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AGO ltr 29 Apr 1980 ; AGO ltr 29 Apr 1980

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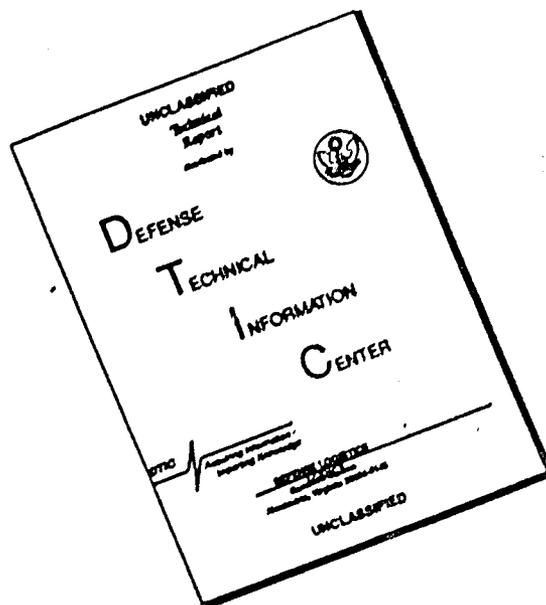
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DEPARTMENT OF THE ARMY
OFFICE OF THE ADJUTANT GENERAL
WASHINGTON, D.C. 20310

AD 386516

IN REPLY REFER TO

AGAM-P (M) (24 Oct 67) FOR OT RD-670284 30 October 1967

SUBJECT: Operational Report - Lessons Learned, Headquarters,
11th Combat Aviation Battalion

TO: SEE DISTRIBUTION

1. Subject report is forwarded for review and evaluation by USACDC in accordance with paragraph 6f, AR 1-19 and by USCONARC in accordance with paragraph 6c and d, AR 1-19. Evaluations and corrective actions should be reported to ACSFOR OT within 90 days of receipt of covering letter.

2. Information contained in this report is provided to insure appropriate benefits in the future from Lessons Learned during current operations, and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

KENNETH G. WICKHAM
Major General, USA
The Adjutant General

1 Incl
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Commanding Officers
 11th Combat Aviation Battalion
 5th Battalion, 46th Infantry
 5th Battalion, 12th Infantry
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DEPARTMENT OF THE ARMY
HEADQUARTERS, 11TH COMBAT AVIATION BATTALION
APO San Francisco 96289

AVGC-AC

15 May 1967

SUBJECT: Operational Report - Lessons Learned for period ending
30 April 1967

TO: Deputy Commanding General
United States Army, Vietnam
ATTN: AVC-DH
APO 96307

1. References:

- a. AR 1-19
- b. AR 220-346
- c. AR 380-5
- d. AR 870-5
- e. USARV Reg 870-2

2. Attached are three copies of the Operational Report - Lessons Learned covering activities of the 11th Combat Aviation Battalion during the period 1 February 1967 thru 30 April 1967 inclusive.

FOR THE COMMANDER:



WILLIAM GIESE
Major, Infantry
Adjutant

Incl
as

Downgraded at 3 year Intervals
Declassified after 12 years
DOD DIR 5200.10

FOR OT RD File
670284

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HEADQUARTERS, 11TH COMBAT AVIATION BATTALION
APO San Francisco 96289

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AVGC-AC

1 May 1967

SUBJECT: Operational Report - Lessons Learned (RCS-CSFOR - 67) for
Quarterly Period Ending 30 April 1967

TO: SEE DISTRIBUTION

SECTION I

SIGNIFICANT UNIT ACTIVITIES

A. COMMAND:

1. (U) General: The 11th Combat Aviation Battalion made substantial gains in all areas of performance during the past quarter. 82% of the Battalion effort during this period was in support of U.S. Forces. The majority of the Army Aviation support provided was oriented toward the 1st and 25th Infantry Divisions on Operation Junction City I and II and Operation Manhattan. The 11th Combat Aviation Battalion also provided support to U.S., Australian and ARVN forces in Operations Big Springs, Fairfax, Uniontown, Palm Beach, Port Sea, Ft. Nisqually, Ala Moana, Makolopa, Leeton, Harvest Moon, Enterprise, Chapman, Lam Son 67, Hattiesburg, Kiribilli, Fitchburg, Overlord II, Waialua and Seneca Falls. UH-1s of the three Assault Helicopter Companies averaged 214% of the programmed flying hours for the quarter. CH-47s of the two Assault Support Helicopter Companies averaged 141% of the programmed flying hours for the quarter.

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01's of the assigned Recon Airplane Company averaged 204% of the programmed flying hours for the quarter. On 22 February 1967 the 11th Combat Aviation Battalion conducted the largest airmobile combat assault in the history of modern warfare. 73 UH-1Ds and 12 CH-47s escorted by 23 armed UH-1Bs and UH-1Cs airlifted and resupplied two Brigades (5 Infantry Battalions, and two Batteries of Artillery) over a 77 Km distance in 9 hours and 5 minutes. Operation Junction City I and II 22 February 1967 to 15 April 1967 and Operation Manhattan 23 April 1967 - required sustained extra effort from every member of the 11th Combat Aviation Battalion.

2. (U) Mission:

a. The 11th Combat Aviation Battalion provides Army Aviation Support, as directed by the 12th Combat Aviation Group to elements of U.S., ARVN and FWMAF units in the III Corps Tactical Zone.

b. Provides command, control, administration and communications to the units assigned to the Battalion.

3. (C) Organization

a. Current organization of the 11th Combat Aviation Battalion is shown in Annex A.

b. Organization of the 11th Combat Aviation Battalion during the reporting period is shown below:

HQ and HHD, 11th Combat Aviation Battalion - Phu Loi
*116th Assault Helicopter Company - Cu Chi
128th Assault Helicopter Company - Phu Loi
162nd Assault Helicopter Company - Phuoc Vinh

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173rd Assault Helicopter Company - Lai Khe

**178th Assault Support Helicopter Company - Phu Loi

***184th Reconnaissance Airplane Company - Phu Loi

213th Assault Support Helicopter Company - Phu Loi

*116th Aslt Hel Co transferred to 269th Combat Aviation
Battalion Cu Chi, effective 19 March 1967

**178th Aslt Spt Hel Co, attached to 14th Combat Aviation
Battalion, Chu Lai, effective 20 April 1967

***184th Recon Airplane Co transferred to 11th Combat Aviation
Battalion, Phu Loi, effective 19 March 1967

4. (C) Command and Staff Structure:

a. Current Command and Staff Structure is shown in Annex B.

b. Significant changes in the 11th Combat Aviation Battalion

Command and Staff Structure during the reporting period are shown

below:

(1) On 2 February 1967 Major Richard B. Schaefer assumed command of the 173rd Assault Helicopter Company from LTC Benjamin F. Pim Jr.

(2) On 4 February 1967 Major Harold I. Small assumed command of the 116th Assault Helicopter Company from Major James H. Patterson.

(3) On 5 March 1967 Major Cornelius F. McGillicuddy assumed command of the 128th Assault Helicopter Company from Major John L. Credeur.

(4) On 5 March 1967 Major James H. Patterson was appointed Battalion S3 replacing Major Cornelius F. McGillicuddy.

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(5) On 15 March 1967 Cpt John J. Keefer was appointed Battalion S2 replacing Major Bobby M. Freeman.

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(6) On 7 April 1967 Major George W. Adamson assumed command of the 213th Assault Support Helicopter Company from LTC Henry G. Mosley.

(7) On 10 April 1967 Major Malcomb D. Rixon was appointed Battalion S4 replacing Major John E. Dugan.

(8) On 10 April 1967 Major Neal C. Petree Jr. assumed command of the 162nd Assault Helicopter Company from LTC Gerald W. Kirklighter.

B. PERSONNEL, MORALE, DISCIPLINE, CIVIC ACTION, AND INFORMATION

1. (U) General: The S1 section continued its normal support to all assigned and attached units during this period. The S1 endeavors to accomplish as many actions at battalion level as possible in order to decrease administrative requirements at company level. Several regulations and policy letters have ^{been} published during this period to aid the units in their administrative work loads. The S1 section has initiated a 24 hour work day to effectively utilize available work space and office equipment.

2. (U) Awards and Decorations: The past quarter has shown an increase in special awards. Faster processing by the 1st Aviation Brigade and USARV has had a considerable effect on the battalion's morale. The Commanding General's "Spot Awards" continues to have a positive effect on the unit drive to "Lean Forward" and give that extra 20-30%. The following is the number of awards submitted and returned for the quarter:

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(1) Submitted:

	SEC	SS	DFC	SM	LM	BS"V"	BS	ACM"V"	ACM	AM"V"	AM	PH	CA
FEB	0	0	3	4	1	3	3	1	7	0	459	7	0
MAR	0	1	5	0	4	1	10	44	29	4	807	10	0
APR	0	0	16	3	2	3	19	0	29	26	939	17	96

(2) Returned:

FEB	0	0	20	0	0	0	48	0	33	18	586	38	7
MAR	0	1	13	3	0	2	6	3	16	7	519	11	31
APR	0	0	6	2	0	0	5	55	24	2	912	7	23

3. (U) Special Services: The tennis and basketball court was completed during the quarter. Each company now has its own 16mm film account. Improvements are being made throughout the battalion to offer the enlisted men better recreational facilities during their off-duty hours. A patio adjacent to the battalion swimming pool area was equipped with chairs, tables, and umbrellas during the period. Dayroom furniture was received and distributed to all units.

4. (U) Courts & Boards: Through a very close liaison and coordination with SJA US Army Vietnam, the Courts and Boards section functions very smoothly and efficiently. The following is an account of the courts for the past quarter:

	Summary Court	Special Court	General Court
FEB	1	2	0
MAR	3	0	0
APR	1	1	0

(5)

5. (U) Personnel:

- a. The personnel section continued its support of approximately 2000 records during the reporting period.
- b. The records of the 116th Assault Helicopter Company were transferred to 269th Aviation Battalion.
- c. The records of the 184th Recon Airplane Company were received from the 145th Battalion.
- d. All finance records have been returned from the 7th F&A Officer, Saigon, for maintenance and submission of payroles.
- e. In-processing of the 213th Assault Support Helicopter Company was completed.
- f. An infusion program for the 213th Aviation Company was written and phase one of the two phases has been completed.
- g. The Personnel section processed 122 requests for extension of Foreign Service Tours during this reporting period.

6. (U) Civic Action Program: Civic Action programs have progressed well considering the availability of time, manpower and materials. Active participation in unit projects and programs on a self-help basis by local nationals has increased. The receptiveness of the local people to the programs carried out has been gratifying. Of particular note is the increased enrollment in the recently completed school at Lai Khe which has risen from 21 to 67 students. It is estimated that, when properly staffed and equipped, this school will be able to increase the student input two to three times over its original input. Equally noteworthy is the joint ARVN-US effort to

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construct new dwellings in the Vinh Son area in connection with relocating the village of Ben Suc. The 11th Combat Aviation Battalion has been actively engaged in this project and 15 dwellings have been erected with water and sanitation facilities. In addition to MEDCAP, direct medical assistance has been rendered by medical officers of the battalion. Health education classes in personal hygiene and physical development have been conducted and commodities, i.e. soap, toothbrushes and toothpaste, have been distributed; food staples, cooking oils, building materials, school supplies and clothing.

7. (U) Information Program: The information program continued to receive added emphasis throughout the quarter. Summaries of daily activities and highlights are furnished to higher headquarters for outside news media. The ~~companies~~ have initiated 245 home town news releases during this reporting period. Liaison with outside news media has given the battalion greater recognition and support. The 11th Combat Aviation Battalion Information section is currently building a photolab. Programmed completion date for the photo lab is 1 June 1967.

C. (C) INTELLIGENCE

1. (U) Significant Activities:

a. During the first week of April the S2 revised the Standing Operating Procedure for Intelligence written in April of 1966. Principle changes were directed toward providing definite guidance to the staff sections and assigned companies.

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b. A summary of normal S2 actions for the past three months is as follows:

- (1) Number of clearances validated: 29
- (2) Number of requests for NAC: 8
- (3) Number of clearances granted: 14
- (4) Number of requests for record checks: 27
- (5) Number of individual debriefings: 12
- (6) Daily Intsums written: 38
- (7) Weekly Intsums written: 14
- (8) Hit rpts recorded and forwarded to 7AF: 217
- (9) Hit overlays prepared and forwarded th 12th Cbt Avn

Gp: 3

- (10) Hit overlays prepared and sent to units: 18
- (11) Perintreps written: 5
- (12) Order of Battle Map updatings: 16
- (13) Number of Secret documents processed in: 82
- (14) Number of Secret documents processed for destruction: 128
- (15) Number of Confidential documents handled: 300
- (16) Number of persons fingerprinted: 45

2. (U) Escape and Evasion:

a. In order to provide information and guidance for establishing and maintaining a sound Survival, Escape and Evasion program at battalion and unit level, the S2 wrote an E&E Standing Operating Procedure.

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b. In April six (6) officers were sent to Jungle Environmental Survival Training (JEST). Three of these were Company E&E officers and three were O-1 pilots. 12

3. (C) Security:

a. In order to implement the provisions of USARV Reg 380-5 and other pertinent security regulations, the S2 prepared a Battalion Security Standing Operating Procedure.

b. An Internal Security SOP and a Plan for Emergency Destruction and/or Evacuation of Classified Materials was written.

c. The quarterly Security Documents Inventory found all documents present and allowed for the destruction of 120 obsolete documents. A monthly inventory will be made to preclude the accumulation of SECRET documents which are no longer of value.

d. The Battalion experienced no security violations during the period requiring investigation under the provisions of para 72, AR 380-5. This Headquarters received one (1) administrative violation in March and took immediate action to preclude recurrence.

e. During the period, a change to the 1st Avn Bde Reg 390-5 authorized the battalion to originate SECRET documents. Prior to this time the only capacity for SECRET at battalion level was in reply to SECRET matters from higher headquarters.

4. (C) Intelligence and Counter Intelligence Reports:

a. The Daily Intelligence Summary was continued throughout the period. Distribution was expanded to include the 520th AM & S Bn and the 610th Maintenance Bn.

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b. The 11th Combat Aviation Battalion Perintrep is now prepared every two weeks. In addition to providing a general enemy situation and disposition, it is the primary document for counter-intelligence information.

c. A Weekly Intelligence Summary containing an operations summary and information on enemy movements and activities, battle casualties, and aircraft receiving fire is prepared and distributed on the same basis as the daily Intsum and the Perintrep.

D. PLANS, OPERATIONS AND TRAINING

1. (C) Plans

a. The concept of planning airmobile combat assaults within the 11th Combat Aviation Battalion during this reporting period was centralized planning and decentralized execution.

b. Planning of airmobile combat assaults and extractions or resupply is conducted at the 11th Combat Aviation Battalion Operations Complex. Execution of one and two assault helicopter company operations is decentralized to company level by designating one company commander as air mission commander for the operation. Execution of airmobile operations involving more than two assault helicopter companies is controlled by the 11th Combat Aviation Battalion Commander from his Airborne Command Post.

c. Coordination of aviation support is controlled by the 11th Combat Aviation Battalion Operations Complex. Requirements for aviation support are screened in the Battalion Operations Complex and initial information on location, map coverage, communication and amount

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of aviation support requested is extracted. A liaison team is selected and dispatched to the requesting unit to assist them in their detailed planning and to advise the supported unit commander and his staff how the aviation assets available to them can best be utilized to support their plan. M

d. The liaison team secures copies of the supported units operations plan, effects final coordination, and returns to the 11th Combat Aviation Battalion to brief the aviation unit commanders selected to conduct the operation, on the supported units operations plan.

e. During this reporting period, this method of liaison, planning and coordination has been very effective. As a bonus effect, this method has been used to orient newly arrived units to the capabilities and limitations of Army Aviation support available to them.

2. (C) Operations

a. New management techniques and better communications during this reporting period have enabled the 11th Combat Aviation Battalion Operations Complex to continually monitor the status of aviation assets within the battalion and tailor the available resources to assigned missions.

b. Tactical tailoring of available resources to assigned missions has enhanced the 11th Combat Aviation Battalion's capability of providing adequate, effective and timely aviation support to the ground commanders.

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c. Employment of the XM47 Subsystem: During this reporting period UH-1Bs and UH-1Cs from the 11th Combat Aviation Battalion participated in 8 XM47 mine laying missions seeding 42 areas. XM47 mine laying missions were suspended effective 20 March 1967.

d. Employment of the UH-1 Firefly system: Aircrews from the 128th, 162nd and 173rd Assault Helicopter Companies received training in the UH-1 Firefly system from the 334th Armed Helicopter Company. On 14 April 1967 two light fire teams from the 173rd Assault Helicopter Company conducted Firefly operations in the IV Corps Tactical Zone in support of the 21st ARVN Division with the following results: 122,500 rounds 7.62mm ammunition expended, 108 2.75 inch rockets expended, and 750 rounds 40mm ammunition expended. Results: 3 VC KIA (BC) 32 VC KIA (EST).

e. Operation Big Spring 1 to 16 February: The 11th Combat Aviation Battalion conducted 3 Battalion sized combat assaults into multiple landing zones northeast of Tan Uyen in support of the 173rd Airborne Brigade on 1 February 1967. Four assault helicopter companies from the 11th Aviation Battalion and two assault helicopter companies from the 145th Combat Aviation Battalion under the control of the Commanding Officer 11th Combat Aviation Battalion inserted three Airborne Infantry Battalions and three Airborne Artillery Batteries into eight landing zones between Tan Uyen and Xom Cat in six hours. The assault was conducted in three phases totaling 636 sorties and was an exceptionally smooth, well planned, well coordinated operation.

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One assault helicopter company and two CH-47s remained in support of the 173rd Airborne Brigade for the remainder of the operation and compiled the following statistics:

Total sorties - 2103

Total passengers transported - 4193

Total cargo transported - 1022.8 tons

Total hours flown 534.9

f. Operation Tuscon 12-21 February 1967: Three Assault Helicopter Companies from the 11th Combat Aviation Battalion under the control of the Commanding Officer 11th Combat Aviation Battalion inserted two Infantry Battalions of the 1st Infantry Division into two landing zones northwest of Lai Khe. The assaults were conducted without incident and completed in one hour fifty three minutes. Five UH-1Ds and 1 CH-47 supported the two Battalions throughout the operation and compiled the following statistics:

Total sorties: 3398

Total passengers transported - 6308

Total cargo transported - 433.5

Total hours flown: 1061

g. Operation Junction City I and II 22 February 1967 to 15 April 1967: During the period of Operation Junction City I and II the 11th Combat Aviation Battalion supported the elements of IIFORCEV with the majority of support oriented toward the 1st, 9th, and 25th U.S. Infantry Divisions. The 11th Combat Aviation Battalion controlled

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50 Battalion sized combat assaults or extractions which added immeasurably to the maneuver phases of the operation. Highlight of the operation was the insertion of 2 Brigades (5 Infantry Battalions and two Batteries of Artillery) on 22 February 1967. This combat assault is considered to be the largest coordinated airmobile combat assault ever conducted. 73 UH-1Ds, 23 UH-1Bs, and UH-1Cs and 12 CH-47s executing one integrated plan moved the 5 Infantry Battalions and two Artillery Batteries, their support equipment and resupply over a 77 Km flight route in nine hours and five minutes. The integrated plan for moving the personnel, equipment and supplies from two staging areas was prepared and executed by the 11th Combat Aviation Battalion. The planned schedule was executed precisely on time and without interference in the refueling areas, pickup zones or landing zones. The lead element on each of the five separate landing zones touched down within 10 seconds of the scheduled time. An additional command and control helicopter was used to control the arrival of aircraft at refueling areas and pickup zones. The additional C&C helicopter enabled the Air Mission Commander to follow all of the activity in the objective area and to control the flights along the 77 Km route. The pickup zones were Quan Loi and Minh Thanh and the landing zones were along the Cambodian Border vic coord XT1598 to XT3891. All non divisional Army aviation support of the 1st Infantry Division during the entire period of Junction City I and II was controlled by the 11th Combat Aviation Battalion. One assault helicopter company was

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oriented to support one maneuver Brigade for the period of the operation. The liaison, coordination and cooperation between the assault helicopter companies and their supported Brigades was truly outstanding. Each assault helicopter company identified with their Brigade and conversely each Brigade identified with their assault helicopter company. Movement of troops supplies and equipment was smoothly and efficiently accomplished. Medical evacuations on return trips became routine. Command and staff relationships between Battalion and Division, Company and Brigade were firmly cemented. At no time during the entire operation was any unit without its desired aviation support. Only concerted extra effort by every member of the 11th Combat Aviation Battalion could have produced the following statistics:

Sorties flown: 40,835

Passengers transported: 71,739

Tons of cargo transported: 18,078

Hours flown: 15,553

h. Operation Manhattan 23 April 1967 - On 23 April 1967 three assault helicopter companies under the control of the 11th Combat Aviation Battalion inserted three Infantry Battalions of the 3rd Bde, 1st Inf Div, into two landing zones northwest of Lai Khe vic coords XT6038 and XT5940 in three hours twenty three minutes. The operation was conducted precisely on schedule with the lead elements of each battalion touching down in the specified landing zone exactly on time. The 11th Combat Aviation Battalion's UH-1B smoke helicopter

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"Smoky the Bear" was used to screen the flanks on both landing zones. Smoke was generated to sustain a smoke screen while the assault elements of each battalion were inserted. Operation Manhattan continues beyond this reporting period and will be summarized in greater detail in ORLL 1 May 1967 to 31 July 1967.

i. Other Significant Activities 1 February 1967 to 30 April 1967:

3 February 1967 - The 162nd Assault Helicopter Company supported the 199th Light Infantry Brigade, transporting 539 U.S. and ARVN troops from pickup zones vic coord XS6881 and XS7777 to landing zones vic coord XS6871 and XS6786 and XS7583. On the lift into landing zone vic coord XS6786 three aircraft were hit by a command detonated mine. Two pilots were killed and two crewmen were wounded. Three UH-1Ds were extensively damaged. The Copperhead light fire team took the area under fire and killed 2 VC (BC).

4 February 1967 - 173rd and 128th Assault Helicopter Companies supported the 25th ARVN Division with 20 UH-1Ds and 2 light fire teams. After an artillery and TAC Air preparation a combat assault was initiated from a pickup zone vic coord XS4797 to four landing zones vic coords XS5296 at 0700. Between 0700 and 0730 15 UH-1Ds and 1 UH-1C received a total of 113 hostile small arms and automatic weapons rounds resulting in one pilot killed and 15 crewmembers wounded. Light fire teams kept the area under continuous fire and were credited with 6 VC KIA (BC) and 2 VC KIA (EST).

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5 February 1967 - 178th Assault Support Helicopter Company reported a new unit record for cargo transported on one day. New record 386 tons in one day. Old record 377.5 tons established during Operation Cedar Falls. 10

11 February 1967 - 213th Assault Support Helicopter Company declared operational. First day results: 710 passengers carried, 234 tons of cargo transported. The 213th arrived in country 27 January 1967 and was declared operational on its 15th day in country.

16 February 1967 - Elements of the 11th Combat Aviation Battalion flew missions in support of every major U.S. unit in the III Corps Tactical Zone. Supported were: 3 US Divisions, 3 separate Brigades and the 1st Australian Task Force.

20 February 1967 - One UH-1D from the 173rd Assault Helicopter Company received intense small arms and automatic weapons fire in a landing zone near Bu Dop vic coord YU9729 in support of the 5th Special Forces Group during a tactical emergency. The helicopter crashed and overturned. One crewman was wounded. The helicopter was ordered destroyed as hostile forces overran the landing zone.

28 February 1967 - 128th and 173rd Assault Helicopter Companies responded to a Tactical Emergency declared by 3rd Bde, 1st Infantry Division near Soui Da at 1940 hours. 11 UH-1Ds from the 128th and 3 UH-1Ds from the 173rd Assault Helicopter Companies performed medical evacuation of 88 dead and wounded, and emergency resupply of ammunition from and to a single ship landing zone vic coord

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XT2972. The evacuation and resupply was conducted entirely at night under intense enemy small arms and mortar fire. Friendly flares and artillery were fired into all quadrants around the landing zone. The evacuation and resupply were conducted without incident. Three helicopters working out of the same landing zone during daylight hours received blade damage from working out of the small confined area.

8 March 1967 - A CH-47 from the 213th Assault Support Helicopter Company was shot down vic coord WT9488 by intense automatic weapons fire. The CH-47 received 8 hits. The helicopter was secured by ground forces. There was no injury to the crew. CH-47 was repaired and flown out 9 March 1967.

12 March 1967 - 11th Combat Aviation Battalion controlled 4 each XM47 mine laying helicopters in support of the 1st Infantry Division. Eight target areas were seeded in 45 minutes without incident. "Smoky the Bear", the 11th Combat Aviation Battalion's smoke generating UH-1B, killed an estimated 4 million mosquitos in support of the 25th Infantry Division. A concentrated insecticide was mixed with 100 gallons of fog oil and sprayed on two base camps vic coord XS3207 and XS4196. These areas were sprayed just before sunset with a light wind blowing. Area coverage was reported to be excellent and ground troops reported effective mosquito control for six to eight hours.

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19 March 1967 - 116th Assault Helicopter Company transferred to the 269th Combat Aviation Battalion (Cu Chi). 184th Recon Airplane Company transferred to 11th Combat Aviation Battalion (Phu Loi). 22

22 March 1967 - 178th Assault Support Helicopter Company established a new Battalion record for cargo transported in one day. New record 507.6 tons, previous record 386 tons.

1 April 1967 - 128th Assault Helicopter Company flew 3602 hours in March. This establishes a new Battalion record. Old record 3047 hours in January 1967 by 116th Assault Helicopter Company. Service Platoon, 128th Assault Helicopter Company reported completion of 36 periodic inspections during March.

7 April 1967 - Elements of the 128th and 335th Assault Helicopter Companies augmented with 2 CH-47s from the 178th Assault Support Helicopter Company moved 3 Infantry Battalions of the 2nd Bde, 1st Inf Div (1440 troops, organic equipment and supplies) in 6 hours.

14 April 1967 - In response to a tactical emergency declared by III ARVN Corps. 29 UH-1Ds and 3 light fire teams from the 128th, 162nd, and 173rd Assault Helicopter Companies assembled at Lam Son Airfield to insert an ARVN Infantry Battalion. The 128th Assault Helicopter Company had received extensive bullet damage to 9 UH-1Ds while inserting a 72 man, ARVN Recon team. The assembled UH-1Ds inserted 568 ARVN soldiers after dark to reinforce the Recon team. Medical evacuation of the wounded members of the Recon team was initiated but was terminated at 2200 hours because of the intense hostile fire and the inability of the Recon team to mark the

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location of the wounded.

21 April 1967 - 178th Assault Support Helicopter Company attached to 14th Aviation Battalion, Chu Lai, for Operation Oregon.

23 April 1967 - 162nd and 173rd Assault Helicopter Companies and A Company 1st Avn Bn inserted three Infantry Battalions of the 1st Infantry Division into two landing zones northwest of Lai Khe to start Operation Manhattan. The assault was conducted on schedule without incident.

