

Appendix F

Heliborne Artillery Raid

Heliborne artillery raids require unique planning considerations and preparation. This appendix outlines tactics, techniques, and procedures which serves as a guideline for conducting heliborne artillery raids. Additional information may be referenced in MCWP 3-41.2, Raid Operations.

General

a. Definition. An artillery raid is the movement of an artillery unit (or portion of that unit) to a designated firing position in order to attack a high pay-off target(s) with artillery fires followed by the immediate withdrawal to a safe location.

b. Characteristics. The artillery raid is a unique operation because the firing position is usually beyond the beachhead or FLOT. Due to the limited protection at these locations speed and surprise are essential. The intent is to rapidly insert an artillery force and swiftly deliver artillery fire on single or multiple targets. This must be done using the minimum amount of equipment and personnel to accomplish the mission. The planning process should allow for the force to withdraw immediately upon completion of the fire mission. These characteristics will govern the planning and execution phases of the operation.

c. Command and Control. The senior maneuver commander assigns an artillery raid to an artillery battery or battalion. The raid force consists of five elements: command, support, assault, security, and observer. The senior artillery commander assigned the raid mission is the Raid Force Commander (RFC). The mission commander for the artillery raid is assigned from the supporting helicopter squadron. Open and direct communications between the artillery raid and mission commanders during the planning phase are imperative for the raid to be successful.

d. Mission Profile. Commanders and staff must understand the purpose of the raid as soon as the mission is assigned (upon receipt of the warning order). There must also be an understanding of the risk involved and the possible loss of key personnel and equipment. This understanding is extremely important, as it will guide many of the decisions during the planning process. The following missions may be assigned to the artillery raid force:

(1) Destroy – permanently render a target combat ineffective, with 30% or more casualties (or as directed in appropriate orders). This mission is best accomplished with a forward observer equipped with a laser and accurate locating device.

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2 **(2) Neutralize** – temporarily rendering enemy personnel or material operationally
3 ineffective, with 10% or more casualties (or as directed in appropriate orders). This mission is
4 best accomplished with a forward observer.

5
6 **(3) Suppress** – preventing enemy personnel, weapons, or equipment from engaging
7 friendly forces.

8
9 **(4) Harass** – confusing, disorganizing, or degrading enemy forces.

10
11 **(5) Deceive** – deceiving the enemy as to the true intent of friendly units.

12
13 **(6) Interdict** – preventing the enemy from using an area, route, or point.

14
15 **e. Security Levels.** Based on the enemy threat at the firing position, one of the
16 following security levels will be utilized:

- 17
18 • **Security Level I** – negligible threat to friendly forces.
19 • **Security Level II** – squad-size enemy units or smaller threatening raid site.
20 • **Security Level III** – enemy units larger than a squad-size threatening raid site.

21
22 **f. Raid Force Elements.** The artillery raid force consists of the five aforementioned
23 elements. Based on the situation, the RFC determines the final composition of his force. This
24 composition is dependent on helicopter availability and the helicopter embarkation plan. A
25 brief description of the five raid force elements is provided below.

26
27 **(1) Command Element.** The command element provides command and control for
28 the raid force and maintains communications with the MEU or ground element.

29
30 **(2) Support Element.** The support element provides fire direction, lays the
31 howitzers, lays wire (if required), and provides support for helicopter transport of howitzers.

32
33 **(3) Assault Element.** The assault element provides gun crews, howitzers, and
34 ammunition for the raid.

35
36 **(4) Security Element.** The security element provides local security for the raid
37 force; which includes the sweeping of the raid position and establishing perimeter defense.

38
39 **(5) Observer Element.** The observer element observes fires on the target and
40 reports Battle Damage Assessment (BDA) to the controlling FDC. This element can include
41 forward observer teams, reconnaissance teams, aircraft, etc. Not all fires are required to be
42 observed. The type of observer, if employed, is situationally dependent.

NOTE: The command and support elements are considered the advance party. During security level II and III operations, the security element will precede the advance party into the firing position.

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Mission Planning Steps

For the execution of a successful raid, planning must be detailed, however, there will be occasions when the time available between the initiating directive (warning order) and L-hour will be compressed. Under these circumstances, the planning phase will be considerably shortened. It is essential that every Marine understands his responsibilities and is competent. Rehearsals are vital tools whenever METT-T permits.

a. Planning Considerations. During the planning cycle, several different considerations relating to the conduct of the raid must be addressed. These include, but are not limited to:

(1) Target. The nature of the target will dictate the number of weapons, amount of ammunition, type of observer, etc.

(2) Number of Weapons. The optimum number of howitzers for a raid is four. This number may vary depending on the nature of the target and helicopter support available.

(3) Ammunition. Based on the nature of the target, required ammunition will be determined via munitions effects tables or attack guidance criteria.

(4) Aircraft. The M198 can be transported externally by the CH-53E only. A four gun raid requires four CH-53Es to lift the guns, ammunition, and gun crews. Ideally, there are also two CH-46s for the advance party and one CH-53E to retrieve the howitzer sections upon extraction available. Additional aircraft may include attack helicopter escorts for ingress and egress protection and to assist the security element as they deploy into the LZ. A UH-1N may be necessary to serve in a C3 capacity as well. Specific requirements based on the number of howitzers and security level are provided in figure F-3.

NOTE: The XM 777 will provide commanders with more flexibility due to its light weight and pre-planned program improvement (P3I). The XM 777 will be transportable by the CH-53E, CH-53D, and V-22.

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b. Landing Zone (LZ) Considerations. Under most circumstances the longest effective standoff range is desired. This distance will be dependent on ammunition type (propelling charge/projectile). LZ site studies will be conducted, if time permits. It is important that the altitude of the target be taken into consideration, as a target with a high

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1 above gun altitude will decrease the maximum range of the weapon system. At a minimum an
2 alternate and primary LZ will be planned. False insertion sites will also be planned in order to
3 further deceive the enemy of the true intent of the mission. The following factors are a guide
4 in the selection of specific LZ locations:

5
6 **(1)** The LZ should be capable of accommodating the simultaneous insertion of all
7 helicopters with howitzers in the wave with the most serials.

