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FIELD MANUAL

AIR TRANSPORT PROCEDURES

**TRANSPORT OF M454 ATOMIC PROJECTILE
IN M467 CONTAINER**

BY US ARMY AIRCRAFT

HEADQUARTERS, DEPARTMENT OF THE ARMY

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AIR TRANSPORT PROCEDURES TRANSPORT OF M454 ATOMIC PROJECTILE IN M467 CONTAINER BY US ARMY AIRCRAFT

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NOTE

References in this manual to the M454 atomic projectile apply to the M454 atomic projectile, all models.

1. Purpose and Scope

a. This manual presents Department of the Army approved procedures for internal and external transport by US Army aircraft of the M454 atomic projectile (155-mm projectile) in the M467 shipping and storage container (also referred to as "item"). The aircraft to which this manual pertains are the UH-1 series, CH-47, and CH-54 helicopters and the U-21A airplane. Materials and qualified personnel needed to prepare, load, tie down, and unload or rig and derig the item are prescribed herein. Where appropriate, metric equivalents are given in parentheses following the dimension or other measurement. References are shown in the appendix.

b. The procedures in this manual apply when the aircraft designated for the internal or external movement has an allowable cargo load capacity equal to or greater than the weight of one or more M454 projectiles in M467 containers. The described loads are the maximum loads permissible for the item except when waived in accordance with the provisions of TM 39-45-51A. Additional internal cargo, including different types of nuclear weapons and/or personnel, within allowable load limits and restrictions prescribed by AR 50-5 and pertinent safety regulations (app), may be transported.

c. Times given to prepare, load, tie down, and unload or rig and derig the loads described in this manual may vary, depending upon existing conditions.

2. Reporting of Publication Improvements

The reporting of errors, omissions, and recommenda-

tions for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forwarded to Director, Military Traffic Management Command Transportation Engineering Agency, ATTN: MTT-TRP, PO Box 6276, Newport News, VA 23606. A reply will be furnished by the Agency.

3. General Safety and Security Considerations

WARNING

The M467 container with M454 projectile is not to be jettisoned under any circumstances.

a. The following warnings will be observed by personnel performing operations, procedures, and practices that are included or implied in this manual. Disregard of these warnings could result in personal injury or loss of life.

(1) Prior to each nuclear cargo mission, the helicopter commander will be familiar with the provisions of AR 50-5 and insure compliance therewith. In addition, he/she will become familiar with the security, safety, and technical peculiarities of the cargo that may affect air transport. Flight plans will include provisions for avoiding built-up and heavily populated areas. When transporting the M454 projectile in the universal military pod by CH-54 helicopter, the pod must be secured to the helicopter to preclude jettisoning the pod deliberately or inadvertently. Procedures for securing the pod to preclude jettisoning are prescribed in paragraph 13-3, TM 55-1520-217-10-1 or in paragraph 13-3, TM 55-1520-217-10-2.

(2) To determine compatibility of any other nuclear weapons or other cargo as authorized in

*This manual supersedes TM 55-1100-204-12-1, 11 October 1972.

chapter 4, AR 50-5 and chapter 1, AR 55-203, for transport with the projectile, ordnance support channels must be consulted. Information on compatibility is contained in TM 39-45-51C and TM 38-250, which are distributed to major headquarters and direct support and general support levels. Restrictions listed in TM 39-20-7 will not be exceeded when additional types of nuclear weapons are transported along with the projectile. *No more than three M454 projectiles may be transported in a single group without waiver (TM 39-20-7 and TM 39-45-51A).*

(3) Emergency destruction procedures for the projectile are contained in TM 39-450-8. Normally, emergency destruct materials will not be carried on the same aircraft as nuclear weapons. In the isolated case where operational necessity limits the availability of alternate aircraft, the theater commander may authorize emergency destruct materials (including blasting caps) to be transported in the load-carrying aircraft. Such materials will be in packagings authorized for transportation, isolated from weapons as far as possible, and tied down so as to prevent movement. Only the number of destruct charges and blasting caps necessary to destroy the projectile will be carried aboard. Blasting caps in their container (recommend use of M2 or M19 series ammunition boxes) will be stored separately and surrounded by a sandbag barrier.

(4) The item will be loaded and tied down in accordance with the procedures in this manual except that it may be repositioned for helicopter operational reasons, or when loading additional nuclear weapons or other cargo and/or personnel. If a location other than that shown in the respective tiedown diagram is used, the helicopter commander must insure that—

(a) The number and load capacity of the tiedown devices are as prescribed in this manual.

(b) The tiedown devices restraining the item are secured to tiedown fittings in the same location relative to the item as those fittings used in the pertinent tiedown diagram.

b. The following operational precautions will be observed during loading, tie down, transport, and unloading of the projectile:

(1) Web strap tiedown assemblies and slings, as used to secure or sling-transport the items described in this manual, are limited to a maximum time of usage (useful life) of 36 months. The time of usage will commence at the time the tiedowns and slings are unpackaged for use by the using organization. At that time they will be marked using stencil ink TT-I-1795 (any contrasting color) with the current date (month and year) in at least 1/2-inch-high letters near the hook

end of the strap.

(2) Prior to each usage, tiedowns and slings will be inspected for burns, tears, punctures, or cuts. Additionally, metal items will be inspected for improper operation, corrosion, cracks, or distortion. If any of these conditions are present, or if the time of usage exceeds 36 months, the tiedowns or slings must be replaced. No testing of tiedowns or slings will be conducted. Additional storage, inspection, and maintenance criteria for tiedowns and slings are prescribed by 55-450-series technical manuals (app).

(3) Inspect the sling, cargo net, metallic, octagonal, 5,000-pound-capacity, to insure that the eyelets, snap fasteners, rings, and cables are not deformed, cracked, frayed, or kinked. Cargo nets in questionable condition will be taken out of service.

(4) When attaching tiedown devices to cargo and to tiedown fittings, approximately equal tension must be maintained throughout tiedown arrangements. Tiedowns must be checked during flight and tightened as necessary.

(5) Security and safety measures relative to guards, fire, or emergency destruction procedures, as established by pertinent publications (app) will be observed during all phases of air transport. All operations described herein will be in strict compliance with AR 50-102, TM 9-1300-206, and TM 9-1100-204-20.

(6) The high noise level of aircraft engines can cause permanent damage to ears. All personnel working in the vicinity will wear hearing protectors and avoid entering engine noise danger area. In addition, external cargo hookup personnel will wear goggles and protective headgear (hard hat, steel helmet, or flight helmet), and will use a static electricity discharge probe.

4. Air Transportability and Handling Data

NOTE

Personnel dosimetry (film badge) is not required for personnel engaged in operations prescribed in this manual nor do the operations require keeping a record of exposure times. However, do not stay within 1 meter of the projectile any longer than is needed to accomplish each operation.

a. The M454 projectile in the M467 shipping and storage container will normally be transported as an internal load. However, under emergency conditions, the item is also capable of being transported as an external load (para 6). The determination that external transport is justifiable will be a deliberate command decision. Approximate dimensions and weight of the container (fig 1), with projectile, are as follows:

| Length | Dimensions | | Volume | *Weight |
|----------------------|----------------------|---------------------|--------------------------|----------------------|
| | Width | Height | | |
| 57.0 in. (1.45 m) | 22.0 in. (0.56 m) | 20.5 in. (.52 m) | 15.0 cu ft (.42 cu m) | **266 lb (121 kg) |

*Approximate weight of the empty container is 138 pounds (63 kg).
 **Add 21 pounds (10 kg) for M454A5 or M454A7 projectile.