29 April 1967 - 162nd and 173rd Assault Helicopter Companies conducted a combat assault with one Infantry Battalion of the 1st Infantry Division in Operation Manhattan. The Battalion size lift was conducted in 48 minutes without incident.

j. Quarterly Statistics, 1 February 1967 to 30 April 1967:

Sorties flown -

UH-1 80,911

CH-47 17,202

O-1 3,583

101,696

Passengers transported -

UH-1 143,928

CH-47 43,493

O-1 16

187,437

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Tons of cargo transported -

UH-1 4,709

CH-47 28,394

01 0

33,103

Hours flown -

UH-1 26,057

CH-47 5,688

01 6,467

38,212

Medical evacuations - 438

Aircraft recovered - 116

Ammunition expended - 7.62mm 2,526,740

2.75 in 12,266

40mm 9,606

Enemy losses - VC KIA (BC) 159

VC KIA (EST) 52

VC WIA 23

VC Captured 1

Structures destroyed 139

Sampans sunk or destroyed 77

Friendly losses - US KIA 6

US WIA 38

Aircraft hit 142

Aircraft destroyed 14

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3. (C) Training

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a. Pathfinder Training: A pathfinder training course was conducted by the Pathfinder Detachment, 11th Combat Aviation Battalion 1 - 11 February 1967. 29 students attended the course which presented the basic requirements stated in USARV message AVHAV 26232 and qualified the students to apply for permanent designation as a Pathfinder upon completion of a six month OJT period. Student inputs were from each assigned unit and the 222nd Combat Aviation Battalion.

b. Decca Training: A continuing program to qualify newly assigned aviators in the operation of the Decca Navigation System continued during this reporting period. Decca Technical Representatives are used on a rotating basis to teach a one hour ground school course to all assigned aviators. Unit Instructor Pilots qualify to teach the Decca Navigation System by flying with Decca Technical Representatives. Decca flight training is taught to the newly arrived aviator during his in country orientation and reviewed every 90 days on standardization check rides.

c. Mobile Training Teams (MTT): The Battalion Mobile Training Team from the 178th Assault Support Helicopter Company prepared a handbook on CH-47 (Chinook) Employment and Utilization in Vietnam (See Annex C) and distributed copies to each supported unit. A Mobile Training Team (MTT) from the 213th Assault Support Helicopter Company was formed and trained by the 178th and has assumed the Battalion MTT responsibility upon departure of the 178th for Chu Lai. All supported units receive initial and refresher

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training on request. The tons per hour ratio for the reporting period was 5.1 compared to 4.3 tons per hour of the previous reporting period. The 178th Assault Support Helicopter Company established a new Battalion record of 507.6 tons of cargo moved in one day (22 March 1967). This record and new tons per hour ratio are a direct result of the training conducted by the 11th Combat Aviation Battalion Mobile Training Team for the units supported on Operation Junction City.

d. AAMTAP Courses: 43 students from the 11th Combat Aviation Battalion attended classes at Vung Tau AAF conducted by the 755th Transportation Detachment. Attendance figures are shown below:

<u>Course</u>	<u>Student Input</u>
UH-1 Airframe	19
UH-1 Engine (T53)	7
CH-47 Airframe II	11
CH-47 Engine (T55)	6

e. VNAF Aviator Training: Four VNAF aviators were attached to the 11th Combat Aviation Battalion for transition training and tactical training in the UH-1D on 15 February 1967. Two VNAF aviators were attached to the 116th Assault Helicopter Company (Cu Chi) and two VNAF aviators were attached to the 173rd Assault Helicopter Company (Lai Khe). On 19 March 1967 control of the two VNAF aviators assigned to the 116th Assault Helicopter Company was transferred to the 269th Combat Aviation Battalion. The two VNAF

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aviators attached to the 173rd Assault Helicopter Company had completed their transition training and were undergoing tactical training when they were recalled to Saigon 18 April 1967.

f. In Country Flight Crew Training: UH-1D and UH-1B/C aircrews from the 187th Assault Helicopter Company, 269th Combat Aviation Battalion, received in country orientation and tactical training with the 11th Combat Aviation Battalion from 15-29 March 1967. CH-47 aircrews from the 200th Assault Support Helicopter Company, 214th Aviation Battalion received in country orientation and tactical training with the 11th Combat Aviation Battalion 17 March - 11 April 1967.

E. LOGISTICS

1. (C) Significant Activities: The major efforts of the S4 during this period have been directed toward:

- a. Improving administrative supply procedures.
- b. Assisting units in the fields of supply and logistics and related activities in preparation for the Annual General Inspection.
- c. Assisting the 178th Assault Support Helicopter Company in procuring and transporting equipment and supplies in conjunction with Operation Oregon.
- d. Construction of cantonment area.
- e. Conversion of the Cola Mess to a Field Ration Mess.

2. (U) Supply: Procedures for receiving new units from CONUS requires development of detailed requirements for host units to

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insure new units are properly received and subsequently achieve operational status within the shortest possible time.

3. (U) Assistance Inspections: Checklists have been developed and issued to the units in preparation for the Annual General Inspection. Battalion conducted inspections have assisted the units by determining present status, identifying weaknesses and assisting in detail to correct deficiencies. Inspectors have stayed with the units to offer technical advice and personal assistance.

4. (C) Operation Oregon: The 178th Assault Support Helicopter Company was required to prepare a logistics contingency plan for displacement from Phu Loi. This plan was implemented one month later.

5. (U) Construction of Cantonment Area:

a. The self-help program continues to be the primary method. Units at Phu Loi now have 50% of their troop billets and are on a priority list to receive the other half in conjunction with the planned base development program.

b. Engineer support of construction activities decreased due to a change in supporting engineer units. The 554th Engineer Battalion (Construction) has recently become operational and construction should rapidly increase, due to the greater amount of construction equipment available.

c. R&U activities slowed down during this reporting period due to an administrative reorganization of the Pacific Architects and Engineers at Phu Loi.

29.

F. SIGNAL

1. (U) Significant Activities: Signal activities during this reporting period were normal and routine. A field expedient command and control communications console was mounted in the Battalion Airborne Command Post. Initial flight tests were successful and the console has been committed for full time use. A Prc 25 portable FM receiver transmitter was also installed in the Battalion Airborne Command Post. (UH-1D) Two sole user telephone circuits were installed between headquarters, 11th Combat Aviation Battalion and the 162nd and 173rd Assault Helicopter Companies at Phuoc Vinh and Lai Khe.

2. (U) Current Projects: Two 75 foot wooden telephone poles have been installed at Headquarters, 11th Combat Aviation Battalion. FM, UHF and HF antennas are being mounted on these poles to improve radio communications in the battalion area of operations. A photo lab is being fabricated to support the 11th Combat Aviation Battalion Information Section.

G. MAINTENANCE

1. (U) Significant Activities

a. During the past three months, the battalion has experienced higher total flying hours, utilization rates and average hours per aircraft than in any previous period. During this reporting period the utilization of UH-1D helicopters averaged 214 percent and CH-47 helicopters 142 percent based on 60 and 50 flying hours per aircraft per month respectively. O-1s averaged 204% based on 80 hours per aircraft per month.

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b. During February, the 213th Assault Support Helicopter Company became fully operational. During March one UH-1 company, the 116th Assault Helicopter Company, was transferred from the battalion and one O-1 company, the 184th Recon Airplane Company, was assigned, which added another type of aircraft for maintenance and supply support.

c. The UH-1 companies have received 21 UH-1Ds, and 2 UH-1C replacement aircraft in an effort to maintain a level of 21 UH-1D and 8 UH-1B or UH-1C aircraft per company. At the end of the period the 11th Combat Aviation Battalion was short a total of 4 UH-1Ds. One CH-47 on hand receipt as a float aircraft was assigned as a replacement to the 178th Assault Support Helicopter Company.

d. All units aircraft technical supply activities have completed a reconciliation with the supporting DSU resulting in numerous requisitions over 30 days old being cancelled. These requisitions were not recognized as valid due-outs by the depot activity. The reconciliation involved all requisitions from 02 priority through priority 17. EDP 02 requisitions are reconciled weekly.

e. Four UH-1 safety of flight inspections were received in February and one in April which required grounding of the aircraft. Through 24 hour maintenance operations, the inspections were completed with no adverse effect on operational commitments.

f. Engine life of the T-53 engines has continued to average 600 hours or half of the expected life. Since 1 February, sixty-nine

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replacement engines have been required. Foreign object damage, bearing failure, bearing seal leaks and high exhaust gas temperature accounted for 50 percent of the reasons for engine change. The O-470 engines used in the O-1 aircraft have also fallen short of expected life with the main cause for replacement being high oil consumption. Filters have been added to the carburetor heat air intake to reduce induction of sand and dirt during ground operations.

g. There has been considerable improvement in the application of dust suppressant around unit maintenance areas, however, erosion of aircraft components and bearing contamination remains a problem. Aircraft operate daily in areas of loose dirt and sand.

H. AVIATION SAFETY

1. (U) General:

a. A steady increase in the accident rate has been evidenced over the past ninety days. There have been twelve major accidents, five combat losses and nineteen incidents reported during this period. Of these only one involved an O-1G; the balance involved UH-1 aircraft.

2. (U) The following is a list of the principal cause factors of the accidents and incidents during this reporting period:

Accidents		Incidents	
Overgross for conditions	5	Blades strike object	7
IFR in dust	2	*Material failure	4
Aviator fixation (2 fatal)	1	Maintenance error	3

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Accidents		Incidents	
Struck object w/TR	1	IFR in dust	2
Intermeshed blades	1	Gunner error	1
Undetermined inflight			
emergency (7 fatal)	1	Overgross for conditions	1
Maintenance error	1	Poor landing techniques	1

*Three engine failures included

b. The principal cause factor that required the aviator to make a precautionary or forced landings during this period are:

- Engine failures 5
- Short shaft failure 3
- Hydraulic failure 2
- Other causes 2

I. SURGEON

1. (U) The consolidated 11th Combat Aviation Battalion Dispensary continued to provide aeromedical support to the 11th Combat Aviation Battalion and supporting maintenance units. Medical civic action projects were pursued actively with satisfying results. A program of regular semi weekly visits to Vinh Son, Lai Khe and Phu Loi was established.

2. (U) An aggressive program was initiated toward improving medical administration, record keeping and statistical reporting. Immunizations were administered regularly throughout this reporting period by insuring each individual shot record was inspected prior to the individuals receiving monthly pay or departing on R&R.

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Section II, Part I

Lessons Learned

A. Personnel

1. (U) Item: 24 hour a day personnel section.

Discussion: Administration of a 2000 man unit with limited work space and limited typewriter availability has presented numerous problems during the last year. To alleviate this shortage of space and resources the 11th Combat Aviation Battalion Personnel Section decided to experiment with a two shift, 24 hour work day during this reporting period. The results of this experiment have exceeded the original goals. The 24 hour work day was originally designed to keep up with the heavy demand for typing, filing and posting of personnel records. Since adoption of the 24 hour work day as a management tool, the work load of the section has leveled out and maximum utilization of space and equipment have been achieved. Additionally, personnel problems of aircrewmembers who are gone during the normal work day are attended to by the night shift.

Observation: The 24 hour a day personnel section has effectively achieved maximum utilization of typewriters, mimeograph machines, and office equipment. Originally experimental, the 24 hour a day personnel section is now standard operating procedure.

B. Operations

1. (C) Item: Night Combat Assaults

Discussion: During this reporting period units of the 11th Combat Aviation Battalion have participated in three night combat

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assaults. These assaults were conducted without incident, however, several lessons were learned. Night combat assaults can be conducted regularly, provided enough planning time is allowed for preparation. Detailed planning and coordination between the air mission and ground commanders is absolutely essential. Reconnaissance of the area of operation, selection of landing zones, approach and departure routes should be conducted during daylight hours. Arrangements for pathfinders nightlighting equipment must be made. Aircrews and aircraft to participate in the assault should be selected with care and special consideration must be given to crew rest and serviceability of aircraft lights and navigation equipment. All participants in a night combat assault should receive a thorough briefing on: the operations plan, concept of the operation, plan of fire support, and any special signal instructions. The coordinated operation plan should be deliberately executed by all personnel. Special planning consideration should be given to ready reaction forces, battlefield illumination, emergency resupply, medical evacuation, and recovery of downed aircraft. Review of after action reports reveals that aviation units participating in past night combat assaults have not had sufficient time to adequately prepare.

Observation: Special consideration should be given to aviation units selected to participate in night combat assaults. Sufficient time to prepare for night combat assaults must be given to each unit. Night combat assaults have proven to be more difficult

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than day combat assaults, however, are within the capability of each assault helicopter company. Utilizing an assault helicopter company all one day, scheduling them for a combat assault that night and scheduling them again the next day, is beyond the capability of an assault helicopter company.

2. (C) Item: Planning combat assaults at low tide in areas affected by tidal flux.

Discussion: During this reporting period units of the 11th Combat Aviation Battalion have participated in numerous combat assaults into operational areas affected by tidal flux. When the assaults were conducted during low tide, the troops had little difficulty in exiting the helicopters. Most of the smaller canals and tributaries were dry. The mobility of the suspected Viet Cong troops in the area was severely restricted because they could not flee from the operational area in sampans. This forced the suspected Viet Cong to flee across the rice paddies exposing them to aerial observation, or, to move their sampans through the mud to deeper canals. The timing of combat assaults to coincide with low tide introduces several bonus effects. It makes the initial assault easier for the assault troops because the helicopters land on relatively firm ground and they do not have to exit the helicopters into water of unknown depth. It makes aerial surveillance of the operational area better for the ground commander and the pilots of the armed helicopters. It severely restricts the suspected Viet Cong's mobility in and out of the operational area. It better enables

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ground troops to detect booby traps that would be undetectable under water. Several disadvantages of conducting combat assaults at high tide are: artillery preparation of landing areas are ineffective; troops exit aircraft into water of unknown depth; troop mobility in the operational area is restricted; troops very vulnerable to small arms and automatic weapons fire while moving through waist deep water; and terrain features marking boundaries of landing zones are obscured by water.

Observation: When practical, airmission commanders should recommend to ground commanders to plan the initial assault at low tide to take advantage of the above stated bonus effects.

3. (C) Item: Combat assaults conducted in response to tactical emergencies.

Discussion: Twice during this reporting period units from the 11th Combat Aviation Battalion have participated in hastily planned combat assaults in support of ARVN forces in response to "Tactical Emergencies". These tactical emergencies were declared to secure the necessary aviation resources to exploit recently evaluated intelligence information. Both assaults were hastily planned and conducted without adequate fire support and both assaults resulted in extensive bullet damage to 80% of the helicopters participating. 52% of the casualties sustained by the 11th Combat Aviation Battalion during this reporting period were sustained on these two operations.

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Observation: Hastily planned and conducted combat assaults have proven to be very hazardous. Recently evaluated intelligence that precipitated these two assaults was proven correct, however, it appeared that the Viet Cong were prepared for the forth coming airmobile combat assaults. The cost in casualties and downed aircraft on this type of operation is very high. These type combat assaults should receive the most attention to detail in planning and execution.

4. (C) Item: Combat Assaults utilizing CH-47 helicopters.

Discussion: 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-47s on initial assaults into insecure landing zones could prove very expensive in men and materiel. CH-47s have been utilized very 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 very complex technical problems.

Observation: The CH-47 is a very valuable asset. Using CH-47s on combat assaults to insecure landing zones presents a higher degree of exposure risk than present CH-47 utilization. All factors influencing the decision to use CH-47s for combat assaults into insecure landing zones should be very carefully evaluated.

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5. (C) Item: High density hostile fire received in landing zones. 38

Discussion: Three times during this reporting period units from the 11th Combat Aviation Battalion have been subjected to a high density of hostile small arms and automatic weapons fire while landing on combat assaults. On all occasions the helicopters caught in the high density of fire have received extensive bullet damage. Helicopters caught in the high density fire from the side have sustained the worst damage and the most casualties.

Observation: Helicopters caught in a high density of hostile fire while landing on a combat assault should turn the tail of the helicopter toward the highest density of fire, discharge their troops and depart the area in the new direction away from the fire. This will present the smallest silhouette to the enemy, afford the greatest protection to the crew and gain the greatest radial distance from the fire in the shortest time.

6. (C) Item: Selection of alternate mission commanders and alternate flight leaders.

Discussion: Each time an assault helicopter company organizes for combat, great care must be used in the selection of alternate mission commanders and alternate flight leaders. If there is a weak spot in the company organization for combat, it can be assumed that the enemy will exploit it. There have been nine instances during this reporting period of the mission commander or flight leader being eliminated from a formation because of bullet damage or equipment malfunction. Only thorough briefing of all aircrews in

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an operation will prevent confusion in the event of the loss of a mission commander or flight leader and allow the mission to continue without interruption.

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Observation: Sound Tactical Standard Operating Procedures, thorough training, and adequate briefing of all aviators should allow any platoon leader or section leader to assume command of a mission, or lead of a flight in an emergency.

7. (C) Item: Selection of landing heading for early morning and late evening combat assaults and extractions.

Discussion: Flight leaders have reported extreme difficulty in identifying pickup and landing zones early in the morning and late in the evening when the landing direction is oriented toward the sun. When the sun is near the eastern or western horizon it has proven very difficult for flight leaders to pick out identifying terrain features and smoke markers when they are looking into the sun.

Observation: When possible, pickup and landing zones used for early morning and late evening assaults and extractions should be oriented away from the sun. Pilot visibility should be considered in planning combat assaults in the same manner as other such factors as loads, barriers, terrain, winds, formations, and routes.

8. (C) Item: XM-47 mine laying missions.

Discussion: A four ship XM47 mine laying mission requires pooling resources from several companies. Generally, a staff officer from battalion or group supervises each mission. Time, effort and resources could be saved if, instead of handling each XM-47 mission

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as a special mission, the XM47 subsystems and allied equipment were consolidated and assigned to one company. This would allow the selected company to specialize in XM47 missions and would relegate XM47 missions from the special category mission to the routine category mission. Presently, XM47 missions are handled individually and crews change with every mission. Standard Operating Procedures could be established by the selected company. Time, effort and resources could be saved in briefing, arming, flying, and after mission reporting of XM47 missions.

Observation: Placing special category missions such as XM47, Firefly, and "people sniffer" in a selected company would not only save time effort and resources, but, also would provide better coordination, mission response, and operational efficiency.

9. (U) Item: Utilization of smoke generating UH-1Bs for insect control.

Discussion: During this reporting period, "Smoky the Bear", the 11th Combat Aviation Battalion's smoke generating UH-1B, has been used very effectively on insect control missions. A concentrated insecticide was mixed with fog oil and applied to two base camps in the 25th U.S. Infantry Division area. Reports from the base camp commanders indicate that the area coverage was good and insect control was effective from six to eight hours.

Observation: This method of insect control has applications in many areas. Insect control in base camps, field positions and selected areas may prove effective in the control of disease carried

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by insects. Additionally, MEDCAP personnel may find this method will assist them in their pacification programs.

10. (C) Item: Special planning considerations for large airmobile combat assaults.

Discussion: During this reporting period the 11th Combat Aviation 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&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&C helicopters, and provisions for one spare helicopter for every 10 troop lift helicopters is considered essential in conducting closely timed well coordinated large combat assaults.

Observation: Large airmobile combat assaults can only be conducted with positive command and control in PZ and/or LZ areas. Sufficient spare helicopters to supplement flight elements in the event of combat damage or mechanical malfunction are essential in the conduct of a closely timed, well executed operation.

11. (C) Item: Utilization of Integral Smoke Generators on UH-1 Helicopters.

Discussion: A UH-1B with an Integral Smoke Generator

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(Smoky the Bear) has been used extensively by the 11th Combat Aviation Battalion during this reporting period. "Smoky" has been used to screen exposed flanks of landing and pickup zones during combat assaults and extractions. The fog oil tank capacity has been increased from 16 to 50 gallons which increases the dispensing duration to 3½ minutes. The screen generated by "Smoky" is approximately 100 feet in diameter. When the smoke screen is generated in a wind of 3 knots or less, the screen will remain effective for approximately two minutes. Wind velocities in excess of 3 knots will cause the smoke screen to drift and dissipate more rapidly. The smoke screen can be sustained for short periods by additional applications of smoke on the upwind side of the screen. Screening of the exposed or downwind side of landing zones has proven very effective. The smoke screen has been effective when generated 15 seconds prior to the touchdown or departure of the UH-1D troop carriers. The protection afforded has not been completely evaluated. However, it should be noted that during this reporting period, operations employing "Smoky" have produced no aircraft hits from the smoke protected flank.

Observations: The most effective use of Smoky has been to screen the downwind woodline of landing and pickup zones on initial insertions and final extractions. The most critical planning considerations are timing, location, wind direction and velocity. Extensive use of the Integral Smoke Generator has demonstrated a need for at least one per assault helicopter company. To give the

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assault helicopter company commander the desired flexibility, consideration should be given to assigning two Integral Smoke Generators per assault helicopter company.

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12. (C) Item: Combat extractions just prior to sunset.

Discussion: Combat extractions immediately prior to sunset have proven to be very hazardous. The Viet Cong has shown himself boldly during these extractions knowing little can be done to counter his activities with the imminent onset of darkness. Intense ground fire has been experienced during several extractions just prior to sunset. Twice during this reporting period, extensive bullet damage was sustained by 11th Combat Aviation Battalion helicopters while conducting extractions during twilight hours.

Observation: Sufficient reaction time for aircraft recovery during daylight hours should be programmed into late afternoon extractions. The accomplishment of the entire extraction can be effected if one helicopter is shot down and has to be secured overnight.

13. (C) Item: Additional FM communications capability for command and control helicopters.

Discussion: During this reporting period a PRC 25 portable FM receiver transmitter was installed in the 11th Combat Aviation Battalion Airborne Command Post. The power was provided by internal batteries and the transmission selector and antenna was wired into the aircraft communications system. This provided one additional FM channel for the Air Mission Commander separate and

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distinct from the console used by the Ground Tactical Commanders. This capability can be readily installed in any UH-1 and enhances communications flexibility appreciably.

Observation: This field expedient increases the FM capability in the airborne command post by 100%. All command and control helicopters in the 11th Combat Aviation Battalion are now so equipped.

14. (C) Item: Planning heliports in fire support bases (Artillery positions in the field).

Discussion: It is essential that specific areas be designated as heliports in all fire support bases. Most fire support bases are resupplied by CH-47 and must be kept clear of vehicular traffic and radio antennas. In addition, CH-47 helicopters produce a great deal of downwash and wind. Dust and loose objects are easily picked up by CH-47 winds and become very serious hazards to sustained operations in both the operational and maintenance areas of these aircraft. Approach and departure routes should remain unobstructed. Fire support bases habitually grow in population during field operations. The available space for the heliport diminishes as population increases. Unfortunately, as the population of a fire support base increases so does the demand for CH-47 resupply.

Observation: Specific areas within the fire support base must be maintained with dust suppressant, kept clear of vehicular traffic and approach and departure routes must remain unobstructed if continuous resupply is to be accomplished.

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15. (C) Item: Liaison requirements for CH-47 resupply missions.

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Discussion: To achieve the full resupply potential of one CH-47 helicopter it has been determined that each resupply mission be coordinated prior to the arrival of the CH-47. If the loads are broken down, packaged correctly and properly rigged before the CH-47 arrives, resupply can begin immediately. If however, loads are not broken down, or incorrectly packaged, or improperly rigged, valuable time is unnecessarily wasted. One CH-47 can support many different units in one day if all the units are prepared to receive the CH-47 and are ready to begin resupply. One unit not prepared for the arrival of a CH-47 can penalize all the other supported units. The only effective means to achieve the full resupply potential of a CH-47 is to effect liaison with the supported units and precisely plan the resupply mission. If the supported unit needs assistance to properly prepare for CH-47 resupply, pathfinders or a mobile training team can be furnished to provide the necessary assistance.

Observation: The full potential of the CH-47 has not been achieved. Until all supported units adequately prepare to efficiently use CH-47s, the full potential will not be achieved. It is the policy of the 11th Combat Aviation Battalion to get out and visit the supported units, find out what their problems are, and assist them in every way to help them overcome their problem areas. This is the only effective way we can approach maximum utilization of CH-47s.

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C. Training and Organization: None

D. Intelligence: None

E. Logistics and Maintenance

1. (U) Item: Supply Procedures for Receiving New Units.

Discussion: Procedures developed by this headquarters for receiving new units from CONUS obtained commendable results. However, problem areas were encountered that were not completely resolved for the benefit of the new unit prior to its arrival in-country. The objectives of these procedures were to insure a cordial reception of the unit; that necessary messing, housing and sanitation facilities were available; that necessary liaison with supporting transportation activities was current; and that the units advance party was briefed on procedures and informed of what agency to contact for assistance in specific problem areas. Upon being notified the unit had been assigned, this headquarters accomplished the following:

(1) Initiated correspondence with the unit, appraising them of the ^{SITUATION} in country, and recommendations that they bring certain items of supplies and equipment not readily available in country but required for their mission or support.

(2) Submitted supply requests for installation type property required for field messing and troop housing, office furniture and equipment.

(3) Coordinated with the supporting troop engineer unit and the installation engineer to prepare and construct necessary sanitary facilities and rehabilitate buildings to be occupied by

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the new unit.

47 (4) Prepared parking aprons and maintenance facilities for aircraft.

(5) Coordinated with transportation agencies on arrivals of advance party, main body, airlifted unit equipment and sealift shipments.

(6) Received advance party, briefed on local situation, provided transportation and personnel to assist advance party in preparing for main body.

(7) Arranged for necessary transportation to transport main body and equipment from aerial port of debarkation and movement of equipment from sea ports.

(8) Delivered previously requested supplies and equipment to the new unit.

(9) Arranged for messing of the unit for the period of time it would take the unit to get its own mess in operation.

(10) Provided Class I and III support until the unit was able to take over this requirement. Nonavailability of required transportation from the supporting Director of Transportation to move personnel and equipment from ports to the unit's home station upon arrival of aircraft and ships, resulted in the new unit having to leave personnel at the ports for a considerable length of time to guard its equipment while awaiting transportation. It took three days to move all equipment from the aerial port after arrival of the aircraft

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and seven days to move all equipment from the sea port after equipment had been unloaded from the ships.

Observation: The importance of the initial reception accorded a new unit cannot be overstressed. If tangible assistance is furnished, the unit will be able to become operational in a very short period of time.

2. (U) Item: The avionics standard configuration program.

Discussion: The objective of the program is to configure all Army aircraft to accept the same family of radios. At present, the retrofit of 1964, 1965, and 1966 model UH-1 does not increase the communications capability of these aircraft. The retrofit of 1963 model UH-1's would provide the capability of using ARC 54 radios instead of the presently installed ARC 44 radios. The ARC 44 is limited in frequency range, and often presents problems in netting with other aircraft and control stations. To date, kits required to retrofit 1963 models have not been available. The contractor has been installing kits on O-1 aircraft over the past three months but does not yet have them completed. The contractor has recently begun a retrofit on some UH-1s, but the kits are not available for 1963 models.

Observation: The avionics standard retrofit program should not interfere with operational commitments, particularly when no increased capability is provided. Retrofit kits should be made available for 1963 model aircraft which will increase the communication capability. New aircraft received which have recently come off the production line

also require the retrofit work. It would seem advantageous to have the standard configuration installed on the production line.

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3. (U) Item: Non availability of replacement armament systems for armed helicopters.

Discussion: Sufficient armament systems are not available to replace combat losses. Until USAF Regulation 735-2 was published 25 March 1967, there was little guidance on the procedures for reporting losses and obtaining replacements. Consequently the battalion is short 12 XM-23 systems, 1 XM-16 system and one M-5 system. As a result of the inadequate reporting system for losses, procurement action has not kept pace with the losses and a mounting shortage of systems has resulted. In addition, in some cases, armament systems are evacuated to CONUS with aircraft that require overhaul.

Observation: Aircraft armament systems are not requisitioned, but are allocated by Hq, USAF based on reported losses and available assets. This is the same system as used for aircraft, however, until 25 March 67 guidance for reporting armament losses were not definitive. Instructions for reporting losses and obtaining replacement armament systems are now adequate, but there is an insufficient number of replacement systems available.

F. Surgeon

1. (U) Item: Inconsistency of TO&E 8-500D w change 1 TOE 300-29
(SCR) Team OA

Discussion: The mission of the aeromedical detachment (OA)

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includes performance of both routine and emergency laboratory procedures. The TO&E provides for this by specifying a laboratory specialist MOS 92B20 as a member of the detachment. However, this same TO&E provides no laboratory equipment with which to perform these procedures.

Observation: Men in an important MOS 92B20, Medical Laboratory Specialist, are assigned to units with no capability to be utilized in their trained skills. Further, the capability of the detachment to provide medical support to its parent unit is seriously compromised.

Section II, Part II

Recommendations

A. Personnel: None

B. Operations:

1. (C) Aviation units scheduled for night combat assaults should be released from all missions on the day of the assault, in sufficient time, to adequately prepare for the night combat assault. Release time should be early enough to allow the aviation unit commander and key personnel from the aviation unit to perform a detailed visual reconnaissance of the operational area during daylight hours. Aircraft maintenance and crew rest should become the primary considerations in the assignment of missions to an aviation unit after a night combat assault.