8
9 **(2)** Natural cover and concealment should be present, but not so prohibitive as to
10 present a restrictive XO's Min QE.

11
12 **(3)** A nearby area must be designated to stage the helicopters during the mission.
13 The situation will dictate whether the staging area will be airborne or in a nearby LZ.

14
15 **(a)** The staging area should be out of enemy reach in order to minimize the
16 potential of enemy engagement.

17
18 **(b)** The area should offer covered and concealed air routes both into and out of
19 the LZ.

20
21 **(4)** The soil composition of the LZ should be appropriate to accommodate firing
22 high propellant charges.

23
24 **(5)** Surface materials must be stable to prevent debris from clogging engines. Loss
25 of visibility, possible personnel injury, or damage to the helicopter from flying objects must be
26 considered. Trafficability for vehicular, troop, and logistic mobility is a consideration which
27 dovetails with that from the purely helicopter aspect. The following specific surface conditions
28 should be evaluated:

- 29
30
- Grass and vegetation from newly mowed fields can clog engine intakes.
 - Loose dirt and sand can cause damage to engine and rotor blades, temporary loss of visibility, and is a safety hazard for both the aircrew and the lifted troops.
 - Snow is not recommended as an LZ surface without prior recon because it may restrict visibility, the underlying surface may be unsatisfactory, may be too deep for landing, and surface unevenness may be obscured by drifts.
 - Dry grasslands represent a fire hazard when exposed to hot exhaust gases.
 - Flooded rice fields which are mire and water of greater depth than is anticipated, hinder troop movement.
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41 **(6)** Obstacles in the LZ must be evaluated. Tall grass or brush which appears
42 relatively smooth from the air, can conceal humps, boulders, or terrain faults which could
43 damage or tip a landing helicopter. The LZ should be free of debris, stumps, rocks, holes,
44 and trenches that exceed ten inches in height or depth. Brush, if over three feet high, is

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1 usually considered restrictive to landing helicopters because of damage to fuselage and tail
2 rotors.

3
4 (7) The nature of approaches to and exits from the LZ must also be evaluated. It is
5 undesirable to establish LZs in locations that require vertical ascent or descent by helicopters
6 operating within. To permit the most effective use of helicopters, approaches to and exits from
7 LZs must be clear of communications wire, trees, powerlines, and other vertical obstacles,
8 particularly when conducting mass landings. Required LZ site is directly associated with the
9 height of obstructions surrounding the LZ and number of helicopters to be landed at one time.

10
NOTE: In order to accurately assess these considerations, recent intelligence must be
available. If intelligence data is not yet available, it must be arranged immediately
before planning can be completed.

11
12 **c. Landing Zone Marking Considerations.** The method used to mark personnel and
13 equipment (howitzer/ammunition) insertion and extraction points will be discussed with the
14 pilots in advance during the initial mission brief in order to eliminate confusion in the LZ. If
15 this fails to occur, a HLZ brief can be used to inform the pilots how the LZ is being marked
16 (see figure F-6).

17 18 (1) Daytime Operations

19
20 (a) **Smoke.** Smoke may be used to draw the pilot's eyes onto the zone as well
21 as demonstrate wind speed/direction. It may also be used to mark a specific point for the
22 insertion/extraction of personnel or equipment.

23
24 (b) **Air Panels.** Air panels may be used to depict the azimuth of fire in addition
25 to a back up for smoke. Caution must be taken when emplacing air panels to ensure they are
26 not disrupted from rotor wash.

27 28 (2) Nighttime Operations

29
30 (a) **Chemlights.** Infrared/red chemlights are the most visible to pilots wearing
31 NVGs. They may be used in the same capacity as smoke and air panels.

32
33 (b) **Infrared Strobes.** Infrared strobes are extremely useful for marking during
34 low visibility. One technique for employing strobes in an LZ is as follows:

- 35
36
- Strobe on muzzle brake
 - Strobe 20m forward of howitzer on deck
 - Strobe 40m forward of howitzer on deck
- 37
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1 **d. Howitzer Considerations.** Howitzers desire to hover/land/takeoff facing into the
2 wind. When possible, choose an LZ that best accommodates the howitzers,
3 insertion/extraction points, and the wind. Additional considerations include:

4
5 **(1)** Howitzer should face into the wind.

6
7 **(2)** Ample room should be available to the right of the howitzer for the personnel
8 extraction point. This ensures personnel are away from the tail rotor when embarking the
9 helicopter.

10
11 **(3)** When room is not available to the right of the howitzer, ample room should be
12 to the rear of the howitzer.

13
14 **(4)** The gun section should wait next to the howitzer for the helicopter to land at the
15 personnel extraction point. This reduces unnecessary movement in the LZ and provides
16 additional maneuvering for the helo.

17
18 **(5) Slope.** The slope of the LZ must also be considered and tempered against the
19 wind speed and direction at the LZ. The slope must not exceed eight degrees where the helo is
20 intended to land for risk of tipping or insufficient rotor clearance. The slope must not exceed
21 five degrees where the howitzer is intended to be positioned as this prevents the howitzer from
22 firing.

23 **e. Helicopter Support Team (HST) Considerations.** HST personnel must be actively
24 involved in the raid brief and rehearsals prior to the raid. Considerations for augmentees to
25 gun crews, security forces, etc. must be addressed.

26 **f. Firing Data.** Firing data for all howitzers will be precomputed using BUCS if at all
27 possible. All available information affecting ballistic computations will be inputted prior to the
28 raid. Data will be computed from each LZ using the lowest charge to limit any site-to-crest
29 problems. Data will be given to the section chiefs in advance and will be based on a map spot
30 grid unless survey control is established.