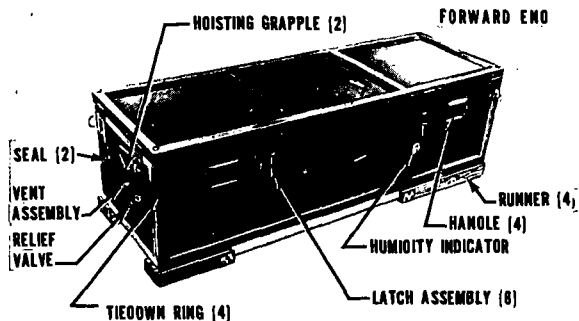


Figure 1. M467 container for M454 projectile.

b. The forward end of the container should bear the marking "FWD" on the end and cover. If the container is not so marked, the forward end is the end without the vent assembly and relief valve.

c. The item should be positioned in the cargo compartment with the longitudinal axis of the container oriented with the front to rear axis of the compartment; however, it may be transported in a lateral position. The item may be faced forward, aft, or to either side during transport. Container center of balance for M454A4 and M454A6 projectiles is approximately 32 inches (0.81 m) from the forward end. Container center of balance for M454A5 and M454A7 projectiles is approximately 31 inches (0.79 m) from the forward end.

d. The M467 container must be inspected for damage other than minor scratches and abrasions. If the container is damaged to such an extent that its contents or functions might be affected, notify the support unit and submit a report in accordance with chapter 5, AR 50-5. Insure that container cover is secure, and that the air vent is closed.

e. Typical internal loads are composed of one, two, or three M467 containers with M454 projectiles. Tiedown

diagrams provide for transport of one or two containers or for maximum container loading (three containers without waiver) when space is available. Additional containers authorized for transport will be positioned and tied down in accordance with paragraph 3a(4).

f. External loads are composed of one or two M467 containers with M454 projectiles.

g. The container is equipped with four handles and will be carried by four service members.

h. Four service members can prepare, load, and tie down each container in the respective aircraft or the universal military pod in approximately 10 minutes.

i. Four service members can unload each container from the respective aircraft or pod in approximately 5 minutes.

5. Internal Transport

WARNING

Insure that the universal military pod is secured to the CH-54 helicopter to preclude jettisoning the pod either deliberately or inadvertently.

a. UH-1 Series, CH-47, and CH-54 (Universal Military Pod) Helicopters. Manhandle M467 container with M454 projectile into helicopter or pod and tie down the container in accordance with the following figures and tables:

| Helicopter | No. of containers | Figure No. | Table No |
|--------------------------------|-------------------|------------|----------|
| UH-1C/M* | 1 | 2 | 1 |
| UH-1D/H | 1 | 3 | 2 |
| UH-1D/H | 2 | 4 | 3 |
| UH-1D/H | 3 | 5 | 4 |
| CH-47 | 3 | 6 | 5 |
| CH-54 (universal military pod) | 3 | 7 | 6 |

*Cargo-floor-fitting pattern in the UH-1B helicopter is similar to the fitting pattern for the UH-1C/M helicopters. Strength of floor fittings in the UH-1B/C/M helicopters is the same.

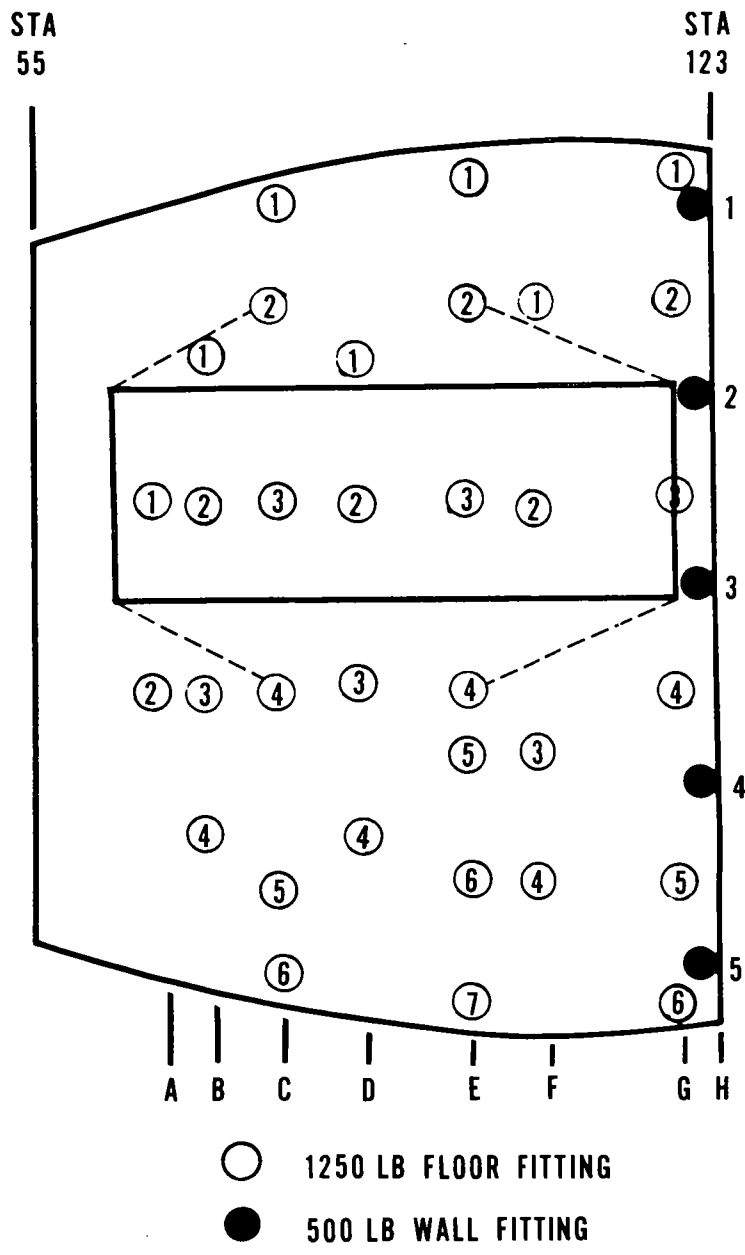


Figure 2. Tiedown diagram for one M467 container with M454 projectile in UH-1C/M helicopter.

Table 1. Tiedown Data for One M467 Container With M454 Projectile in UH-1C/M Helicopters

| Tiedown fitting | | Tiedown device* | | |
|-----------------|----------------------|-----------------|----------------------|--------------------------|
| designation | capacity in 1,000 lb | type | capacity in 1,000 lb | Attach to item |
| C2 | 1.25 | CGU-1/B | 5 | Right front tiedown ring |
| C4 | 1.25 | CGU-1/B | 5 | Left front tiedown ring |
| E2 | 1.25 | CGU-1/B | 5 | Right rear tiedown ring |
| E4 | 1.25 | CGU-1/B | 5 | Left rear tiedown ring |

*MC-1 tiedown device may be used.