2. (U) None

3. (U) None

(47)

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4. (U) None

5. (U) None

6. (U) None

7. (U) None

8. (U) None

9. (U) None

10. (U) None

11. (C) Consideration should be given to authorizing two Integral

Smoke Generators by TO&E to each assault helicopter company.

12. (U) None

13. (U) None

14. (U) None

15. (U) None

E. Training and Organization: None

D. Intelligence: None

E. Logistics and Maintenance

1. (U) None

2. (U) None

3. (U) Sufficient armament systems to replace combat and/or

accident loss should be maintained and be readily accessible in quantities sufficient for issue to units so that immediate installation on issued replacement aircraft can be accomplished.

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F. Surgeon

1. (U) None


JOSEPH B. STARKER
LTC, Infantry
Commanding

ANNEXES: A - Organization Structure
B - Command and Staff Structure
C - CH-47 Handbook on CH-47 (Chinook)
Employment & Utilization in Vietnam

DISTRIBUTION:

- 1 copy to CO 12th Combat Aviation Group
- 1 copy to CG 1st Aviation Brigade
- 3 copies to DCG USARV
- 2 copies to CG USARPAC
- 2 copies thru CO 12th Cbt Avn Gp to ACSFOR
- 1 copy thru channels to ACSFOR

AVGC-SC (10 May 67) 1st Inc (U)
SUBJECT: Operational Report - Lessons Learned (ORLL) for Period Ending
30 April 1967 (RCS CSFOR-65)

HEADQUARTERS, 12TH COMBAT AVIATION GROUP, APO 96491 3 June 1967

THRU: Commanding General, II Field Force Vietnam, APO 96266

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

1. One copy of the 11th Combat Aviation Battalion's Operational Report - Lessons Learned (ORLL) (RCS CSFOR-65) for period ending 30 April 1967, is forwarded in compliance with USARV Regulation 1-19, dated 8 February 1967.

2. Comments are included on observations and recommendations made by the battalion commander:

a. Personnel: None

b. Operations: None

c. Training and Organization: None

d. Intelligence:

e. Logistics: Reference paragraph E, page 43. In-country transportation and liaison with supporting activities, i.e., 1st Logistical Command and U.S. Air Force, have, for the most part, been resolved by the S4, 12th Combat Aviation Group. As each new arrival presents different problems, no concrete guide-lines or SOP can be developed. Close coordination of the Group S4 with the sponsoring battalion has proven satisfactory for the past two unit arrivals. The Group S4 maintains contact with 1st Logistical Command for detailed arrival data, meets each aircraft arrival and arranges for in-country transportation, while the sponsoring battalion prepares for billeting, messing, and initial administrative support.

FOR THE COMMANDER


WILLIAM N. WALKER
CPT, INF
Asst Adjutant

1 Incl
as

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AVFBC-H (1 May 1967) 2d Ind
SUBJECT: Operational Report-Lessons Learned for Period Ending 30 April
1967, 11th Combat Aviation Battalion

DA, HQ II FFORCEV, APO San Francisco 96266 7 JUN 1967

THRU: Commanding General, 1st Avn Bde, ATTN: AVBA-C, APO 96307

Commanding General, USARV, ATTN: AVHGC-DH, APO 96307

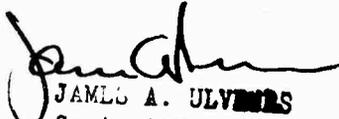
Commander in Chief, US Army Pacific, ATTN: GPOP-MH, APO 96558

TO: Assistant Chief of Staff for Force Development, Dept of the
Army, Washington, D.C. 20310

The enclosed Operational Report on Lessons Learned submitted by
the 11th Combat Aviation Battalion has been reviewed by this head-
quarters for information and is forwarded to your headquarters for
comment.

FOR THE COMMANDER:

1 Incl
nc


JAMES A. ULMERS
Capt. AGC
Asst. AG

51 3

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AVBA-C (15 May 67)

3rd Ind

SUBJECT: Operational Report-Lessons Learned Period Ending 30 April 1967
(RCS-CSFOR 67)

HEADQUARTERS, 1ST AVIATION BRIGADE, APO 96307

26 JUN 1967

THRU: Commanding General, United States Army Vietnam, ATTN: AVHGC-DH,
APO 96307

Commander in Chief, United States Army Pacific, ATTN: GPOP-MH,
APO 96558

TO: Assistant Chief of Staff Force Development, Department of the Army,
(ACSFOR DA), Washington D. C. 20310

1. (U) This headquarters has reviewed subject report of the 11th Combat Aviation Battalion as indorsed and considers it to be adequate and concurs with the contents except as noted.

2. (C) The following additional comments are considered pertinent:

a. Section II, Part I, Para B 13, page 40: Additional FM communications: The AN/ASC-10 command consoles for installation in the UH-1 are being issued at the present time. This console permits provisions for 2 complete FM Radios, which will eliminate the need for this field expedient.

b. Section II, Part II, Para B 11, page 48: USARV has submitted an ENSURE requirement for Integral Smoke Generators on a BOI of 2 per assault helicopter company.

c. Section II, Part II, Para E 3, page 48: The shortage of weapons systems does not hinge on reporting procedures for combat losses and unserviceable turn-in's of equipment. Funding procurement/production lead time and accurate and timely replacement forecasts are but a few of the factors affecting the shortages of armament subsystems and components. Armament systems evacuated to CONUS are those which require repair/analysis. It is not policy to retrograde armament subsystems with aircraft to be overhauled. The forthcoming Closed Loop Conference will address weapons subsystems and components shortages in RVN.

FOR THE COMMANDER

3 Incl
nc

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LEWIS T. TURNER
Captain, AGC
Asst Adjutant General

Downgraded at 3 year intervals
Declassified after 12 years
DOD DIR 5200.10

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AVHGC-DST (15 May 67) 4th Ind
SUBJECT: Operational Report-Lessons Learned for the Period Ending
30 April 1967 (RCS CSFOR-65) (U)

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HEADQUARTERS, UNITED STATES ARMY VIETNAM, APO San Francisco 9637531 JUL 1967

TO: Commander in Chief, United States Army, Pacific, ATTN: GPOP-OT,
APO 96558

1. (U) This headquarters has reviewed the Operational Report-Lessons Learned for the period ending 30 April 1967 from Headquarters, 11th Combat Aviation Battalion as indorsed.

2. (C) Pertinent comments follow:

a. Reference item concerning units scheduled for night combat assaults, paragraph B1, page 30 and paragraph B1, page 47: Concur. The successful night operations conducted by this battalion as discussed in the ORLL are attributed to following established principles of doctrine found in current DA Field Manuals on Army Aviation and in the 1st Aviation Brigade Operations Manual.

b. Reference item concerning integral smoke generators, paragraph 11, page 39; paragraph 11, page 48 and paragraph 2b, 3d Indorsement: Concur. As indicated in paragraph 2b, 3d Indorsement, action has been taken to provide smoke generators in accordance with the recommendation of the 11th Combat Aviation Battalion.

c. Reference item concerning replacement armament systems; section II, part I, paragraph 3, page 46; section II, part II, paragraph E3, page 48 and paragraph 2c, 3d Indorsement: Concur. Third Indorsement comments accurately define the aircraft armament problem. The gun systems reported as short are being filled from assets now arriving in-country. USARV requirements for TOR, Maintenance Float and Depot Stocks of these items are major topics for discussion at the USARPAC Closed Loop conference. Once USARV requirements are defined DA can take appropriate procurement action.

FOR THE COMMANDER:

1 Incl
nc


E. L. KENNEDY
Cpt, AGC
Asst Adjutant General

Downgraded at 3 year Intervals
Declassified after 12 years
DOD DIR 5200.10

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GPOP-DT (15 May 67)

5th Ind (U)

SUBJECT: Operational Report for the Quarterly Period Ending 30 April 1967
from HQ, 11th Combat Aviation Battalion (RCS CSFOR-65)

HQ, US ARMY, PACIFIC, APO San Francisco 96558 16 OCT 1967

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

1. This headquarters has evaluated subject report and forwarding
indorsements and concurs in the report as indorsed.

2. The problems stated concerning aircraft armament subsystems
have been overtaken by time. The three subsystems discussed were
programmed during the Second Aircraft Closed-Loop Conference conducted
by USARPAC 26-30 June 1967. Replacement systems and components are
being supplied expeditiously to meet USARV requirements.

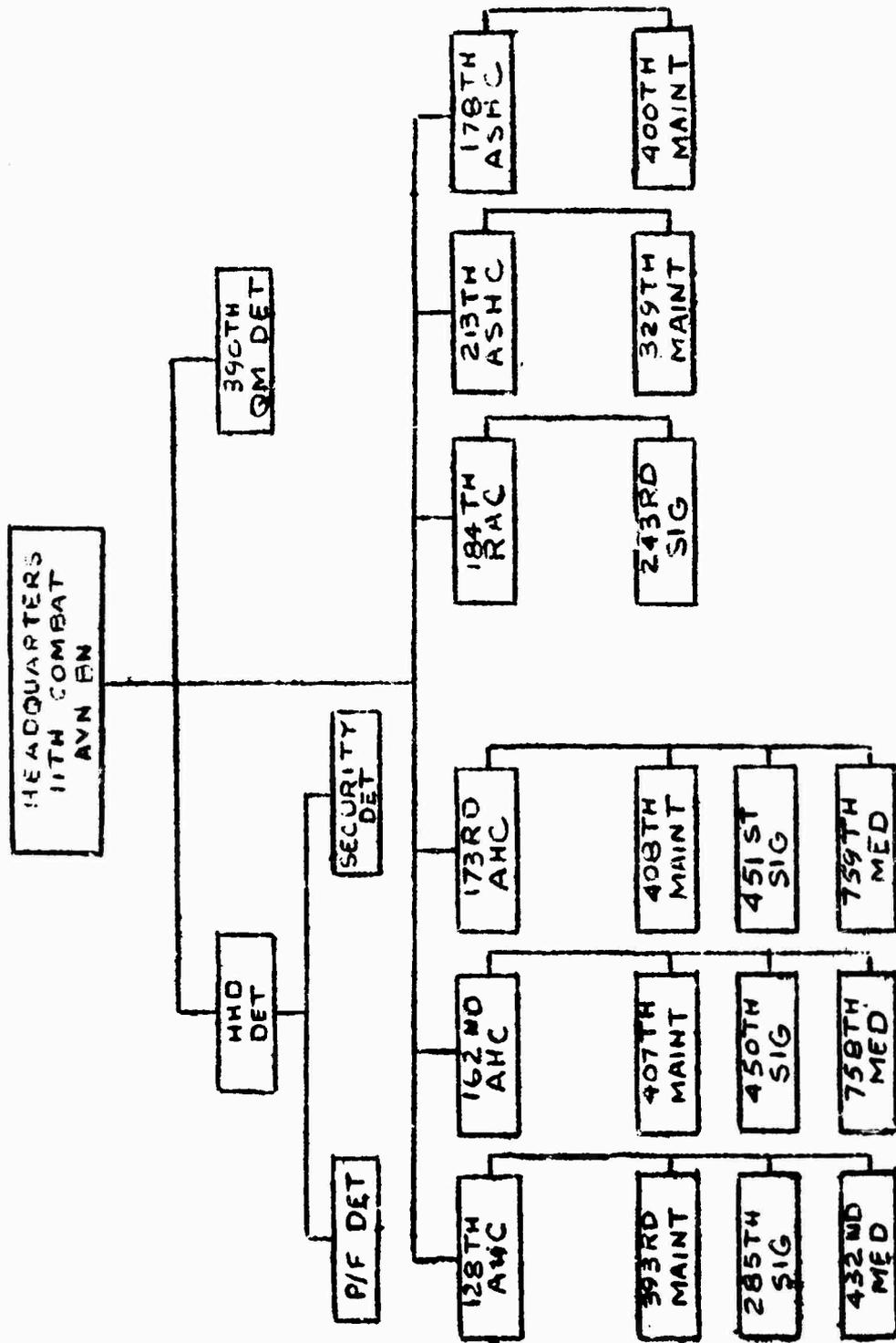
FOR THE COMMANDER IN CHIEF:



K. F. OSBOURN
MAJ, AGC
Asst AG

1 Incl
nc

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*Attached 14th Cbt Avn Bn

ANNEX A Current Organisation

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COMMAND AND STAFF STRUCTURE (C)

1. Bn CO: LTC Joseph B. Starker
 2. Bn XO: LTC Daniel B. Knight
 3. Bn S1: Maj William Giese
 4. Bn S2: Cpt John J. Keefer
 5. Bn S3: Maj James H. Patterson
 6. Bn S4: Maj Malcom D. Rixon
 7. CO HHD: Cpt Jackie D. Catt
 8. CO 128th Aslt Hel Co: Maj Cornelius F. McGillicuddy
 9. CO 162nd Aslt Hel Co: Maj Neal C. Petree Jr.
 10. CO 173rd Aslt Hel Co: Maj Richard B. Schaefer
 - *11. CO 178th Aslt Spt Hel Co: Maj Clyde F. Klick
 12. CO 184th Apl Recon Co: Maj Benjamin L. Collins Sr.
 13. CO 213th Aslt Spt Hel Co: Maj George W. Adamson
- *Attached to 14th Combat Aviation Battalion Chu La& for Operation
Oregon 20 April 1967

ANNEX B

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HANDBOOK
ON
CH-47 (CHINOOK)



EMPLOYMENT
&
UTILIZATION
IN VIETNAM

PUBLISHED BY 11TH CBT. AVN. BN.
JANUARY 1967

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ANNEX C

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INTRODUCTION

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This handbook has been prepared by the 178th Assault Support Helicopter Company, 11th Combat Aviation Battalion, to assist ground unit personnel to understand better the capabilities and limitations of the CH-47 (CHINOOK) helicopter and to provide a common understanding between the supporting aviation and supported ground units. The Chinook is relatively new to the Army inventory and a large number of personnel assigned to duty in Vietnam have not previously been afforded the opportunity to work with this aircraft. With the foregoing in mind, this handbook has been compiled from what is considered to be the best currently available information on Chinook employment and utilization in the Vietnam tactical environment, with emphasis on airlift of cargo and equipment. The procedures set forth in this handbook are the results of thousands of missions, extensive support of various ground units, and a great deal of trial and error. It would be impossible to give credit to everyone who has contributed to this handbook because ideas have been obtained from virtually every unit in the theater. Acknowledgment, with sincere appreciation, is extended to the Army Concept Team in Vietnam (ACTIV) for the cooperation and assistance which made publication of this handbook possible. Users are encouraged to submit recommended changes or comments to improve the handbook to the Commanding Officer, ACTIV, APO 96243, San Francisco, California.

13 February 1967

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HANDBOOK FOR CH-47 (CHINOOK) EMPLOYMENT & UTILIZATION IN VIETNAM

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INTRODUCTION

CHAPTER 1 DESCRIPTION

- I General
- II Crew Duties
- III Dimensions
- IV Avionics Equipment
- V Cargo Loading Aids

CHAPTER 2 CAPABILITIES & LIMITATIONS

- I General
- II Seating Configuration
- III Litter Configuration

CHAPTER 3 SAFETY CONSIDERATIONS

CHAPTER 4 PLANNING THE AIR MOVE

- I Selection of Pickup and Landing Zones
- II Airlift Planning

CHAPTER 5 PREPARING LOADS FOR MOVEMENT

- I Internal Versus External Loading
- II Internal Loading
- III Principles of Rigging External Loads
- IV External Load Rigging Equipment
- V Preparation and Rigging of Typical External Loads

CHAPTER 6 ORGANIZATION OF THE PICK-UP ZONE

CHAPTER 7 CONDUCT OF THE MOVE

- I Responsibilities
- II Use of Pathfinders

CHAPTER 8 RESUPPLY OPERATIONS

CHAPTER 9 EXTRACTION OPERATIONS

CHAPTER 10 PREPARATION OF A NIGHT LANDING AREA

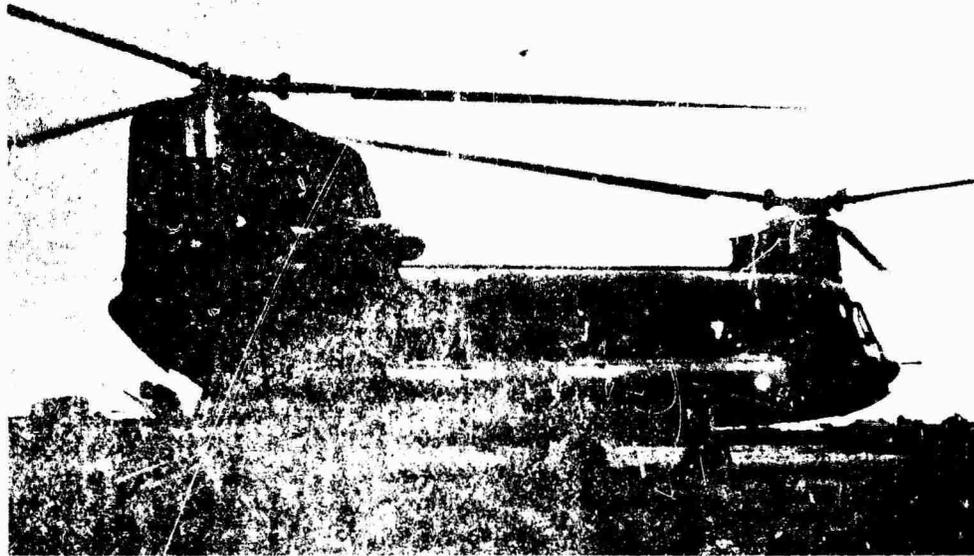
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- APPENDIX I REFERENCES
- APPENDIX II WEIGHS OF COMMON ITEMS
- APPENDIX III TYPICAL LOADS
- APPENDIX IV LOADING PLAN AND PASSENGER MANIFEST
- APPENDIX V CHECK LIST FOR CARGO RIGGING
- APPENDIX VI MISSION REQUEST FORM
- APPENDIX VII EQUIPMENT USED FOR RIGGING EXTERNAL LOADS
- APPENDIX VIII RECOMMENDED LIST OF RIGGING EQUIPMENT BY TYPE ORGANIZATION
- APPENDIX IX METHODS OF RIGGING TYPICAL LOADS
- APPENDIX X METHODS OF LOADING CARGO BAGS AND NETS
- APPENDIX XI ARM AND HAND SIGNALS
- APPENDIX XII LOAD CARD FOR RESUPPLY OPERATIONS

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CHAPTER 1

DESCRIPTION

SECTION I

GENERAL

The CH-47A is manufactured by Vertol Division, The Boeing Company. It is a twin-turbine-engine, tandem-rotor aircraft designed for transportation of cargo, troops, and weapons during day, night, visual, and instrument conditions. The helicopter is powered by either two Lycoming T55-L-5 or two L-7 or one T55-L-5 and one T55-L-7 shaft-turbine engines mounted on the aft fuselage. The engines simultaneously drive two tandem 3-bladed rotors through a combining transmission, drive shafting, and reduction transmissions. The forward transmission is mounted in the forward pylon above the cockpit (forward cabin section). The aft transmission, the combining transmission, and drive shafting are located in the aft pylon section. Drive shafting from the combining transmission to the forward transmission is housed within a tunnel along the top of the fuselage. A gas-turbine auxiliary power unit, which supplies hydraulic pressure for starting the engines, is mounted in the aft pylon section. A pod on each side of the fuselage contains a fuel tank. The helicopter is equipped with four non-retractable landing gear. An entrance door is located at the forward right side of the cabin fuselage section. At the rear of the cabin fuselage section is a hydraulically powered loading ramp. The pilot's seat and controls are located at the right side of the cockpit; the copilot's seat and controls are on the left.

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SECTION II

CREW DUTIES

The normal crew consists of the Aircraft Commander, Pilot, Flight Engineer, Crew Chief and Gunner(s). The Aircraft Commander has overall responsibility for operation of the helicopter and is assisted by the Pilot. The Flight Engineer has overall responsibility for maintenance, servicing, inspection, and security of the helicopter and is assisted by the Crew Chief. (It is worth noting that considerable time is required to maintain the CH-47: an Intermediate Inspection is performed at 25-hour intervals and a Periodic Inspection every 100 hours. These inspections pro-rate out to approximately 22 hours of maintenance for each hour of flying time). During flight the Crew Chief mans one 7.62 MM machine gun (XM 60D) and an assigned gunner mans another. These machine guns are mounted in the Forward Cabin Section; one at the cabin door and one at the cabin escape hatch. During special missions, an extra gunner is stationed at a rear ramp position to which a third XM 60D may be mounted.

SECTION III

DIMENSIONS

1. Overall dimensions of the CH-47A are shown in Figure 1.
2. Cargo compartment dimensions of the CH-47A are shown in Figure 2.

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OVERALL DIMENSIONS

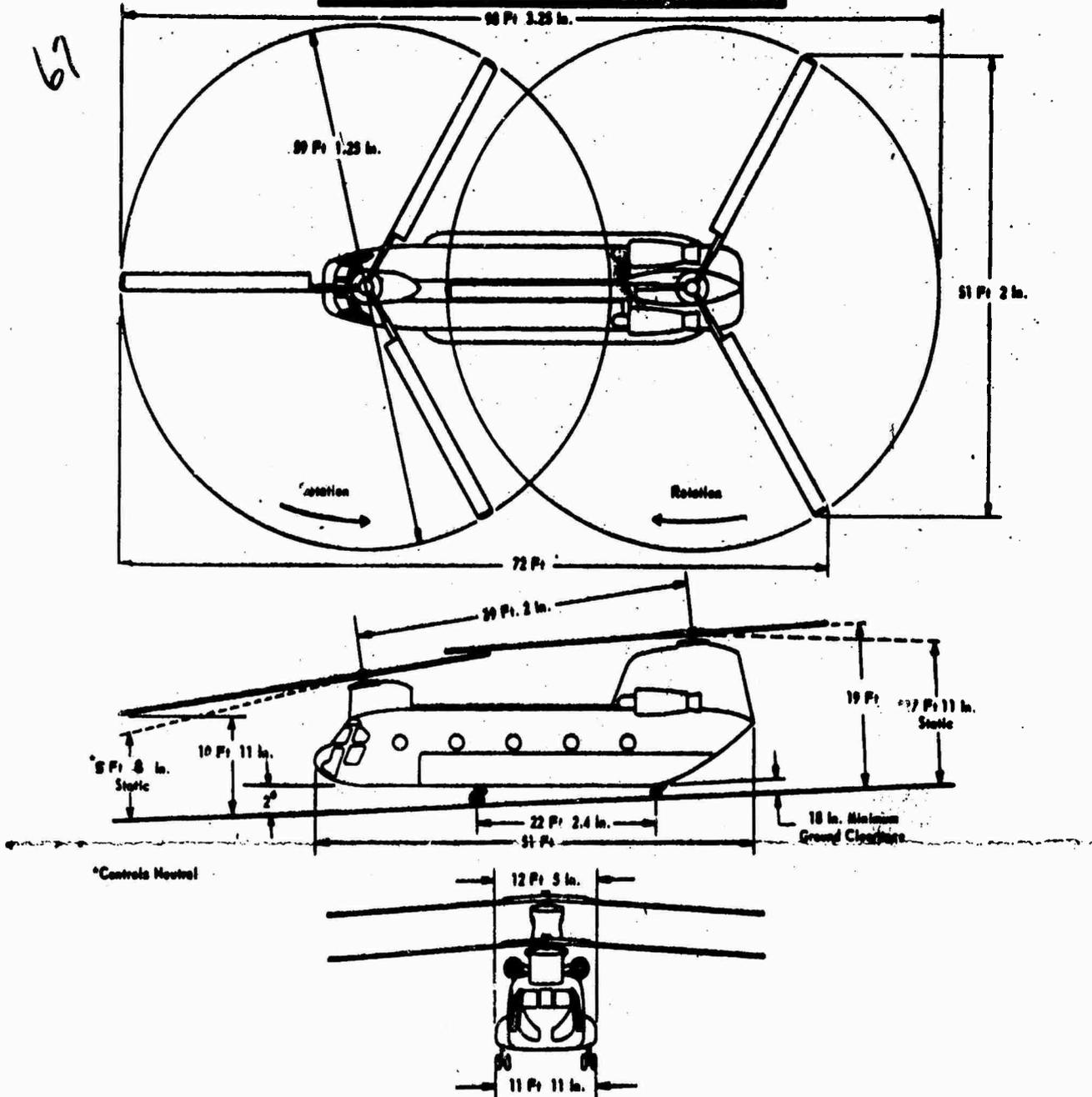


FIGURE 1
Overall Dimensions of the CH-47

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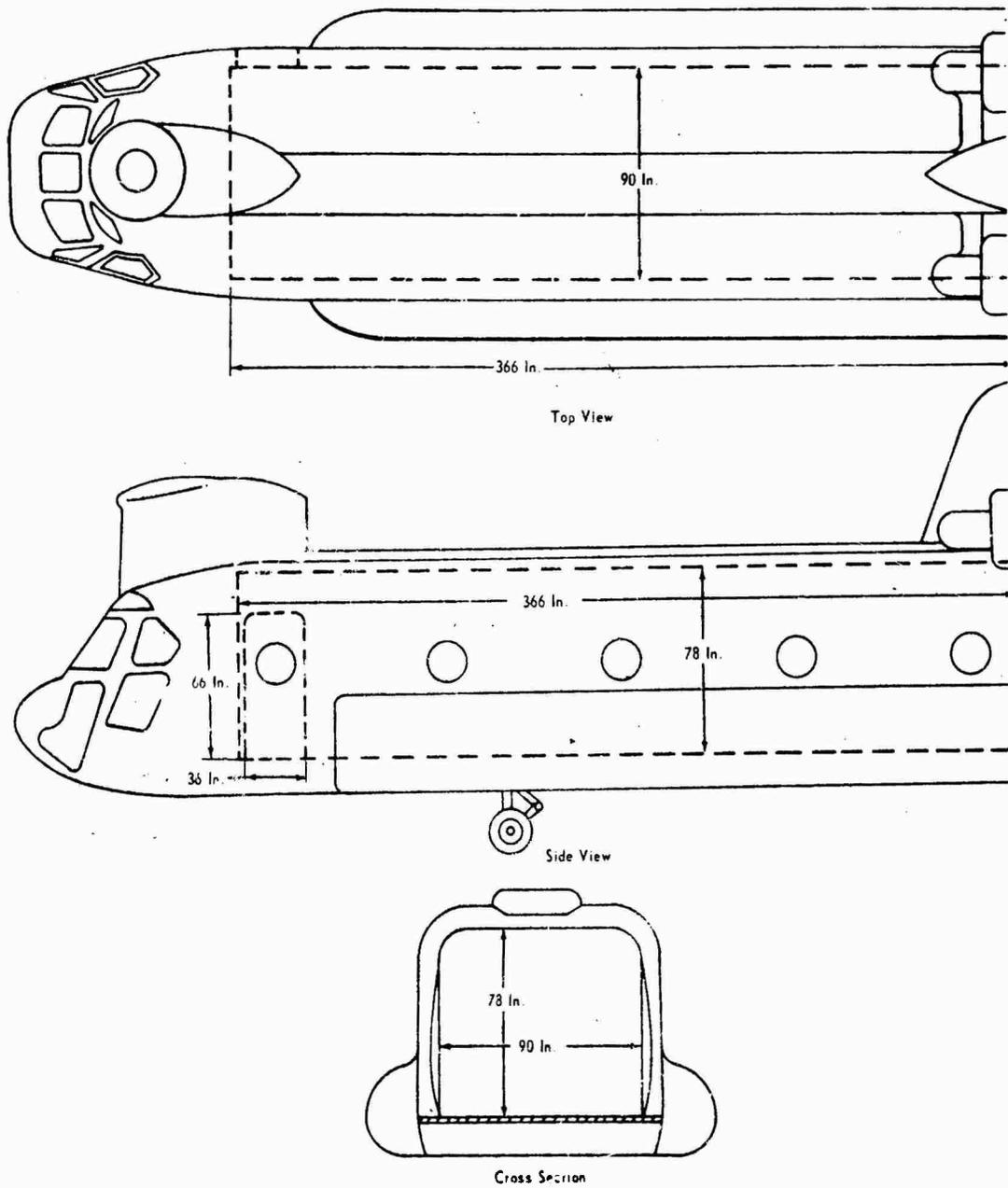


FIGURE 2
Cargo Compartment Dimensions of the CH47A

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SECTION IV

AVIONICS EQUIPMENT

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1. The CH-47A is equipped with the following communications equipment. The list is not all-inclusive, but lists the equipment of possible interest to ground unit personnel.

a. Interphone System - one interphone station each for pilot, co-pilot, troop commander; two stations in the cabin fuselage section; and two exterior interphone stations for ground crew use.

b. UHF Radio Set (AN/ARC-51EX) - provides 2-way communications between aircraft in flight and between aircraft and ground stations. Manual selection of one of 3,500 frequencies in the band from 225.00 to 399.95 in 50 KC increments, plus 20 preset frequencies. The range is line-of-sight.

c. FM Radio Set (AN/ARC-54) - provides 2-way communications and a homing capability within the tactical frequency modulation band of 30.00 to 69.95MC on 800 preset channels. The range is limited under average conditions to approximately 80 miles. The homing capability is used to great advantage during tactical operations. When a ground station is transmitting, there is a course indicator needle on the helicopter instrument panel which will show whether the helicopter is left, right, on a heading to, or over the signal source. Therefore, if a ground station is asked by the helicopter pilot, to "key" its transmitter switch, the pilot is able to home in on the station.