31 **g. Go/No-Go Criteria.** Certain criteria must be established prior to the start of the
32 mission and to aid in deciding if the mission should continue under duress. These criteria
33 serve solely as guidelines with the mission commander having final deciding authority. The
34 following is one technique when determining No-Go criteria:

35 **(1)** If both advance party helicopters are lost.

36 **(2)** If the raid element loses more than 50% of its howitzers/ammunition.

37 **(3)** If the minimum number of helicopters required to conduct the mission is not
38 available.

39 **(4)** Loss of communications with the mission commander.

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Duties of Key Personnel

a. RFC

- (1) Determine viability of raid.
- (2) Direct the mission planning process.
- (3) Select firing positions maintaining dispersion between howitzers.
- (4) Ensure the advance party is in the correct LZ.
- (5) Determine the following upon arrival at the raid LZ:
 - Orienting station/FDC location.
 - Howitzer locations.
- (6) Ensure the LZ is secure.
- (7) Supervise the smooth operation of all aspects of the raid.
- (8) Supervise the marking of the LZ.
- (9) Ensure accountability upon extraction of personnel and equipment.

b. Executive Officer/Platoon Commander

- (1) Inspect artillery raid personnel, equipment, and ammunition.
- (2) Ensure communications are maintained with the RFC and the helicopter mission commander.
- (3) Set up and orient the aiming circle.
- (4) Lay the howitzers
- (5) Assist in hasty survey, MET data, and computing data as required.

c. Battery Gunnery Sergeant

- (1) Emplace the local security force.

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1 (2) Ensure accountability of personnel and equipment.

2
3 (3) Ensure rapid emplacement of howitzers.

4
5 (4) Ensure preparations for rapid extraction.

6
7 **d. Ops Chief**

8
9 (1) Supervise FDC planning and ensure all BUCS have all pre-computed data
10 loaded.

11
12 (2) Set up GPS at aiming circle (if survey team is unavailable).

13
14 (3) Collect data for technical fire direction and supervise firecontrolman inputting
15 data.

16
17 (4) If time permits, input data in back up computer system.

18
19 (5) Set up chart and check firing data.

20
21 (6) Supervise issuing of fire commands.

22
23 (7) Ensure all maps, records, and FDC equipment are extracted.

24
25 **e. Section Chiefs**

26
27 (1) Ensure all personnel and equipment are ready. Conduct detailed inspection of
28 gear and personnel prior to raid.

29
30 (2) Ensure rapid offload of ammunition and gun.

31
32 (3) Begin ammunition preparation prior to receiving fire commands.

33
34 (4) Supervise the rapid emplacement, firing, and extraction of the howitzer.

35
36 (5) Maintain communications with the RFC.

37
38 (6) Be prepared to assume security mission on order.

39
40 (7) Ensure recovery of all personnel and equipment upon extraction.

41
42 **f. Fire controlman**

43
44 (1) Input all preplanned data in all BUCS prior to departure for raid.

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1 (2) Prepare charts and Records of Fire (ROFs) prior to departure for raid.

2
3 (3) Prepare computer checklist and be prepared to enter data upon arrival at firing
4 position.

5
6 (4) Maintain ROF.

7
8 (5) Send fire commands to howitzers once approved by Ops Chief.

9
10 (6) Be prepared to receive subsequent corrections.

11
12 (7) Extract all records and equipment.

13 14 g. Radio Operator

15
16 (1) Establish preplanned communications as quickly as possible and as close to the
17 FDC as terrain and helicopter routes will allow.

18
19 (2) Establish communications with the following priorities:

- 20
21
 - Observers (as required)
 - Helicopters
 - Higher headquarters
 - Simo master station (as required)

22
23
24
25
26 (3) Pass all necessary information to the FDC and the RFC.

27
28 (4) Maintain communications until directed.

29
30 (5) Recover all communications equipment and material including messages and
31 notes upon extraction.

32 33 h. Gun Guides

34
35 (1) Set up panel markers/chem lights as briefed to mark location for the assault
36 element.

37
38 (2) Establish communications with aiming circle/FDC.

39
40 (3) Record initial deflection.

41
42 (4) Act as a legman under guidance of HST leader (as required).

43
44 (5) Assist in providing local security until howitzers arrive.

45

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1 **(6)** Announce initial deflection to gunner.

2
3 **(7)** Assist in emplacing, firing, and march ordering of howitzer.

4
5 **(8)** Ensure all howitzer equipment is extracted.

6
7 **i. Security Element**

8
9 **(1)** Receive briefing on layout of landing zone/firing position prior to raid.

10
11 **(2)** Upon landing, conduct sweep of area.

12
13 **(3)** Establish perimeter security.

14
15 **(4)** Report security status as directed to the RFC.

16
17 **j. Corpsman**

18
19 **(1)** Have medical equipment necessary for raid mission.

20
21 **(2)** Upon landing, stay with FDC.

22
23 **(3)** Respond to any calls for medical attention.

24
25 **k. Survey Personnel (if required)**

26
27 **(1)** Determine firing point location.

28
29 **(2)** Establish direction.

30
31 **l. HST Leader**

32
33 **(1)** Provide all required personnel and equipment to quickly guide helicopters onto
34 marked howitzer positions, and recover howitzer at the end of the mission.

35
36 **(2)** Inspect howitzers and ammunition slings before departure. Report findings to
37 the artillery raid commander.

38
39 **(3)** Assist gun guides in marking howitzer positions.

40
41 **(4)** Assist in rapid insertion of howitzers.

42
43 **(5)** Upon the order to CSMO, inspect howitzer loads and slings and assist in
44 preparation for extraction.

45

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1 **(6)** Guide helicopters in and supervise the reattaching of howitzers.
2
3

4 **Execution Sequence**

5
6 **a. Insertion.** Security element/advance party arrives at the firing position and:

7
8 **(1)** Secures the site and establishes perimeter defense.
9

10 **(2)** Conducts hasty survey to establish firing position location and direction (as
11 required).

12
13 **(3)** Establishes communications with observers and the MEU (or ground element) as
14 directed.

