 2815 weapons were sent to USARV for evaluation. The final report recommending adoption of this item was considered by USACDC in formulating BOI. USAMC has been directed to take action to type classify the XM 177E1/E2. A formal IPR (prototype design review) is anticipated in May 1968 to finalize plans for ET/ST of this item prior to classification.

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1. (U) Reference: Operational Report - Lessons Learned, 18th Engineer Brigade, 31 October 1967.

2. (U) Item: Rock Production.

3. (U) Unit Comments: One of the major engineer missions of engineers in any operational theatre is the construction of roads, temporary and permanent, to provide a means of movement for both tactical and logistical operations. In Vietnam even more engineer effort has had to be expended for the construction of the depot facilities necessary to support combat operations, and more effort has had to be expended to provide living areas, maintenance facilities, communications centers, headquarters complexes, airfields and aviation facilities. No one single factor in this building of Vietnam into a huge military installation costing millions of dollars and millions of man-hours is as singularly important to the engineers as the availability of crushed rock. Almost no vertical construction can be done without provisions for a solid base to work from - and this solid base is composed of crushed rock. Crushed rock is needed for concrete aggregate, asphaltic concrete, road base and surface treatments. Because of this, considerable amount of effort has been expended in improving rock production. During the previous reporting period the average weekly production of the 18th Engineer Brigade was 46,620 tons of rock per week. During this reporting period the average weekly rock production has been 68,831 tons of rock per week. This represents a 4 percent increase. This increase has been a result of three factors:

- a. An increase in the experience of personnel.
- b. The addition of additional rock crushing equipment.
- c. More attention to a good maintenance program.

During the past reporting period, 639,448 cubic yards of crushed rock were produced at 16 different crushing locations which were operated by 11 different units with the type of unit varying from combat battalions to construction support companies.

4. (U) USACDC Discussion: None.

5. (U) USACDC Action: The USACDC Engineer Agency is evaluating present rock crushing equipment to determine what immediate action USACDC can recommend which will assist the productive output of the equipment in Vietnam.

1. (U) Reference: Operational Report - Lessons Learned, 5th Special Forces Group, 31 October 1967.

2. (U) Lightweight Individual Equipment.

3. (U) Unit Comments:

a. Lightweight Jungle Hammocks. The hammock is constructed from water repellant treated nylon fabric, 3 feet by 8 feet in size, with two 15 foot, $\frac{1}{2}$ inch thick, polyester drawcords. The evaluation of the hammocks has been completed and the 5th SFGA has requested basis of issue of one per USASF.

b. Lightweight Nylon Rucksack. Thirty-one lightweight rucksacks were tested by 5th SFGA. A high degree of enthusiasm was expressed by individuals conducting the testing. The noteworthy features of the rucksacks are: Lightweight nylon construction, quick-release buckles on shoulder straps, plastic holding device on the drawstrings for the large compartment, five sections of webbing with eyelets for mounting additional equipment, and a pocket with velcro fastener in the cover of the large compartment. The requested basis of issue is one per USASF. No information is presently available as to when the item will be available for issue.

4. (U) USACDC Discussion: None

5. (U) USACDC Action:

a. Lightweight Jungle Hammocks. The US Army Supply Center recommended that subject hammock be issued in lieu of the present standard "Hammock, Jungle with Canopy." On 29 March 1968, USACDC notified the Natick Laboratories of its concurrence with this recommendation.

b. Lightweight Nylon Rucksack. A formal In-Process Review concerning the LINCLOE Load Carrying Equipment and Rucksack was conducted at Natick Laboratories on 21 March 1968. The LINCLOE Rucksack (large and small) is an improved version of the subject rucksack. As a result of the In-Process Review, the LINCLOE Rucksack will be subjected to Engineering Test/Service Test.

1. (U) Reference: Letter, CDCPA-SO, subject: Reply to Army Chief of Staff on US Casualties from Own Fires, 7 November 1967.

2. (U) Item: Firing Battery Intercom System.

3. (U) Extracted Comments:

a. Observations on Potential Problem Areas. A CONARC team to RVN recommended the following action to CG CONARC, which may have an organizational impact: Request USACDC establish a requirement for a firing battery intercom system to facilitate read-back and checks.

b. Corrective Action Recommended for Consideration by DA Staff: Current doctrine for equipment authorizations provide for telephone communications between each gun/howitzer site and battery FDC.

4. (U) USACDC Discussion: This item was discussed in the USACDC Lessons Learned reports to DA, dated 14 March 1968 and 15 November 1967. Since then, informal evaluations of the AN/PRT-4 and AN/PRR-9 (squad radio) and the C-2328A/GRA-39 (remote) as a possible firing battery intracomunications system have been conducted by the USACDC Artillery Agency. The objective of those evaluations was to determine if the system would allow the battery executive officer the ability to control the firing of his guns, and still have the freedom of movement required to perform his necessary duties during the firing. The results of the evaluation appear to substantiate the objective.

5. (U) USACDC Action: Formal concurrence has been received from the United States Army Artillery Board and the United States Army Artillery and Missile School on the intracomunications system described, above. Further, a proposed BOI is being prepared for recommendation to Department of the Army.

NOTE: See also page 3.23, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967; page 2.12, USACDC Lessons Learned report to Department of the Army, dated 23 August 1967; page 2.11, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and page 3.28, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968.

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1. (U) Reference: Operational Report - Lessons Learned, 1st Battalion, 92nd Artillery, 31 July 1967.

2. (U) Item: Towed Medium Artillery Maneuverability.

3. (C) Comments:

a. Discussion: The towed 155-mm howitzer can be moved into areas inaccessible to self-propelled artillery through the use of helicopters. This gives the infantry added artillery firepower in remote areas. However, in the monsoon in the central highlands, the towed 155-mm howitzer is moved on the ground with great difficulty. The five ton prime mover cannot negotiate the wet roads and trails pulling a six and one-half ton weapon. Some of the areas the batteries have been into had little more than trails for access. Movement into these areas was possible only with APC's pulling both the prime movers and the howitzers. In planning moves on poor roads it is necessary to triple the time normally required for a move to allow for the prime movers and howitzers to be pulled from the mud or back onto the road. It is also necessary to plan for APC's whose sole duty is to pull prime movers and howitzers.

b. Observation: Maneuverability of the towed 155-mm howitzer would be tremendously improved if the XM 548 full tracked cargo carrier were used as a prime mover. This would give the towed howitzer the same cross-country maneuverability as the self-propelled howitzer and retain the airlift capability. Towed 155-mm howitzers of the battalion should not be replaced by self-propelled weapons. Simply increase their mobility.

4. (U) USACDC Discussion: During preparation of the QMR for the M548 tracked carrier an essential requirement for the vehicle to be capable of towing a 14,000 lb wheeled load was developed. This requirement was reflected in the DA Approved QMR dated 25 September 1964 and the vehicle and necessary brake kits were subsequently designed to satisfy the towing requirement and tested to insure the adequacy of equipment to function in the prime mover role. The vehicle is presently being deployed without the brake kit which will be needed to insure full suitability of the M548 as a prime mover for the M114 howitzer.

5. (U) USACDC Action: The requirement for M548 vehicles as prime movers for the 155 towed howitzer is peculiar to units in RVN at the present time. MTOE action by the user in RVN is indicated as a means of obtaining authorization. Consideration will be given to the above observation during the next scheduled revision of pertinent TOE.

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1. (U) Reference: Operational Report - Lessons Learned, 54th Artillery Group, 30 April 1967.

2. (C) Item: Counter-Mortar Radar

3. (C) Unit Comments:

a. Discussion: The most effective enemy tactic against artillery positions has been short, intense mortar attacks. During the past year a total of 14 mortar attacks have been made on units of this group, and the majority of Group casualties have been resulted from mortars. The ability to retaliate against such attack has been severely limited because the Group has no organic or attached counter-mortar radar to locate the enemy position. The attachment of four sections of AN/MPQ-4A radar would greatly enhance the ability of the Group to protect its own base camp and field positions as well as other friendly units in the immediate area.

b. Observation: Counter-mortar radar would greatly increase the Group's ability to effectively react to mortar attacks and would improve the security of all positions.

4. (C) USACDC Discussion: Concur with observation. DA has initiated action to procure 36 additional AN/MPQ-4A sets to be delivered between April-September 1969. Additionally the AN/TPQ-28 Omnidirectional Radar is being developed for employment in SEA. It is hoped that the increase in the number of radar sets resulting from procurement and also the TPQ-28 will provide some relief in the world-wide shortage of counter-mortar radar sets. Current TOE's do not authorize a counter-mortar radar set for non-divisional artillery battalions or to artillery group headquarters. Immediate changes should be accomplished by MTOE action if deemed appropriate.

5. (U) USACDC Action: The recommendation will be considered in conjunction with the next scheduled TOE revision.

NOTE: See also pages 2.29 and 2.36, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967, and page 2.11, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968.