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SECTION V.
CARGO LOADING AIDS

The Chinook has a number of features to facilitate loading of cargo. Only those of interest to ground unit personnel are described below.

Cargo Hook System

A cargo hook (Figure 3) which can be loaded to a maximum of 16,000 pounds (8,000 pounds ACL in this Theater of operations) is provided to lift and transport external loads. The position of the cargo hook allows the load to be suspended beneath the center - of - gravity of the helicopter. The hook is suspended, by means of a carriage, from a removable beam which is mounted inside the rescue hatch located in the bottom of the fuselage. The hook also contains a spring - tensioned keeper which prevents accidental loss of cargo. The cargo hook system is normally operated electrohydraulically but can also be opened pneumatically or manually. A load can be released from the cargo hook by the aircraft commander or pilot from the cockpit, or by the flight engineer or crew chief from the cargo compartment. Provisions for emergency release of cargo from the hook are installed, should failures to the helicopters hydraulic or electrical systems occur.

Winching System

A 3,000 pound capacity hydraulically operated winch (Figure 4) is permanently mounted on the floor in the right-hand forward cabin section. The winch has 150 feet of $\frac{1}{4}$ -inch cable and is capable of winching up to 12,000 pounds of cargo, with the aid of pulley blocks, through the rear cargo door. The winch has two reeling speeds: one for cargo loading (20 ft/min) and one for hoisting (100 ft/min). The winch can be controlled from the cockpit or from the cargo compartment.

Hoisting System

The hoisting system (Figure 5) is used for air rescue and for aerial loading of smaller general cargo through the utility hatch in the underside of the fuselage. The cargo hook assembly must be removed from the utility hatch before using the hoisting system. The hoisting system differs from the winching system only in the manner in which the cable is reeled. Hoisting operations require the winch cable to be reeled overhead in the cabin fuselage section. Also, the hoist load capacity is limited to a maximum of 600 pounds. The winch cable hook is used for hoisting operations together with a cable cutter which provides for quick release of the paid-out cable in event of an emergency.

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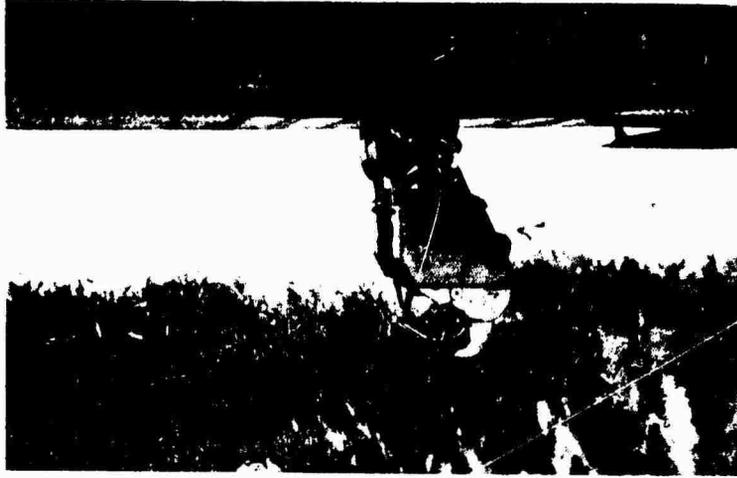


Figure 3
CH-47 Cargo Hook

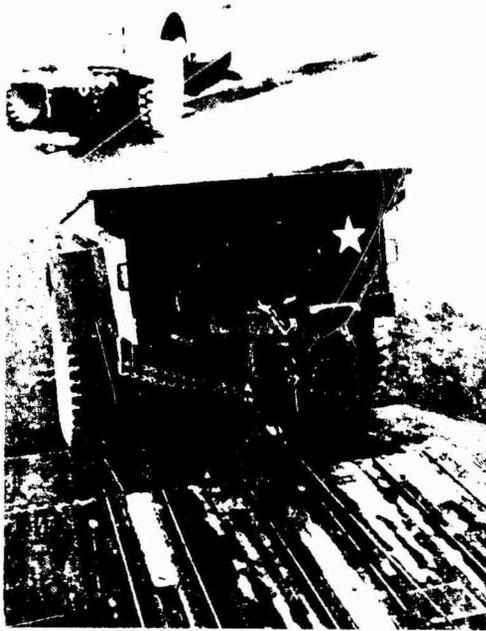


Figure 4
CH-47 Winch



Figure 5
CH-47 Hoist

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The hoisting system can be used in conjunction with the following equipment.

Stokes Litter (FSN 6530-783-7810)

The Stokes Litter (Figure 6) is a rigid, aluminum frame basket type litter which can be used to extract wounded personnel from an otherwise inaccessible area. The litter is hoisted from the ground at a near vertical angle to permit access through the helicopter's rescue hatch (Figure 7). If there is a necessity to extract an individual through dense foliage, two stokes litters may be strapped face-to-face together to provide complete protection to the individual.

Mountain Rescue Litter (FSN 6530-783-7600)

The Mountain Rescue Litter (Figure 8) is a semi-rigid poleless canvas-type litter which can be used for the same purpose as the Stokes Litter. However, this litter does not offer the same protection during the extraction through dense foliage. Its main advantage is ease of storage and transport.

Rescue Seat, Forest Penetrating

The Rescue Seat, Forest Penetrating (Figure 9) is a 3-legged aluminum device which can accommodate one to three personnel and can be used to either extract personnel from, or lower them into, otherwise inaccessible areas. Nylon straps are located in the top of the rescue device to aid in holding an injured person on the seat, however, personnel carried on the rescue seat should be ambulatory.

Trooper Ladder

This device can be used to off-load troops into, or extract them from, otherwise inaccessible areas. The Trooper Ladder (Figure 10) is mounted on the rear ramp of the helicopter and can be used in lengths of 60 and 120 feet. Figure 11 shows the side view of the ladder installed. Although its employment in tactical operations has proven practical in emergency situations, utilization of the Trooper Ladder is extremely hazardous for the following reasons:

- a. Both the helicopter, while hovering, and the troops, while deployed on the ladder, are extremely vulnerable to hostile ground fire, even from a single sniper.
- b. While hovering at altitude, the helicopter is in the maximum danger area aerodynamically should a mechanical malfunction occur.

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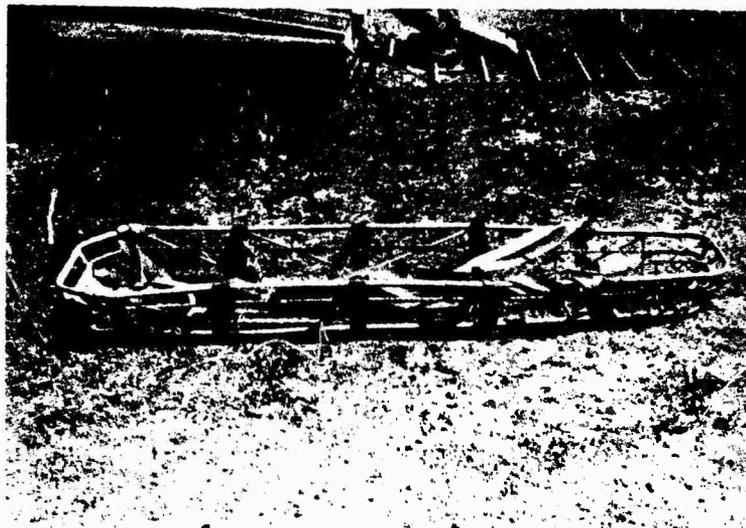


Figure 6
Stokes litter



Figure 7
Stokes litter being hoisted into CH-47

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Figure 8
Mountain Rescue Litter



Figure 9
Rescue seat, forest penetrating

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c. Exceptional pilot skill is required to satisfactorily maintain the helicopter at a high hover while avoiding entanglement of the ladder with surrounding obstacles.

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Figure 10
Trooper ladder installed on rear ramp of Ch-47

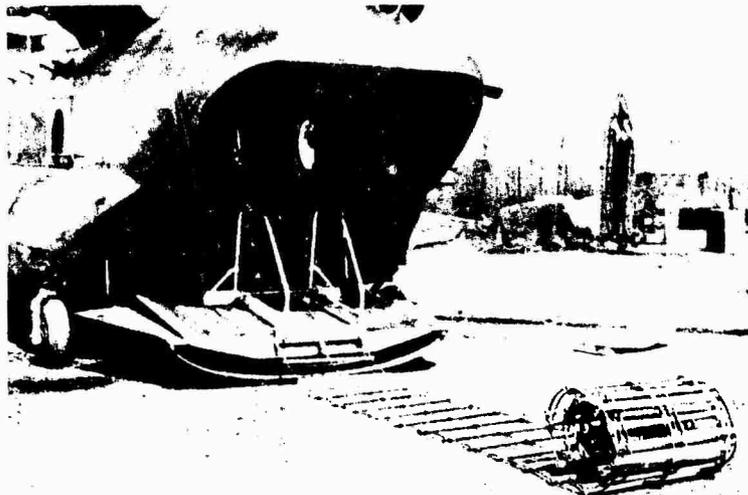


Figure 11
rear view of trooper ladder

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CHAPTER 2

CAPABILITIES AND LIMITATIONS

SECTION I

GENERAL

As presently organized, one CH-47 Company (16 aircraft) can furnish continuous operational support, during visual flight conditions, if a total of not more than 6 helicopters are committed. In order to keep 6 helicopters in continuous operation the Chinook unit will often fly 10 or 11 aircraft during the course of the day. The additional aircraft will be used to replace aircraft requiring scheduled or unscheduled maintenance and to accomplish repair parts pick-up and transport of crews and equipment to the field for on-site repair. Maintenance and supply support for the CH-47s is based on 50 hours per aircraft per month or 800 hours per month for the 16 aircraft. It is common for the 6 aircraft when being properly utilized to exceed thirty flying hours per day. If this were continued over a thirty day period the unit would fly 900 hours or 100 hours over what has, in view of current support, proven to be a realistic program. Since most CH-47 units support several tactical units it is extremely important that the maintenance posture of the Chinooks be maintained at a high level to preclude a collapse of Chinook support with the resultant effects on supported units.

The design gross weight of the CH-47A is 28,550 pounds, with an alternate or maximum allowable gross weight of 33,000 pounds for normal operations.

Cargo may be loaded internally or sling load internally. The Allowable Cargo Load (ACL) for the Chinook with a full load of fuel, is 8,000 pounds. This ACL is computed by considering the average basic weight of the CH-47, adding those variable items which remain substantially constant (i.e., oil, crew, armament and standard and emergency equipment) and including a full load of fuel. An 8,000 lb ACL will permit a radius of action of 75 nautical miles, with 30 minutes fuel reserve.

The Chinook has a total fuel capacity of 621 gallons (4036 lbs.), which gives a total flying time of 2 hours and 10 minutes. The amount of fuel carried may be varied under certain circumstances to allow more cargo to be transported. (For short-haul operations such as river or obstacles crossings, the Chinook can transport 11,000 lbs, with minimum fuel). However, it is emphasized that for planning purposes loads should not exceed 8,000 pounds.

The limitations upon CH-47 employment in a tactical area follows:

*This is applicable for operation at or near sea level. When operating at higher altitudes contact supporting CH-47 unit for ACL.

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- a. Local security must be provided by infantry troops in order to permit sustained operations into unsecured areas.
 - b. Capabilities are significantly reduced during darkness, reduced visibility and severe weather.
 - c. Extensive support maintenance is required during sustained operations.
 - d. Continuous FOB re-supply-in-volume is required.

SECTION II

SEATING CONFIGURATION

As shown in Figure 12, troop seating capacity in the Chinook is 33. This provides a seat and seat belt for each man. It is desirable for safety reasons that each passenger have a seat and safety belt; however, under emergency conditions the Chinook can transport up to 40 troops (at 240 lbs per man) with a reduced fuel load and a radius of action of 25 nautical miles.

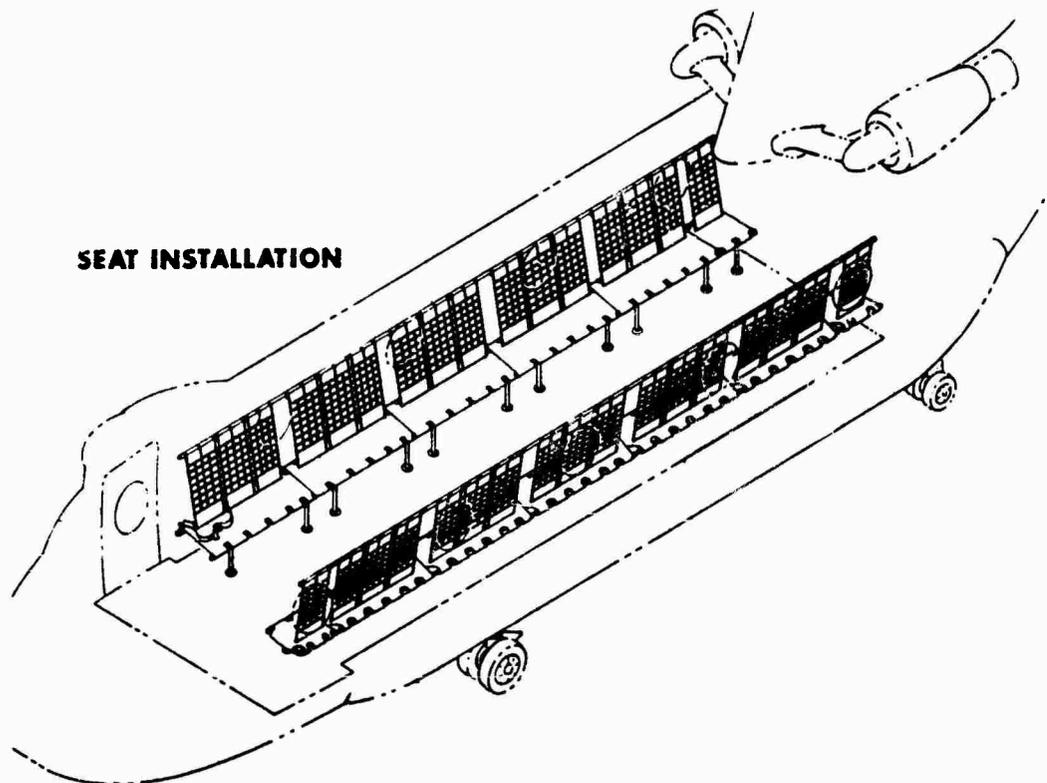


FIGURE 12
Troop Seating Installation of the CH-47A

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SECTION III

LITTER CONFIGURATION

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As shown in Figure 13, provisions for 24 litters are furnished. The two 1-man seats in the aft section of the cargo compartment may remain in place to accommodate medical attendants. It is not necessary to remove the troop seats in order to install the litters. The CH-47 may, therefore, augment aeromedical evacuation from the tactical zone.

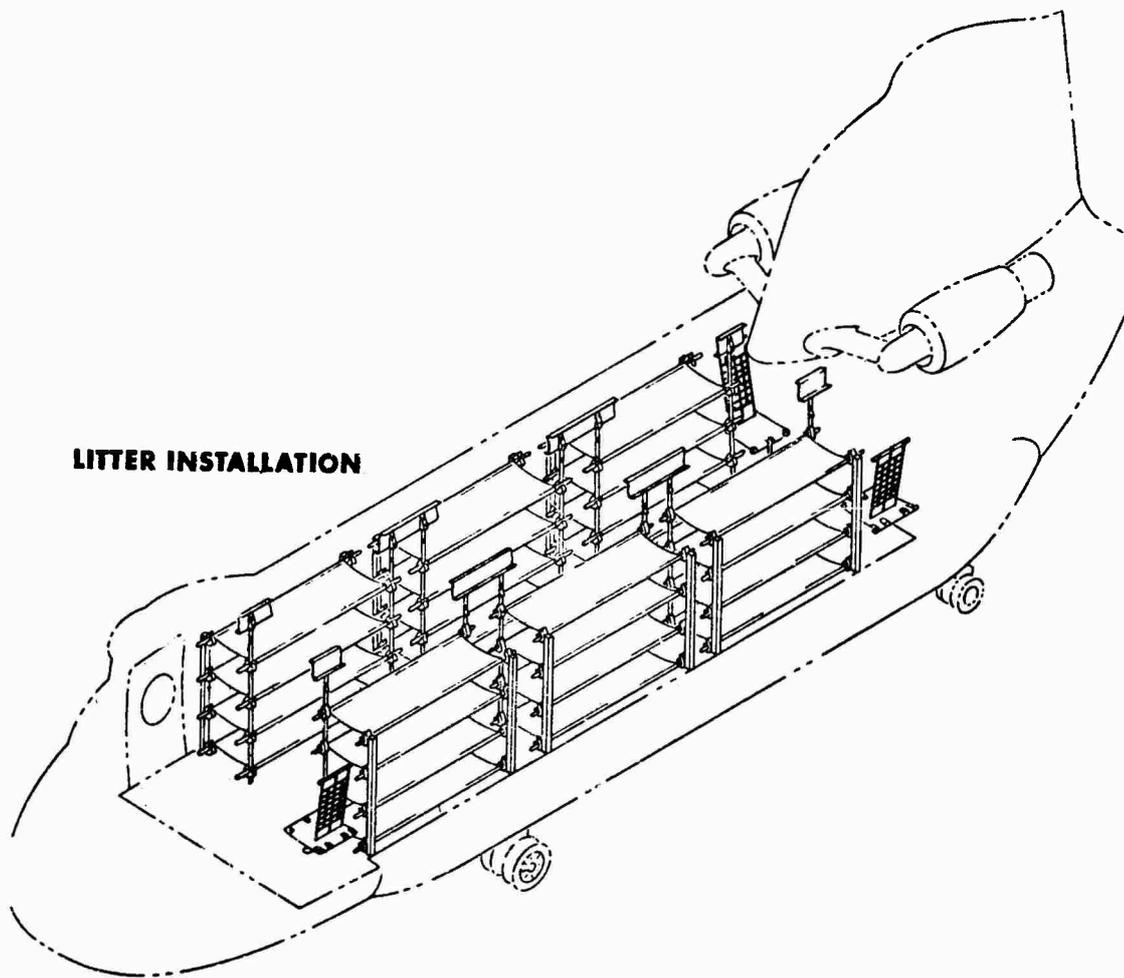


FIGURE 13
Litter Installation of the CH-47A

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CHAPTER 3

SAFETY CONSIDERATIONS

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1. The following general safety precautions are required during Chinook operations:

a. No smoking within 50 feet of the helicopter on the ground, or during take-off and landing or at any time when fuel fumes are present.

b. It is preferable for troops working in the vicinity of a CH-47 to wear ear plugs or cotton for noise protection.

c. All vehicles and back-pack radios must have whip antennas either removed or tied down while near the Chinook.

d. Approach to or departure from the helicopter should not be made from or to the direct front or rear. Front rotor blade clearance is less than 6 feet from the ground, as shown in Figure 14. Engine exhaust temperatures to the rear range from 200°F at 55 feet to 900°F at 10 feet. See Figure 15. Auxiliary power unit exhaust gas temperatures are depicted in Figure 16. The preferred approach-departure is at 90 degrees to the side of the aircraft. See Figure 17.

e. Weapons must be cleared before entering the helicopter, and must be unslung and carried at port arms or slung muzzle down when entering and leaving the aircraft.

f. Except under emergency conditions, all cargo should be tied down or otherwise secured.

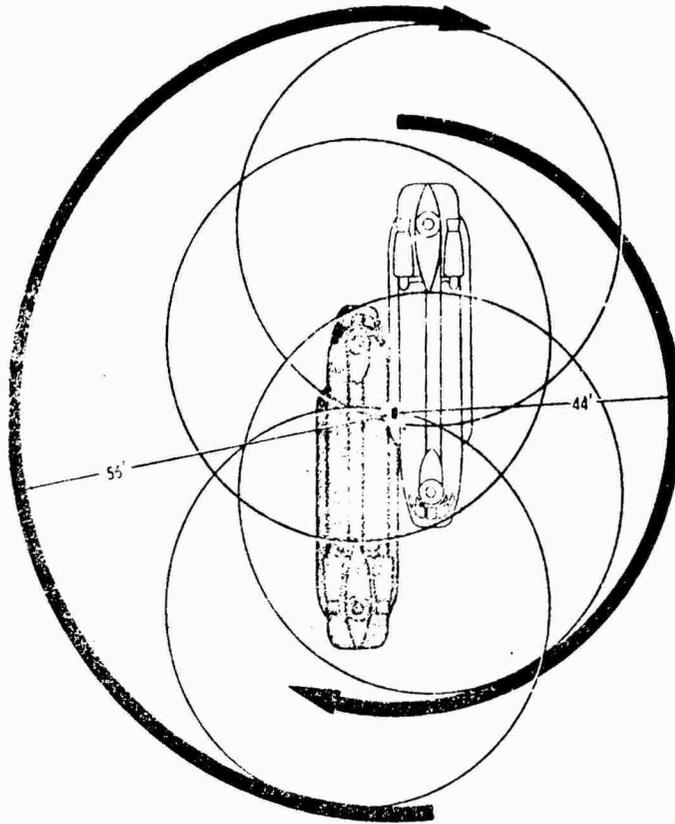
g. Passengers are encouraged to have sleeves rolled down as protection against fire.

h. Seat belts will be utilized.

i. Whenever practical, no exposed personnel, tents, loose equipment or trucks with canvas should be positioned within 50 meters of a Chinook landing area. The high velocity rotor wash and associated flying debris during Chinook operations may cause damage to any structure within 60 meters of a landing area. Also, loose articles may be swept up into the engines.

2. The following safety precautions should be observed when participating in external load operations:

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NOTE

All radii and ground clearances are approximate

TURNING RADII

GROUND CLEARANCES

Item	Blade Attitude	Clearance
A	* Fwd. Static	5 Feet 2 Inches
B	Fwd. Turning	10 Feet 11 Inches
C	* Aft. Static	17 Feet 11 Inches
D	Aft. Turning	19 Feet

*Flight controls neutral.

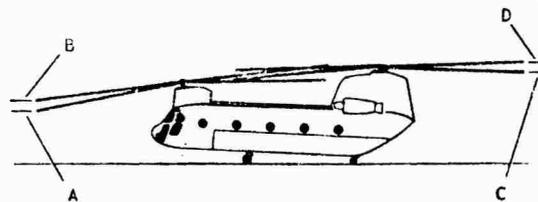
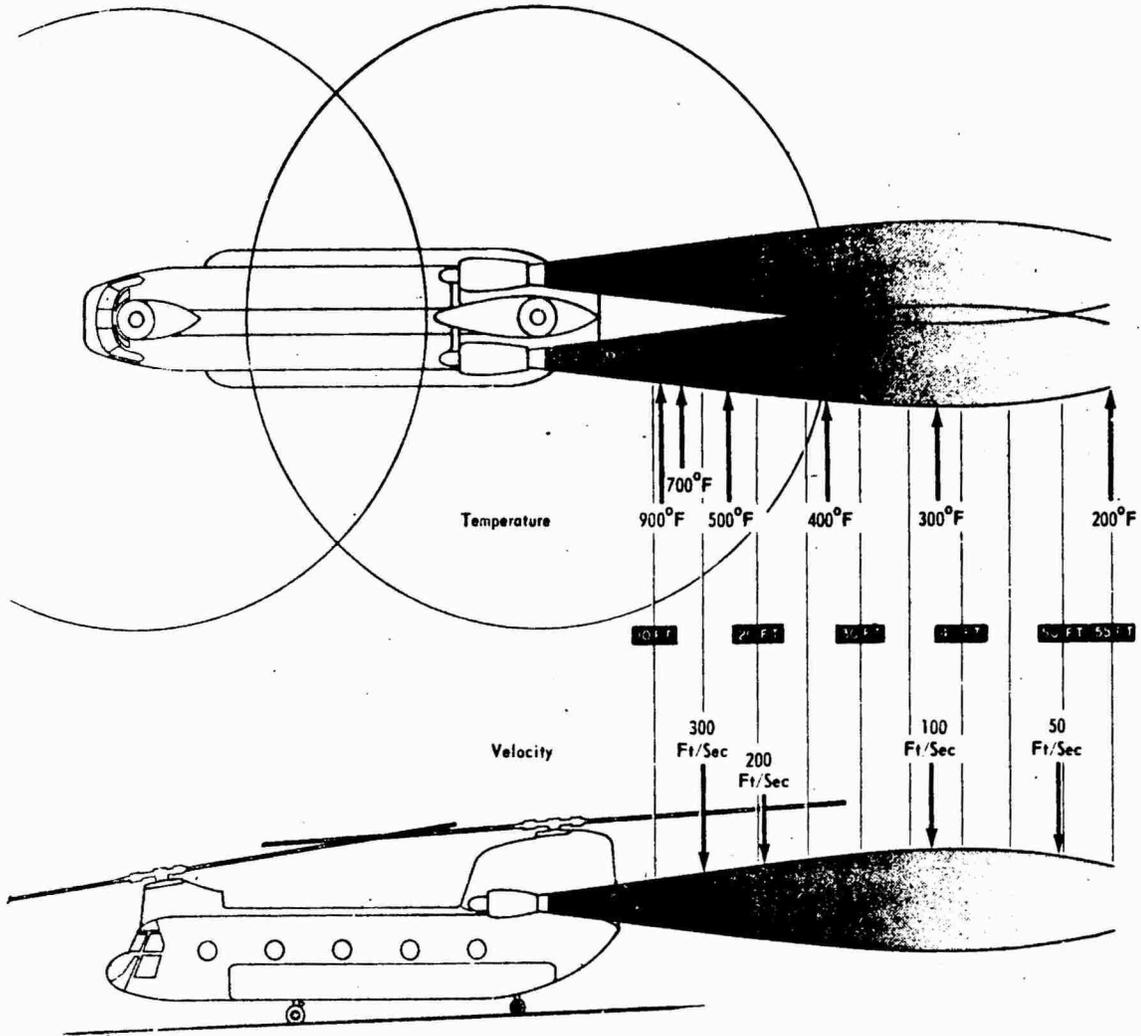


FIGURE 14
Turning Radii & Rotor Blade Ground Clearances, CH-17A

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Both Engines Developing Military Power