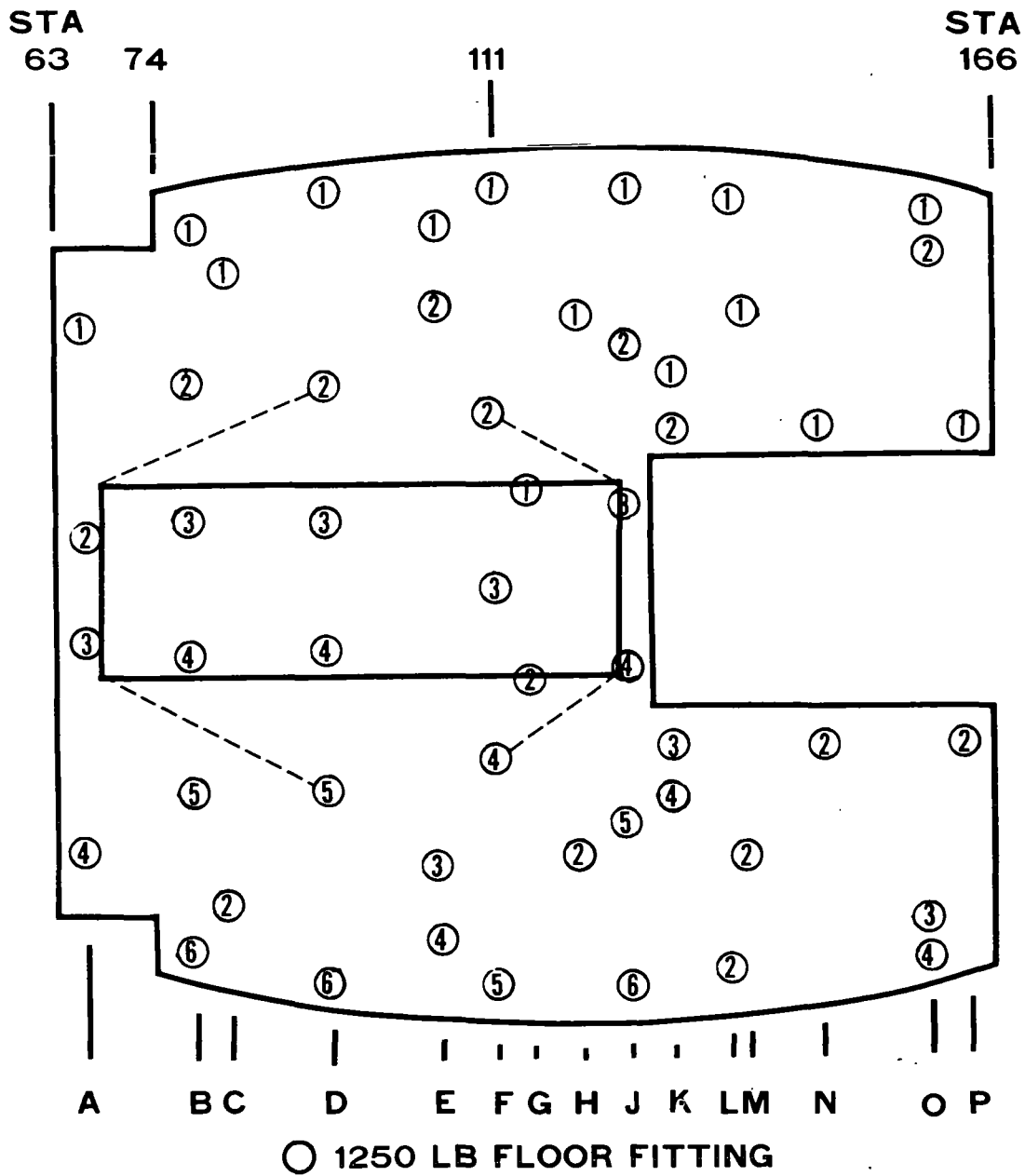


Figure 3. Tiedown Diagram for one M467 container with M454 projectile in UH-1D/H helicopters.

Table 2. Tiedown Data for One M467 Container With M454 Projectile in UH-1D/H Helicopters

| Tiedown fitting | | Tiedown device* | | |
|-----------------|----------------------|-----------------|----------------------|--------------------------|
| designation | capacity in 1,000 lb | type | capacity in 1,000 lb | Attach to item |
| D2 | 1.25 | CGU-1/B | 5 | Right front tiedown ring |
| D5 | 1.25 | CGU-1/B | 5 | Left front tiedown ring |
| F2 | 1.25 | CGU-1/B | 5 | Right rear tiedown ring |
| F4 | 1.25 | CGU-1/B | 5 | Left rear tiedown ring |

*MC-1 tiedown device may be used.

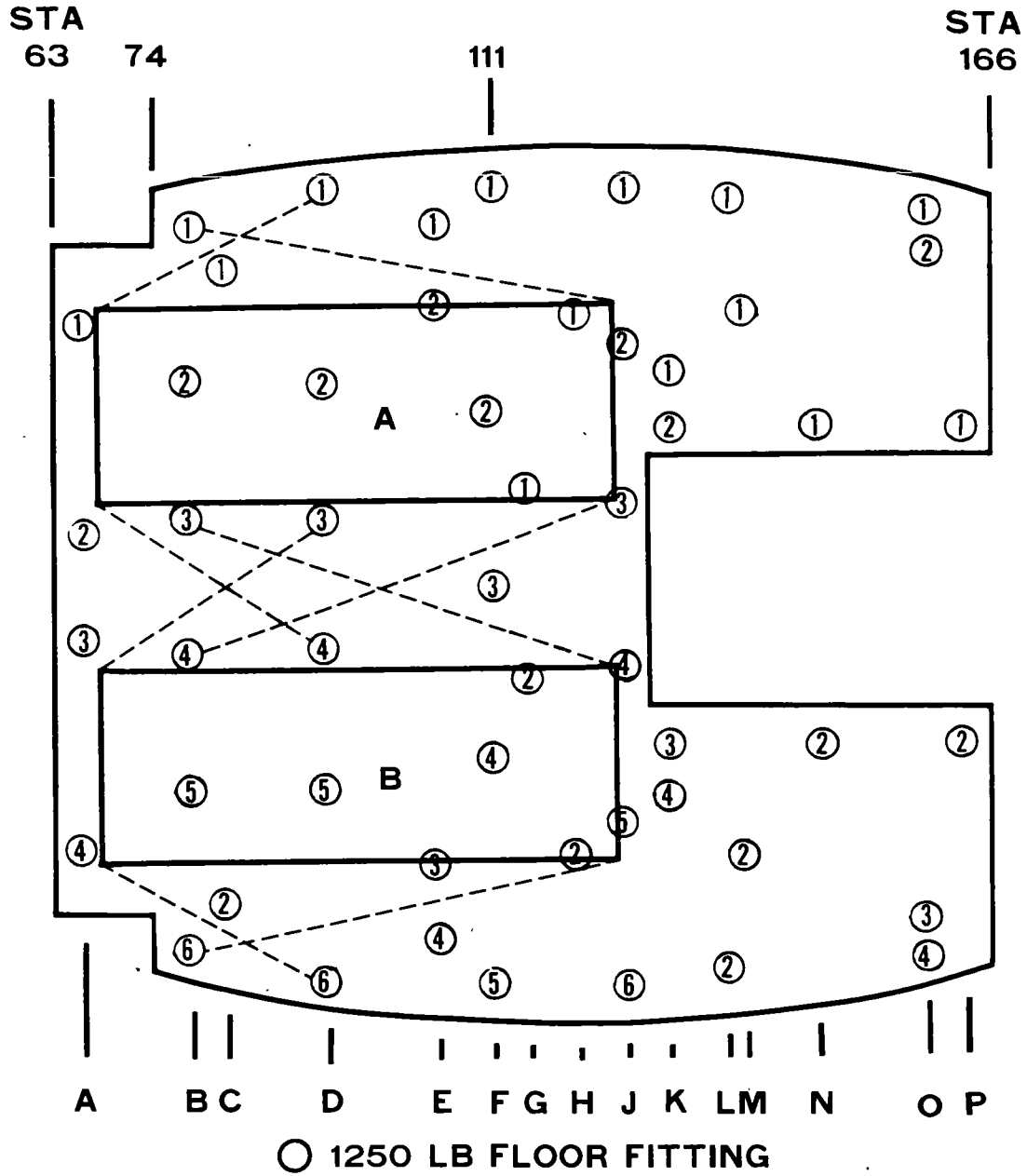
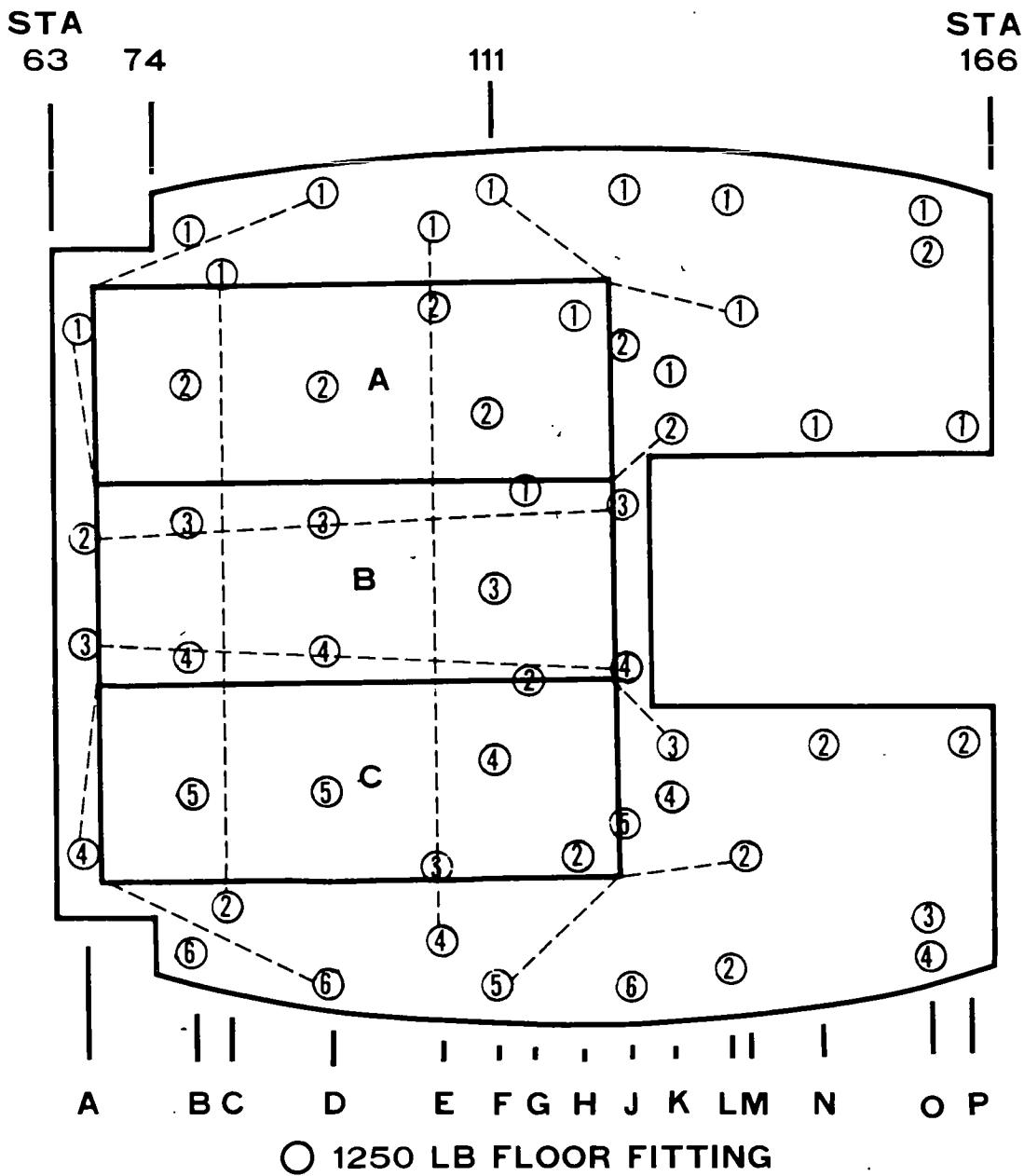