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1. (U) Reference: Operational Report - Lessons Learned, 2nd Battalion, 11th Artillery, 31 July 1967.

2. (U) Item: Generators.

3. (U) Unit Comments:

a. Discussion: Generators are a major problem in RVN. The constant high temperatures accelerate engine wear to a great extent. The 10 KW Military Standard air-cooled generator utilized by this unit's Metro section required a new engine after approximately 100 days of operation. The PE 75 2.5 KW generator, presently issued as a standby is not adequate to perform the mission. The 10 KW Hobart water-cooled generators used by signal units are operating very well in RVN, especially when two are operated on an "on 4 hours, off 4 hours basis."

b. Observation: The air-cooled 10 KW generator used by the Metro section is not operating very well in RVN, and requires extensive maintenance in order to keep it operating. The water-cooled 10 KW works more effectively.

4. (U) USACDC Discussion:

a. This is the second operational report identifying failures of the 10 KW military standard air-cooled generator.

b. A copy of the first report was forwarded to the US Army Mobility Equipment Research and Development Center (MERDC) requesting assistance in the form of EIRs, analysis and proposed solutions to problems reported. MERDC's response indicates that EIRs have not been received by the Project Manager, Mobile Electric Power or the Directorate of Maintenance, MECOM, and that the operational report does not provide information necessary for evaluation. In addition to reporting problems in operational reports, EIRs should be sent to the appropriate National Maintenance Point (NMP). The NMP, through evaluation of EIRs, can best determine if problems are isolated cases or warrant corrective action because of common occurrence on a world-wide basis.

c. A review of the power requirements for the Metro sections shows that 2300 watts are required to power the basic metro equipment, excluding lights, soldering irons and test equipment. It is noted that the 2.5 KW is provided as backup power for periods where the 10 KW fails or requires maintenance. Because of the large difference between the 10 KW and 2.5 KW it is understandable that the 2.5 would be considered inadequate to power the metro equipment plus ancillary equipment. Perhaps two generators having equal power ratings would be more desirable for the metro section.

d. The information contained in the operational report is not adequate for use in evaluating the cause of the engine failure after 100 days. The design life of the 10 KW, 60 cycle, Military Standard Engine Generator Set, Model SF-10.0-MD/SIED is 1500 hours of operation, therefore, failures should be reported by hours indicated on the generator hour meter.

e. A QMR for a Family of Military Design Electric Power Plants is being processed that will provide improved performance, higher reliability, less maintenance and lower fuel consumption. (ACN 11592)

5. (U) USACDC Action:

a. The user will be queried for detailed information about the failures of the generator in question (e.g., hours of operation, operational environment, maintenance records prior to the engine failure, etc.).

b. An evaluation will be conducted to determine the suitability of the generator mix within the Metro Section and its affect on power availability.

NOTE: See also page 2.59 of this report.

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1. (U) Reference: Operational Report - Lessons Learned, 1st Infantry Division, 30 April 1967.

2. (U) Item: Transport of 155/8" Ammunition.

3. (C) Unit Comments:

a. Discussion: 155mm How/8" batteries are required by tactical necessity to carry more ammunition than their organic transportation will allow. Thus, the vehicles of several batteries may have to be pooled in order to move or resupply one battery. This seriously impairs mobility of the 155 How/8" howitzer battalion as a whole since batteries may be unable to react quickly to a requirement to displace because of nonavailability of transport.

b. Observation: Medium and heavy artillery units in Vietnam should be authorized additional 5-ton trucks for the purpose of hauling ammunition. A 50 percent increase would be sufficient.

4. (U) USACDC Discussion: In theaters where basic load requirements exceed organic transportation capability additional vehicles should be authorized by MTOE.

5. (U) USACDC Action: The recommendation will be considered in conjunction with scheduled revisions to pertinent TOE.

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1. (U) Reference: Operational Reports - Lessons Learned, 10th Combat Aviation Battalion, 30 April 1967.

2. (U) Item: Floor Microphone Buttons.

3. (U) Unit Comments (Summary): Crew chiefs and door gunners are used extensively to watch for obstructions and to guide pilots away from them. The present use of only a hand mike switch forces the door gunner and crew chief to use only one hand on their machinegun while talking on the intercom. This creates a situation that, if the helicopter is fired on, the gunners are either late returning enemy fire or in reporting it. It also causes delays in reporting obstructions. Recommend that all UH-1 helicopters be modified by the addition of floor microphone switches for the crew chief and gunner.

4. (U) USACDC Discussion: This item appears to have merit but requires further study.

5. (U) USACDC Action: The USACDC Aviation Agency has dispatched a message to the Iroquois (UH-1) Program Manager's office requesting information as to the feasibility and cost of incorporating the two foot switches into present inventory and production aircraft. Upon receipt of the requested information that Agency will submit a formal requirement if applicable.

1. (U) Reference: Operational Reports - Lessons Learned, 25th Infantry Division, 30 April 1967.

2. (U) Item: Organic Armed Helicopters.

3. (U) Unit Comments (Summary): Company "A" (airmobile) of the division aviation battalion does not have the capability of immediately responding to airmobile lift requirements because of the lack of an organic armed helicopter platoon. The general support requirements placed on Company "B" (GS) by the division's widely separated operations preclude rapid response. The armed helicopters in B/25 provide fire support to ground elements, night surveillance and interdiction missions, convoy cover, countermortar suppression and medical evacuation/resupply aircraft escort cover. Division requirements for gunship support on these missions presently tax this company's capabilities to the fullest.

4. (U) USACDC Discussion: None.

5. (U) USACDC Action: This item will be considered in the Aviation-75 Study.

1. (U) Reference: Operational Reports - Lessons Learned, 11th Combat Aviation Battalion, 30 April 1967.

2. (U) Item: Special Planning Considerations for Large Airmobile Combat Assaults.

3. (U) Unit Comments (Summary): During this reporting period this battalion conducted several large airmobile combat assaults. To facilitate command and control of large numbers of helicopters, two command and control helicopters were utilized. One C and C helicopter contained the air mission and ground commanders. The second C and C helicopter contained the alternate air mission commander. The duty of the alternate air mission commander was to control movement in and around pickup zones and refueling areas and to control insertion of spare helicopters into the airmobile operation as the situation required. The use of two C and C helicopters, and provisions for one spare helicopter for every ten troop lift helicopters is considered essential in conducting closely timed, well-coordinated large combat assaults.

4. (U) USACDC Discussion: FM 57-35, Airmobile Operations, provides doctrine for large-scale airmobile operations. Normally, control of movement in staging and loading areas is provided by pathfinder elements. Although spare helicopters are desirable, resources will seldom permit providing one spare helicopter for every ten troop lift helicopters. It is generally necessary to plan the use of all available helicopters and make adjustments as required. The use of a second C and C helicopter in controlling large airmobile operations should be given further study to determine its feasibility.

5. (U) USACDC Action: Future Operational Reports - Lessons Learned and other similar reports will be evaluated to provide a basis for determining the feasibility of utilizing two C and C helicopters during large airmobile operations.

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1. (U) Reference: Operational Reports - Lessons Learned, 11th Combat Aviation Battalion, 30 April 1967.
2. (U) Item: Combat Assaults Utilizing CH-47 Helicopters.
3. (C) Unit Comments (Summary): There has been an increasing trend during this reporting period to consider airmobile combat assaults utilizing CH-47 helicopters. This type of combat assault should receive very careful consideration before adoption. A CH-47 can carry an Infantry Platoon (-) into a landing zone; however, utilizing CH-47's on initial assaults into insecure landing zones could prove expensive in men and materiel. CH-47's have been utilized effectively to move combat troops into secure landing zones. Should a CH-47 receive extensive damage on an initial assault into an insecure landing zone, repair or recovery of the aircraft, plus the disposition of the passengers and crew would present complex technical problems.
4. (U) USACDC Discussion: The greater lift capability of the CH-47 helicopter permits a more rapid buildup of forces in airmobile operations. The decision to commit CH-47 helicopters into insecure landing zones must be based on a detailed evaluation of the risks against the urgency of the mission.
5. (U) USACDC Action: This item will be considered in the Aviation-75 Study and in the concept formulation of UTTAS.

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1. (U) Reference: Operational Report - Lessons Learned, 10th Combat Aviation Battalion, 4 January 1967.
2. (C) Item: Inadvertant Detonation of Claymore Mines.
3. (C) Unit Comments: During command and control, utility, and resupply missions, helicopters are often required to land outside the perimeter of Special Forces camps, or the forward tactical command posts of friendly units. These isolated headquarters normally are protected by Claymore mines. During an electrical storm, an aviation company had two UH-1s damaged by the inadvertant explosion of four Claymore mines by static electricity. Contact must be established with these isolated posts to insure the selection of a safe landing area.
4. (U) USACDC Discussion: Claymore mine components are relatively safe from detonation by electrostatic charges since the electric initiating cap (MG) issued with the mine will not detonate unless the internal bridgewire is heated to a certain temperature. Electrostatic charges are high voltage with extremely low amperage, which can cause very short duration sparks across gaps, but will normally not burn bridgewire or detonate caps. For further protection from electrostatic charges, firing wires should be buried. This prevents buildup of electrostatic charges along the wires and shields breaks in wire insulation. Firing switches should also be shunted when off to prevent the accumulation of voltage differentials in the two wires leading to the charge. A device which would consume some lightning charges striking the lead wires can be developed; however, the cost of such a device would be unacceptable when compared to the number of times lightning is likely to strike mines.
5. (U) USACDC Action: A multiple mine firing control panel which uses the XM32 firing device for power is now being considered for inclusion in the Army inventory. The control panel is equipped to fire from one to twelve mines or demolition charges, and is equipped with shunted switches.