15
16 **(4)** Positions the aiming circle and prepares the gun position for howitzers.
17

18 **(5)** Computes firing data (if not previously computed).
19

20 **(6)** Prepares for arrival of the assault element.
21

22 **b. Actions in Firing Position.** The assault element arrives at the raid site and
23 conducts the following:

24
25 **(1)** Positions and prepares ammunition once it arrives at the firing position.
26

27 **(2)** Lays the howitzers.
28

29 **(3)** Conducts and completes firing.
30

31 **(4)** Prepares the howitzers for extraction.
32

NOTE: The observer element (if required) reports BDA to the controlling FDC.

33
34 **c. Extraction**

35
36 **(1)** All elements prepare for extraction:
37

38 **(a)** Collect all refuse from the raid site and prepare to retrograde.
39

40 **(b)** Extract assault element.
41

42 **(c)** Extract advance party, observer, and security elements.

1
2 (2) All elements conduct a mission debrief.
3
4

5 Survey Operations in Helicopterborne Artillery Raids

6
7 During a helo raid, battalion survey support may not be available, unless a Position Azimuth
8 Determining System (PADS) is used via a UH-1 (refer to TM 5-6675-308-12 for installation
9 procedures). If PADS is not available, it will be necessary for the firing battery to use
10 expedient means to determine direction, location, and height. Direction is the most important
11 element of survey and every available means will be used to determine an accurate direction.
12 An error in direction is magnified over distance whereas an error in location is constant.
13

14 a. The following methods of determining direction are listed in preferred order.

15
16 (1) **Gun Laying Positioning System (GLPS).** The GLPS contains a gyroscope
17 that will provide azimuths to ± 0.2 mils Probable Error (PE).

18
19 (2) **PADS.** The PADS contains a gyroscope that will provide azimuths to ± 0.4
20 PE.

21
22 (3) **BUCS/Hasty Astro.** This program enables the battery to determine direction
23 to various accuracies dependent upon the type of instrument. If the firing battery has attached
24 a battalion surveyor with a T-2E theodolite, the accuracy of an astronomic observation with
25 this instrument is ± 0.3 mils. If the firing battery is using an M2A2 aiming circle, the
26 accuracy of an astronomic observation is ± 2.0 mils. In order to perform an astronomic
27 observation, one of the known celestial bodies (i.e. the sun or one of 73 survey stars) must be
28 visible from the OS. Inclement weather, heavy overcast, or smoke may negate this method.
29

30 (4) **North Finding Module (NFM).** The NFM is the gyroscope used with the
31 Modular Universal Laser Equipment (MULE) and Target Location Designation Handoff
32 System (TLDHS). The NFM can be placed into a survey mode, which will provide an
33 accurate direction to ± 2.0 mils.
34

35 (5) **Declinated M2A2 Aiming Circle.** A declinated aiming circle could be used as
36 a last resort, if the instrument was declinated within 40 kilometers of the firing position. A
37 declinated aiming circle will provide a direction to an accuracy of ± 10.0 mils.
38

NOTE: The Declination Constant of an aiming circle may be affected by the strong
magnetic field generated by the rotors of a helicopter.

39
40 b. The following are methods of determining location:
41

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1 **(1) GLPS.** The GLPS is used in conjunction with a Precise Locating GPS Receiver
2 (PLGR). The PLGR with valid crypto variable keys loaded and verified will provide a
3 location to an accuracy of 10 meters CEP (refer to MCWP 3-16.7 for explanation of Circular
4 Error Probable).
5

6 **(2) PLGR.** The PLGR with valid crypto variable keys loaded and verified will
7 provide a location to an accuracy of 10 meters CEP. The advantage of the PLGR is that it is a
8 hand-held unit but it cannot provide accurate direction.
9

10 **(3) PADS.** The PADS in a UH-1 will provide location using 10 minute Zero-
11 Velocity Updates to an accuracy of seven meters CEP between 0-65 degrees latitude (N or S)
12 and 10 meters CEP between 65-75 degrees latitude (N or S). The advantage of the PADS is
13 that it provides accurate direction, location, and height. However the PADS/UH-1 must be
14 landed at the OS and the EOL to establish positioning and orientation.
15

16 **(4) Hasty Three-Point Resection.** After determining an accurate direction, a three-
17 point resection can be performed by either using the BUCS, BCS, or graphic resection. The
18 accuracy of a three-point resection is dependent upon the accuracy of the location of the visible
19 known points and the angle-measuring instrument available. The accuracy of a three-point
20 resection is seldom better than 50 meter CEP.
21

22 **(5) Map Spot.** A map spot is the least preferred method of determining location.
23 The accuracy of a map spot is dependent upon the availability of prominent terrain features,
24 the accuracy of the map, and the proficiency of the individual performing the map spot. All
25 other means of determining location will be exhausted before resorting to this method.
26

27 c. The following methods of determining height are listed in preferred order.
28

29 **(1) GLPS.** The PLGR, with valid crypto variable keys loaded and verified, is part
30 of the GLPS and it will provide height to an accuracy of 10 meters PE. The displayed height
31 from the PLGR should be checked by determining a height from the map using the PLGR
32 coordinates. Non-Crypto PLGRs should never be used to determine height as their accuracy is
33 unpredictable.
34

35 **(2) PADS.** The PADS will provide an accurate height to three meters PE. The
36 PADS is more accurate than the PLGR in both location and height, but the required logistical
37 support, as well as the fact it must be positioned on the OS, relegates this system to the second
38 most preferred method.
39

40 **(3) Hasty Three-Point Resection.** After determining an accurate direction, a three-
41 point resection can be performed and the coordinates used to derive a height from the map.
42

43 **(4) Map Spot.** This method is to be used only as a last resort after all other means
44 have been exhausted.