Figure 4. Tiedown diagram for two M467 containers with M454 projectiles in UH-1D/H helicopters.

Table 3. Tiedown Data for Two M467 Containers With M454 Projectiles in UH-1D/H Helicopters

| Item | Tiedown fitting | | Tiedown device* | | |
|------|-----------------|----------------------|-----------------|----------------------|--------------------------|
| | designation | capacity in 1,000 lb | type | capacity in 1,000 lb | Attach to item |
| A | B1 | 1.25 | CGU-1/B | 5 | Right rear tiedown ring |
| | B4 | 1.25 | CGU-1/B | 5 | Left rear tiedown ring |
| | D1 | 1.25 | CGU-1/B | 5 | Right front tiedown ring |
| | D4 | 1.25 | CGU-1/B | 5 | Left front tiedown ring |
| B | B3 | 1.25 | CGU-1/B | 5 | Right rear tiedown ring |
| | B6 | 1.25 | CGU-1/B | 5 | Left rear tiedown ring |
| | D3 | 1.25 | CGU-1/B | 5 | Right front tiedown ring |
| | D6 | 1.25 | CGU-1/B | 5 | Left front tiedown ring |

*MC-1 tiedown device may be used.



NOTE: INSERT ANTICHAFFING MATERIAL BETWEEN COMBINED CONTAINERS.

Figure 5. Tiedown diagram for three M467 containers with M454 projectiles in UH-1D/H helicopters.

Table 4. Tiedown Data for Three M467 Containers With M454 Projectiles in UH-1D/H Helicopters

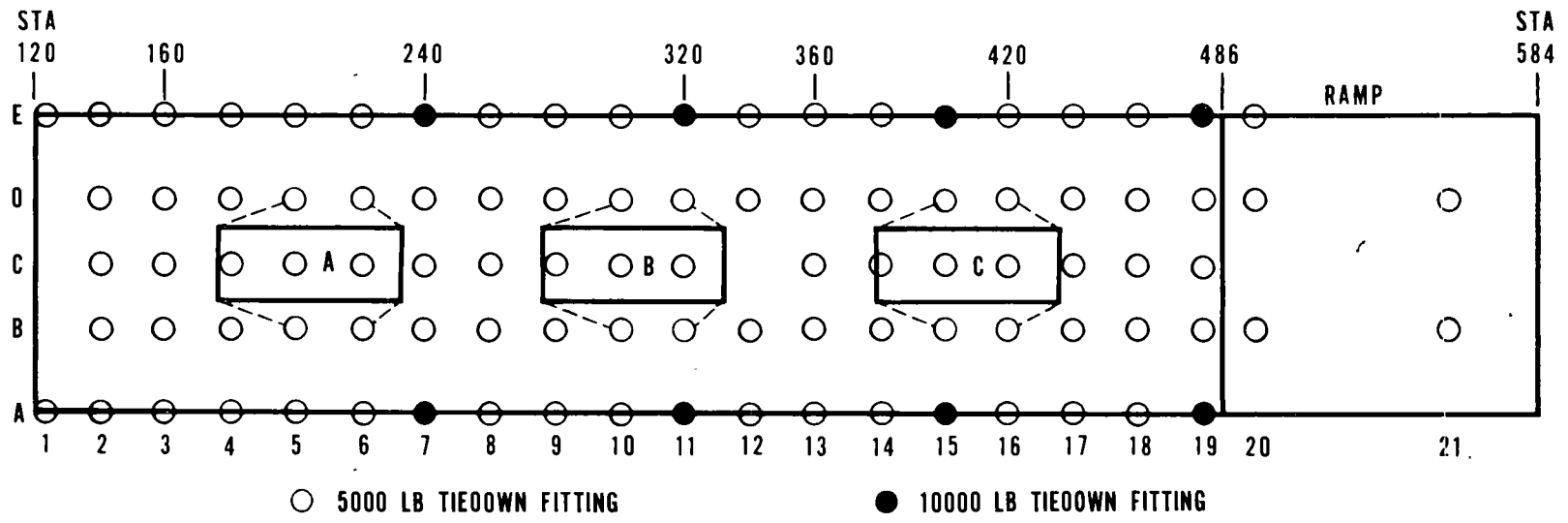
| Item | Tiedown fitting | | Tiedown device* | | Attach to item |
|------------|-----------------|----------------------|-----------------|----------------------|---|
| | designation | capacity in 1,000 lb | type | capacity in 1,000 lb | |
| A, B and C | A1 | 1.25 | CGU-1/B | 5 | Through aligned front tiedown rings of items A and B. |
| | A2/J3 | 1.25 | CGU-1/B | 5 | Over item B |
| | A3/J4 | 1.25 | CGU-1/B | 5 | Over item B |
| | A4 | 1.25 | CGU-1/B | 5 | Through aligned front tiedown rings of items B and C. |

*MC-1 tiedown device may be used.