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1. (C) Reference: Operational Report - Lessons Learned, I Field Force Vietnam, 30 April 1967.

2. (C) Item: Psychological Exploitation of Prisoners of War.

3. (C) Unit Comments:

a. Psychological exploitation of PWs can be used for propaganda against the enemy. Information as to home and family locations, education, family background, age, marital status, and civilian occupation may all be used for propaganda purposes. NVA and VC should be treated as separate categories to determine the type propaganda most suitable for each group. Prisoners' background should be examined in depth to determine availability of propaganda producing information.

b. At the cessation of hostilities, many PW will be released to South Vietnam with the same attitude and beliefs they had at the time of capture unless steps are taken to indoctrinate them in GVN policies, concepts, and belief in the democratic way. Psychological warfare teams should have the capability of conducting training programs on a continuing basis through the use of lectures, films, and daily personal contact. A thoroughly developed program would not only change prisoner attitude, but also make useful citizens of those who wish to remain in South Vietnam when they are repatriated or released.

c. Psychological warfare teams are authorized in the TOE of the PW camps. Although personnel are assigned against these authorizations, they are untrained and inadequate in numbers to properly carry out the task of re-education. The philosophy that on-the-job training will produce a qualified psychological operator lacks realism and full appreciation of the problem. While weekly classes are conducted at the Pleiku PW camp, they do not involve all prisoners, nor is the depth of the instruction sufficient to reach the PW through establishment of psychological rapport.

4. (C) USACDC Discussion: Prisoners of war interviewed at the PW camps represent a valuable source of information which could be developed for psychological warfare. One of the aims of any stability type operation should be the re-education and indoctrination of the populace. It has been observed in reports emanating from Vietnam that US units are not fully exploiting the resources available to conduct a successful stability type operation. PW, Chieu Hoi, and the like, are too often only considered for their immediate military significance - as a source of intelligence. More emphasis must be placed on the long run significance of these individuals. Programs should be developed

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and directed toward the re-education and indoctrination of these individuals so that later they can contribute to the eventual establishment of a stable environment.

5. (U) USACDC Action: This item will be held for further corroboration of doctrine in FM 33-1, Psychological Operations - US Army Doctrine, and for doctrine in the PSYOP portion of SW-75.

NOTE: See also page 2.18, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967, and pages 2.26, 2.27, and 3.14 of this report.

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1. (U) Reference: Marine Corps Bulletin 3480, Professional Knowledge Gained from Experience in Republic of Vietnam, 8 May 1967.

2. (C) Item: Revolutionary Development Operations.

3. (C) Extracted Comments: Revolutionary Development (RD) is the integrated military and civil program to restore, consolidate and expand government control, so that nation building can progress throughout the Republic of Vietnam. It consists of those coordinated military and civic actions necessary to liberate the people from VC control, restore public security, initiate political and economic development, extend effective GVN authority, and win the willing support of the people toward these ends. The focal point of RD is the people in the hamlets. The RD program aims at transforming VC-controlled hamlets in order that new life will be developed for the people within a secure environment and with improved political, economic, and social standards of living for all. An intermediate goal of the RD program is the evaluation of a secure hamlet. The following points provide a criteria for determining security status of a hamlet:

a. A census of residents has to be completed, the VC infrastructure has to be identified and destroyed, or neutralized, and an intelligence net has to be established to deter its recurrence.

b. An adequate popular force and/or paramilitary force has to be recruited, trained, armed, and qualified for operations.

c. Hamlet security must be effected with an integrated defensive system to include methods of requesting reinforcements.

d. Hamlet inhabitants are questioned and permitted to express their grievances and aspirations. With this information, some economic and social development projects have to be initiated to satisfy people's desires.

e. Hamlet inhabitants should be organized for self-defense and development tasks.

f. Hamlet chief should be elevated or appointed and trained. Chiefs should be supported by a majority of the people in the hamlet.

4. (U) USACDC Discussion: The employment of a RD program is a technique used by an American unit committed in low intensity, type I, warfare, but it can also be adapted through advisors to host country effort in low intensity, type II warfare.

5. (U) USACDC Action: This item will be held for further corroboration for inclusion in the rewrite of FM 21-23, Stability Operations - US Army Doctrine.

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1. (U) Reference: Operational Report - Lessons Learned, 6th Psychological Operations Battalion, 29 September 1967.

2. (U) Item: Leaflet/Poster Texts and Illustrations.

3. (U) Unit Comments: Pretesting of leaflet/poster texts and illustrations point up many areas where errors may exist not evident to the western manner of thinking. A photo of two elderly men (even though smiling) showed them squatting, and conveyed the impression that they were PW. Texts that seem highly credible in English may sound very false or foolish when expressed in Vietnamese. Illustrations and texts using expressions that convey particular meanings to Americans may have no meaning whatever to Vietnamese. Careful pretests of photos, illustrations, and texts for possible errors by the extensive use of available Vietnamese personnel (Armed Propaganda Platoon members, Chieu Hoi ralliers, Translator/Interpreter personnel) is indispensable in order to retain the credibility of propaganda.

4. (U) USACDC Discussion: This item validates doctrine concerning pretesting propaganda against a sample target to assure optimum effect of propaganda when employed against target audience.

5. (U) USACDC Action: This item will be retained as corroboration of doctrine in FM 33-1, Psychological Operations - US Army Doctrine.

NOTE: See also page 2.18, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967, and pages 2.27, 2.28, and 3.11 - 3.12 of this report.

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1. (U) Reference: Report of the Convoy Security Seminar, HQ USARV, 27 November 1967.
2. (U) Item: Route Security.
3. (C) Unit Comments (Summary): This document discussed the classification of environmental situations affecting route security.
4. (C) USACDC Discussion: The environmental situations, route classification, and requirements for route security described for each environmental situation and route classification appear to have "across the board" application for stability operations. The material presented stands alone with the removal of certain terms, e.g., situation I, red, etc., which do not have Army-wide acceptance.
5. (C) USACDC Action: The material presented will be considered for inclusion in FM 17-1 and other appropriate FMs.

NOTE: See also page 3.2, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967, and page 3.27, USACDC Lessons Learned report to Department of the Army, dated 23 August 1967.

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1. (U) Reference: Report of the Convoy Security Seminar, HQ USARV, 27 November 1967.
2. (U) Item: Convoy Procedures.
3. (U) Extracted Comments: As with any successful combat operation, conduct of a successful convoy is the result of the planning and coordination which has taken place prior to the move. A convoy should be conducted as a tactical operation. It should not be considered as an administrative move even though convoys have followed the same route before and were unmolested.
4. (C) USACDC Discussion: The discussion though brief has many salient points for both doctrine and application.
5. (C) USACDC Action: The material presented will be considered for inclusion in FM 17-1, FM 17-15, and other appropriate manuals.

NOTE: See also page 3.2, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967.

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1. (U) Reference: Trip Report on visit to the 4th Corps Advisory Headquarters, USACDC Liaison Detachment, USARV, 30 November 1967.
2. (C) Item: Xenon Searchlights and IR Viewers for APCs.
3. (C) Extracted Comments: As a result of APCs employed in a tank role, it was felt that they should have Xenon searchlights and IR viewers to make them more effective in night operations, such as convoy security. Other evaluations indicate the Xenon light and light intensification device would probably be a more effective combination.
4. (U) USACDC Discussion: None.
5. (C) USACDC Action: USACDC is considering the desirability of installing a new lightweight Xenon searchlight on APCs in Vietnam and requirements for this searchlight within a mechanized infantry unit for world-wide application.

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1. (U) Reference: Trip Report on a visit to the 4th Corps Advisory Headquarters, USACDC Liaison Detachment, USARV, 30 November 1967.
2. (U) Item: Heavier Weapon for APCs.
3. (C) Extracted Comments: General Desobry felt that there was a need for a heavier weapon than the .50 caliber or 7.62 machinegun and suggested the twin .50 caliber which they have tried. He also felt that rapid fire 40mm grenade launcher or 76mm gun used by the British and the Australians on the Saladin Armored Car and the M113 might be acceptable.
4. (C) USACDC Discussion: USACDC completed a feasibility study of the twin .50 caliber machinegun and concluded the system would be too complex for operations in a low-intensity environment. As a result of USARV's requesting ACSFOR to further consider this system, USAMC will initiate additional studies.
5. (C) USACDC Action: The USACDC Armor Agency will continue to monitor various programs underway at the present time to up-gun the weapons system on the M113. The 40mm grenade launcher is programmed for testing in Vietnam in 2nd Quarter, 1968, and the Armor Agency will follow closely the test reports.