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ARTILLERY RAID AMMUNITION REQUIREMENTS

1. Small Arms

<u>DODIC</u>	<u>NOMEN</u>	<u>ROUNDS PER WEAPON</u>
A363	9mm ball	30
A071	5.56 ball	180
A131	7.62 linked ball	400
A576	.50 cal ball	200
B546	40mm HEDP	10
G881	M67 Frag Grenade	2 per man
G900	Thermite Grenade	2 per Section Chief

2. M198/LW 155 155mm Ammunition

<u>DODIC</u>	<u>NOMEN</u>	<u>ROUNDS PER HOWITZER</u>
D563	Shell DPICM	16
N286	M577 Fuze MTSQ	16
N523	M82 Primer	16
D541/D533	Propellant Charge (GB/WB)	16

3. The above loads are provided as an example. The type and amount of small arms will be based on the security level, whereas, the type and amount of artillery ammunition will be based on lift availability, munitions effects tables, and/or attack guidance.

Figure F-1. Example Artillery Raid Ammunition Requirements

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ARTILLERY RAID TASK ORGANIZATION

1. Command Element (same for all security levels)

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
1	1stLt	XO/Plt Cmdr	0802	9mm	
2	Sgt	RTO	2531	M16A2	1
3	Cpl/LCpl	RTO	2531	M-203	1

2. Support Element (same for all security levels)

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
4	SSgt	Ops Chief	0848	9mm	
5	Sgt	Artillery Mechanic		M16A2	
6	Cpl	Firecontrolman	0844	M16A2	1
7	Cpl	HST	0481	M16A2	1
8	LCpl	HST	0481	M-203	1
9	HM3	Corpsman	8404	9mm	
10	Cpl/Pvt	Wireman	2512	M16A2	3
11	Sgt	Survey	0843	M16A2	1,3
12	LCpl/Pvt	Survey	0843	M16A2	1,3

3. Assault Element (same for all security levels)

Gun Number - One

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
13	SSgt/Sgt	Section Chief	0811	9mm	
14	Cpl/Pvt	Gun Crewman	0811	M-203	1
15	Cpl/Pvt	Gun Crewman	0811	M16A2	1
16	Cpl/Pvt	Gun Crewman	0811	M16A2	1
17	Cpl/Pvt	Gun Crewman	0811	M16A2	1
18	Cpl/Pvt	Gun Crewman	0811	M16A2	1
19	Cpl/Pvt	Gun Crewman	0811	M16A2	1
20	Cpl/Pvt	Gun Crewman	0811	M16A2	1
21	Cpl/Pvt	Gun Crewman	0811	M16A2	1

Figure F-2. Example Artillery Raid Task Organization

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1 **Gun Number – Two**

2

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
22	SSgt/Sgt	Section Chief	0811	9mm	
23	Cpl/Pvt	Gun Crewman	0811	M-203	1
24	Cpl/Pvt	Gun Crewman	0811	M16A2	1
25	Cpl/Pvt	Gun Crewman	0811	M16A2	1
26	Cpl/Pvt	Gun Crewman	0811	M16A2	1
27	Cpl/Pvt	Gun Crewman	0811	M16A2	1
28	Cpl/Pvt	Gun Crewman	0811	M16A2	1
29	Cpl/Pvt	Gun Crewman	0811	M16A2	1
30	Cpl/Pvt	Gun Crewman	0811	M16A2	1

3

4 **Gun Number – Three**

5

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
31	SSgt/Sgt	Section Chief	0811	9mm	
32	Cpl/Pvt	Gun Crewman	0811	M-203	1,2
33	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
34	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
35	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
36	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
37	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
38	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
39	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2

6

7 **Gun Number – Four**

8

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
40	SSgt/Sgt	Section Chief	0811	9mm	
41	Cpl/Pvt	Gun Crewman	0811	M-203	1,2
42	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
43	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
44	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
45	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
46	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
47	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2
48	Cpl/Pvt	Gun Crewman	0811	M16A2	1,2

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17 **Figure F-2. Example Artillery Raid Task Organization (cont).**

MCWP 3-16.1 Marine Artillery Operations

4. Security Element

a. Security Level I

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
49	Cpl	M240G Tm Ldr	0811	M16A2	
50	LCpl/Pvt	M240G Gunner	0811	M240G	

b. Security Level II. In addition to line numbers 49 and 50, the following personnel will be included:

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
51	SSgt	Security Chief	0811	9mm	
52	Sgt	Asst. Security Chf	0811	M16A2	
53	Cpl	M240G Tm Ldr	0811	M16A2	
54	LCpl/Pvt	M240G Gunner	0811	M240G	
55	Cpl/Pvt	Security Man	0811	M16A2	
56	Cpl/Pvt	Security Man	0811	M16A2	
57	Cpl/Pvt	Security Man	0811	M-203	
58	Cpl/Pvt	Security Man	0811	M16A2	
59	Cpl/Pvt	Security Man	0811	M16A2	
60	Cpl/Pvt	Security Man	0811	M-203	
61	Cpl/Pvt	Security Man	0811	M16A2	
62	Cpl/Pvt	Security Man	0811	M16A2	

c. Security Level III. In addition to line numbers 49 through 62, the following personnel will be included:

<u>LINE #</u>	<u>RANK</u>	<u>BILLET</u>	<u>MOS</u>	<u>WEAPON</u>	<u>NOTE</u>
63	1 st Lt/2ndLt	OIC Security	0802	9mm	
64	Sgt	Asst Security Chf	0811	M16A2	
65	Sgt	M-2 Tm Ldr	0811	M16A2	
66	Cpl	M-2 Gunner	0811	M-2/9mm	
67	Cpl/Pvt	M-2 Asst. Gunner	0811	M16A2	
68	Cpl/Pvt	M-2 Ammo Man	0811	M16A2	
69	Cpl/Pvt	Security Man	0811	M16A2	
70	Cpl/Pvt	Security Man	0811	M-203	
71	Cpl/Pvt	Security Man	0811	M16A2	
72	Cpl/Pvt	Security Man	0811	M16A2	

- Notes:**
1. May act as part of Security Element
 2. Will not participate in raid unless more than two howitzers are required.
 3. As required

Figure F-2. Example Artillery Raid Task Organization (cont).