WARNING

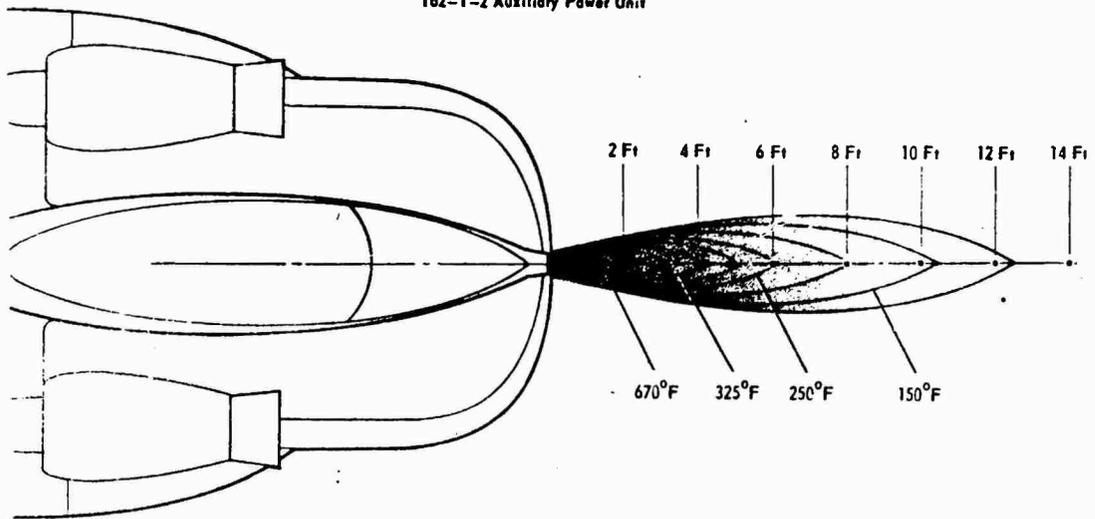
Avoid Entering
Danger Areas

FIGURE 15
CH-47A Engine Exhaust Danger Areas

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T62-T-2 Auxiliary Power Unit



Duct Outlet Temp. 1000°F at 100% Engine Load

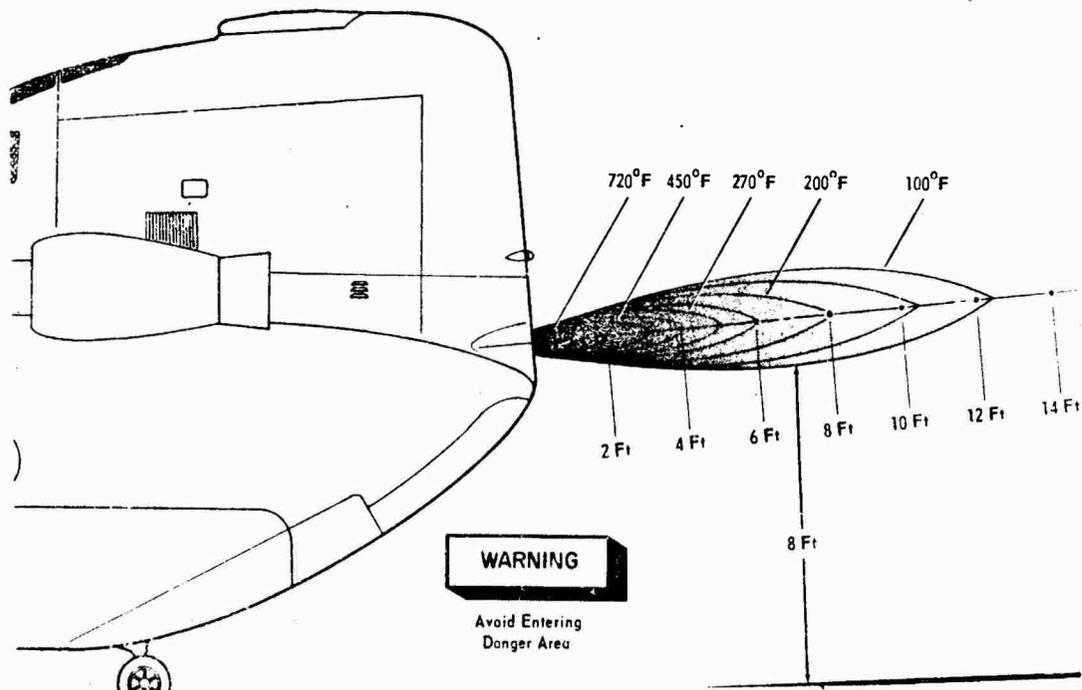


FIGURE 16
CH-47A Auxilliary Power Unit Exhaust Danger Area

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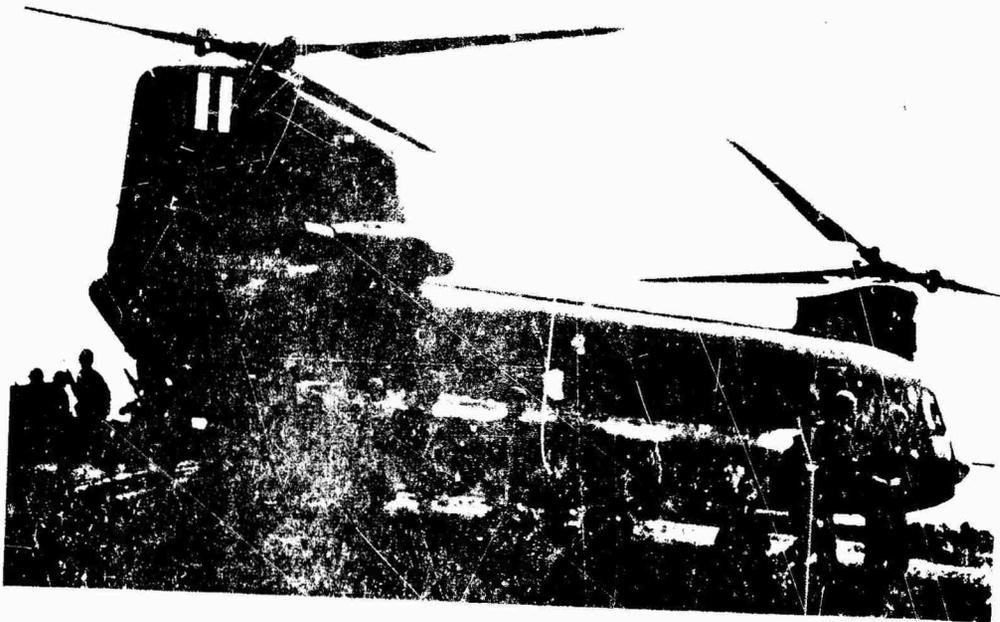


FIGURE 17
Safest Approach-Departure: 90° to the side of the CH47A
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a. Prior to hooking up the load to the helicopter, the hook-up man should use a grounding rod, if available, to touch the cargo hook and thereby discharge static electricity which may be present on the hook. This precaution is particularly appropriate during the dry season. (Figure 18)

b. The hook-up man should wear ear plugs and goggles.

c. The hook-up man should hold the Doughnut as high in the air as possible. If the Doughnut is the type which has steel keeper bolts on it, make sure that the belts are in the 3 or 9 o'clock position when the Doughnut is placed on the helicopter's cargo hook, to prevent metal-to-metal contact and wear on Doughnut. (See Figure 19) The flight engineer will direct the pilot over the load; the hook-up man should not attempt to "chase" the cargo hook.

d. After hook-up, the hook-up man should rapidly clear away from under the helicopter and the load.

e. In the event of an aircraft emergency during hook-up, the hook-up man should move to his left as he faces the helicopter. The pilot will move the aircraft to his left, which will be to the hook-up man's right.

3. The Chinook has 9 emergency entrances and exits (Figures 20 and 21). There are 3 hand fire extinguishers aboard the aircraft. The battery is located in the forward section of the left fuselage pod and can be reached only from outside the helicopter.

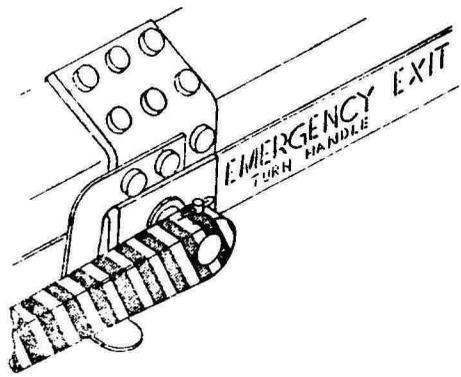


FIGURE 18
Proper method of Hook-up

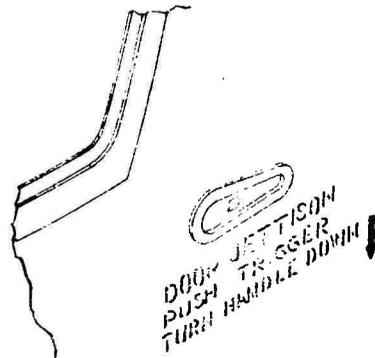


FIGURE 19
Correct method of holding Doughnut

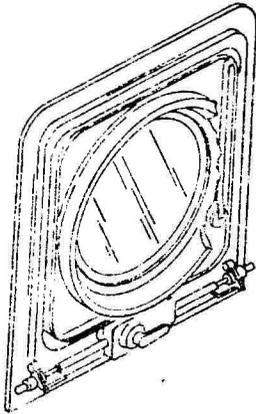
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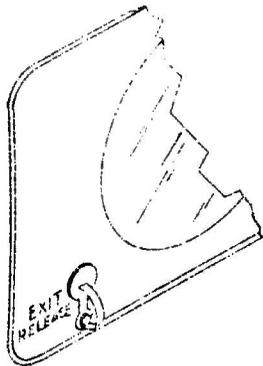
Jettisonable Door Interior Release Mechanism



Jettisonable Door Exterior Release Mechanism



Upper Cabin Door Section Escape Panel



Cabin Escape Panel

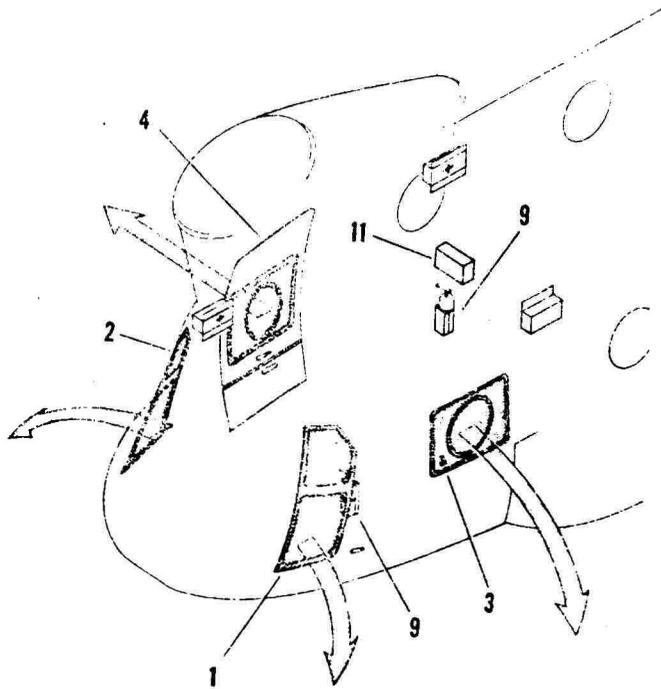


FIGURE 10
Emergency Exit (cont.)

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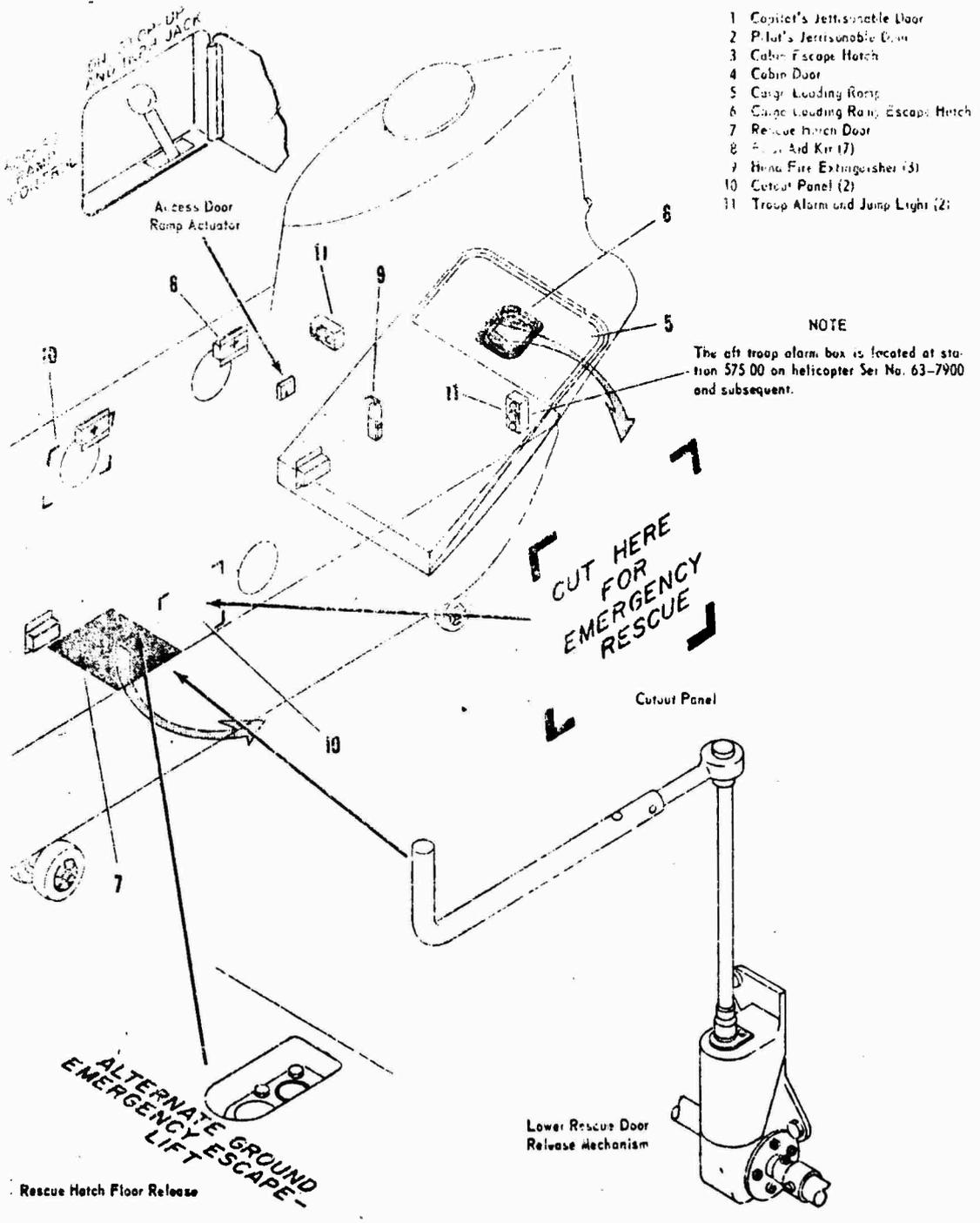


FIGURE 21
Emergency exits (aft)

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CHAPTER 4

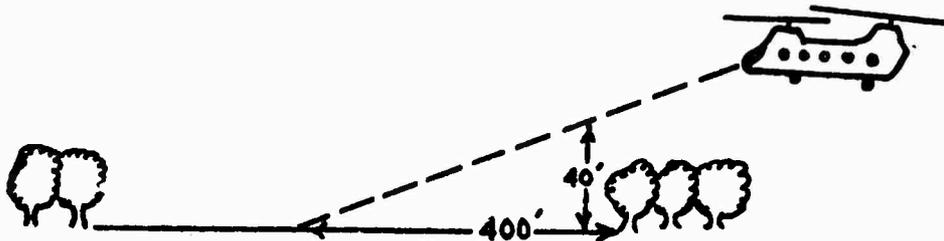
PLANNING THE AIR MOVE

SECTION I

SELECTION OF PICK-UP AND LANDING ZONES

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1. A typical landing area which will accommodate 1 CH-47 should measure at least 100 yards in length and 35 yards in width. To accommodate each additional CH-47 add 50 yards in length. Add 35 yards in width for each additional Chinook if you plan to land them abreast. The approach and departure ends of the area must be clear of high obstacles and wires. An obstacle clearance ratio of 10:1 is required. That is, for every 1 foot of barrier height on the approach or departure path of the helicopter, the touchdown point in the landing zone should be 10 feet away from the barrier. For example:



Because the barrier - in this case, trees - is 40 feet high, the landing area for the Chinook must be 400 feet clear of the trees.

2. A thorough inspection of the proposed landing area should be conducted by supported personnel. If possible, a grassy area rather than a dirt one should be used, particularly during the dry season. During a recent operation six CH-47s experienced engine malfunctions due to excessive dirt ingestion. Since the Chinook sits very close to the ground, the area should be clear of large ruts, holes and stumps. If a clear area is not available, panels or obstruction markers, clearly visible to the pilots, should mark these obstructions. The landing area should not be located close to tents, buildings or antennas, and all items of equipment laying loose on the ground or on vehicles must be secured to prevent the helicopter rotor wash from blowing articles into personnel, aircraft or vehicles. Items such as empty sand bags, papers and rags can, and have, been ingested into engines causing complete engine failure.

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SECTION II

AIRLIFT PLANNING

1. An Army unit would never attempt a road march or organize a convoy without a plan. The same approach applies to an airlift involving Chinooks. The supported ground unit should always prepare a loading plan, no matter how abbreviated it must be because of operational circumstances. Of course, the more time available for planning, the more detailed the plan will be. Following are recommended steps in airlift planning:

a. Determine what you are going to move (personnel and equipment). Weights of common items airlifted by CH-47 are shown in Appendix II.

b. Determine the priority for movement of these items.

c. Prepare the load plan accurately and conscientiously. Plan loads based on an allowable cargo load of 8,000 pounds.* The closer this ACL is approached, the more efficient and economical will be the employment of the Chinook. Appendix III contains a list of Typical Loads for the CH-47. Appendix IV shows a suggested format for a Loading Plan and Passenger Manifest.

2. At least 1 officer and 1 NCO should be designated in advance to supervise the preparation and positioning of loads and to establish loading priorities. Loads must be rechecked--particularly vehicles for overweight conditions--immediately prior to the airlift. Loads rigged for external lift must be checked for proper rigging and for condition of slings and clevises. For proper methods of rigging, see Chapter 5. Appendix V shows a suggested checklist which may be used as a guide when checking rigging.

3. Plans must be made for refueling the supporting helicopters. The Chinook uses large quantities of JP-4: normal fuel consumption for one aircraft is between 250-300 gallons per hour. During multi-ship lifts, fuel requirements become a significant factor. Refueling facilities are normally supplied by the supported unit. During one recent operation, 70 percent of the Chinook operating time was spent in traveling from the operational area to the nearest source of fuel. It therefore took 8 aircraft to do the same amount of work that could have been accomplished by 3 aircraft if the supporting ground unit had planned for and provided proper logistical support. If the situation is such that it is clearly impractical for the supported unit to arrange for aircraft refueling, the supporting helicopter company should be advised.

*This is based on operation at or near sea level. When operating at higher altitudes, contact your supporting CH-47 unit for ACL.

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4. If the area into which the Chinook(s) will be transporting personnel, equipment, or cargo is not secure, the supported unit must arrange for gunship escort.

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5. Seasonal weather factors must be considered when planning the airlift. If it is the season when there is extensive ground fog in the operational area during early morning hours, it is clearly impractical to plan an airlift on an inflexible time schedule. If equipment is to be airlifted to a mountain location, it makes little sense to plan for the mission to take place during late afternoon when cloud buildups and turbulent winds increase. Application of common sense during the planning stage will help avoid delayed or aborted missions.

6. If, after supported unit planning is completed, there remain unresolved problems which the supporting Chinook unit can answer or assist with, the appropriate Aviation Battalion Operations Center should be contacted. The BOC will in turn consult the Chinook unit providing support for assistance. When time permits and the magnitude of the operation warrants, supported units are encouraged to arrange for a liaison visit from the supporting Chinook company as far in advance as possible.

7. Appendix VI shows a suggested format for a CH-47 mission request.

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CHAPTER 5

PREPARING LOADS FOR MOVEMENT

SECTION I

INTERNAL VERSUS EXTERNAL LOADING

1. Obviously, both internal and external loading have a place in CH-47 operations. Many loads are not suitable for external airlift and conversely, many loads are. Whenever possible, external loading should be employed in order to minimize helicopter ground time and thereby increase aircraft utilization. Loading the helicopter internally is hot, tiring work. Hooking up an external load to a CH-47 will require only a fraction of the time (as little as 30 seconds) as that required to put the same load inside. Also, in case of emergency, an external load can be jettisoned. However, to make an operation of this type successful, the supported unit must have on hand a sufficient quantity of slings and net equipment to prepare the loads in advance of aircraft arrival. Little if any time is saved if the helicopter must shut down and wait while an external sling load is being prepared.

2. Besides eliminating non-productive ground time, another very favorable characteristic of airlifting external loads is that relatively less ground area is required when the CH-47 is not required to land in order to load or unload cargo. This factor becomes critical after a succession of lifts of cargo, personnel and equipment into an area have produced congestion consisting of tents, CP's, antennas, and administrative areas. Figure 22 sums up the difference between internal and external transport of equipment which can be more easily airlifted externally.

SECTION II

INTERNAL LOADING

1. If a load is obviously better suited to internal airlift, the following procedures should be used:

a. Bend the loads to pallets if possible. Mark the weight on each pallet as it is prepared so the weight will be available when preparing the loading plan.

b. There are two ways to load pallets on the aircraft. If there is a low bed trailer available, conveyor rollers can be placed on the bed of the vehicle and the pallets placed on the rollers. Upon arrival of the Chinook, the pallets are pushed or winched from the trailer onto the rollers in the bed of the Chinook. The other method is by use of the fork lift. There are two disadvantages to using the fork lift. The first is that many

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M-101 Howitzer loaded internally



FIGURE 22
M-101 Howitzer with "riggy back" ammunition

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aircraft have been damaged by fork lifts. The second is that fork lifts are generally in short supply and long delays frequently occur when units are reliant on a fork lift for loading. 92

c. When preparing equipment for internal loading in the Chinook, care must be taken to insure that the load will enter and exit the aircraft. Dimensions of the cargo area are shown in figure 2. In general, antennas must be removed and stored. On 3/4 ton trucks, the spare tire must be removed, top bows removed and the windshield folded flat. Vehicle fuel tanks should not be more than two-thirds full. When driving a vehicle onto the helicopter, it is recommended that the driver wear goggles to protect against the aircraft's APU and engine exhaust blasts to the rear of the helicopter.

2. Personnel

- a. Will be properly manifested
- b. Will be organized and oriented for efficient loading
- c. Will not be transported without I.D. Tags
- d. With back pack radios will remove or hold down antennas
- e. Will clear all weapons. Rifles will be unslung and carried at port arms, or slung muzzle down, when entering or departing the Chinook. Weapons will be held butt to floor between legs. The seat belt will pass through the sling of the rifle.
- f. Will exit the helicopter upon signal from the flight crew or troop commander.

SECTION III

PRINCIPLES OF RIGGING EXTERNAL LOADS

1. TM 55-1520-209-10, "Operators Manual Army Model CH-47A Helicopter," states: "External loads must not be rigged entirely with steel cable (wire rope) slings. A nylon vertical riser of at least 6 feet in length must be placed between a steel cable sling and the cargo hook to dampen vibration tendencies. Nylon and chain leg slings and pure nylon slings must have at least 6 feet of nylon in each leg".

2. The mechanics of rigging external loads for airlift by the CH-47 helicopter can be basically described as follows, starting at the aircraft's CARGO HOOK and progressing to the load:

a. Without exception, a Sling, endless, 7,500 lb capacity, PSN 3940-675-5001, commonly called the "Doughnut," is the attaching link between the helicopter's cargo hook and whatever comprises the load. Two doughnuts are always used unless the doughnut is a manufactured component part of the sling, in which case one doughnut will suffice.

b. Cargo slings should, whenever possible, be connected directly to the doughnut using a choker hitch (see Figure 23) or

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(1) When the slings cannot be attached directly to the doughnuts (Figure 33) a clevis of appropriate capacity may be used to connect the doughnuts to the slings legs. This should be avoided as much as possible because use of the clevis greatly reduces the life of the doughnuts. In the case of symetrically shaped loads, the clevis allows twisting of the load in flight and causes eventual failure of the doughnuts.

(2) A doughnut may be an integral part of the manufactured sling and can be attached to the cargo hook directly.

c. Clevises are frequently used to connect the sling legs to the load when the sling legs are attached to the doughnuts by a choker hitch. When a clevis is used between the slings legs and the doughnuts, the opposite end of the sling may be connected to the load by use of the choker hitch as in the case of the M-101 Gowitzler.

CAUTION

Vehicle lifting shackles will not be substituted for clevises.

d. In the case of the cargo net, most loads will permit connecting the corners of the net and the two doughnuts with a clevis. If this method cannot be used, a single leg, not to exceed six feet in length, may be used between the net and the doughnuts. A four leg sling can also be used in which case one leg is attached to each corner. Most cargo net loads are cylindrical or round in shape and are not inclined to twist or oscillate in flight. This factor permits use of single line suspension from the aircraft to the load.

e. Nylon material is extremely strong in comparison to other fabric material. The major disadvantage is the problem of heat and wear when it comes in contact with metal or similar materials under pressure. It should be noted that all nylon sling equipment is designed with cotton buffer pads at points where the sling comes in contact with the load (figure 23). These pads prevent wearing, burning and eventual failure of the nylon sling. These pads should always be kept in place. In some cases it may be advisable to tape these pads to provide greater security and prevent detachment. In the event these pads become separated from the sling it is imperative that these insulators be replaced prior to further use. Scrap canvass can be used for this purpose.

f. As indicated above, nylon slings must be padded or insulated at any point where the sling comes in contact with the load. Figure 24 depicts how to properly insulate these slings. This is important. Numerous sling failures have occurred through failure to adequately insulate sling legs. Canvass is the most suitable material for this purpose. Materials such as sandbags provide only limited protection.

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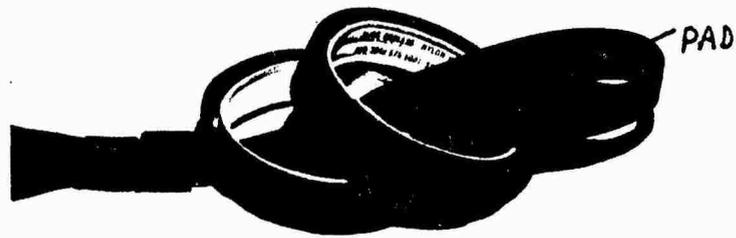


FIGURE 23

Method of attaching Cargo Sling to Sling, Endless, 7,500 lb Cap (Doughnut), using choker hitch (Cotton liner inside sling should be kept in place flush against the sling). Care must be taken to assure that liner will not be torn out. Replace with canvas liner if missing.

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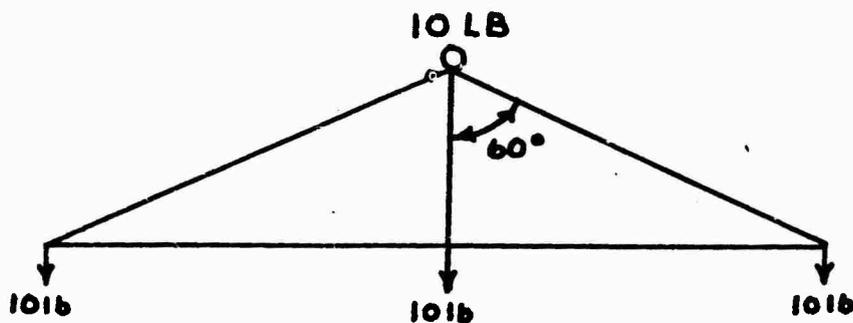
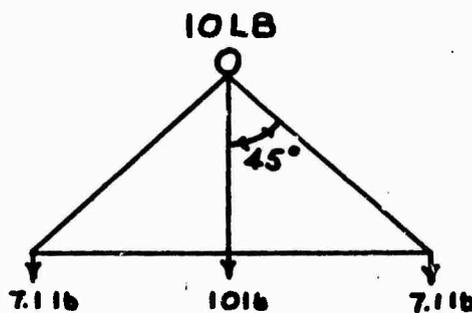
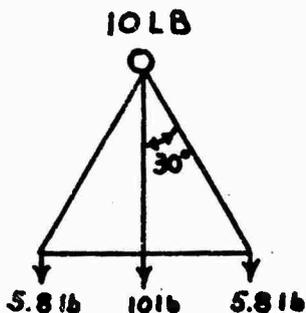
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CAUTION

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Symmetrically shaped loads such as conex containers tend to twist and oscillate in flight, particularly when they are lightly loaded. Always use rigging similar to that described on page IX-18 for loads of this type. A single line suspension to the aircraft offers the least resistance to this condition and should only be used for high density, round or cylindrical loads.