NOTE: See also pages 2.38 and 2.39, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967, and page 4.1, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968.

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1. (U) Reference: Trip Report on a visit to the 9th Infantry Division, USACDC Liaison Detachment, USARV.
2. (U) Item: Use of Beehive Ammunition.
3. (C) Extracted Comments: Ambushed unit fired three rounds of beehive from the road into heavy jungle. Results of action showed that the three rounds cleared an approximate area 40 meters into jungle. A body count of five was established. These five bodies were 75 meters from the road with additional blood trails leading off into the jungle.
4. (C) USACDC Discussion: Lethality of beehive type ammunition, even in thick jungle, should be given wide publicity at command level. Whenever possible weapons systems possessing beehive capability should accompany convoys operating in generally insecure areas.
5. (U) USACDC Action: USACDC will continue to monitor the use of beehive ammunition to determine if its use requires changes in doctrine, materiel, or organizations.

NOTE: See also pages 2.59 - 2.60, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967.

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1. (U) Reference: Operational Report - Lessons Learned, 57th Transportation Battalion (Truck), 31 October 1967.

2. (U) Item: Capabilities of Truck Companies.

3. (U) Unit Comments (Summary): For operations in Vietnam this unit felt that the 5-ton Company could handle only 900 tons of cargo daily and that the 12-ton S and P Company could handle only 1800 tons daily.

4. (U) USACDC Discussion: The USACDC Transportation Agency has included in Transportation '75 a reduction from current doctrine for these two units to 1000 tons and 2000 tons respectively. Many other similar units are also covered in such reductions. These projected capabilities are for normal conditions, not just Vietnam.

5. (U) USACDC Action: Actions will depend on adoption of Transportation '75 Study.

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1. (U) Reference: Operational Report - Lessons Learned, 185th Maintenance Battalion, 31 July 1967.

2. (U) Item: Repair Parts Warrant Officer.

3. (U) Unit Comments (Summary): One of the observations of the commander was the lack of a repair parts supply career field for warrant officers.

4. (U) USACDC Discussion:

a. The actual physical change of the TOE technical supply assignments from lieutenants to warrant officers slots could be easily accomplished. The supply warrant officer has the benefit of many years of experience to draw from because the majority of them were appointed from the senior NCO ranks. Presently there are 16 enlisted MOS's in the supply field of which nine would give an individual entering warrant officer status a good background in the repair parts field.

b. The main problem will be in creating the parts supply warrant officer field again. At present, there is no MOS or course being taught to the warrant officer in this field and if warrant officers are put back into the parts supply or technical supply field then a definite MOS should be fielded and not merely drawn from the 761A unit supply tech group.

c. Many of the warrant officers who have this MOS do not have technical supply experience and the two fields, although related, are very different.

5. (U) USACDC Action: None at this time. The item will be kept under consideration.

1. (U) Reference: Operational Report - Lessons Learned, 588th Engineer Battalion (C) (A), 30 April 1967.
2. (FOUO) Item: Night Vision Device.
3. (FOUO) Unit Comments: The Engineer unit is required to man perimeter bunkers at the base camp and while on combat support missions. They have no organic night vision devices and must therefore rely on illumination flares. Flares are not practical since the noise warns the enemy in advance and the illumination ruins night vision. Unit recommends that two starlight scopes be issued to each line company and HHC.
4. (FOUO) USACDC Discussion: A current CDC sponsored Night Operation program consisting of doctrinal and materiel studies and troop tests will refine the requirement for varied kinds of night vision devices in all units.
5. (FOUO) USACDC Action: Night vision devices will be considered for inclusion in future TOE as discretionary items.

NOTE: See also page 2.42, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967; pages 2.1 - 2.2 and 3.34, USACDC Lessons Learned report to Department of the Army, dated 17 May 1967; page 3.35, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and pages 2.11 and 2.13 of this report.

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1. (U) Reference: Operational Report - Lessons Learned, 46th Engineer Battalion (Construction), 31 July 1967.

2. (U) Item: Drivers for S2/S3 Section.

3. (U) Unit Comments (Summary): The unit recommends that the TOE (5-116E) be modified to provide two light vehicle drivers, who are also radio operators, for the S2/S3 section. The section is presently authorized three jeeps, two of which have FM radios, one 2½-ton and two 3/4-ton trucks. Two clerks, two rodmen, two construction draftsmen and the terrain analyst are assigned the additional duty, by TOE, as light truck drivers. However, clerks must stay in the S2/S3 sections because of the workload. The rodmen drive the 3/4-ton truck for the surveyors, and the draftsmen are employed on a full-time basis drafting. The terrain analyst can be used as a driver, but he is an E-6 and should be more gainfully employed. There is no one in the section trained to maintain or operate the radios and there are no drivers actually available to drive for the S-3, Civil Engineer, and Pipeline Engineer.

4. (U) USACDC Discussion: Concur with the unit's comments on the requirements for light truck drivers for the S2/S3 section. The workload on the clerks and construction draftsmen prevent their being utilized as drivers for the 1/4-ton vehicles which are constantly in operation. As two of these vehicles mount FM radios, a requirement exists for full-time driver-radio operators.

5. (U) USACDC Action: Since changes to "E" series TOE are not authorized by ACSFOR, these personnel should be requested by MTOE. Addition of these personnel will be considered when formulating an "H" series TOE or a change to the "G" series.

1. (U) Reference: Operational Report - Lessons Learned, 39th Engineer Battalion (Combat), 31 July 1967.

2. (U) Item: Floodlight Sets.

3. (U) Unit Comments: The unit has been required to operate on a 24-hour basis for construction of airfields. It has been difficult as there are no lighting sets authorized to this battalion. The use of vehicle lights is ineffective and hinders production.

4. (U) USACDC Discussion: The concept of employment of the Engineer Battalion (Combat) (Army), TOE 5-35, for construction projects, would necessitate the attachment of a Light Equipment Company (TOE 5-58) or one of its equipment platoons. Each of the equipment platoons has an electric floodlight set for use on night construction projects. If the unit is experiencing an excessive number of construction projects requiring night work, they should request the floodlight sets by MTOE action (or Class IV yard item).

5. (U) USACDC Action: The USACDC Engineer Agency will consider including floodlight sets in the next revision of TOE 5-35 as a discretionary item.

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1. (U) Reference: Operational Report - Lessons Learned, HQ, 25th Infantry Division, 30 April 1968.
2. (U) Item: H and I Target Acquisition with SLAR Aircraft.
3. (C) Unit Comments: A moving SLAR return in the vicinity of a suspected VC base camp indicated that the camp might be occupied. Artillery fire was placed on the base camp and large secondary explosion resulted. A moving return on a road or river can be engaged by firing along the road or river or by firing at known or suspected crossing or off-loading sites in the vicinity. A return in the vicinity of a planned concentration can be fired upon almost immediately. SLAR returns which require comparison with other available intelligence to determine proximity to known installations or activities can generally be fired upon within 25 minutes after sighting. In-flight spot reports from Army Mohawk SLAR aircraft can provide lucrative Artillery H and I targets.
4. (U) USACDC Discussion: SLAR returns require comparison with other available information to determine their validity. This analysis can best be accomplished at the TOC where all types of information pertaining to the enemy and friendly situations are available. Targets developed at the TOC can then be forwarded to the artillery for action. Undoubtedly, SLAR spot reports from Mohawk aircraft may be provided directly to the artillery on special operations, but these instances should probably not be a doctrinal matter.
5. (U) USACDC Action: Direct in-flight reporting from Army Mohawk SLAR aircraft to artillery units will be considered for inclusion in the next revision to FM 30-20, Aerial Surveillance-Reconnaissance, Field Army, which is scheduled to be forwarded to The Adjutant General during the 2nd Quarter, FY 69.

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1. (U) Reference: Operational Report - Lessons Learned, 4th Infantry Division, 31 October 1967.

2. (U) Item: Bulk CS-1 Delivery.