Table 4. Tiedown Data for Three M467 Containers With M454 Projectiles in UH-1D/H Helicopters—Continued

| Item | Tiedown fitting | | Tiedown device* | | Attach to item |
|------|-----------------|-------------------------|-----------------|-------------------------|--|
| | designation | capacity in 1,000 lb | type | capacity in 1,000 lb | |
| | C1/C2 | 1.25 | CGU-1/B | 5 | Over items A, B, and C |
| | D1 | 1.25 | CGU-1/B | 5 | Right front tiedown ring of item A. |
| | D6 | 1.25 | CGU-1/B | 5 | Left front tiedown ring of item C. |
| | E1/E4 | 1.25 | CGU-1/B | 5 | Over items A, B, and C |
| | F1 | 1.25 | CGU-1/B | 5 | Right rear tiedown ring of item A. |
| | F5 | 1.25 | CGU-1/B | 5 | Left rear tiedown ring of item C. |
| | K2 | 1.25 | CGU-1/B | 5 | Through aligned rear tiedown rings of items A and B. |
| | K3 | 1.25 | CGU-1/B | 5 | Through aligned rear tiedown rings of items B and C. |
| | M1 | 1.25 | CGU-1/B | 5 | Right rear tiedown ring of item A. |
| | M2 | 1.25 | CGU-1/B | 5 | Left rear tiedown ring of item C. |

*MC-1 tiedown device may be used.



NOTE: UTILITY HATCH DOOR IS LOCATED IN THE CENTER OF THE FLOOR BETWEEN STATIONS 320 AND 360

Figure 6. Tiedown diagram for three M467 containers with M454 projectiles in CH-47 helicopter.

Table 5. Tiedown Data for Three M467 Containers With M454 Projectiles in CH-47 Helicopter

| Item | Tiedown fitting | | Tiedown device* | | Attach to item |
|---------|--|-------------------------|-----------------|-------------------------|--------------------------|
| | designation | capacity in 1,000 lb | type | capacity in 1,000 lb | |
| A | B5 | 5 | CGU-1/B | 5 | Left front tiedown ring |
| | D5 | 5 | CGU-1/B | 5 | Right front tiedown ring |
| | B6 | 5 | CGU-1/B | 5 | Left rear tiedown ring |
| | D6 | 5 | CGU-1/B | 5 | Right rear tiedown ring |
| B and C | Restrain items in positions shown in figure 7 and in manner prescribed for item A above. | | | | |

*MC-1 tiedown device may be used.

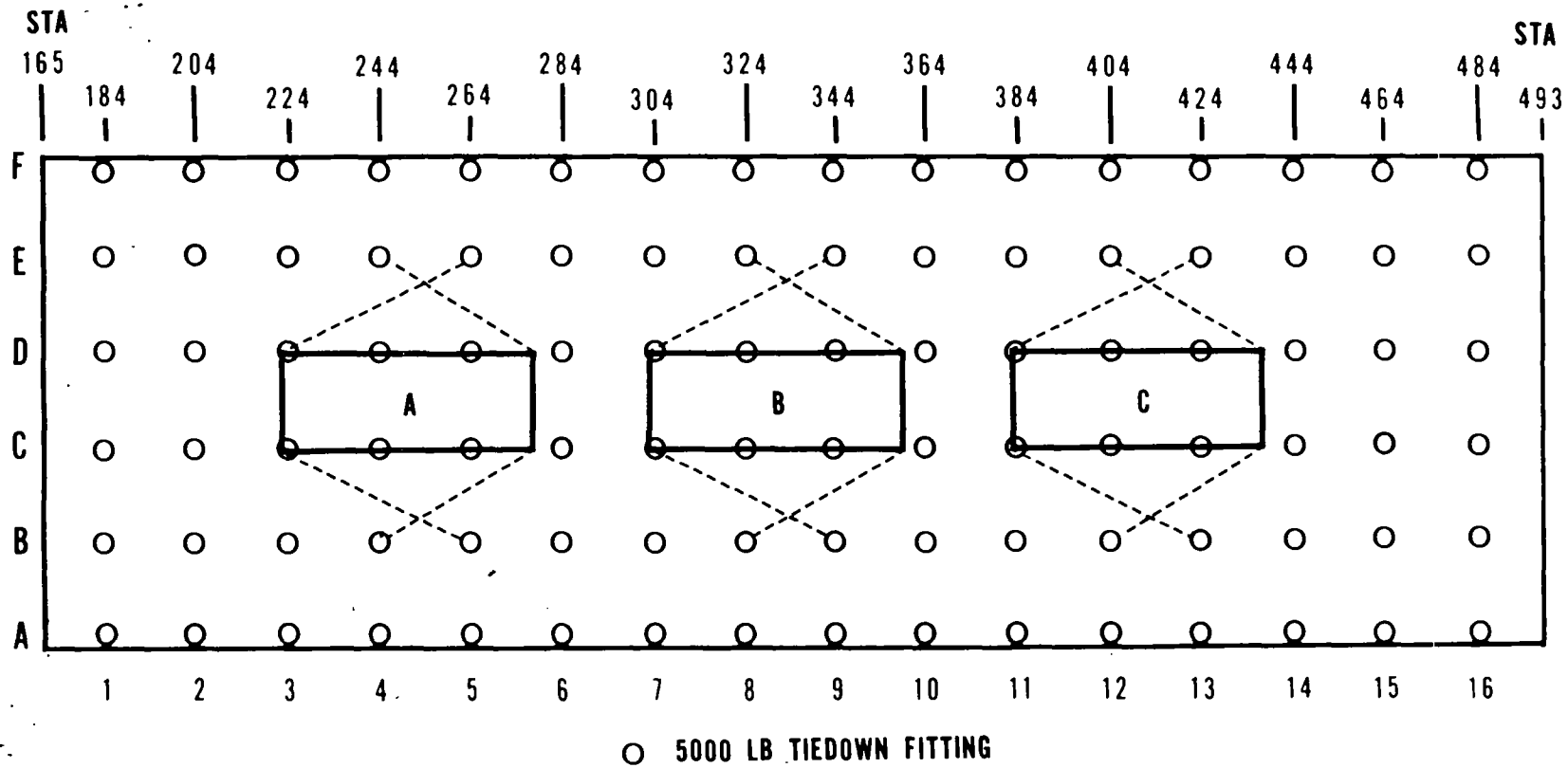


Figure 7. Tiedown diagram for three M467 containers with M454 projectiles in CH-54 helicopter universal military pod.

Table 6. Tiedown Data for Three M467 Containers With M454 Projectiles in CH-54 Helicopter Universal Military Pod

| Item | Tiedown fitting | | Tiedown device* | | Attach to item |
|---------|--|----------------------|-----------------|----------------------|--------------------------|
| | designation | capacity in 1,000 lb | type | capacity in 1,000 lb | |
| A | B4 | 5 | CGU-1/B | 5 | Left rear tiedown ring |
| | E4 | 5 | CGU-1/B | 5 | Right rear tiedown ring |
| | B5 | 5 | CGU-1/B | 5 | Left front tiedown ring |
| | E5 | 5 | CGU-1/B | 5 | Right front tiedown ring |
| B and C | Restrain items in positions shown in figure 6 and in manner prescribed for item A above. | | | | |

*MC-1 tiedown device may be used.

b. U-21A Aircraft.

(1) Materials and procedures for transporting one M467 container with M454 projectile in U-21A aircraft.

(a) *Shoring*: One piece, 2- by 4- by 44-inch lumber; three pieces, 16- by 60- by 1-inch plywood; and four pieces, 2- by 4- by 32-inch lumber; or respective equivalents.

(b) Loading.

1. Place the 44-inch piece of lumber on edge crosswise in cargo compartment to rest against the aft side of the forward spar covering (at cargo compartment station (163) to function as buffer.