MCWP 3-16.1 Marine Artillery Operations

HELICOPTER LIFT REQUIREMENT MATRIX

HOWITZERS	SECURITY LEVEL	CH-46E	CH-53E	UH-1N	AH-1W	V-22
1 M198	I	2	1	1	2	
	II	3	1	1	2	
	III	4	1	1	2	
2 M198	I	2	2	1	2	
	II	3	2	1	2	
	III	3	2	1	2	
3 M198	I	3	3	1	2	
	II	3	3	1	2	
	III	4	3	1	2	
4 M198	I	3	4	1	2	
	II	4	4	1	2	
	III	4	4	1	2	

Notes: 1. CH-53D/E may be used in place of CH-46's.
 2. UH-1N and AH-1W helicopters will be used for command and control, communications retransmission, aerial observation, escort, fire support, or PADS on an as required basis.

NOTE: The CH-53D and V-22 may be utilized in place of the CH-53E when operating with the LW 155.

Figure F – 3. Example Helicopter Lift Requirement Matrix.

MCWP 3-16.1 Marine Artillery Operations

HELICOPTER WAVE AND SERIAL ASSIGNMENT TABLE

1. General. The following tables provide helicopter embarkation guidance for personnel, howitzers, and ammunition in support of helicopterborne artillery raids. The wave number describes the order of arrival in zone, and the helo number indicates the number of the helicopter the howitzer/ammunition/personnel will embark on. This the remarks column describes the duty of the embarked elements. This table is intended as an initial planning guide with exact assignments depending on mission and threat.

2. Two Howitzers, Security Level I

<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
1-3	Command	1	1	Advance Party
4-12	Support	1	1	Advance Party
49-50	Security	1	1	Advance Party
13-21	Assault	1	2	Gun Crew, Ammo Pallet(s), Howitzer
22-30	Assault	1	3	Gun Crew, Ammo Pallet(s), Howitzer

3. Two Howitzers, Security Level II

<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
49-62	Security	1	1	Secures Position
1-3	Command	2	2	Advance Party
4-12	Support	2	2	Advance Party
13-21	Assault	2	3	Gun Crew, Ammo Pallet(s), Howitzer
22-30	Assault	2	4	Gun Crew, Ammo Pallet(s), Howitzer

4. Two Howitzers, Security Level III

<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
1-3	Command	1	1	Advance Party
49-62	Security	1	1	Secures Position
4-12	Support	1	2	Advance Party
63-72	Security	1	3	Secures Position
13-21	Assault	2	4	Gun Crew, Ammo Pallet(s), Howitzer
22-30	Assault	2	5	Gun Crew, Ammo Pallet(s), Howitzer

Figure F-4. Example Helicopter Wave and Serial Assignment Table.

MCWP 3-16.1 Marine Artillery Operations

1 **5. Three Howitzers, Security Level I**

2

<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
1-3	Command	1	1	Advance Party
4-12	Support	1	1	Advance Party
49-50	Security	1	1	Advance Party
13-21	Assault	2	2	Gun Crew, Ammo Pallet(s), Howitzer
22-30	Assault	2	3	Gun Crew, Ammo Pallet(s), Howitzer
31-39	Assault	2	4	Gun Crew, Ammo Pallet(s), Howitzer

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4 **6. Three Howitzers, Security Level II**

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<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
1-3	Command	1	1	Advance Party
49-62	Security	1	1	Secures Position
4-12	Support	1	2	Advance Party
13-21	Assault	2	3	Gun Crew, Ammo Pallet(s), Howitzer
22-30	Assault	2	4	Gun Crew, Ammo Pallet(s), Howitzer
31-39	Assault	2	5	Gun Crew, Ammo Pallet(s), Howitzer

6

7 **7. Three Howitzers, Security Level III**

8

<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
49-62	Security	1	1	Secures Position
1-3	Command	1	2	Advance Party
4-12	Support	1	2	Advance Party
63-72	Security	1	3	Secures Position
13-21	Assault	2	4	Gun Crew, Ammo Pallet(s), Howitzer
22-30	Assault	2	5	Gun Crew, Ammo Pallet(s), Howitzer
31-39	Assault	2	6	Gun Crew, Ammo Pallet(s), Howitzer

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10 **8. Four Howitzers, Security Level I**

11

<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
1-3	Command	1	1	Advance Party
4-12	Support	1	1	Advance Party
49-50	Security	1	1	Advance Party
13-21	Assault	2	2	Gun Crew, Ammo Pallet(s), Howitzer*
22-30	Assault	2	3	Gun Crew, Ammo Pallet(s), Howitzer*
31-39	Assault	2	4	Gun Crew, Ammo Pallet(s), Howitzer*
40-48	Assault	2	5	Gun Crew, Ammo Pallet(s), Howitzer*

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Figure F-4. Example Helicopter Wave and Serial Assignment Table (cont).

MCWP 3-16.1 Marine Artillery Operations

9. Four Howitzers, Security Level II

<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
49-62	Security	1	1	Secures Position
1-3	Command	1	2	Advance Party
4-12	Support	1	2	Advance Party
13-21	Assault	2	3	Gun Crew, Ammo Pallet(s), Howitzer*
22-30	Assault	2	4	Gun Crew, Ammo Pallet(s), Howitzer*
31-39	Assault	2	5	Gun Crew, Ammo Pallet(s), Howitzer*
40-48	Assault	2	6	Gun Crew, Ammo Pallet(s), Howitzer*

10. Four Howitzers, Security Level III

<u>LINE #</u>	<u>ELEMENT</u>	<u>WAVE #</u>	<u>HELO #</u>	<u>REMARKS</u>
1-3	Command	1	1	Advance Party
49-62	Security	1	1	Secures Position
4-12	Support	1	2	Advance Party
63-72	Security	1	2	Secures Position
13-21	Assault	2	3	Gun Crew, Ammo Pallet(s), Howitzer*
22-30	Assault	2	4	Gun Crew, Ammo Pallet(s), Howitzer*
31-39	Assault	2	5	Gun Crew, Ammo Pallet(s), Howitzer*
40-48	Assault	2	6	Gun Crew, Ammo Pallet(s), Howitzer*

* It may be necessary to divide this wave into two separate waves if the LZ does not support the simultaneous insertion of four howitzers.