3. (U) Unit Comments: Bulk CS is now being received in a new type package. The agent is being issued in plastic jugs with a pouring spout. Each jug contains eight pounds of agent and five jugs are packed in a cardboard carton. The carton is wrapped in a metalized waterproof cloth bag and then packed in a wooden crate. The receipt of bulk CS-1 in this packaging requires a complete revision of procedures for aerial delivery of bulk CS. It was necessary to determine how to rig the boxes for explosive dissemination when dropped from aircraft. In September tests were conducted employing 11 boxes rigged with explosives in 11 different ways and several sets of jugs rigged in various ways. The two methods that worked best were:

a. The cardboard carton and waterproof bags were removed. Four wraps of primacord were made around the five jugs and one strand was run between the jugs. The jugs were placed back in the crates and the crate nailed shut with the end of the primacord running out the top. An M1A2, 15-second delay, detonator was used to explode the primacord which shattered the crate and jugs and disseminated the agent. A drop altitude of 2300 feet gave low airbursts. Problems associated with this method were the burning of some of the agent and the excessive amount of time required to rig the boxes.

b. The other method required that each plastic jug be cut on the sides and resealed with 2" masking tape. The jugs were dropped from 1500 feet or higher and broke open on contact spreading the agent. This method was tested in an open area (little vegetation) and worked successfully. It has not been determined whether the agent would reach the ground if the jug was dropped into a multi-canopied jungle.

4. (U) USACDC Discussion: None.

5. (U) USACDC Action: This item will be considered for incorporation in FM 3-10. The next programmed revision of FM 3-10 is scheduled for submission to DA in 703.

1. (U) Reference: Operational Report - Lessons Learned, 4th Infantry Division, 31 October 1967.

2. (U) Item: Precipitation of Salts.

3. (U) Unit Comments: It has been found that using BLUE in the defoliation apparatus after using WHITE will cause precipitation of sodium salts to such an extent as to completely plug the nozzles and valves of the apparatus. Precipitation occurs even after the apparatus has been rinsed with water subsequent to use with WHITE. Rinsing with diesel followed by water appears to completely decontaminate the apparatus and results in minimum precipitation.

4. (U) USACDC Discussion: None.

5. (U) USACDC Action: This item will be considered for incorporation in FM 3-10. The next programmed revision of FM 3-10 is scheduled for submission to DA in 703.

NOTE: See also pages 3.26 and 5.3, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and pages 3.28, 3.34, and 4.24 of this report.

1. (U) Reference: Operational Report - Lessons Learned, 4th Infantry Division, 31 October 1967.

2. (U) Item: Contamination of Aircraft.

3. (U) Unit Comments: Difficulty has been experienced in decontaminating aircraft used in spraying agent ORANGE to prevent damage to paint and rubber fixtures. Coating the tail section with wax or as an alternate, motor oil, reduces but does not entirely prevent damage to paint. Immediate decontamination with warm, soapy water minimizes damage but sufficient quantities of water are not always readily available. Dilution of the agent with diesel appears to reduce aircraft damage and also results in better dispersion on the target. However, operators as well as pilots are reluctant to fly with ORANGE/diesel mix because of the nauseating smell and fire hazard.

4. (U) USACDC Discussion: None.

5. (U) USACDC Action: This item will be considered for incorporation in FM 3-10. The next programmed revision of FM 3-10 is scheduled for submission to DA in 703.

NOTE: See also pages 3.26 and 5.3, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and pages 3.27, 3.34, and 4.24, of this report.

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1. (U) Reference: Operational Report - Lessons Learned, 1st Infantry Division, 30 April 1967.

2. (U) Item: CS Presistency Test.

3. (C) Unit Comments: The results of the presistency test referred to in the Operational Report - Lessons Learned for the period 1 November - 31 January 1967 have been completed. During the 1st Infantry Division CS Presistency Tests (January - April 1967) five separate areas in the jungle southwest of DI AN, RVN were contaminated with chemical agent CS-1. These areas, indicated below, were then examined periodically between 1330 and 1430 hours to determine the degree of CS Presistency: Area 1 - 80 lbs GS-1 in 55 gallon drums was detonated with an M-4 incendiary burster under the jungle canopy. Area 2 - same type of drum and agent, detonated on the forest floor. Area 3 - as in Area 1, except that the CS drum was detonated with Composition C-3. Area 4 - as in Area 2, except that the CS drum was detonated with Composition C-3. Area 5 - ten 8 lb bags of CS-1 were burst on the ground with detonator cord. The degree of CS contamination (persistency) in each of the five test areas was designated as follows:

***** = heavy contamination (cannot walk through the area).

*** = moderate contamination (cannot camp or work in the area).

** = light contamination (can work in the area, but mask required).

* = slight contamination (can camp or work in the area without mask, but still some irritation).

= no contamination.

Results of these tests are indicated in the following tables:

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AREA 1

<u>Days Following Initial Contamination</u>	<u>Degree of Persistency</u>	<u>RH</u>	<u>Surface Temp °F</u>	<u>Remarks</u>
2	★★★★	79	85	Trace of rain previous night
4	★★★★	86	89	Trace of rain previous night
8	★★★★	81	87	Trace of rain 6th night
13	★★★★	74	63+	Trace of rain 8th night
19	★★	78	85	0.9" rain since 15th day
23	★★	96	84	1.7" rain 21st day
26	★★★	88	85	No precipitation
32	★★★★	78	85	No precipitation
40	★★★★	74	85	No precipitation
47	*	70	83	0.1" rain 43rd and 46th days respectively
54	**	77	84	No precipitation
60	★★	76	84	0.05" rain in late afternoon 60th day
70	*	64	88	No precipitation
75	★★	62	90	No precipitation
90	*	52	88+	No precipitation

+Area examined in AM

AREA 2

<u>Days Following Initial Contamination</u>	<u>Degree of Persistency</u>	<u>RH</u>	<u>Surface Temp °F</u>	<u>Remarks</u>
2	★★★★	79	85	See remarks for Area 1
4	★★★★	86	89	" " " "
8	★★★★	81	87	" " " "
13	★★★★	74	63+	" " " "
19	★★★	78	85	" " " "
23	★★★★	96	84	" " " "
26	★★★	88	85	" " " "
32	★★★★	78	85	" " " "
40	★★★★	74	85	" " " "
47	★★	70	83	" " " "
54	★★	77	84	" " " "
60	★★	76	84	" " " "
70	*	64	88	" " " "
75	★★	62	90	" " " "
90	*	52	88+	" " " "

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AREA 3

<u>Days Following Initial Contamination</u>	<u>Degree of Persistency</u>	<u>RH</u>	<u>Surface Temp of</u>	<u>Remarks</u>
4	****	82	88	Trace of rain 1st night
9	****	75	65+	Trace of rain 4th night
14	****	78	86	0.9" rain previous two nights
22	***	74	35	1.7" rain 20th day
28	***	88	85	No precipitation
34	***	78	86	No precipitation
41	***	74	85	
48	***	70	85	0.1" rain on 45th and 47th days respectively
54	**	76	83	0.05" rain in late afternoon 54th day
64	**	64	88	No precipitation
70	**	62	91	No precipitation
90		52	88+	No precipitation

AREA 4

<u>Days Following Initial Contamination</u>	<u>Degree of Presistency</u>	<u>RH</u>	<u>Surface Temp of</u>	<u>Remarks</u>
4	****	82	87	See remarks for Area 3
9	****	75	65+	" " " "
14	****	78	86	" " " "
22	***	94	85	" " " "
28	***	88	85	" " " "
34	***	78	85	" " " "
41	**	74	85	" " " "
48	**	70	84	" " " "
54	**	76	83	" " " "
64	*	84	88	" " " "
90	*	53	88+	" " " "

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AREA 5

<u>Days Following Initial Contamination</u>	<u>Degree of Persistence</u>	<u>RH</u>	<u>Surface Temp OF</u>	<u>Remarks</u>			
4	***	82	87	See Remarks for Area 3			
9	**	75	64+	"	"	"	"
14	**	78	85	"	"	"	"
22	***	93	85	"	"	"	"
28	***	88	85	"	"	"	"
34	***	77	85	"	"	"	"
41	**	74	84	"	"	"	"
48	**	70	84	"	"	"	"
54	**	74	84	"	"	"	"
64	**	64	88	"	"	"	"
70	*	63	92	"	"	"	"
90	*	53	88+	"	"	"	"

4. (C) USACDC Discussion: A review of the persistency test results above indicates that heavy contamination lasts for approximately eight days, moderate contamination 39 days, and light contamination 68 days. The results also indicate that these numbers decrease or increase depending on the amount of rainfall. ENSURE Item Number 8 (CS-2) has been designed to provide an improved non-toxic persistent agent for use in terrain and tunnel contamination operations. The persistency and secondary aerosolization characteristics of CS-2 far exceed those of CS-1. CS-2 is scheduled to be available in bulk quantities during CY 68 and USARV has requested that a Required Supply Rate of 30 lbs/Bde/day be established.

5. (U) USACDC Action: When the persistency results of CS-2 are available they will be considered for incorporation in FM 3-10. The next programmed revision of FM 3-10 is scheduled for submission to DA in 703.

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1. (U) Reference: Trip Report on Visit to the 1st Infantry Division, USACDC Liaison Offices, USARV, 13 January 1968.
2. (U) Item: Frequency Crowding.
3. (U) Extracted Comments (Summary): This report, and many others, cite problems with over-crowded frequency spectrums, particularly FM.
4. (U) USACDC Discussion: FM multiplex systems are currently under investigation/study. A total of 129 sets will be in Vietnam by August 1968. This will alleviate the problems.
5. (U) USACDC Action: USACDC will continue to monitor this problem.