2. Stack three pieces of plywood in recessed walking area of cargo compartment to level compartment floor.

3. Load container into cargo compartment and position at tiedown location (fig 8). Place two pieces of 32-inch lumber crosswise beneath runners at each end of container (fig 8).

4. Tie down the container in accordance with figure 8 and table 7.

(2) Materials and procedures for transporting two M467 containers with M454 projectiles in U-21A aircraft.

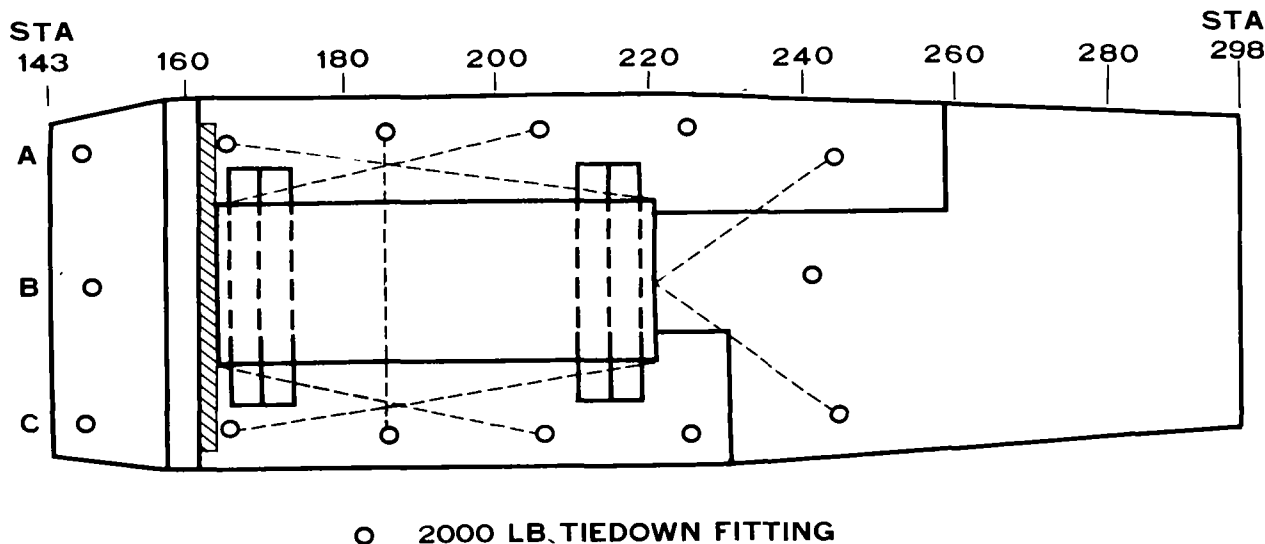


Figure 8. Tiedown diagram for one M467 container with M454 projectile in U-21A aircraft.

Table 7. Tiedown Data for One M467 Container With M454 Projectile in U-21A Aircraft

| designation | Tiedown fitting | | Tiedown device* | | Attach to item |
|-------------|----------------------|---------|----------------------|--|--------------------------|
| | capacity in 1,000 lb | type | capacity in 1,000 lb | | |
| A2 | 2 | CGU-1/B | 5 | | Right rear tiedown ring |
| C2 | 2 | CGU-1/B | 5 | | Left rear tiedown ring |
| A3/C3 | 2 | CGU-1/B | 5 | | Over the item |
| A4 | 2 | CGU-1/B | 5 | | Right front tiedown ring |
| C4 | 2 | CGU-1/B | 5 | | Left front tiedown ring |
| A6 | 2 | CGU-1/B | 5 | | Rear hoisting grapple |
| C6 | 2 | CGU-1/B | 5 | | Rear hoisting grapple |

*MC-1 tiedown device may be used.

(a) *Shoring*: One piece, 2- by 4- by 44-inch lumber; three pieces, 16- by 60- by 1-inch plywood; and four

pieces, 2- by 4- by 45-inch lumber; or respective equivalents.

(b) Loading.

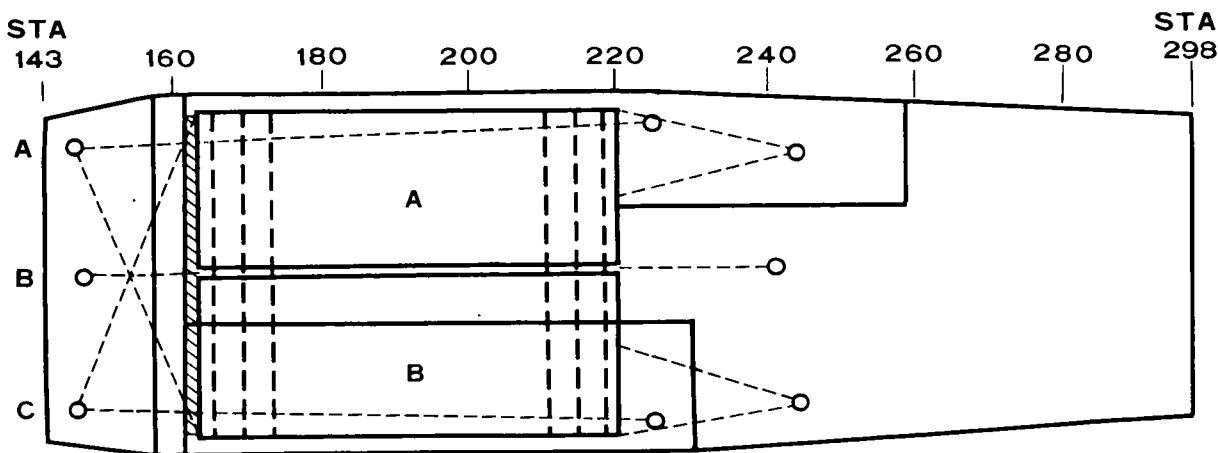
1. Place the 44-inch piece of lumber on edge crosswise in cargo compartment to rest against the aft side of the forward spar covering (at cargo compartment station 163) to function as buffer.

2. Stack three pieces of plywood in recessed walking area of cargo compartment to level compartment floor.

ment floor.

3. Load containers into cargo compartment and position at tiedown locations (fig 9). Place two pieces of 45-inch lumber crosswise beneath runners at each end of containers (fig 9).

4. Tie down the containers in accordance with figure 9 and table 8.



○ 2000 LB TIEDOWN FITTING

NOTE: INSERT ANTICHAFFING MATERIAL BETWEEN COMBINED CONTAINER'

Figure 9. Tiedown diagram for two M467 containers with M454 projectiles in U-21A aircraft

Table 8. Tiedown Data for Two M467 Containers With M454 Projectiles in U-21A Aircraft

| Item | Tiedown fitting | | Tiedown device* | | Attach to item |
|---------|-----------------|----------------------|-----------------|----------------------|---|
| | designation | capacity in 1,000 lb | type | capacity in 1,000 lb | |
| A and B | A1 | 2 | CGU-1/B | 5 | Left front tiedown ring of item B. |
| | C1 | 2 | CGU-1/B | 5 | Right front tiedown ring of item A. |
| | B1 | 2 | CGU-1/B | 5 | Through aligned front tiedown rings of items A and B. |
| | A1/A5 | 2 | CGU-1/B | 5 | Over item A |
| | C1/C5 | 2 | CGU-1/B | 5 | Over item B |
| | A6 | 2 | CGU-1/B | 5 | Right rear tiedown ring of item A. |
| | A6 | 2 | CGU-1/B | 5 | Rear hoisting grapple of item A. |
| | B6 | 2 | CGU-1/B | 5 | Through aligned rear tiedown rings of items A and B. |
| | C6 | 2 | CGU-1/B | 5 | Left rear tiedown ring of item B. |
| | C6 | 2 | CGU-1/B | 5 | Rear hoisting grapple of item B. |

*MC-1 tiedown device may be used.