NOTE: The Gun Crew may act as the security element to alleviate the number of personnel as well as air support necessary for the mission. In this instance there will be an overlap between line numbers and Figure F-4 will require adjustment.

Figure F-4. Example Helicopter Wave and Serial Assignment Table (cont).

MCWP 3-16.1 Marine Artillery Operations

ARTILLERY RAID EXECUTION CHECKLIST

#	EVENT/SITUATION	RPT	NET	FROM	TO	CODEWORD	PLANNED TIMELINE	ACTUAL TIMELINE	REMARKS
1	HELO'S LAUNCHED								
2	ADVANCE PARTY IN LZ								
3	LZ SECURED								
4	HOWITZERS IN LZ								
5	FIRE CAPABLE								
6	FIRE MISSION COMPLETE								
7	EMERGENCY EXTRACT								
8	MEDEVAC								
9	FORCE READY FOR EXTRACTION								
10	ALL FORCES EXTRACTED								
11	ALL FORCES RECOVERED								
12	ABORT								
13	USING ALTERNATE LZ/FP								
14	ENEMY CONTACT								
15									
16									
17									
18									
19									
20									

Figure F-5. Example Artillery Raid Execution Checklist.

MCWP 3-16.1 Marine Artillery Operations

1
2

HELICOPTER LANDING ZONE (HLZ) BRIEF

LINE	INFORMATION	REMARKS
1	MISSION NUMBER	
2	LOCATION (COOR/RAD/DME)	
3	UNIT CALLSIGN	
4	FREQUENCY	PRI UHF _____ /FM _____ SEC UHF _____ /FM _____
5	LZ MARKING	
6	WIND DIRECTION/VELOCITY	
7	ELEVATION/SIZE	
8	OBSTACLES	
9	FRIENDLY POSITION (DIRECTION/DISTANCE)	
10	ENEMY POSITION (DIRECTION/DISTANCE)	
11	LAST FIRE RECEIVED (TIME/TYPE)	
12	DIRECTION OF FIRE/DISTANCE	
13	CLEARANCE TO FIRE (DIRECTION/DISTANCE)	
14	APPROACH/RETIREMENT (RECOMMENDED)	
15	PERSONNEL/EQUIPMENT	
16	OTHER	

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Figure F-6. Helicopter Landing Zone (HLZ) Brief.

PLANNING CONSIDERATIONS CHECKLIST

- 1
- 2
- 3 **1. ACCURATE TARGET LOCATION**
- 4
- 5 Source
- 6 Accuracy
- 7 Observer
- 8
- 9 **2. ACCURATE BATTERY LOCATION**
- 10
- 11 **3. METEOROLOGICAL INFORMATION**
- 12
- 13 **4. WEAPONS AND AMMUNITION DATA**
- 14
- 15 **5. COMPUTATIONAL PROCEDURES**
- 16
- 17 **6. WEATHER**
- 18
- 19 ASTRO
- 20 Illumination
- 21
- 22 **7. TERRAIN**
- 23
- 24 Soil
- 25 Vegetation (Firing Point and Target)
- 26
- 27 **8. ENEMY CAPABILITIES**
- 28
- 29 Counter Fire
- 30 AAAM
- 31 EW
- 32 Reaction Force
- 33
- 34 **9. TARGET**
- 35
- 36 Dimensions
- 37 Composition
- 38 Posture
- 39
- 40 **10. INDIGIOUNES POPULATION**
- 41
- 42 Proximity to Firing Point
- 43 Proximity to Target
- 44
- 45 **11. IMAGERY**
- 46
- 47 Photos
- 48 Tamp/Togo
- 49 Autocads
- 50
- 51

Figure F-7. Example Planning Considerations Checklist.

MCWP 3-16.1 Marine Artillery Operations

EQUIPMENT DENSITY LIST

<u>HASTY SURVEY KIT</u>	<u>QUANTITY</u>
BUCS WITH SURVEY CHIP	1
BUCS WITH REV 1 CHIP	1
MAP	1
PIZZA CUTTER (GTA 6-5-1)	1
3 POINT RESECTION DEVICE	1
ANTI-STATIC BAG FOR BUCS	1
HASTY ASTRO PREPLANNED DATA:	
ROUGH DATA TO CELESTIAL BODIES	
SCALED DATA TO DAP	
SCALED DECLINATION CONSTANT	
SATELLITE DATA	
XO'S HANDBOOK	1
APPLICABLE TFT	1
CALCULATOR	1
8 INCH PROTRACTOR	1
PLOTTING SCALE	1
MAP CASE	1
CLIP BOARDS	1
PENCIL/PEN	2
 <u>FDC BAG</u>	
CHART BOARD	1
CHART PAPER, SCALED	1
RDP	1
PIZZA CUTTER (GTA 6-5-1)	1
TARGET GRID	1
CHART BAG	1
MAP	1
 <u>FDC BRIEF CASE</u>	
BRIEF CASE	1
APPLICABLE TFT(s)	1
APPLICABLE ADDENDUM(s)	1
APPLICABLE GFT(s)	1
APPLICABLE GST(s)	1
BUCS WITH REV 1 CHIP	1
PLOTTING PINS	1 BOX
PLOTTING SCALE	1
8 INCH PROTRACTOR	1
6H PENCIL	2
4H PENCIL	2
2H PENCIL	2
BLUE PENCIL	2
ANTI-STATIC BAG FOR BUCS	1
MAP	1
CLIP BOARD	1
RECORD OF FIRE	1 PAD

Figure F-8. Example Artillery Raid Equipment Density List.