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1. (U) Reference: Trip Report on Visit to 1st Cavalry Division, USACDC Liaison Office, USARV, 19 September 1967.
2. (U) Item: Use of Herbicide.
3. (FOUO) Extracted Comments: The Division has employed herbicide agent Blue in hand carried aerosol cans to kill rice seed beds. This is done in areas which have been previously cleared for crop destruction such as the An Loa valley where all friendly civilians have been evacuated and crops harvested or destroyed.
4. (U) USACDC Discussion: None.
5. (U) USACDC Action: Development of chemical herbicides is closely monitored by the USACDC CBR Agency for future applications. Preparation of requirements documents has been deferred because the Air Force is responsible for the herbicide program in Vietnam.

NOTE: See also pages 3.26 and 5.3, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and pages 3.27, 3.28 4.24 of this report.

1. (U) Reference: Operational Report - Lessons Learned, I Field Force Vietnam Artillery, 31 October 1967.

2. (U) Item: Auto-Tape Survey System in RVN.

3. (U) Unit Comments:

a. Discussion: The Auto-Tape Survey System was sent to RVN in late May 1967. Several of the components were shipped improperly, resulting in damage and/or failure to arrive at the desired destination. Therefore, it was late July before field testing of the system in RVN could be initiated. When testing was started, excessive temperatures necessitated some modification of the equipment. In addition, the absence of a FADAC and limited availability of aircraft limited the use of the system. However, testing has indicated that:

(1) A thorough plan must be prepared and understood by all members of the survey party prior to starting the survey if the system is to be used efficiently under combat conditions.

(2) Procedures outlined in FM 6-2 (Trilateration) must be followed when using this survey system if the results are to be considered valid.

(3) A FADAC should be issued with the system if it is to be of practical value in field situations.

(4) The system still requires some modification if its potential is to be realized by the army.

b. Observation: Although the Auto-Tape Survey System has great potential value to the service, field tests in RVN have been inconclusive thus far.

4. (U) USACDC Discussion:

a. The initial AABC System included a Wyle Desk Calculator and programs for solving the survey problems. This item was damaged in shipment and returned to CONUS for repair. In the interim, the 1st Air Cavalry Division Artillery received its FADAC and subsequently trilateration solution program tapes for the FADAC were requested in December 1967. USAAMS wrote the program, produced the tapes, and forwarded them by airmail on 19 February 1967. The 1st Air Cavalry Division Artillery reported receiving the tapes on 4 March 1967 and indicated success in their use.

b. The AABC System has been plagued with numerous equipment failures. The loss of critical test equipment items has aggravated the problem. Actions have been taken to provide the necessary test equipment and repair parts. Non-militarization of the equipment is the primary reason failures are occurring.

5. (U) USACDC Action: USACDCARTYA will continue to monitor this program.

c. (U) USACDC Recommendation: Inasmuch as the one AABC System was provided to fill an ENSURE request, it is recommended that any decision to issue a FADAC with the system be withheld until the final report of its one year trial is received and reviewed.

NOTE: See also pages 2.47-2.48, USACDC Lessons learned report to Department of the Army, dated 14 March 1968; and pages 2.3 and 2.9 of this report.

1. (U) Reference: Operational Reports - Lessons Learned, 145th Combat Aviation Battalion, 30 April 1967.

2. (U) Item: Landing of Lead and Trail Helicopters.

3. (U) Unit Comments (Summary): When landing in a combat assault, helicopter companies have maximum firepower to the flanks by virtue of the installation location of machineguns. However, the front and rear of the formation are vulnerable to enemy fire because gunners are unable to bring their machineguns to bear in those directions. When landing, the lead and trail helicopter(s) should land at an angle to the direction of flight. In this manner, the gunners on these aircraft can readily suppress enemy fire that may come from the front or rear of the formation. It may be necessary to land two or possibly three aircraft on either end of the formation at an oblique to provide all-round protection.

4. (U) USACDC Discussion: This technique appears to have only limited application and should receive careful evaluation prior to integration into current training programs. Proper employment of armed helicopters during these operations should obviate the requirement for this procedure. There are a number of problem areas associated with the use of this type procedure in landing zones. It depends to a large extent upon the size and type of landing zone and the size of the formation. It would appear to increase the hazard of inadvertently firing into friendly troops or aircraft and would consume additional time in reorientation of the aircraft prior to liftoff.

5. (U) USACDC Action: This comment has been forwarded to USAAVNS for appropriate action.

1. (U) Reference: Operational Reports - Lessons Learned, 52nd Combat Aviation Battalion, 30 April 1967.
2. (U) Item: Use of Artillery Illumination.
3. (U) Unit Comments (Summary): When artillery is utilized as a source of illumination a hazard is created by the separation of the flare and cannister. The position of the flare can easily be ascertained by visual reference; however, the unlit cannister will continue for another 1000 to 1500 meters along the gun-target line. Aviators utilizing artillery illumination must remain aware of the gun-target line to preclude flying through the trajectory of the cannisters. The gun-target line should be made known to an aviator prior to departure for proper planning of flight routes.
4. (U) USACDC Discussion: This comment should be considered for integration into aviation techniques and procedures for night operations.
5. (U) USACDC Action: This item has been forwarded to USAAVNS for appropriate action.

1. (U) Reference: Operational Report - Lessons Learned, Tuy Hoa Subarea Command, 30 April 1967.
2. (U) Item: Chain-type Load Binders.
3. (U) Unit Comments (Summary): The recommendation of the Tuy Hoa Subarea Command is that the chain-type load binders be made TOE items.
4. (U) USACDC Discussion: Chain-type load binders are less desirable than the new web-type straps (Strap Assembly, Universal Type - FSN 2540-980-9277). The straps do not damage the cargo and should cost \$10 or less in quantity production according to the latest information from AMC.
5. (U) USACDC Recommendation: Since the equipment is needed wherever cargo vehicles are employed, it is recommended that the strap be made an OEM rather than truck unit TOE item. A basis of issue of 4 per 2½-ton and 5-ton truck and 10 per 12-ton S and P semitrailer is suggested.

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1. (U) Reference: Operational Report - Lessons Learned, II Field Forces Vietnam Artillery, 31 July 1967.
2. (U) Item: Logistics - M42 Twin 40mm Duster.
3. (C) Unit Comments: There is an existing in-country shortage of repair parts for the M42 twin 40mm duster. It is understood that the factory production of M42's stopped about ten years ago and assets from all available sources in CONUS were used to provide duster vehicles and PLL/ASL for units deploying to Vietnam. Stockage of repair parts should be established in-country.
4. (U) USACDC Discussion: This is a logistical management problem and as such is not within the purview of USACDC.
5. (U) USACDC Action: None.
6. (U) USACDC Recommendation: That the US Army Material Command be informed of the problem so that corrective action may be taken.

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1. (U) Reference: Operational Report - Lessons Learned, 25th Infantry Division, 30 April 1967.
2. (U) Item: Capture Card (MACV Form 340).
3. (C) Unit Comments: In many instances, detainees are evacuated for interrogation without a Captive Card or with one which contains fragmentary, incomplete, or erroneous information. It is difficult to gain the upper hand during the initial interrogation when this occurs. It is, therefore, essential that capturing units complete individual Captive Cards, in the field, providing the details of the capture of every person detained. In some cases in the past, personnel of capturing unit's headquarters have attempted to complete capture tags after the arrival of the detainee at the Division PW Collecting Point. Naturally, the lack of first-hand information concerning the circumstances of the capture of the individual leads to serious omissions of vital information.
4. (U) USACDC Discussion: The importance of accurately completing prisoner of war tags is fully recognized. Procedures for completing prisoner of war tags are contained in FM 30-5, Combat Intelligence, and 30-15, Intelligence Interrogations. In addition, FM 19-40, Enemy Prisoners of War and Civilian Internees, states that tags will be completed when a prisoner is captured.
5. (U) USACDC Action: None.
6. (U) USACDC Recommendations: That action be taken to insure that individuals receive training in the completion of prisoner of war tags during basic training, advanced individual training, and unit training, both within the United States and overseas.

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1. (U) Reference: Operational Report - Lessons Learned, 12th Combat Aviation Group, 30 April 1967.

2. (U) Item: Avionics Problems.

3. (C) Unit Comments:

a. Some progress was made during this period on obtaining authorized float stockage for FM and UHF radios. However, a lack of maintenance float is still a significant problem with the new ARN-82 and ARN-83 navigation receivers.

b. Maintenance publications and experience indicate a continued flow of new equipment into the country without the required test equipment, publications, parts, or trained personnel. This equipment, such as the AN/TRN-25, ARC-131, ARC-134, ARN-82, and ARN-83 will encounter severe maintenance problems without the necessary supporting equipment.

4. (U) USACDC Discussion: None.

5. (U) USACDC Recommendation: That this problem be brought to the attention of USAECOM with a view toward establishing procedures for future introduction of new equipment into Vietnam.