6. External Transport (Emergency Procedure)

WARNING

The contents of paragraph 6 are for information and training purposes only and are not to be construed as authority for external transport by helicopter of the M467 container with M454 projectile. Only dummy loads may be used for practice and/or training exercises. *War reserve nuclear weapons*

shall not be moved by external transport except in emergency conditions (such as emergency evacuation from fire or flood) when the situation does not allow time to prepare and move the nuclear weapons by internal transport (para 4a).

WARNING

Always assume that a charge of static electricity is present on the helicopter. Use of some type of discharge apparatus (static

probe) (fig 4-1, TM 55-450-19) to ground the hook and discharge electricity is necessary to prevent shock when the hook is touched. After discharge of electricity, the hook is grasped quickly and firmly and held, if possible, until the hookup is completed. If contact with the hook is lost after initial grounding, the hook must be grounded again before it is touched. Do not use the load as a ground contact. After air delivery and before handling, again ground the load to discharge any accumulated/retained static electricity.

CAUTION

When performing external air transport by CH-54 helicopter, a large metal clevis will be used to attach the load to the cargo hook as a nylon sling ring will tend to adhere to the hook thereby preventing release of the load. However, when performing similar transport by UH-1-series or CH-47 helicopter, a nylon sling ring will be used in lieu of a metal clevis to prevent damage to the cargo hook.

a. Transport of one M467 container with M454 projectile, using air delivery cargo slings.

(1) *Materials.*

(a) Sling legs: four 8-foot, two-loop cargo slings (NSN 1670-00-753-3789) (each has rated capacity of 6,500 pounds).

(b) Sling ring: one 3-foot, three-loop cargo sling (NSN 1670-00-753-3788) (has rated capacity of 10,000 pounds), with link assembly, Type IV (NSN 1670-00-783-5988).

(c) Tape: 2-inch pressure sensitive (NSN 8135-00-266-5016), or suitable substitute.

(d) Vertical riser: one 8-foot, two-loop cargo sling (NSN 1670-00-753-3789) (has rated capacity of 6,500 pounds). For use with CH-47 helicopter, if required.

(e) Clevis assembly, large: one, air delivery, Type I (NSN 1670-00-090-5354). For use with CH-54 helicopter.

(f) Clevis assembly, small: four, air delivery, steel (NSN 1670-00-360-0304). Clevis assembly, medium (NSN 1670-00-678-8562) or clevis assembly, large, air delivery, Type I (NSN 1670-00-090-5354), may be used.

(2) *Rigging.*

(a) Use small clevis assembly (or authorized substitute) to attach a sling leg to each tiedown ring on the container. Clevis assembly may be passed through sling leg loop or sling leg may be choker hitched to the clevis assembly. Four service members can rig the container (including vertical riser when used) for external transport in approximately 5 minutes.

(b) Twist each sling leg one turn for each 3 feet

of sling.

(c) Combine the free ends of the sling legs to form a single loop, and attach this loop to the 3-foot sling. Connect free ends of the 3-foot sling with the link assembly, and safety tie the assembly to prevent accidental release. The 3-foot sling forms the apex for attachment to the helicopter cargo hook (UH-1 series and CH-47 helicopters). See caution above regarding transport by CH-54 helicopter.

(d) Cluster and tape sling legs (breakaway technique) to prevent fouling during lift-off.

(e) In addition to the foregoing, the following procedure may be applicable when transporting the container by CH-47 helicopter: choker hitch one end of the 8-foot cargo sling to the sling legs; then attach the 3-foot sling to the upper loop of the 8-foot sling. Connect free ends of the 3-foot sling with the link assembly, and safety tie the assembly to prevent accidental release. The 3-foot sling forms the apex for attachment to the helicopter cargo hook. The 8-foot sling (vertical riser) dampens vibration tendencies.

(3) *Derigging.* Four service members can derig the container (including vertical riser when used) in approximately 5 minutes.

b. Transport of one M467 container with M454 projectile, using sling, nylon and chain, multiple-leg.

(1) *Materials.*

(a) Sling set: one 23-foot, nylon and chain, four-leg sling (NSN 1670-00-902-3080) (has rated capacity of 15,000 pounds).

(b) Sling ring: one 3-foot, three-loop cargo sling (NSN 1670-00-753-3788) (has rated capacity of 10,000 pounds), with link assembly, Type IV (NSN 1670-00-783-5988).

(c) Tape: 2-inch pressure sensitive (NSN 8135-00-266-5016), or suitable substitute.

(d) Vertical riser: one 8-foot, two-loop air-delivery cargo sling (NSN 1670-00-753-3789) (has rated capacity of 6,500 pounds). For use with CH-47 helicopter, if required.

(e) Clevis assembly, large: one, air delivery, Type I (NSN 1670-00-090-5354). For use with CH-54 helicopter.

(2) *Rigging.*

NOTE

Each nylon and chain sling leg is constructed of a 15-foot nylon web sling with a metal grab link on its lower end. The grab link is approximately 10 inches long and is equipped with a spring-loaded keeper. Attached to the lower or small end of the grab link is a hammer lock which connects the chain leg to the grab link. The chain leg is approximately 6 feet long and has 64 links. The link at the free end is referred to as link number 1.

(a) Pass one sling chain leg through each tiedown ring on the container. Four service members can rig the container (including vertical riser when used) for external transport in approximately 5 minutes.

(b) Form a hitch at each tiedown ring by passing the chain through the upper part of the grab link that attaches the chain to the nylon sling. Adjust chain length by forcing the selected link past the spring keeper into the lower part of the grab link to complete hitch. The spring keeper prevents the chain from sliding out of the grab link until the keeper is manually depressed and the chain is removed.

(c) The 12-inch ring of the sling forms the apex for attachment to the helicopter cargo hook (UH-1-series and CH-47 helicopters). See Caution above regarding transport by CH-54 helicopter.

(d) Cluster and tape sling legs (breakaway technique) to prevent fouling during lift-off.

(e) In addition to the foregoing, the following procedure may be applicable when transporting the container by CH-47 helicopter: choker hitch one end of the 8-foot cargo sling to the 12-inch ring of the sling; then, attach the 3-foot sling to the upper loop of the 8-foot sling. Connect free ends of the 3-foot sling with the link assembly, and safety tie the assembly to prevent accidental release. The 3-foot sling forms the apex for attachment to the helicopter cargo hook. The 8-foot sling (vertical riser) dampens vibration tendencies.

(3) *Derigging.* Depress spring-loaded keeper on grab link and remove chain leg from link and from each tiedown ring on the container. Four service members can derig the container (including vertical riser when used) in approximately 5 minutes.

c. Transport of one or two M467 containers with M454 projectiles, using a cargo net.

(1) *Materials.*

(a) One sling, cargo net, metallic, octagonal, 5,000-pound-capacity (NSN 3940-00-774-8507).

(b) Cord, nylon, natural, Type III, 550-pound-capacity (NSN 4020-00-240-2146), or equivalent.

(c) Additional materials used with CH-47 helicopter only:

1. One 8-foot, two-loop, air delivery cargo sling (NSN 1670-00-753-3789) (has rated capacity of 6,500

pounds).

2. One 3-foot, three-loop, air delivery cargo sling ring (NSN 1670-00-753-3788) (has rated capacity of 10,000 pounds).

(2) *Rigging.*

(a) Spread cargo net and center the container(s) on the net. When two containers are transported (fig 10), place the forward end of one container next to the aft end of the other container. Four service members can prepare the load and rig the net (including vertical riser when used) for external transport in approximately 10 minutes.

(b) Attach net draw cables to the 6-inch ring forming the apex that is attached to the helicopter hook; this should be done so that four ring-end snap fasteners coverge at the base of the 6-inch ring and three free-end snap fasteners are attached to the 2 $\frac{3}{8}$ -inch rings (fig 11).