3. The optimum sling leg lifting angle measured from the vertical is 30 to 45 degrees. Minimum sling tension would result from a vertical lift. Tension increases as the angle from the vertical increases, reaching maximum tension when the sling legs are horizontal with the load. However, if the sling load lifting angle is less than 30 degrees, load stability is affected and rotating or swinging motion of the load during flight may result. The increase in sling leg load with an increased angle is indicated in the following diagrams:



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FIGURE 24
Insulation of sling legs with canvass

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ANGLE IN DEGREES MEASURED FROM THE VERTICAL	ANGULARITY FACTOR
85	11.473
80	5.579
75	3.863
70	2.924
65	2.366
60	2.000
55	1.743
50	1.555
45	1.414
40	1.305
35	1.220
30	1.154
25	1.103
20	1.064
15	1.035
10	1.015
5	1.003
0	1.000

FIGURE 25
Angularity Factor Chart

SECTION IV

EXTERNAL LOAD RIGGING EQUIPMENT

1. The equipment used for rigging external loads is shown in Appendix VII. Also shown are examples of common failures involving this equipment.

2. A recommended list of equipment, by type organization, considered a minimum to support CH-47 airlift operations, is shown in Appendix VIII.

SECTION V

PREPARATION AND RIGGING OF TYPICAL EXTERNAL LOADS

The methods of rigging typical loads externally airlifted by CH-47 are shown in Appendix IX.

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CHAPTER 6
ORGANIZATION OF THE
PICK-UP ZONE

1. The loads should be segregated and positioned in the pick-up zone in accordance with the unit's load plan and in such a way that the helicopters can land in front of an internal load or in back of an external load. Combination loads should be placed to allow the Chinook to land, load the internal cargo from the rear and then move forward to pick up the external load.

2. Sufficient area must be available to allow the Chinooks to operate safely in proximity to each other.

3. Whenever possible, internal cargo should be loaded while the helicopters are refueling, to avoid unnecessary ground time.

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CHAPTER 7

SECTION I

CONDUCT OF THE MOVE

RESPONSIBILITIES

The supported unit is responsible for having ground-crew signal men and hook-up men trained and available. The supporting CH-47 company will provide assistance as requested by the ground unit to train these personnel.

SECTION II

USE OF PATHFINDERS

1. Normally, the Chinook company will provide Pathfinder support unless the supported unit has organic Pathfinders available. The first helicopter landing in the PZ and LZ will drop off the CH-47 Pathfinders. The Pathfinders will work with the ground unit's Loading Supervisor/Air Movement Officer or NCO.

2. The Pathfinders (or, in their absence, the supported ground unit personnel) will:

a. Check loading plans for accuracy and completeness.

b. Check loads for location, rigging and security. A check list for cargo rigging is shown in Appendix V.

c. Using FM radio, direct the helicopters to the appropriate landing, parking, loading or unloading area. Smoke grenades and, when available, loading pannels, will be used to mark these locations. When smoke is used, it should be placed 15 feet in front of the point where the nose of the aircraft is desired. For external loads, the smoke should be placed at the desired release point of the sling load. The pilot will set the load next to the smoke.

d. The following information should be radioed to the helicopter upon its approach to the pick-up or landing zone:

- (1) Enemy situation (if applicable)
- (2) Wind direction and velocity.
- (3) Direction of approach (heading in degrees)
- (4) When smoke is cut.
- (5) Type load (if applicable)

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EXAMPLES:

(Helicopter Inbound to Pick-Up Zone)

Helicopter: "(Pathfinder Call Sign), (CH-47 Call Sign) inbound to your location."

PF or Gnd Personnel: "Roger, (CH-47 Call Sign), negative enemy situation, wind from northeast at 5 knots, approach heading 030 degrees, smoke on call, your load will be external Class V."

(Helicopter Inbound to Landing Zone)

Helicopter: "(Pathfinder Call Sign), (CH-47 Call Sign) inbound to your location with external load of Class V."

PF of Gnd Personnel: "Roger (CH-47 Call Sign), enemy small arms firing approximately 2 kilometers north of landing zone, wind light and variable, approach heading 360 degrees, smoke on call."

e. The supported unit should furnish a signalman or guide to direct the helicopter to the exact touch-down area desired. Guides should be familiar with the proper arm and hand signals as shown in Appendix XI. The guide should position himself where he can see the pilot's helmet from the time the Chinook is on final approach until the aircraft has either parked or has departed. This will normally require the signalman to be 50 yards in front of the desired point of touchdown.

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CHAPTER 8

RESUPPLY OPERATIONS

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The principles involved in rigging and loading cargo for, and the method of conducting, resupply operations are basically similar to those pertaining to movements discussed earlier. However, attention of the supported ground unit is invited to the following general recommendations. They result from experience gained during past operations, and have contributed to the safe and timely accomplishment of resupply operations conducted by CH-47 helicopters.

1. Loads should be planned on a priority of movement basis, and each load should weigh as close to 8,000* lbs as possible. Experience during past resupply operations has shown that the use of a Load Card greatly assists in organizing and expediting a resupply operation. The Load Card is given to the aircraft crew when the load is placed aboard the aircraft or prior to the hooking up of an external load. The suggested format for such a Load Card is shown at Appendix XII.

2. Use the external airlift method whenever possible, utilizing A-22 Cargo Bags, or cargo nets. A-22's are ideally suited for pre-loading ammunition, rations or ice. When cargo nets are utilized, scrap canvas liners are helpful for holding objects in the net and for helping distribute the load stresses.

3. Assure that an adequate supply of sling and net equipment is available. The supporting transport helicopter company must be notified if supplementary sling equipment is required.

4. ~~When feasible, remove items from bulky crates and boxes when utilizing external airlift.~~ Ammunition should be transported in fiber cartons rather than in boxes or in the steel jungle pack—the saving in weight ranges from 13 to 24 pounds per pound. Also, ammo boxes and the jungle pack containers must be removed from the artillery site, causing more cargo handling and expenditure of aircraft time.

5. To resupply water, the desirable method is to externally airlift 250 or 500 gallon fabric water drums. Next most desirable is to externally airlift a 1½ ton, 400-gallon water trailer. The least desirable method is to transport 5 gallon water cans internally.

6. Return flights from the resupply drop-off area should be utilized by the supported unit to back-haul expended ammunition brass and any other equipment or material which is practical to return to the supply point.

*This is based on operation at or near sea level. When operating at higher altitudes, contact your supporting CH-47 unit for ACL.

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CHAPTER 9

EXTRACTION OPERATIONS

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The general methods and procedures used in the employment of CH-47 helicopters during extraction operations are basically the same as used in moving a ground unit to the field. However, as with Resupply operations discussed in Chapter 8, there are specific operating practices peculiar to the extraction by Chinook of ground elements.

1. Security of the area is of vital importance to permit aircraft as large as the CH-47 to operate safely in a forward area. Extraction of an artillery unit must be planned by the ground element so as to provide adequate security by infantry personnel until the last cargo load departs the pick-up zone. Air cover, in the form of armed helicopters (gunships), must be requested by the supported ground force, for pick-up zones located in marginally secure areas.

2. Cargo comprised of difficult-to-load items of supplies and equipment must be planned to be moved out first. This will take advantage of the greater manpower available at the pick-up site during the initial part of the move.

3. Loads must be planned and coordinated to avoid the necessity of having the Chinooks shut down in the pick-up zone. Ground unit personnel are reminded that the fuel consumption rate is high--whether flying or parked on the ground with engines running. The more time spent on the ground, the less the number of loads carried between refueling stops, and the longer the time required to extract the unit.

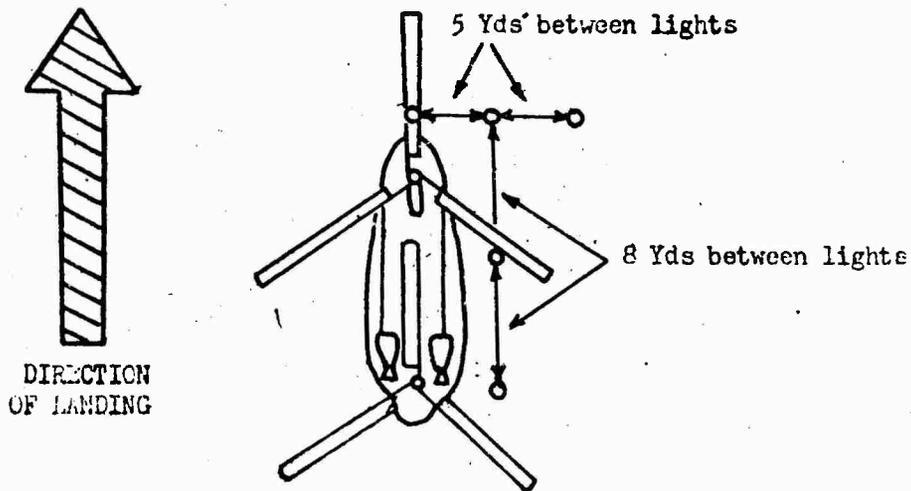
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PREPARATION OF A NIGHT LANDING AREA

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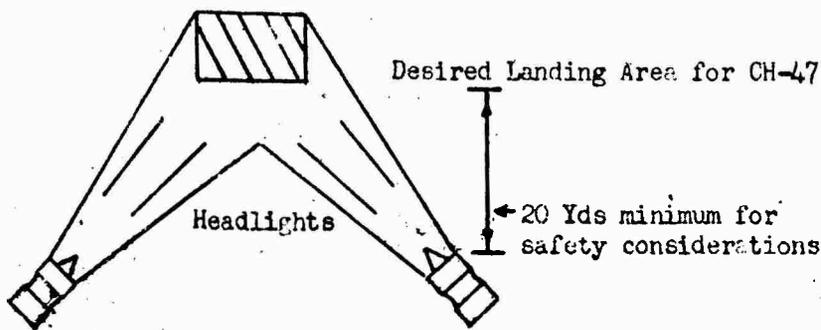
Night operation in unprepared landing areas can be extremely hazardous because of obstructions and the presence of dust and debris causing loss of visual reference by the pilots. However, if an emergency exists requiring Chinook support, the supported unit must try to set up some form of lighted landing area. Methods of lighting a landing area are shown in Figure 26. If neither a night lighting set nor vehicles are available, the landing area may be ringed with flashlights as a last resort.

MOST DESIRABLE LIGHTING ARRANGEMENT FOR CH-47 NIGHT LANDING AREA:



(Helicopter will land to the left of the Tee)

ALTERNATE METHOD OF LIGHTING CH-47 NIGHT LANDING AREA:



Vehicles

FIGURE 26

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APPENDIX I

REFERENCES

1. Army Regulations

AR 95-13

Safety Procedures for Operation and Movement of Army Aircraft on the Ground

2. Field Manuals

FM 55-15

FM 101-10

Transportation Reference Data
Staff Officer's Field Manual

3. Technical Manuals

TM 10-500

Airdrops of Supplies and Equipment,
General

TM 55-405-8

Air Transportation of Supplies and Equipment: External Transport Procedures.

TM 55-1520-209-10

Operators Manual CH-47 Helicopter

4. Technical Bulletins

TB 55-46

Standard Characteristics for Transportability of Military Vehicles and Equipment

5. Other

1st Aviation Brigade Handbook, 1 Jul 66

1st Air Cavalry Division Airmobile Techniques and Procedures, 3rd Revision

Aeroquip, Universal Cargo Sling Operating Instructions BUL 274

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APPENDIX II

WEIGHTS OF COMMON ITEMS

Vehicles

1/2 Ton Truck	2350 (+ 100 lbs w/radios)
1/2 Ton Trailer	600
3/4 Ton Truck	5700 (+ 200 lbs w/w)
3/4 Ton Trailer	1350
1 1/2 Ton Water Trailer 400 Gal (Fiberglass)	2900
1 1/2 Ton Trailer	2750
Mechanical Mule	900

Artillery

M-101 Howitzer w/shields	4990
M-101 Howitzer w/o shields	4600
M102 Howitzer	3100
105 MM ammo per Rd in Box	60
in Carton	47
in Steel	
Jungle Rack	71
155MM Howitzer Projectile	95
Powder	35
30 Rds 105MM Ammo in Fiber Containers	1450

POL (External Loads Only)

	55-Gal Drums	500-Gal Drums (Collapsible)
Gasoline	373	3300
JP/4	410	3550
Diesel Fuel	432	3800
Lub Oil	472	4300

Miscellaneous

Water Can w/5-Gal	45
C Rations	25
81MM Mortar w/Fuze, Box of 3 Rds.	53.5
4.2 KH Mortar w/Fuze, Box of 2 Rds.	81.7
Rice, 100 Kilo Bag	220

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APPENDIX III

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TYPICAL LOADS

The following typical loads which can be airlifted by CH-47 helicopters are offered as representative; obviously, such a list cannot be all-inclusive. Standardization of loads by supported ground units will greatly expedite airlift by CH-47 and will assist in reducing the time required for planning and liaison with the supporting helicopter company.

33 Personnel*	7920	1-3/4 Ton Truck	5900
Cargo	<u>80</u>	W/W	
Total Weight	8000	Driver	240
1-1/4 Ton Truck	2350	Cargo in Truck	<u>1260</u>
1-1/4 Ton Trailer	600	Total Weight	8000
17 Personnel	4080	2- Collapsible Fuel	7100
Cargo in Trailer	<u>1000</u>	Drums (500 Gal	
Total Weight	8030	ea., External)	
1-3/4 Ton Truck	5900	2- Personnel	<u>480</u>
W/W		Total Weight	7580
1-1/4 Ton Trailer	600	2-1/2 Ton Trucks	6290
Driver	240	w/106 RR	
Cargo	<u>1250</u>	7- Personnel	<u>1680</u>
Total Weight	7990	Total weight	7970

* Based on 240 lbs per individual. This includes the weight of the individual and his proportionate share of hand-carried supplies and equipment including crew-served weapons up to, but not including, the 106MM RR and 4.2 inch Mortar.

The following typical loads are offered as a basis for planning the airlift by CH-47 of a 105MM Howitzer Battery:

Load #1 (Battery FDC)

1-1/4 Ton Truck w/radios	2450
1-3/4 Ton Trailer	1350
8 Personnel	1920
Section Equip on Trailer	600
Add'l Personnel or Cargo	<u>1680</u>
(Internal)	
Total Weight	8000

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Load #2 thru 7 (105MM Howitzer Section)

1-105MM Howitzer w/shields (External)	4990
Sec Equip strapped to How	300
30 Rds Ammo in Fiber Containers (External)	1450
3 Personnel	720
2 Fuze Boxes	160
6 Cases C Rations	150
5 Water Cans 5 Gal	<u>225</u>
Total Weight	7995

or

1-105MM Howitzer w/shields (External)	4990
30 Rds Ammo in Fiber Containers (External)	1450
6 Personnel	1440
S/A Ammo, Water, Rations, Tools	<u>110</u>
Total Weight	7990

NOTE: If 105MM Howitzer is without shields, 400 lbs of additional cargo or equipment may be added.

Load #8 thru 10

66 Boxes Ammo (132 Rds) (External)	7950
---------------------------------------	------

or

160 Rds Ammo (in Fiber Containers) (External)	7600
--	------

Load #11

1-3/4 Ton Truck	5700
1-1/4 Ton Trailer	600
Driver	240
Cargo in Truck and Trailer	<u>1460</u>
Total Weight	8000

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APPENDIX IV

CH-47 LOADING PLAN AND PASSENGER MANIFEST

CH-47 LOADING PLAN AND PASSENGER MANIFEST

Load #	Acft #	Description of Cargo	Unit Wgt	Total Wgt	Passenger Names
1		105 MW. WD SHIELDS, & TOOL CHEST 30 RDS. 108 AMMO 3 BOXES FUZES @ 89# 3 WATER CANS & S.A. AMMO 6 PERSONNEL W/DUFFEL BAGS	4,600 1,540 267 160 1,440	8,007	S/SGT WILLARD PFC WILSON CPL BLACK PFC BLUE PFC WILLIAMS PFC GEORGE
2		1/4 TON TRUCK W/RADIO & GEAR 3/4 TON TLR W/4 RADIOS 2 GP MED (800), 1-3KW GEN. 2 SA AMMO (150) 10 PERSONNEL W/DUFFEL BAGS	3000 2,600 2400	8,000	LT GALL SP/4 GREEN S/SGT HEAD SP/4 JONES SGT GEE PFC COX SGT BROWN PFC SMITH SP/8 SMART PFC BILL
3					
4					
5					
6					

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APPENDIX V

CHECK LIST FOR LOAD PREPARATION

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General

1. Loading Plans should be prepared in 3 copies (1 for unit; 1 each for Pathfinders in PZ and LZ).
2. An Officer or NCO from the supported unit should be readily available to the Pathfinders in the PZ and LZ.

External Rigging

1. Always perform a detailed visual inspection of all sling equipment prior to rigging the load. Equipment found to be frayed, burned or worn (minor surface wear is normal) should be declared unserviceable and destroyed if not repairable. After inspection, nylon slings should be wrapped with canvas at possible chafing points (figure 24).

2. When possible avoid using steel clevises as the connecting link to the nylon doughnuts particularly with symmetrically shaped loads which tend to twist in flight. Rapid deterioration of the doughnuts and loss of the load may result.

3. 4-Leg Adjustable slings:

- a. Delta rings must be removed or taped flush to the sling.
- b. All legs must be adjusted to exactly the same length, by comparison.
- c. All legs must be adjusted to the proper length considering the optimum 30-35° angle.
- d. Each ratchet must have a level wrap of nylon strap around it.
- e. Loose ends of sling legs must be taped.
- f. Sling legs must not be crossed over each other: The inside pair should be attached to one end of the load, the outside pair to the other. Figure 29
- g. Slings must be in good general condition.

4. Cable Nets:

- a. There should be an equal number of rings between attachment points (5 rings on each drawstring; drawstrings properly positioned).
- b. General condition of nets

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- c. Maximum load of 2000 lbs.
5. Rope Nets: Canvas liner used if small objects included in load.
6. A-22 Cargo Bag:
 - a. 4-leg Adjustable Sling should be adjusted to 6 ft. and attached to the A-22 Delta rings with small clevises or shackle anchor screws.
 - b. Bag must be loaded correctly to provide equal stress on all 4 sides.
7. 105MM Howitzer

Cargo slings must be wrapped with canvass or similar material wherever they contact the howitzer. Give particular attention to insulation in the hole on gun casting which piggy-back sling passes through. Failure to insulate the sling from the sharp edges of the casting will result in loss of the load.

INTERNAL LOADS

1. $\frac{1}{2}$ Ton Truck
 - a. Wirecatcher removed.
 - b. Aerial securely held down.
2. $\frac{3}{4}$ Ton Truck
 - a. Spare tire removed.
 - b. Windshield folded down.
 - c. Bows removed.
 - d. Only one side antenna mount permitted on each vehicle.
 - e. Load not to exceed 2000 lbs.
3. $\frac{3}{4}$ Ton Trailer

External transport of the $\frac{3}{4}$ ton trailer is recommended unless a $\frac{1}{2}$ ton vehicle is used as a prime mover. For internal loading remove the top bows. Overall height of trailer should not exceed 76".

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APPENDIX VI

CH-47 MISSION REQUEST

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1. Mission Requested by: (Complete Unit Designation: Co, Bn, Bde, Div)

2. Requesting Officer: _____

3. Mission Date: _____ Number CH-47s Requested: _____

4. Initial Reporting Instructions:

a. Acft Report to: _____

b. Coordinates: _____

c. Time: _____

d. Ground Contact: _____
(Call Sign) (Frequency)

5. Mission Itinerary and Instructions:

a. LZ: _____ Coordinates: _____

b. LZ: _____ Coordinates: _____

6. General Mission Information:

a. Type Cargo to be Airlifted: _____

b. Number of Lifts: _____

c. Number of Internal Loads: _____ Number of External Loads: _____

d. Special Equipment Required from Supporting CH-47 Unit:

e. Special Mission Instructions: _____

f. Release Time: _____

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APPENDIX VII

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CARGO SLING AND NET EQUIPMENT USED FOR RIGGING EXTERNAL LOADS

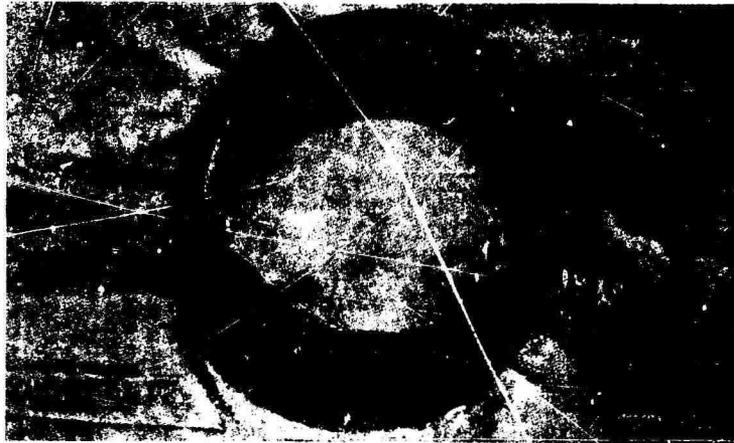
<u>FSN</u>	<u>NOMENCLATURE</u>	
1670-753-3789	Sling Cargo Aerial Del 13,500 lb 2 loop	8' O/A lg
3790		9'
3791		11'
3792		12'
3793		16'
3794		20'
1670-753-3630	Sling Cargo Aerial Del 20,000 lb 3 loop	8'
3631		9'
3788		13'
1670-823-5040		11'
5041		12'
5042		16'
5043		20'
5044*	Sling Cargo 4 Leg Adjustable	13'
3940-298-3985	Sling Cargo Paulin: Cotton Duck 12X12 Ft Nom O/A Dim	
3940-542-4698	Sling Cargo Net 14' Sq 7-7/8" Mesh 2 1/2" Circ Rope	
3940-675-5001	Sling Endless: Nylon Webbing 7,500 lb Cap 10" Lg 1-3/4" W	
3940-675-5002	Sling Endless: Nylon Webbing 2,500 lb Cap 4 Ft Lg 1-3/4" W	
3940-675-5003	Sling Endless: Nylon Webbing 2,500 lb Cap 8 Ft Lg 1-3/4" W	
3940-774-8507	Sling Cargo Net: Metal Octagonal 5,000 lb Rated Cap	
3940-856-7998	Sling Set Cargo Universal Type Set No. 1	
3940-892-4375	Sling Cargo Net: Nylon 12X12 Ft	
3940-902-3080	Sling Nylon 4-Leg Aeroquip 40,000 lb Cap	
1670-242-9169	Bag Cargo Aerial Del A-22	
1670-090-5354	Clevis Assy Suspension Bolt and Nut Type Size 5	
1670-360-0304	Clevis Assy Suspension Bolt and Nut Type Size 3	
4030-185-0490	Shackle Anchor Screw	

*Limited standard; no longer being procured.

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Sling Endless Nylon Webbing

7,500 lb
FSN 3940-675-5001



Shackle Anchor Screw
FSN 4030-185-0490



Clevis Assy Suspension Bolt
and Nut Type Size 5
FSN 1670-090-5354



Clevis Assy Sus-
pension Bolt and
Nut Type Size 3
FSN 1670-360-0304

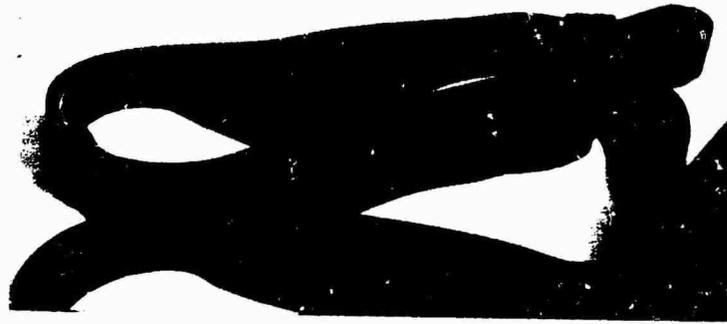


Sling Set Cargo Universal Type Set No.1
FSN 3940-856-7998

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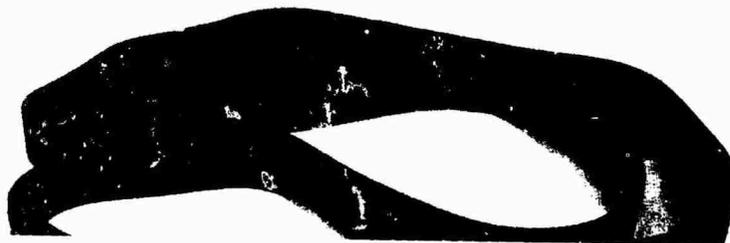
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Sling Cargo Aerial Del 13,500 lb 2 loop 9' lg
FSN 1670-753-3790



Sling Cargo Aerial Del 20,000 lb 3 loop 9' lg
FSN 1670-753-3631

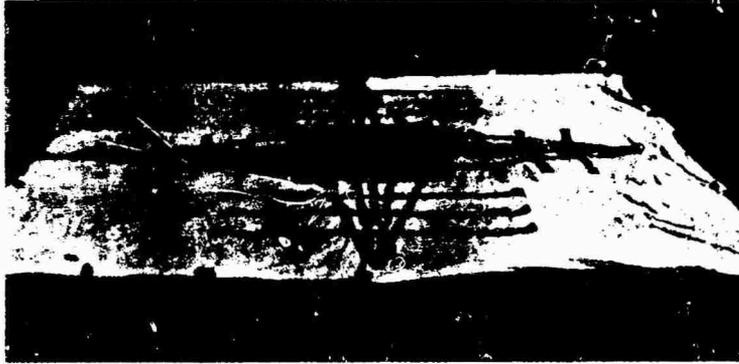


Sling Endless Nylon Webbing 2,500 lb 8' lg
FSN 3940-675-5003

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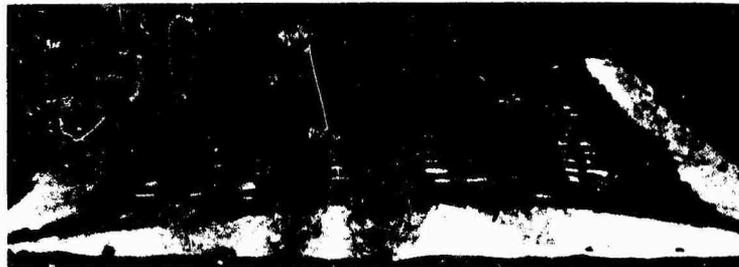
Bag Cargo Aerial Delivery A-22 FSN 1670-242-9169



Bag Cargo Aerial Delivery A-22 FSN 1670-242-9169
(Placed on top of unit above)



Sling Cargo Net Nylon 12X12 FSN 3940-892-4375



Sling Cargo Net Rope 14X14 FSN 3940-542-4698

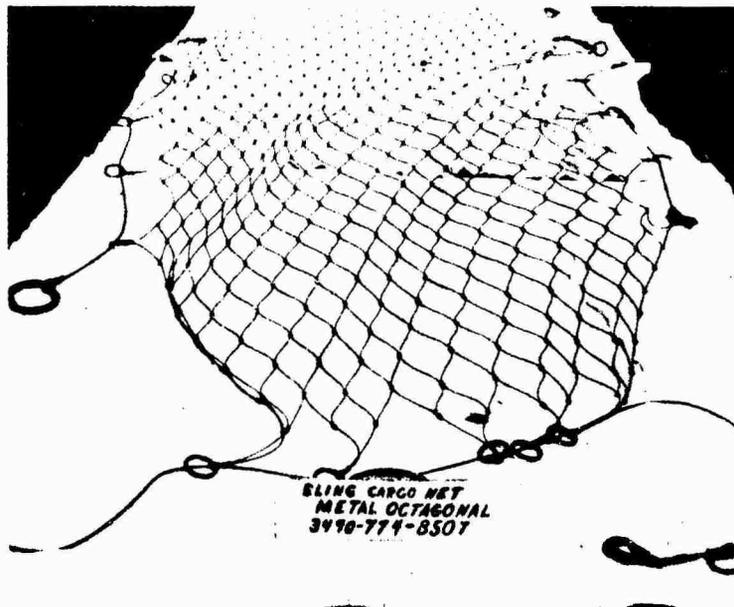
VII-4 III
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Sling Cargo / Leg Adjustable*, 10,000 lb Cap. FSN 1670-823-5014



Sling Cargo Net Metal Octagonal 5,000**lb Cap. FSN 3940-774-8507

*limited standard; no longer being produced. Personnel must be trained to safely use this sling.