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1. (U) Reference: Operational Report - Lessons Learned, 12th Combat Aviation Group, 30 April 1967.
2. (U) Item: Air Traffic Control and Navigation Aids.
3. (C) Unit Comments: The portable non-directional beacons, AN/TRN-25, were installed during Operation Junction City but were unsatisfactory. The primary difficulty was interference with the AN/TRC-24 VHF telephone systems. Two EIR's were submitted on improper wiring in the sets.
4. (U) USACDC Discussion: None.
5. (U) USACDC Recommendation: That the unit comment be brought to the attention of USAECOM for follow-up on Equipment Improvement Reports (DA Form 2407) submitted by using unit.

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1. (U) Reference: Operational Report - Lessons Learned, 25th Infantry Division, 30 April 1967.

2. (U) Item: Maintenance of Communication Equipment.

3. (C) Unit Comments: Equipment failures have resulted in excessive communication outages. The equipment failures have been a result of two things - the extreme heat and high humidity which reduces the life of tubes, resistors, and other components of the equipment. All communication vans should be equipped with air conditioners to eliminate excessive communication outages.

4. (U) USACDC Discussion: It is felt that comments made by higher headquarters, as noted in the 2nd and 3rd indorsements forwarding the referenced report, are adequate and proper.

5. (U) USACDC Recommendation: This unit comment should be brought to the attention of USAECOM.

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1. (U) Reference: Operational Report - Lessons Learned, 25th Infantry Division, 30 April 1967.
2. (U) Item: Pressurization of Receiver-transmitter for Radio Set AN/VRC-24.
3. (C) Unit Comments: The pressurization that is designed into this set is for aircraft use. When used on the ground the extreme heat that builds up tends to render the set inoperative. By inserting a screw driver into the air pressure valve located on the rear of the set, the air pressure can be relieved thus making set operable again.
4. (U) USACDC Discussion: None.
5. (U) USACDC Recommendation: The unit comment should be brought to the attention of USAECOM.

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1. (U) Reference: Operational Report - Lessons Learned, 25th Infantry Division, 30 April 1967.
2. (U) Item: Water Proofing of the Handset on the AN/PRC-25 Radio.
3. (C) Unit Comments: It has been proven in the past that when units make a canal or river crossing, and even in heavy rain that the handset will become inoperative when wet. The handset must remain dry at all times. One of the best ways to prevent the handset from becoming wet is to place a plastic bag or any plastic or rubber material over the handset and tape it down so that the handset is waterproof.
4. (U) USACDC Discussion: It is felt that action taken by higher headquarters, as noted in the 1st indorsement forwarding the referenced report, is adequate and proper.
5. (U) USACDC Recommendation: The unit comment should be brought to the attention of USAECOM for follow-up on Equipment Improvement Reports (DA Form 2407) submitted by using units.

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1. (U) Reference: Operational Report - Lessons Learned, 25th Infantry Division, 30 April 1967.
2. (U) Item: Division Photo Lab.
3. (C) Unit Comments: During the tactical combat photographic missions, experience has shown that certain photographic equipment currently being used by the Division Signal Battalion is not satisfactory. The KS-6 and KS-4A cameras are too complex and fragile for use in combat photography. The deadline rate for this equipment and the lack of replacement parts reduces the capability of the Division Photo Section. There is a lack of working space in the dark room AN/TFQ-7, which materially inhibits the operation of this facility.
4. (U) USACDC Discussion: Matters pertaining to cameras are handled by the Army Pictorial Center. Both the USACDCINTA and USAECOM are participating in work on film processing laboratories; USACDCINTA's work is being done under ACN 1324 and USAECOM's under QMR 1539a(7).
5. (U) USACDC Recommendation: The unit comment should be brought to the attention of the Army Pictorial Center, and USAECOM.

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1. (U) Reference: Operational Report - Lessons Learned, 25th Infantry Division, 30 April 1967.
2. (U) Item: Use of Wiretap Teams.
3. (C) Unit Comments: Several times in Operations of the 1st Battalion (Mech), 5th Infantry, VC communication lines were discovered but higher headquarters indicated that only specially trained teams should be allowed to tap them for intelligence material. The time required for such teams to arrive in the area is long. The question remains unanswered on whether an inexperienced team tap would produce an audible click in the line, and if it did, would a VC operator recognize the sound. A written policy should be published concerning wiretapping of enemy lines. Any evaluation of the problem should consider immediate tactical value of intelligence gained in relation to the chance of compromising the tap.
4. (U) USACDC Discussion: It is felt that action taken by higher headquarters, as noted in the 1st indorsement forwarding the referenced report, is adequate and proper.
5. (U) USACDC Recommendation: The unit comment should be brought to the attention of USASA.

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1. (U) Reference: Operational Report - Lessons Learned, 1st Battalion, 83rd Artillery, 30 April 1967.

2. (U) Item: AN/VRC-12 Series Radio Blower Motors.

3. (C) Unit Comments: The blower motors in the transmitter portion of the AN/VRC-12 series radios tend to blow out at a higher rate than expected due to the following causes; first, high rate of transmissions due to continuous usage require the blower motors to operate at a higher rate than normal; second, the high external temperature to which the radios are exposed activate the blower motor spontaneously at an increased rate. The effect on a unit's mission is to cause a higher rate of deadline than had been expected. The signal repair facility repairs deadlined equipment promptly, so the high deadline rate has not materially affected this unit's mission. This unit has identified high usage radios, and instituted a plan whereby radios which receive continuous use are rotated with less used radios in order to "rest" the blower motor components. Also, where feasible, an external fan is allowed to blow across the equipment, thereby keeping the outside temperature reduced to some extent. An Equipment Improvement Recommendation is being submitted.

4. (U) USACDC Discussion: It is felt that action taken by higher headquarters, as noted in the 1st, 2nd, and 4th indorsements forwarding the referenced report, is adequate and proper.

5. (U) USACDC Recommendation: The unit comment should be brought to the attention of USAECOM for follow-up on Equipment Improvement Reports (DA Form 2407) submitted by using unit.

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1. (U) Reference: Operational Report - Lessons Learned, 459th Signal Battalion, 30 April 1967.

2. (U) Item: Premature Burnout of Teletype Motors.

3. (U) Unit Comments: Teletype machines operated in tactical shelters are subject to premature motor burnout if the line voltage is permitted to fall below 105 volts. As the line voltage drops, the current demands of the teletype motor increases and the motor windings overheat and burn out. The line voltage supplied to shelters should be continuously monitored on the power input panel motor and teletype operations suspended when the voltage is less than 105 volts. Power wiring input to shelters should be of sufficient size to minimize line voltage drops. Generators should be adjusted to provide optimum voltage at the shelter.

4. (U) USACDC Discussion: Teletype motors are designed to perform satisfactorily between the limits of 105-120 volts. If continuously operated beyond or below these limits, trouble will develop. Units in Vietnam are hard pressed for generators and continually overload the ones in use. A QMR for a family of military design electric power plants is being processed and they will ultimately provide generators more suitable to the mission. (ACN 11592).

5. (U) USACDC Recommendation: The unit comment should be brought to the attention of USAECOM for follow-up on Equipment Improvement Reports (DA Form 2407) submitted by using unit.

1. (U) Reference: Operational Report - Lessons Learned, 459th Signal Battalion, 31 July 1967.

2. (U) Item: Generator Repair.

3. (U) Unit Comments: After a generator has been repaired, it is not, generally, feasible to test its ability to support a normal load because the equipment normally serviced by the generator is either providing communications system support or is not available. To compensate for this factor a dummyload capable of dissipating at least 15KW may be made by using a 55-gallon drum, filled with a saline solution (for a three-phase unit, three drums are used). The barrels should have the tops removed and be free of dirt, paint, and rust. The barrel acts as the negative electrode and may be connected to the generator with heavy duty wire and large alligator clips (use 2/0 or 1/0). The positive electrode is a copper rod or stripped 2/0 solid wire suspended in the center of the drum. The depth of the center electrode is adjusted to vary the load current. The correct solution is approximately one pound of common salt (Sodium Chloride) to 55 gallons of water. Extreme caution should be used when using a dummyload, and warning signs should be posted.

4. (U) USACDC Discussion: None.

5. (U) USACDC Recommendation: The unit comment should be brought to the attention of USAECOM for possible promulgation in applicable TM.

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1. (U) Reference: Department of the Army, ACSI-DSR, Memorandum for: Deputy for Combat Intelligence, Reconnaissance and Mapping, subject: Trip Report - Reconnaissance and Surveillance (R and S) in Vietnam, 12 September 1967.
2. (U) Item: The Handheld Camera.
3. (C) Extracted Comments: The handheld aerial camera program is quite successful using the locally procured Japanese Nikon 35mm camera with Asahi Pentax 200mm, 500mm, and 1000mm lenses from the O-1, U-6, and from choppers. This capability is being given Army echelons and some ARVN echelons as low as brigade and sector with appropriate numbers of cameras and training provided at each higher echelon. Photographic intelligence derived by this means has proven to be extremely valuable and is enthusiastically supported by the commanders and intelligence officers at all levels.
4. (U) USACDC Discussion: The USACDC Intelligence Agency is currently processing a PSDR under ACN 5833 dealing with cameras. The development of the item, based on the approved PSDR, will be accomplished by USAECOM.
5. (U) USACDC Recommendation: The unit comment should be brought to the attention of USAECOM.