MCWP 3-16.1 Marine Artillery Operations

EQUIPMENT DENSITY LIST

1
2

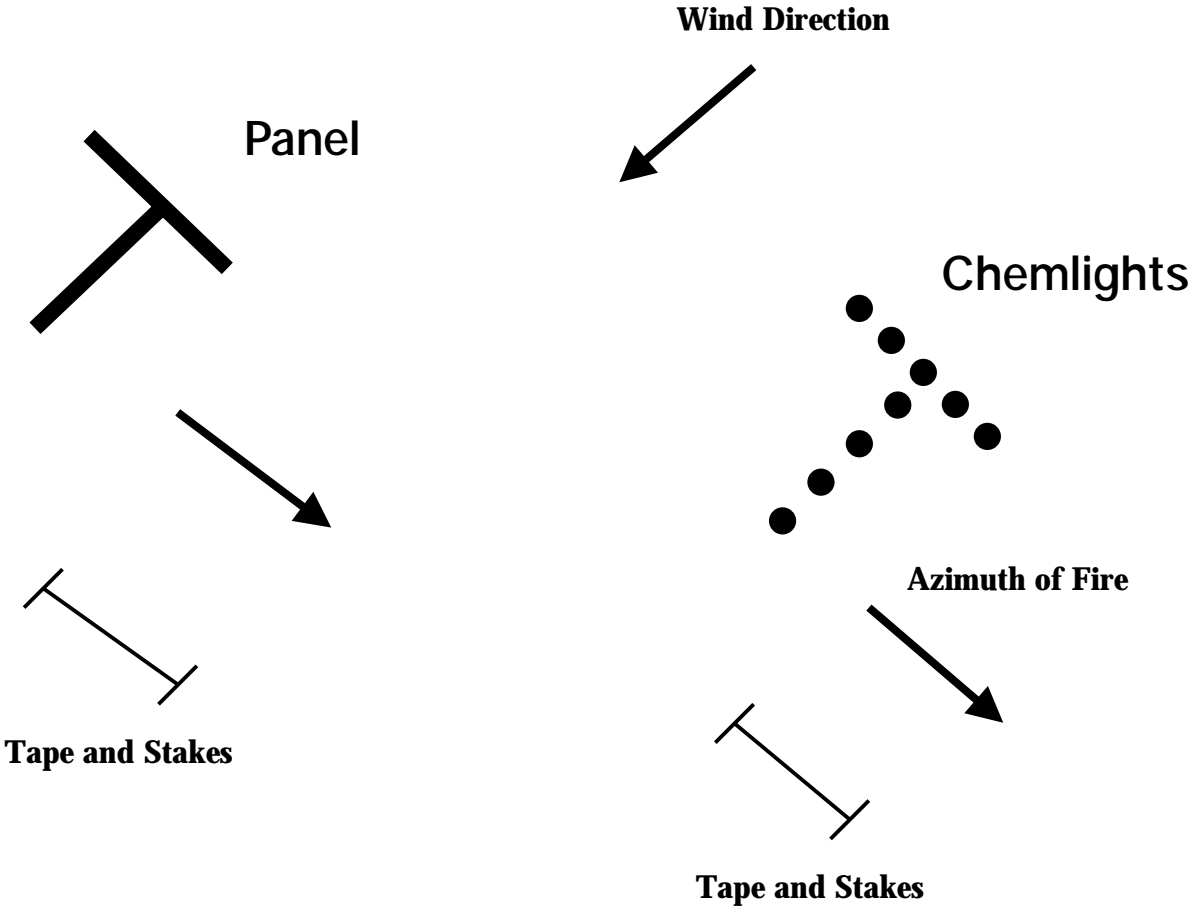
<u>GUN GUIDE KIT</u>	<u>QUANTITY</u>
LENSATIC COMPASS	1
HAMMER	1
STAKES AND TAPE	1 SET
PANEL MARKERS WITH STAKES	AS DIRECTED
CHEM LIGHTS	AS DIRECTED
INFRARED STROBES	AS DIRECTED
PANTEL STAKE	1
NOTE PAD	1
PENCIL/PEN	2
 <u>RAID HST KIT</u>	
GROUNDING ROD	1
LZ MARKING LIGHT	1
GLOVES, LEATHERMAN WORKMAN'S	1 PAIR
ORANGE VEST	1
GOGGLES	1
CONE FLASHLIGHT	2
CHEM LIGHTS	AS DIRECTED
INFRARED STROBES	AS DIRECTED
 <u>RAID MECHANICS TOOL BAG</u>	
TOOL BAG	1
FLAT TIP SCREWDRIVERS	2
ADJUSTABLE WRENCH	2
BOX WRENCHES	1 SET
BRUSH, CLEANING	1

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Figure F-8. Example Artillery Raid Equipment Density List (cont).

ARTILLERY RAID LANDING ZONE MARKING

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NOTE: One technique to use at night is to place red chemlights on the muzzle end of the tape and stakes and blue chemlights on the breach end.

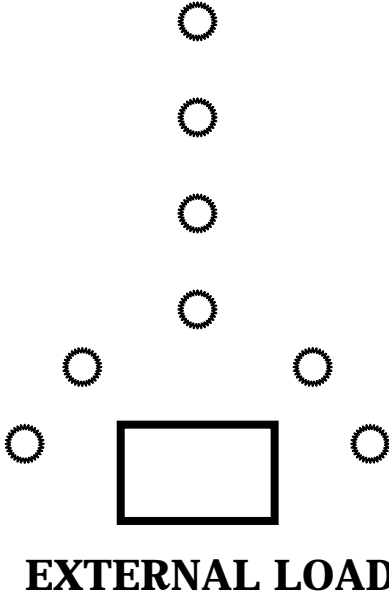
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Figure F-9. Example Artillery Raid Landing Zone Marking.

HOWITZER PICK-UP POINT LIGHTING

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11
12

WIND



○ = INFRARED STROBES OR BUNDLES OF CHEM LIGHTS

Figure F-10. Example Howitzer Pick-Up Point Lighting.