**Limit loads in this cargo net to 2,000 lbs.

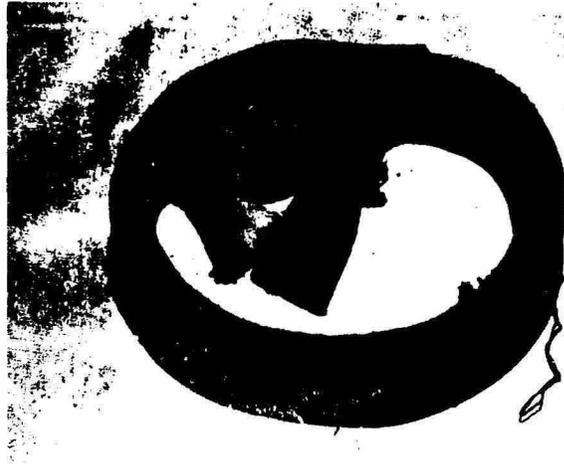
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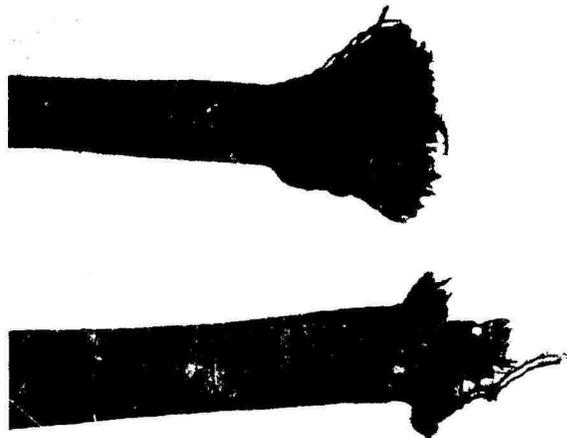
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COMMON FAILURES OF SLING EQUIPMENT

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Failures of this type are most frequently caused by twisting action of the load. Use of a clevis as the connecting link between the sling legs and the doughnuts with symmetrically shaped loads gives the load greater freedom to twist and frequently results in destruction of stitching of the doughnut as shown above. Additionally, to prolong the service life of the doughnuts, place the doughnut on the hook with the inside seam ninety degrees to the metal hook.



The strays of a cargo sling which rubbed against metal of a water trailer, broke and caused loss of the load.

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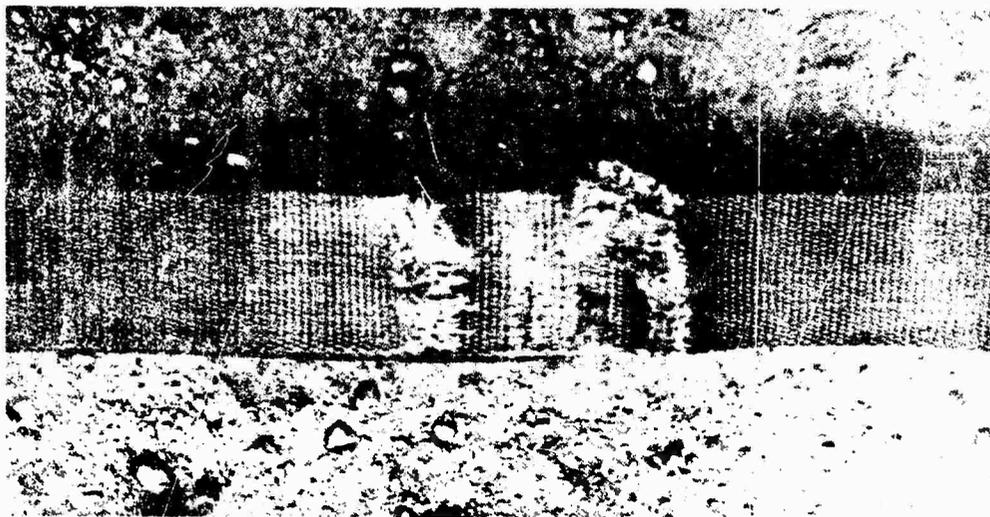
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One loop of this two loop sling burned through in flight even though sling was wrapped with a sand bag. Heavy duty canvas is the most satisfactory insulation



One loop of this two loop sling failed due to rubbing on trailer tailgate in flight.

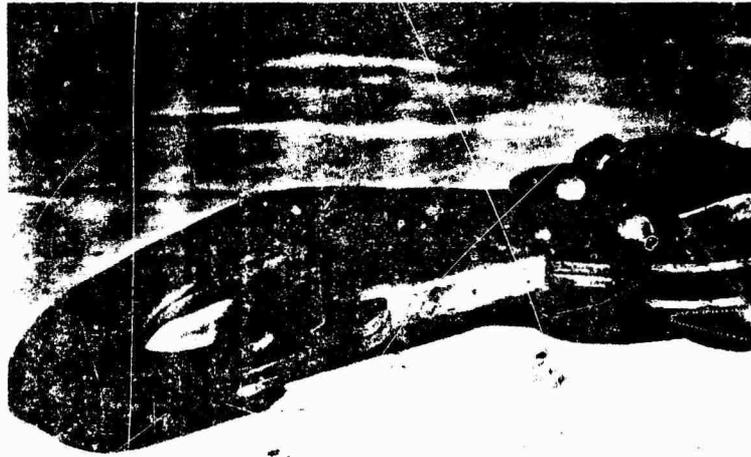
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The result of placing metal keeper bolt of Doughnut, part of 4 Leg Adjustable Sling, on the helicopter cargo hook. This type doughnut is manufactured as part of the sling. The keeper bolt must be placed so as not to contact the cargo hook or nylon sling legs.



Bent lifting hook on a 4 Leg Adjustable Cargo Sling. Lifting hooks must be attached so as to provide a straight pull on the load, or above will result.

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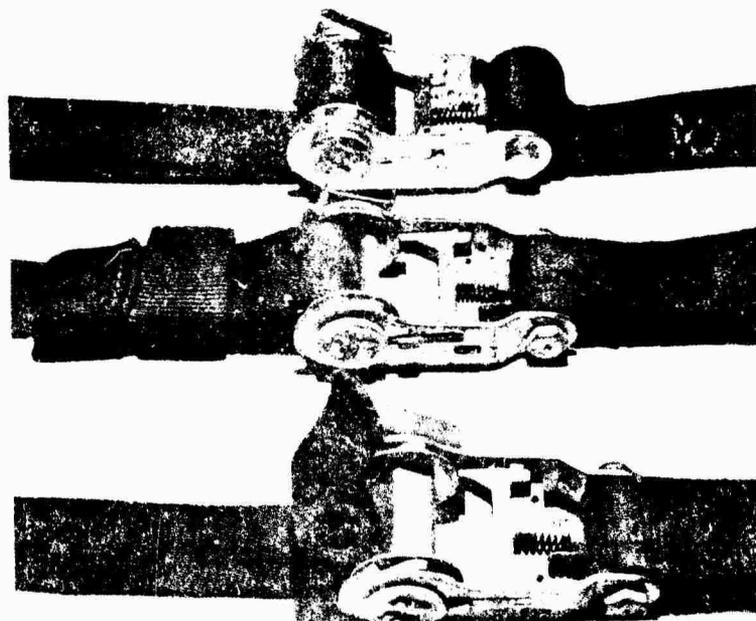
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Metal Delta rings should be cut off the 4 Leg Adjustable Cargo Sling, or at least taped flush with the sling. The "D" ring on sling above was loose, and as the load was being airlifted, the ring cut through the nylon, almost causing loss of the load.



The ratchet on the 4 Leg Adjustable Cargo Sling must have a full wrap of the nylon sling around it, as shown at Top. At Center, the ratchet does not, and the weight of the load will be carried only by the stitching to the left of the keeper on the left of the ratchet. At Bottom, the stitching has torn out and will allow the sling leg to slip out of the ratchet, resulting in a dropped load.

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APPENDIX VIII

RECOMMENDED LIST OF RIGGING EQUIPMENT BY TYPE ORGANIZATION

CARGO SLING AND NET REQUIREMENTS FOR HELICOPTER LIST OF:

INFANTRY BRIGADE HQ

<u>FSK</u>	<u>NOMENCLATURE</u>	<u>QUANTITY</u>
1670-090-5354	Clevis Assy Suspension Bolt and Nut Type Size 5	40
1670-242-9169	Bag Cargo Aerial Del A-22 (For ice, rations)	20
1670-753-3790	Sling Cargo Aerial Del 13,500 lb 2 loop 9' O/A Lg (For fuel bladders, water trailer*, Conex Container)	8
1670-753-3793	Sling Cargo Aerial Del 13,500 lb 2 loop 16' O/A IG (For 3/4 ton truck)	4
3940-675-5001	Sling endless: nylon webbing 7,500 lb capacity 10" lg 1-3/4" wide (Doughnut, for use with all slings)	40
3940-856-7998	Sling Set, Cargo, Universal Type set No 1 (For general rigging of fuel bladders, water con- tainers, trailers, etc.)	8
3940-892-4375	Sling Cargo Net: Nylon 12x12	10
*Fiberglass water trailers require 11 or 12' 2 loop slings		

ROAD DIVISION SUPPORT COMMAND

<u>FSN</u>	<u>NOMENCLATURE</u>	<u>QUANTITY</u>
1670-090-5354	Clevis Assy Size 5	300
1670-242-9169	Bag Cargo Aerial Del A-22 (For ammo, ice, rations, misc.)	150
1670-753-3790	Sling Cargo Aerial Del 13,500 lb 2 loop 9' O/A (For bladders, water trailer, Conex)	30
1670-753-3792	Sling Cargo Aerial Del: 13,500 lb 2 loop 12' O/A lg (For 1 1/2 ton trailer, bridge mater- ials.)	30
1670-753-3793	Sling Cargo Aerial Del: 13,500 lb 2 loop 16' O/A lg (For 3/4 ton truck, bulky cargo.)	30
1670-753-3794	Sling Cargo Aerial Del: 13,500 lb 2 loop 20' O/A lg (general rigging of bulky cargo.)	30
1670-823-5044	Sling Cargo 4 leg adjustable (For A-22 bags.)	40
3940-298-3985	Sling Cargo paulin: Cotton duck 12x12 Ft Nom O/A Dim. (For use inside cargo net.)	20
3940-542-469E	Sling Cargo Net: 14' Sq 7-7/8 in Mesh 2 1/2 in. circ rope (For general rigging of bulky cargo)	10
3940-675-5001	Sling endless: Nylon webbing 7,500 lb capacity 10" lg. 1-3/4" wide (doughnut)	300

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3940-856-7998	Sling set, cargo universal type set NRI (For general riging of fuel bladders and trailers.)	20
3940-892-4375	Sling cargo net: Nylon 12x12	10

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105MM HOWITZER BN HQ BTRY

1670-090-5354	Clevis Assy Size 5	30
1670-242-9169	Bag Cargo Aerial Del: A-22	20
1670-753-3790	Sling Cargo Aerial Del: 13,500 lb 2 loop 9' O/A lg (For bladders, water trailers*, Conex)	10
1670-753-3792	Sling Cargo Aerial Del: 13,500 lb 2 loop 12' O/A (For 1½ ton trailer, misc, rigging.)	10
1670-753-3793	Sling Cargo Aerial Del: 13,500 lb 2 loop 16' O/A lg (For ¾ ton truck, misc. rigging)	10
1670-823-5044	Sling Cargo 4 leg adjustable (For A-22 Bags.)	10
3940-542-4698	Sling Cargo Net: 14' Sq 7-7/8 in Mesh 2½ in circ rope	10
3940-675-5001	Sling endless: Nylon webbing 7,500 lb cap 10" lg ¾ wide	30
3940-856-7998	Sling Set, cargo universal type NRI (For general rigging of fuel bladders, pallets, trailers etc.)	4
3940-892-4375	Sling Cargo Net: Nylon 12x12	10
4030-185-0490	Shackle Anchor Screw	30

*Fiberglass water trailers require 11 or 12' 2 loop slings

105MM HOWITZER BTRY

<u>FSN</u>	<u>NOI ENCLATURE</u>	<u>QUANTITY</u>
1670-090-5354	Clevis Assy Size 5	40
1670-242-9169	Bag Cargo Aerial Del A-22 (For ammo, rations.)	16
1670-753-3790	Sling Cargo Aerial Del: 13,500 lb 2 loop 9' O/A lg: (For lifting 105 howitzers and general use with nets.)	14
1670-753-3792	Sling Cargo Aerial Del: 13,500 lb 2 loop 12' O/A lg. (For use with 105 How. and fiberglass water tlr.)	12
1670-753-3793	Sling Cargo Aerial Del: 13,500 lb 2 loop 16' O/A lg (For lifting ¾ ton truck.)	10
1670-823-5044	Sling Cargo 4 leg adjustable (Ammo bags)	6
3940-298-3985	Sling Cargo Paulin: Cotton Duck 12x12 ft Nom O/A Dim 12x12 (For use inside cargo net.)	10
3940-675-5001	Sling endless: Nylon webbing 7,500 lb capacity 10" 1-¾" wide-(doughnut)	30
3940-675-5003	Sling endless: Nylon webbing 2,500 lb cap 8' lg 1-¾" (For attaching ammo to gun and general use)	20
3940-774-8507	Sling Cargo Net: Metal Octagonal 5,000 lb rated cap	6
4030-185-0490	Shackle Anchor Screw	30

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APPENDIX IX

METHODS OF RIGGING TYPICAL LOADS

500 GALLON COLLAPSIBLE FUEL DRUM

1. Rigging Equipment Required:

- 2 ea. Sling Endless: Nylon Webbing 7,500 lb (Doughnut FSN 3940-675-5001
- 4 ea. Sling Endless: Nylon Webbing 2,500 lb 8' lg. FSN 3940-675-5003

or, in lieu of above,

- 1 ea. Sling Cargo 4 leg Adjustable FSN 1670-823-5044

2. Method A:

- a. Combine 2-8' slings together by placing one loop inside the other.
- b. Tie the 2 loops to the doughnut with a reverse choker hitch (see Figure 23) to form one leg.
- c. Repeat steps a and b, above, with the other 2-8' slings, tying them to the same Doughnut.
- d. Attach free end of one pair of 8' slings to the Fuel Drum, placing the shackle on the drum through the loop on the end of the sling. See Figure 27.
- e. Repeat step d with other 8' sling, attaching it to Drum shackle on opposite side of the drum.

3. Method B:

- a. Using one 4-leg Adjustable Cargo Sling, adjust each leg to length of 7 feet.
- b. Attach 2 legs of sling to one shackle of Fuel Drum, the other 2 legs to shackle on opposite side of drum. See Figure 28.

2 - 500 GALLON COLLAPSIBLE FUEL DRUMS

1. Rigging Equipment Required:

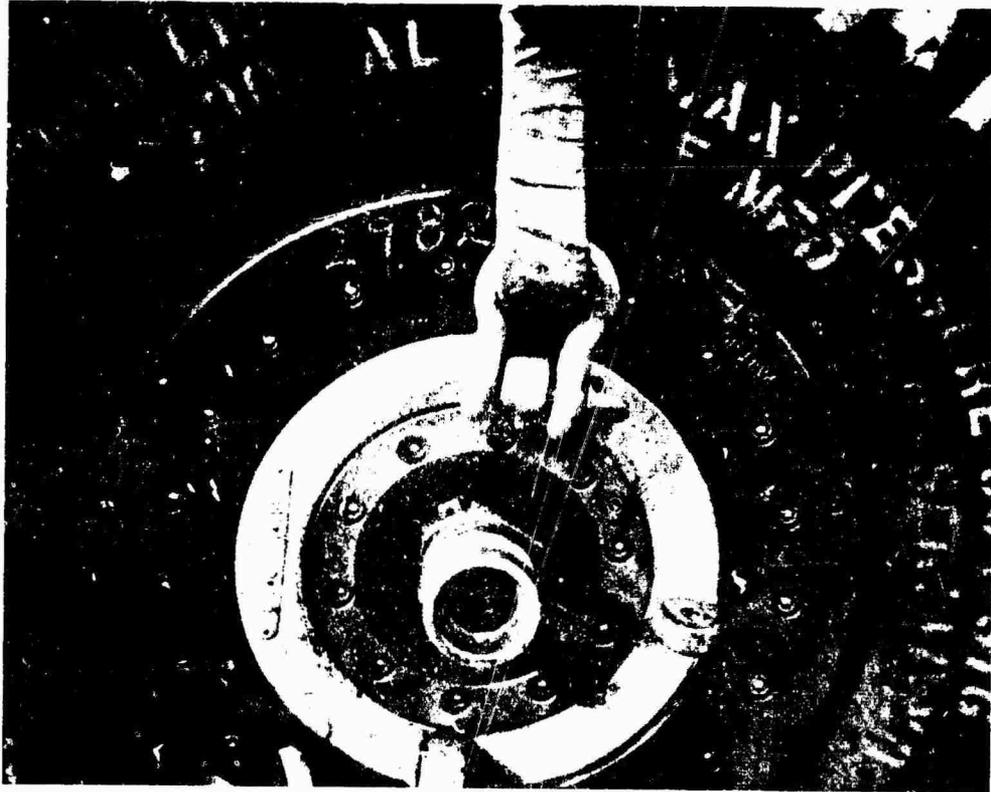


FIGURE 27
ATTACHMENT OF SLING TO FUEL BLADDER

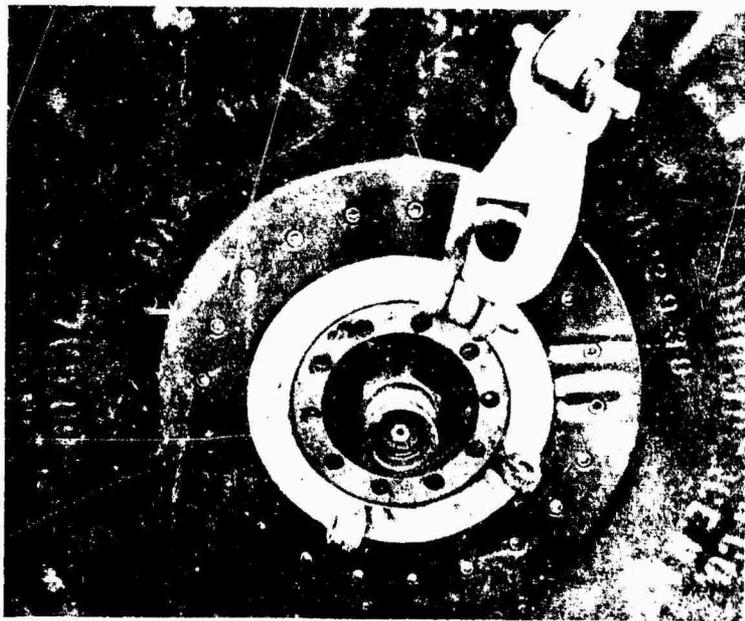


FIGURE 28
ATTACHMENT OF A 4 LEG ADJUSTABLE SLING TO FUEL BLADDER

UNCLASSIFIED

- 2 ea. Sling Endless; Nylon Webbing 7,500 lb (Doughnut) FSN 3940-675-5001
- 8 ea. Sling Endless; Nylon Webbing 2,500 lb 8' lg. FSN 3940-675-5003

Or, in lieu of above,

- 1 ea. Sling Cargo 4 leg Adjustable FSN 1670-823-5044

2. Method A:

- a. Combine 2, 8' slings together by placing one loop inside the other.
- b. Tie the 2 loops to the doughnut with a choker hitch (see Figure 23) to form one leg.
- c. Repeat steps a and b, above, with the other 6, 8' slings, attaching them to the same doughnut.
- d. Attach free ends of the slings to the Fuel Drums as shown in Figure 27.

3. Method B:

- a. Using one 4 Leg Adjustable Cargo Sling, adjust each leg to a length of 7 feet.
- b. Attach 2 legs of the sling to one Drum, other 2 legs to the other Drum. Note caption on Figure 29, pertaining to the positioning of sling legs in pairs, inside and outside.

105MM HOWITZER WITH "PIGGY-BACK" LOAD OF AMMUNITION

1. Rigging Equipment Required:

- 2 ea. Sling Endless: Nylon Webbing 7,500 lb (Doughnut) FSN 3940-675-5001
- 1 ea. Sling Cargo 13,500 lb 12' Lg FSN 1670-753-3792
- 1 ea. Sling Cargo 13,500 lb 9' Lg FSN 1670-753-3790
- or
- 1 ea. Sling Cargo 20,000 lb 9' Lg FSN 1670-753-3631
- 1 ea. Sling Endless 2,500 lb 8' Lg FSN 3940-675-5003
- 1 ea. Sling Cargo Net 5,000 lb FSN 3940-774-8507
- or
- 1 ea. Bag Cargo Aerial Del A-22 FSN 1670-242-9169
- 1 ea. Sling Cargo Paulin 12X12 Ft FSN 3940-298-3985
- 1 ea. Clevis Assy Size 5 FSN 1670-090-5354

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FIGURE 29
Attachment of slings to fuel drum shackles

Note position of slings from attachment at doughnut to attachment to each fuel drum: the inside sling legs are attached to the same drum, the outside legs to the other drum. If sling legs are not attached in this manner, the legs frequently rub together in flight causing wear or burning of the slings.

CAUTION

Insure that sling legs are not tangled around filler neck.

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- 1 ea. Shackle Anchor Screw FSN 4030-185-0490
Scrap Canvass and Tape to insulate slings

NOTE: Sling Cargo 13,500 lb. 16' lg FSN 1670-753-3793 may be used
in lieu of Sling Cargo 12' lg.

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2. Method:

a. The cargo slings must be wrapped and taped at any places where the slings may come in contact with the Howitzer. The taped end of the 12 ft. Cargo Sling is placed under the pintle of the gun. The other end of the sling is passed thru the loop on the taped sling end and pulled up tight. See Figure 30. If a 16 ft. Cargo Sling is used, the extra length may be taken up by taking 3 wraps around the pintle and passing the long end around and under the pintle. See Figure 31.

b. The 9 ft. Sling is wrapped, taped and placed around the recoil mechanism and sliding carriage, behind the shield. See Figure 32.

c. The Clevis (Size 5) is placed through the respective loops of the 12 and 9 ft. slings and 2 Doughnuts are placed on the Clevis with a straight pull against the bolt. See Figure 33.

d. Pass one end of the 8 ft. Endless Sling through the bottom hole on the curved casting located to the lower left of the elevated hand rail. See Figure 34. Draw the sling down until both ends are even and attach a Shackle Anchor Screw through both ends of the sling. Insure that the strap is insulated where it passes through casting. Failure to insulate this strap will result in loss of the piggy back load. As an alternate method, a Size 5 clevis may be inserted through hole in frame to connect piggy back sling.

e. With the Cargo Net* spread on the ground next to the Howitzer, place the Paulin on the net, and place 30 rounds of ammunition on the paulin. See Figure 35. The net is then brought together as shown in Figure 36.
NOTE: Canvas should be approximately 12' X 12'

f. The Shackle Anchor Screw is then attached to the cargo net.

g. An additional 300 lb of section equipment may be strapped to the trails of the Howitzer. Figure 37.

*Bag Cargo Aerial Delivery A-22 may be used in lieu of metal Cargo Net.

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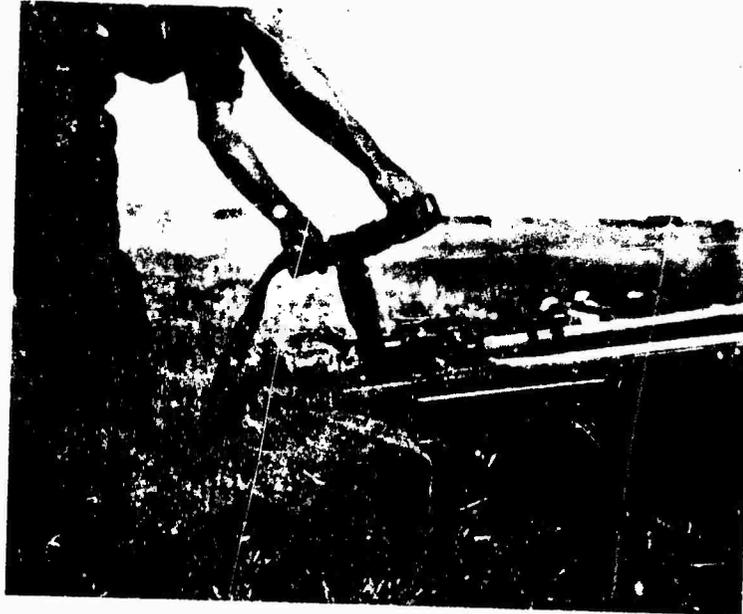


FIGURE 30
Attachment of 12' Sling to Howitzer Pintle

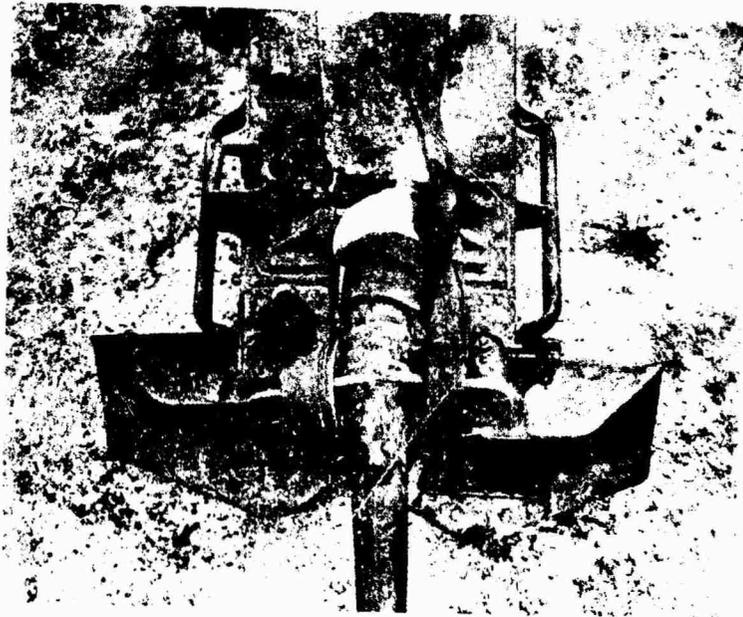


FIGURE 31
Attachment of 16' Sling to Howitzer Pintle

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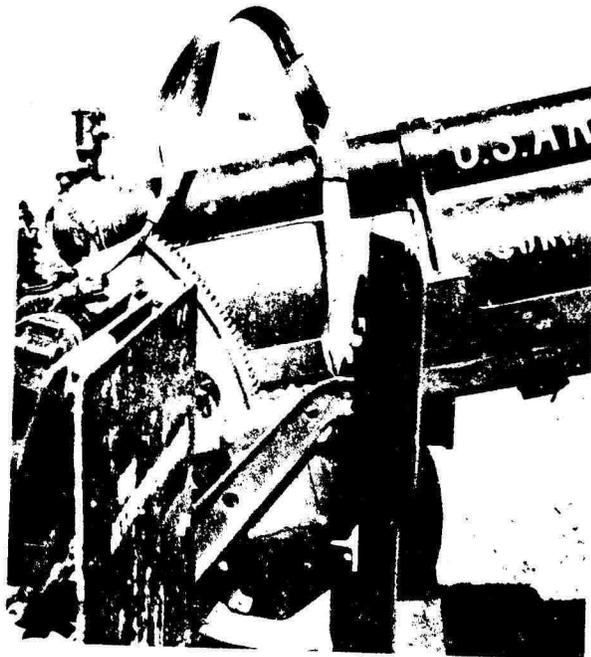


FIGURE 32
Attachment of 9' Sling to Howitzer



FIGURE 33
Attachment of Slings to Clevis and Doughnuts
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CAUTION

Sling must be insulated where sling passes through hole in frame.