NOTE: See also page 3.23, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967; page 3.31, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; page 2.30, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968; and pages 2.46 and 4.19 of this report.

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1. (U) Reference: Department of the Army, ACSI-DSR, Memorandum for: Deputy for Combat Intelligence, Reconnaissance and Mapping, subject: Trip Report - Reconnaissance and Surveillance (R and S) in Vietnam, 12 September 1967.
2. (U) Item: KA-60 Camera.
3. (C) Extracted Comments: The 73rd Aviation Company and the ASTA Platoons have the KA-60 camera in limited quantity. Each Mohawk Company visited, except the 131st Aviation Company, indicated that there is a need for this camera. The 225th Aviation Company, reports that the installations of the data link electronics in the nose position preclude installing the KA-60 there without further modification.
4. (U) USACDC Discussion: The areas discussed fall within proponentcy of USACDC; however, USAECOM would be interested in the problems encountered in aircraft installation.
5. (U) USACDC Recommendation: The unit comment should be brought to the attention of USAECOM and USASA.

NOTE: See also page 3.23, USACDC Lessons Learned report to Department of the Army, dated 18 January 1967; page 3.31, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; page 2.30, USACDC Lessons Learned report to Department of the Army, dated 14 March 1968; and pages 2.46 and 4.18 of this report.

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1. (U) Reference: US Marine Corps Bulletin 3480 entitled, "Professional Knowledge Gained from Operational Experience in Vietnam," November 1967.

2. (U) Item: SB-86 Switchboard Demagnetization.

3. (U) Extracted Comments: After a period of use, line signals and supervisory signals in the SB-86 switchboard become magnetized in the operate (white) position. The normal solution is replacement of the signal at a cost of approximately \$9.50. It was discovered that the use of a tape recorder head demagnetizer will restore the signal to normal (black) position with no damage. A head demagnetizer, with a switch, is plugged into a 110V outlet and located within easy reach of all the signals on the switchboard. When one of the signals fails to restore to the normal position after the plug is inserted, the demagnetizer is touched to the lens of the signal and switched on. A second or two is all that is required to restore the signal to normal. The cost of the head demagnetizer is approximately \$3.50.

4. (U) Discussion: None.

5. (U) Recommendation: The unit comment should be published in an appropriate document for the benefit of maintenance personnel and should be brought to the attention of USAECOM with a view toward improvement in the design of future switchboards utilizing mechanical indicators.

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1. (U) Reference: Operational Report - Lessons Learned, submitted by Headquarters, 10th Combat Aviation Battalion, 23 October 1967.

2. (U) Item: Chemical Training.

3. (C) Unit Comments: The 10th Combat Aviation Battalion conducted gas chamber exercises for all of its flight crews during the period as well as practice company size combat assaults into a CS saturated landing zone. The lens of the M-24 protective mask limits peripheral vision and the plastic material can become creased resulting in some visual distortion. These limitations are minimized by requiring aviators to fly wearing their protective masks for a minimum of one hour each month. During these periods the aviator practices formation flying and accomplishes at least three approaches to the ground, thereby instilling confidence in his ability to fly an aircraft while wearing a protective mask.

4. (U) USACDC Discussion: The construction of all protective masks limits the peripheral vision to some degree. The creased plastic lens are probably caused by use, age, and/or storage conditions.

5. (U) USACDC Recommendation: This headquarters recommends that the protective mask be turned in for repair or replacement when the plastic lens become creased. Proper care, cleaning, and storage of the protective mask should be followed more closely. The practice of having pilots fly while wearing the protective mask should be continued.

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1. (U) Reference: Operational Report - Lessons Learned, 10th Transportation Battalion (Terminal), 31 July 1967.

2. (U) Item: Unserviceable Protective Ointment Kits, M-5.

3. (U) Unit Comments: The protective ointment kits, M-5 received from depot by this battalion are in many cases unserviceable due to rust and/or corrosion. In all cases of an unserviceable kit, a turn-back to the depot was made and a replacement kit was requisitioned. No prior recommendation has been forwarded by this battalion due to its limited supply of M-5 kits to observe. However, if continued evidence of excessive rust and/or corrosion exists in other units M-5 kits, it is recommended that better protection from effects of climate and prolonged storage be studied at the packaging point and be stressed at the storage areas.

4. (U) USACDC Discussion: None.

5. (U) USACDC Recommendation: This headquarters recommends that this item be brought to the attention of AMC (Edgewood Arsenal) for investigation of the problem.

1. (U) Reference: Operational Report - Lessons Learned, 4th Infantry Division, 31 October 1967.

2. (U) Item: E-158R2 CS Canister Clusters.

3. (U) Unit Comments: The E-158R2 cluster is an excellent area coverage CS munition requiring little time to prepare for delivery. Tests conducted using the E-158R2 munition indicate that the maximum safe load for UH-1 aircraft is eight munitions. This allows room for crew of three to handle the munitions (two as bombardiers and one to supervise) and one artillery observer to adjust fire onto the target. The best drop altitude, considering safety from ground fire and bombing accuracy, has been 2000 feet above the ground.

4. (U) USACDC Discussion: Many employment concepts for the E-158 are contained in TC3-16. Evaluation of CS Munitions is presently in progress in Vietnam.

5. (U) USACDC Action: This evaluation is being monitored for possible action.

6. (U) USACDC Recommendation: This headquarters recommends that CONARC incorporate this item in TC3-16.

1. (U) Reference: Operational Report - Lessons Learned, 4th Infantry Division, 31 October 1967.

2. (U) Item: Foaming of BLUE.

3. (U) Unit Comments: The foaming of BLUE has become a problem in filling the defoliation apparatus. Only 60-70 gallons of agent can be pumped into the 110 gallon tank, the remaining space being filled by foam. Pouring a quart of motor oil in the tank prior to filling with BLUE reduces the foaming, but does not entirely eliminate it.

4. (U) USACDC Discussion: None.

5. (U) USACDC Recommendation: This headquarters recommends that this item be brought to the attention of AMC (Edgewood Arsenal) for investigation and correction of the problem.

NOTE: See also pages 3.26 and 5.3, USACDC Lessons Learned report to Department of the Army, dated 15 November 1967; and pages 3.27, 3.28; and 3.34 of this report.

ACRONYMS AND SIMILAR TERMS

ACAV	- Armored Cavalry Assault Vehicle
ACN	- Action Control Number
ACTIV	- Army Concept Team in Vietnam
AM	- Airmobile
AMC	- Army Material Command
AMITOC	- Airmobile Instant Tactical Operations Center
AM&S	- Aircraft Maintenance and Supply
ARA	- Widely used but incorrect acronym for aerial artillery
ARS	- Army Support
AVLB	- Armored Vehicle Launch Bridge
CDOG	- Combat Development Objectives Guide
CS	- A Riot Control Agent
CTZ	- Corps Tactical Zone
DISCOM	- Division Support Command
DPSDR	- Draft Proposed Small Development Requirement
DS	- Direct Support
DZ	- Drop Zone
ENSURE	- Expedited Nonstandard Urgent Requirement for Equipment
FAMECE	- Family of Standardized Engineer Construction Equipment
EIR	- Equipment Improvement Recommendation
FAC	- Forward Air Controller
FDC	- Fire Direction Center
FFORCEV	- Field Force Vietnam

FO	- Forward Observer
FSB	- Fire Support Base
FWMAF	- Free World Military Assistance Forces
GS	- General Support
H&I	- Harassing and Interdiction
HTW	- Helicopter Trap Weapons
ICC	- Inventory Control Center
LAW	- Light Antitank Weapon
LINCLOE	- Lightweight Individual Clothing and Equipment
LRRP	- Long Range Reconnaissance Patrol
LZ	- Landing Zone
MACOV	- Mechanized and Armored Combat
MAD	- Mortar, Air Delivered
MERDC	- Mobility Equipment Research and Development Command
MIBBS	- Military Intelligence Battalion, Army Support
MSD	- Minimum Safe Distance
OEM	- On Equipment Materiel
PSDR	- Proposed Small Development Requirement
PZ	- Pickup Zone
QMDO	- Qualitative Materiel Development Objective
QMR	- Qualitative Materiel Requirements
RF/PF	- Regional Forces/Popular Forces
SCP	- Survey Control Point
SDR	- Small Development Requirement
TAB	- Target Acquisition Battalion (Battery)

TF	- Task Force
TOC	- Tactical Operations Center
VATLS	- Visual Airborne Target Locator System

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