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FIGURE 34

NOTE: Size 5 clevis may be inserted through hole in frame to connect "Piggy Back" Sling

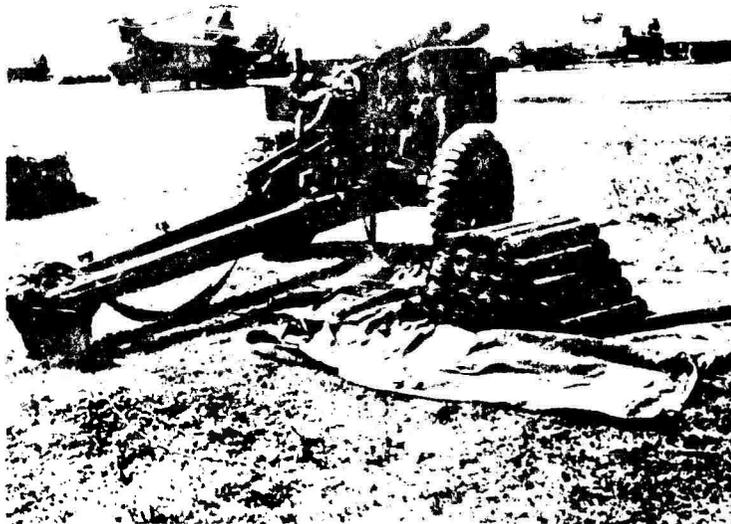


FIGURE 35

Positioning and loading "Piggy Back" ammo

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FIGURE 36
Connecting cargo net to Howitzer



FIGURE 37
Section gear strapped to trails of Howitzer

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3/4 TON TRAILER

1. Rigging Equipment Required:

- 2 ea. Sling Endless: Nylon Webbing 7,500 lb (Doughnut)
FSN 3940-675-5001
- 4 ea. Shackle Anchor Screw FSN 4030-185-0490 (optional)
- 4 ea. Sling Cargo Aerial Del 13,500 lb 2 loop 12' lg
FSN 1670-753-3792
- or
- 4 ea. Sling Cargo Aerial Del 13,500 lb 2 loop 11' lg
FSN 1670-753-3791

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2. Method:

a. Attach 4 Slings to the 2 Doughnuts using a choker hitch (see figure 23) to form 4 legs.

b. Attach one sling leg to each of the 4 shackle anchor screws.* Make sure that the cotton insulation in the sling loop is next to the metal of the anchor screw, and then push the keeper up tight. See Figure 39. Insure that sling legs are used in pairs--inside to one end, outside to opposite end.

c. Attach one of the shackle anchor screws to each of the 4 lifting shackles mounted on the 3/4 Ton Trailer.**

*Shackle Anchor Screws may be eliminated by attaching slings directly to lifting shackles.

**If the Trailer canvas top is removed, the sling legs must be wrapped with tape over scrap canvas to prevent chafing on the trailer.



FIGURE 38

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3/4 TON TRUCK

1. Rigging Equipment Required:

- 133
- 2 ea. Sling Endless: Nylon Webbing 7,500 lb (Doughnut)
FSN 3940-675-5001
 - 4 ea. Sling Cargo Aerial Delivery 13,500 lb 2 loop 16' lg
FSN 1670-753-3793
 - 4 ea. Shackle Anchor Screw FSN 4030-185-0490 (optional)

2. Method:

- a. Same as that used for rigging 3/4 Ton Trailer.
- b. Figure 39 shows the sling and anchor screw attachments.

1/2 TON TRUCK

1. Rigging Equipment Required:

Same as that used for rigging the 3/4 Ton Trailer.

2. Method:

- a. Same as that used for rigging the 3/4 Ton Trailer.
- b. Figure 40 shows the sling attachments at the vehicle lifting shackles.

1 1/2 TON TRAILER

1. Rigging Equipment Required:

Same as that used for rigging the 3/4 Ton Trailer.

2. Method:

Same as that used for rigging the 3/4 Ton Trailer.

NOTE: The sling legs must be passed inside the wooden bows on each end of the trailer or the slings will draw in and break the bows when airlifted. An alternate method is to remove the bows from each end of the trailer.

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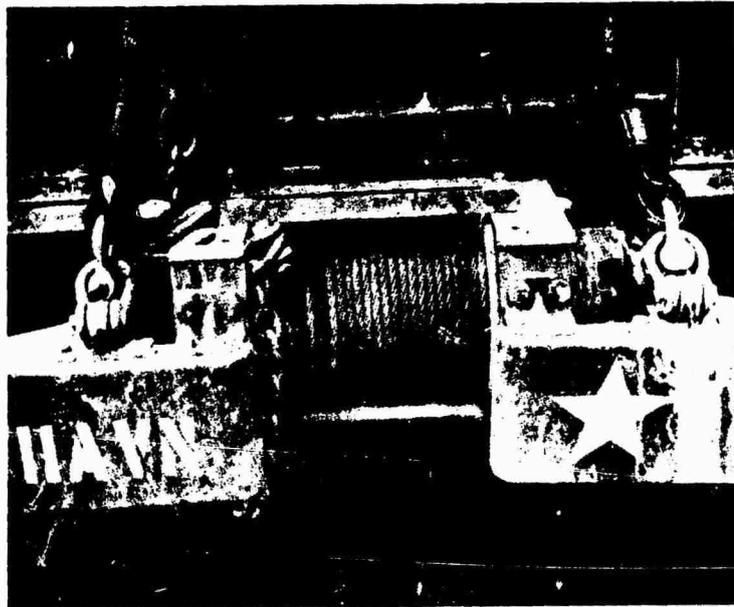


Figure 39
Attachment to lifting shackles using
shackle anchor screws

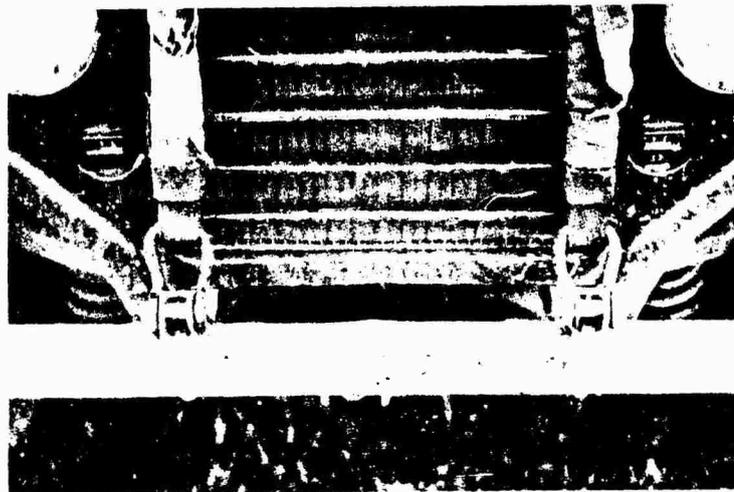


Figure 40
Attachment of slings to lifting shackle
Caution
Always insulate sling legs front and rear

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UNCLASSIFIED

AN/GRC - 46 RADIO VAN

135-
1. Rigging Equipment Required:

1 ea. Sling Endless: Nylon Webbing 7,500 lb (Doughnut) FSN 3940-675-5001

4 ea. Sling Endless: Nylon Webbing 2,500 lb Cap 4 ft lg 1 3/4" w or in lieu of the 4' and 8' 2,500# endless slings:

4 ea. Sling, Cargo Aerial Dal 13,500 lb Cap 2 loop 8 ft lg

4 ea. Shackle Anchor Screw FSN 4030-185-0490

2. Method:

Since the widest side of the AN/GRC - 46 is 6 feet, it is desirable to have sling legs 6 feet in length (see chapter 5 section III). To attain the six foot leg length, basket hitch a four and an eight foot sling together thus resulting in a six foot leg length. Each leg is connected to the Doughnut with a choker hitch. The four legs are attached to the van by use of anchor shackle screws.



Figure 41

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ENGINE CONTAINER

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1. Rigging Equipment Required:

- 2 ea. Sling Endless: Nylon Webbing 7,500 lb (Doughnut) FSM 3940-675-5001
- 4 ea. Clevis's compatible with lifting holes in the container
- 4 ea. Slings of the proper length and strength as derived from chapter 5 section III.

2. Method:

- a. Attach 4 slings to the 2 doughnuts using a choker hitch (see figure 23) to form 4 legs.
- b. Use the four clevis's to attach the 4 sling legs to engine containers.
- c. Some containers do not offer good attachment points for use of the above method. In this case, consider use of the 14' X 14' rope net. Set the engine container on the net and gather the net around the container in the same manner as shown in figure 42.

Note: Figure 42 shows a load prepared without the six feet of nylon between the load and the aircraft hook as specified in TM 55-1520-20-10. However, the leaders on the manila rope net are over six feet in length and have proven through experience, to absorb vertical bounce in the same manner as the nylon slings.



Figure 42

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1½ TON WATER TRAILER (STEEL)

1. Rigging Equipment Required:

- 137
- 2 ea. Sling Endless: Nylon Webbing 7,500 lb (Doughnut)
FSN 3940-675-5001
 - 4 ea. Sling Cargo Aerial Del: 13,500 lb 2 loop 9' 0/A lg
or
 - 4 ea. Sling Cargo Aerial Del: 13,500 lb 2 loop 11' 0/A lg
 - 4 ea. Shackle Anchor Screw FSN 4030-185-0490

or in lieu of above,

- 1 ea. Sling Cargo 4 leg Adjustable FSN 1670-823-5044

2. Method A:

a. Attach 4, 9 or 11' slings to the 2 doughnuts using a choker hitch (see figure 23) to form 4 legs.

b. Attach 1 shackle anchor screw or clevis to each sling leg by removing the screw bolt, slipping the shackle or clevis thru the sling loop end, putting the cotton insulator next to the metal and pushing the keeper up tight.

c. Attach one of the shackles or clevises to each lifting point (use lifting points next to the tank in front) on the trailer frame. Always attach sling legs in pairs--inside to one end, outside to opposite end. Insulate sling legs at points of contact with trailer.

3. Method B:

a. Using one 4 leg adjustable Cargo sling, adjust each leg to a length of 9½ feet.

b. Attach slings lifting hooks to lifting points on trailer frame (use lifting points next to tank in front). Always attach sling legs in pairs--inside to one end, outside to opposite end. Insulate sling legs at points of contact with trailer

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1½ TON WATER TRAILER (Fiber Glass)

1. Rigging Equipment Required:

2 ea. Sling Endless: Nylon Webbing 7,500 lb
(Doughnut) FSN 3940-675-5001

4 ea. Sling Cargo Aerial Del. 13,500 lb 2 loop
11' lg FSN 1670-753-3790 or 2 loop 12' lg
FSN 1670-753-3791

4 ea. Shackle Anchor Lever FSN 4030-185-0490
or Clevis Assy Suspension Bolt and Nut Type
Size 3 FSN 1670-360-0304

2. Method:

- a. Attach the 4-11 or 12 ft slings to the 2 doughnuts using a choker hitch as shown in Figure 23 to form 4 legs.
- b. Attach 1 clevis or shackle anchor screw to each sling leg by removing the screw bolt, slipping the shackle or clevis thru the sling loop end, cutting the cotton insulator next to the metal and pushing the keeper up tight.
- c. Attach one of the shackle anchor screws to each of the lifting points on the frame of the trailer (use forward lifting points on front of trailer). Always attach sling legs in pairs - inside to one end, outside to opposite end. Use canvas to insulate the legs of the sling where slings come in contact with the trailer.

Note: This trailer can be carried with a 4 leg adjustable sling. Adjust legs evenly to 10 feet (Figure 43). Attach in pairs inside to one end outside to opposite end. Insulate lower sling legs with canvas.

CAUTION

To preclude rear sling leg ratchets and attachment points of lower sling legs from rubbing on trailer, use two clevises to raise position of ratchets as shown in figure 44. Failure to use clevises will result in loss of load.

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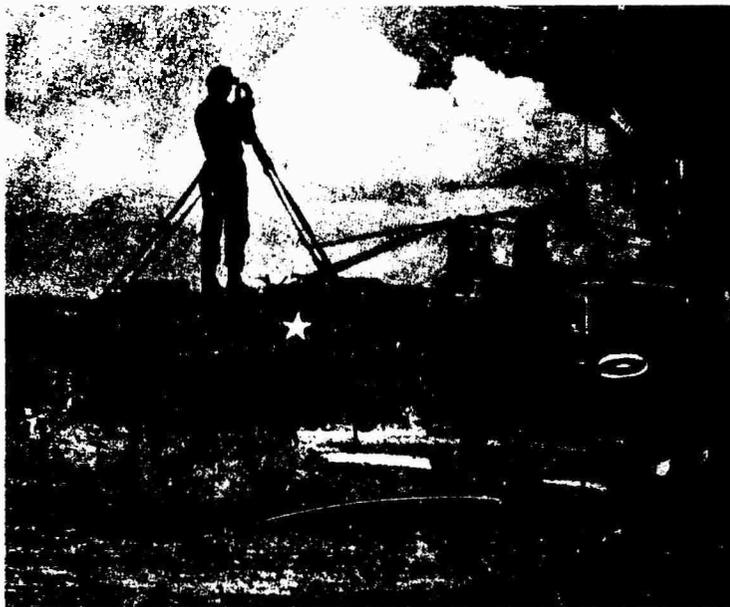


Figure 43
1½ ton fiberglass water trailer rigged with 4 leg adjustable sling

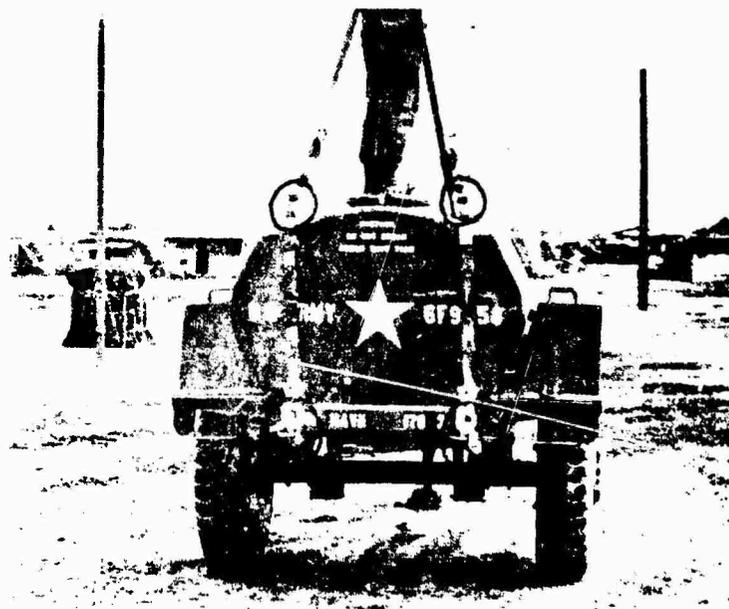


Figure 44
Clevises installed to raise ratchets on rear legs of sling
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CONEX CONTAINER

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1. Rigging Equipment Required:

- 2 ea. Sling Endless: Nylon Webbing 7,500 lb
(Doughnut) FSN 3940-675-5001
- 4 ea. Sling Cargo Aerial Del 13,500 lb 2 loop 9' lg
FSN 1670-753-3789
- 4 ea. Shackle Anchor Screw FSN 4030-185-0490
or
- 4 ea. Clevis Nuts Suspension Bolt and Nut Type Size 3
FSN 1670-360-0304

2. Method:

- a. Attach the 4 9-ft Slings to the 2 Doughnuts,* using a choker hitch as shown in Figure 23, to form 4 legs.
- b. Attach 1 clevis or shackle anchor screw to each sling leg by removing the screw bolt, slipping the shackle or clevis thru the sling loop end, putting the cotton insulator next to the metal and pushing the keeper up tight.
- c. Attach one of the shackle anchor screws to each of the 4 corner lifting brackets mounted on the Conex Container. Always attach sling legs in pairs - inside to one end, outside to opposite end.

MARK 69 COMMUNICATIONS VAN

1. Rigging Equipment Required:

Same as Conex Container

2. Method:

Same as Conex Container

*In some cases it may be desirable to further stabilize the load by using three Doughnuts.

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38' Dry Span Bridge

1. Equipment required:

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2 ea. Sling endless: Nylon webbing 7,500 lb (doughnut)
FSN 3940-675-5001

4 ea. Sling cargo aerial del 13,500 lb 2 loop 20' lg
FSN 1670-753-3794

4 ea. Bolts 1" dia X 4"

or

4 ea. Medium clevis's

2. Method:

a. Attach 4-20' sling to the 2 doughnuts using a choker hitch as shown in figure 23 to form 4 legs.

b. Use four 1" bolts to attach the four sling legs at the most outboard balk attachment hole on the second stiffener inboard from each end as shown in figure 45. Slings may also be attached to four clevis's which are in turn connected to outboard lifting points on stiffeners.



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12' AND 15' BRIDGE BALK

1. Rigging Equipment Required:

- 2 ea. Sling Endless: Nylon Webbing 7,500 lb
(Doughnut) FSN 3940-675-5001
- 4 ea. Sling Cargo Aerial Delivery 13,500 lb
2 loop 16' lg FSN 1670-753-3793
- 4 ea. Shackle Anchor Screws

2. Method:

- a. Attach 4 - 12' slings to the 2 doughnuts using a choker hitch (see figure 23) to form 4 legs.
- b. Band the balk load together with cables or straps as shown in figure 46.
- c. Attach ends of sling to balk by use of shackle anchor screws, or suitable clevis, through the holes in the lips that are normally used to attach the balk to the stiffeners. The four sling legs should be insulated at points where sling legs rub against balk. Hand holds on balk should not be used for lifting the balk load since these pipes are held only by a weld.



Figure 46

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M-102 MORTAR WITH "PIGGY BACK" LOAD OF AMMUNITION

1. Rigging Equipment Required:

- 3 ea. Sling Endless: Nylon Webbing 7,500 lb (doughnut)
FSN 3940-675-5001
- 1 ea. Sling Cargo 13,500 lb 8' lg FSN 1670-753-3789
- 1 ea. Sling Cargo 13,500 lb 9' lg FSN 1670-753-3790
- 1 ea. Sling Cargo 13,500 lb 12' lg FSN 1670-753-3792
- 1 ea. Sling Cargo 13,500 lb 20' lg FSN 1670-753-3794
- or
- 1 ea. Sling Cargo 13,500 lb 16' lg FSN 1670-753-3793
- 1 ea. Bag Cargo Aerial Del, A-22 FSN 1670-242-9169
- 1 ea. Shackle Anchor Screw FSN 4030-185-0490
- or
- 1 ea. Clevis assy size 5 FSN 1670-090-5354

2. Method: (See Figure 47)

a. Attach one end of the 9' sling to the two doughnuts using a choker hitch (A1). See Figure 23. Attach the opposite end to the lift point on the gun tube (A2).

b. Loop the 12' sling through the two doughnuts (B1).

c. Attach the 8' sling to one of the trail lifting points (C1). Thread the loose end through one end of the 12' sling, through a doughnut, through the other end of the 12' sling (C2) and then attach the sling to the opposite point on the trail (C3).

d. Attach the 16' or 20' sling to the two doughnuts using a choker hitch (D1). Thread the loose end of the sling through the doughnut at the junction of the 8' and 12' slings and under the trail to the piggy back load (D2). The sling is attached to the cargo bag by use of a shackle anchor screw or size 5 clevis (D3).

e. The A-22 Cargo Bag will normally be loaded with sixty rounds of ammunition plus other items as required by the artillery unit.

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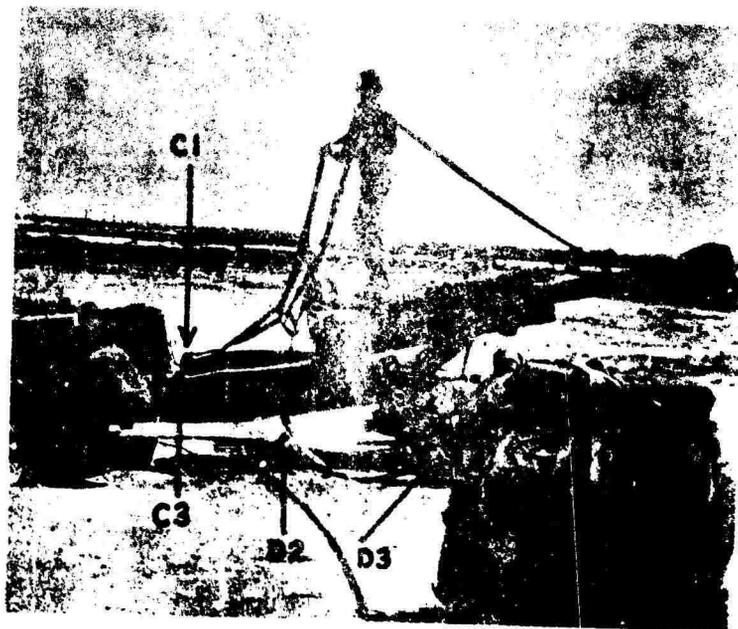


Figure 47
Rigging of M-102 Howitzer with "piggy-back" load of ammunition

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M-55 QUAD 50 CAL. MACHINE GUN MOUNT WITH AMMUNITION

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1. Rigging Equipment Required:

- 2 ea. Sling Endless: Nylon Webbing 7,500 lb (doughnut)
FSN 3940-675-5001
- 1 ea. Sling Cargo 13,500 lb 12' lg FSN 1670-753-3792
- 2 ea. Shackle Anchor Screw FSN 4030-185-0490
- 1 ea. 4 leg lifting harness, legs 2' lg
- 1 ea. 2"X12"X4' wood plank

2. Method: (See Figure 48

a. Attach the four leg lifting harness to the four lifting points on the top of the gun mount (A1). If a cable harness is not available, a suitable harness can be made using 2500 lb slings and clevises.

b. Load the A-22 Cargo Bag with ammunition and other gear as desired.

c. Place a 4' plank through the bag as shown in figure 48. Positioning of the plank in this manner precludes bending of ammo containers during flight.

d. Attach the 12' sling to the two doughnuts using a reverse choker hitch as shown in figure 48 to form two legs (D1). Attach one sling leg to the large ring on the 4 leg lifting harness. Attach the other leg to the A-22 cargo bag using shackle anchor screws or suitable clevises (D2). Insure that the shackle anchor screw or clevis is not positioned so as to cause a side load on the clevis.

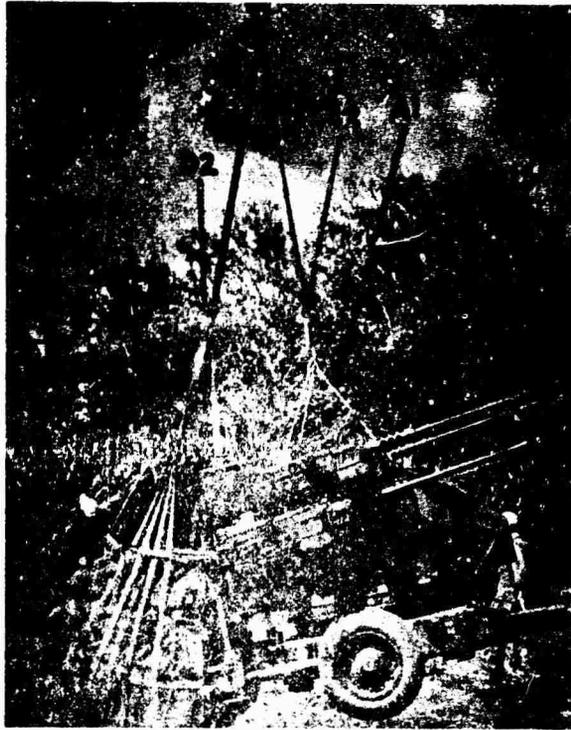
NOTE: The sling described in paragraph 2d can be used effectively for lifting two A-22 cargo bags instead of using 4 leg adjustable sling as shown on page X-1.

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Rigging of M-55 cal machine gun mount with ammunition

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LOADING BAG CARGO AERIAL DELIVERY A-22

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FIGURE 49

The A-22 Cargo Bag FSN 1670-242-9169, can be used for transportation of numerous commodities including ammunition, rations, ice, water cans and rice. Figure 49 depicts loading 80 rounds of 105 ammunition in each A-22 bag with a 4 leg adjustable sling adjusted to 6 feet used to lift the bags. It is recommended that when sufficient cargo bags are available, loads be limited to 2000 lbs and four bags be used for the Chinook load. However, the A-22 bag, in good condition has consistently carried the above load without failure.

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Loading the 12' X 12' Nylon Cargo Net FSN 3940-892-4375

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FIGURE 50

The 12' X 12' Nylon Cargo Net, FSN 3940-892-4375, can be used for transportation of numerous commodities including ammunition, rations, rice, barrels and repair parts. Figure 50 depicts loading 160 rounds of 105 ammunition. Since this net is constructed of nylon, care must be taken to insure that sharp objects do not cut the net. It is desirable, as shown above, to use a tarpaulin to distribute load stresses, preclude small objects falling out and reduce wear on the net.

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Loading the 14' X 14' Para-Net

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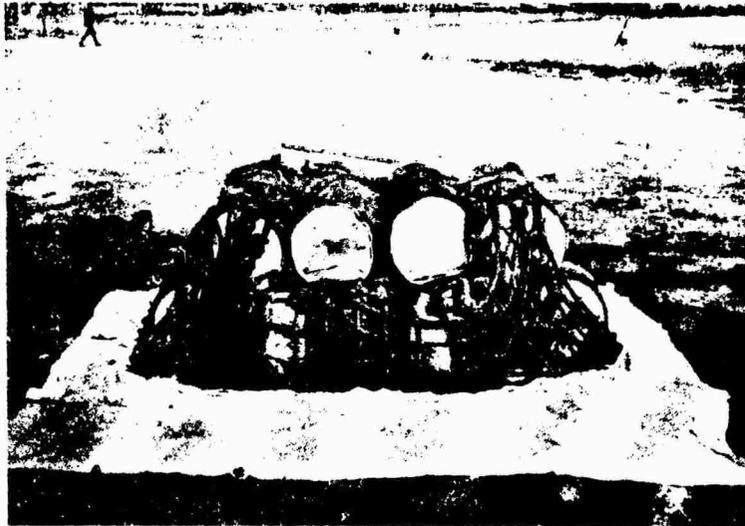


FIGURE 51

The 14' X 14' rope net FSN 3940-540-4098 (Figure 51) is the most rugged of all cargo nets. The greatest disadvantage of this net is its weight (128 lbs when dry). It can be used for hauling up to 20 barrels, depending on the weight of the contents, ammunition, rations, repair parts, cement and other building materials of appropriate size. When hauling such items as ammo in the fiber containers, a tarpaulin should be used to preclude rounds from slipping through the rope mesh.

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APPENDIX XI
ARM AND HAND SIGNALS



DESIRED LANDING
DIRECTION
Arms rigid & overhead



STOP or HOLD
Arms crossed above
head, palms turned
toward helicopter



MOVE FORWARD
Elbows flexed, palms at
eye level facing inward,
move arms repeatedly back-
ward, beckoning onward



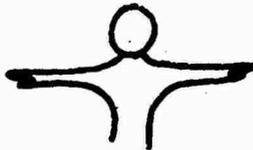
MOVE REARWARD
Hold hands down by side;
face palms forward & with
elbows straight, repeatedly
move arms forward & backward



MOVE RIGHT
Extend left arm
horizontally side-
ways. Swing right
arm in front of
body to indicate
direction of move-
ment; repeat



MOVE LEFT
Extend right arm
horizontally side-
ways. Swing left
arm in front of
body to indicate
direction of move-
ment; repeat



HOVER
Extend arms
horizontally
sideways



MOVE UPWARD
Extend arms horizon-
tally to the side,
beckoning upward with
palms turned up



MOVE DOWNWARD
Extend arms horizon-
tally to the side,
beckoning downward with
palms turned down



LAND
Cross and extend arms
downward in front of the body

NIGHT SIGNALING: At night, signals will be given by using batons or flashlights, one in each hand. Signals will be identical to day signals except the STOP signal will be made by crossing batons or flashlight beams before the face. When using flashlights, care must be taken to avoid blinding the pilot.

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APPENDIX XII

LOAD CARD FOR RESUPPLY OPERATIONS

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LOAD CARD	
	DATE _____
UNIT _____	CONTENTS OF LOAD

LOCATION _____	_____

CALL SIGN _____	_____

FREQUENCY _____	REMARKS _____

REMARKS _____	_____

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