(c) Draw the net up evenly and smoothly around the load, cluster the draw cables by hand, and tie the net above the load (fig 12) to prevent fouling during lift-off.

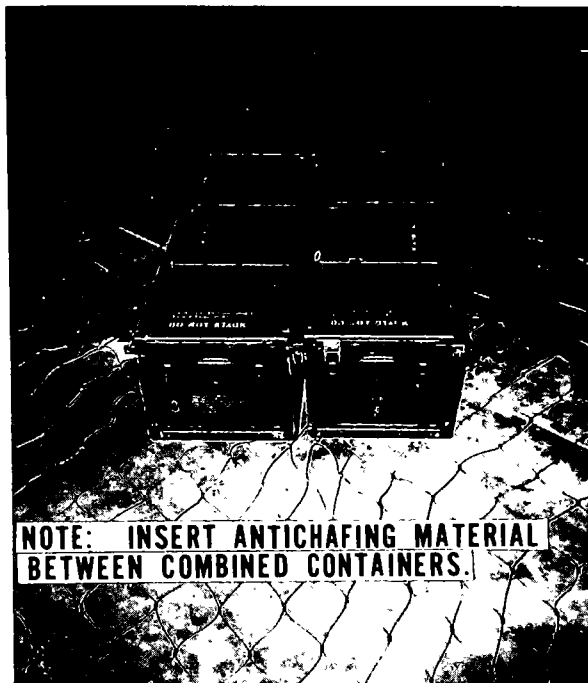


Figure 10. Two M467 containers with M454 projectiles placed in center of cargo net. Note that containers face in opposite directions.

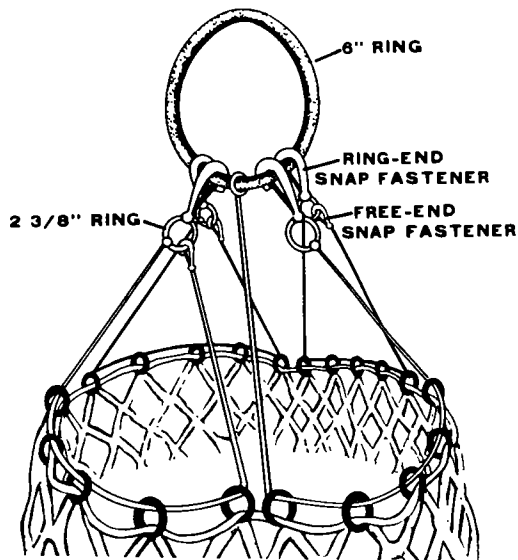


Figure 11. Attachment of draw cable snap fasteners to 6-inch ring (top) and to 2 3/8-inch rings.

(d) In addition to the foregoing, the following procedures are applicable when the load is transported by CH-47 helicopter: choker hitch one end of the 8-foot cargo sling (functions as vertical riser) to the 6-inch ring on the cargo net; then pass the 3-foot sling through the upper loop of the 8-foot sling. Connect free ends of the 3-foot sling with the link assembly, and safety tie the assembly to prevent accidental release. The 3-foot sling forms the apex for attachment to the helicopter cargo hook. The vertical riser dampens vibration tendencies.

(3) *Derigging.* Four service members can derig the cargo net (including riser when used) in approximately 5 minutes.

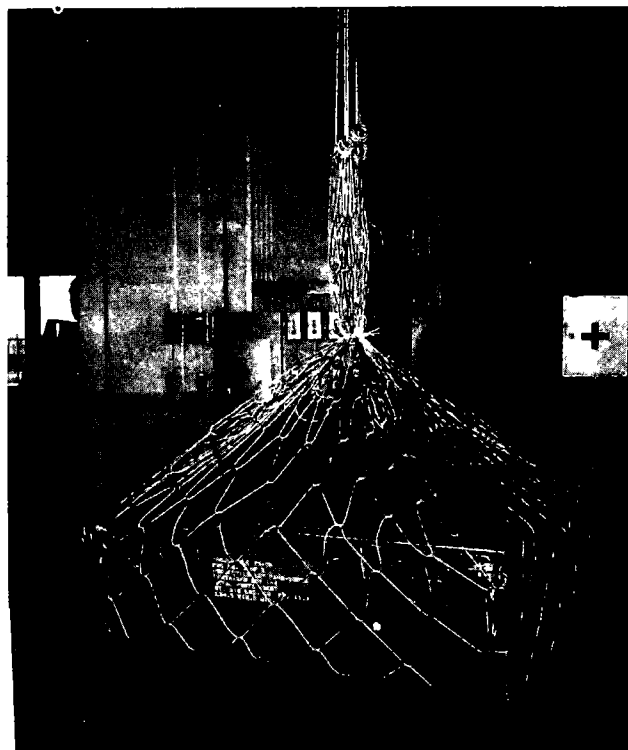


Figure 12. Two M467 containers with M454 projectiles in cargo net prepared for external transport. Note use of nylon cord around the net.

APPENDIX REFERENCES

1. Army Regulations (AR)

| | |
|--------------|--|
| 10-16 | US Army Nuclear and Chemical Surety Group. |
| 40-14 | Control and Recording Procedures: Occupational Exposure to Ionizing Radiation. |
| 50-5 | Nuclear Weapons and Materiel: Nuclear Surety. |
| (C)50-102 | Safety Rules for the Operation of the 155MM Howitzer/W48 MOD 1/M454 Nuclear Weapon System (U). |
| 55-203 | Movement of Nuclear Weapons, Nuclear Components, and Related Classified Non-nuclear Materiel. |
| 95-27 | Operational Procedures for Aircraft Carrying Dangerous Materials as Cargo. |
| 360-5 | Army Information: Public Information Policies. |
| 385-40 | Accident Reporting and Records. |
| (FOUO)700-65 | Nuclear Weapons and Nuclear Weapons Materiel. |
| 740-1 | Storage and Supply Activity Operations. |

2. Field Manuals (FM)

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| 1-100 | Army Aviation Utilization. |
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3. Technical Bulletins (TB)

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| (SRD)9-1100-811-40 | Security Classification of Nuclear Weapons Information (U). |
| 385-2 | Nuclear Weapons Firefighting Procedures. |

4. Technical Manuals (TM)

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| 5-315 | Fire Fighting and Rescue Procedures in Theaters of Operations. |
| 9-1100-204-10 | Operator's Manual: M454 Atomic Projectile. |
| (CRD)9-1100-204-14 | Operator's, Organizational, Direct Support, and General Support Maintenance Including Repair Parts and Special Tools List (Operation and Maintenance Instructions With Illustrated Parts Breakdown, XM76 Locking Device, XM78 Training Locking Device (U). |
| 9-1100-204-20 | Organizational Maintenance: M454 Atomic Projectile, M455 Training Atomic Projectile. |
| 9-1300-206 | Ammunition and Explosives Standards. |
| 38-250 | Packaging and Handling of Dangerous Materials for Transportation by Military Aircraft. |
| (CRD)39-0-1A | Numerical Index to Joint Atomic Weapons Publications (Including Related Publications) (Army Supplement) (U). |
| (SRD)39-20-7 | Nuclear Safety Criteria (U). |
| (CRD)39-20-11 | General Firefighting Guidance for Nuclear Weapons (U). |
| 39-45-51 | Transportation of Nuclear Weapons Materiel. |
| (SRD)39-45-51A | Transportation of Nuclear Weapons Materiel (Supplement): Shipping and Identification Data for Stockpile Major Assemblies (U). |
| 39-45-51C | Transportation of Nuclear Weapons Materiel (Supplement): DOD Criteria, Courier Responsibilities, Military Shipment, and Vehicle Loading/Tiedown Procedures. |
| (CRD)39-50-8 | Emergency Destruction of Nuclear Weapons (U). |
| 55-450-8 | Air Transport of Supplies and Equipment: External Transport Procedures. |
| 55-450-11 | Air Transport of Supplies and Equipment: Helicopter External Loads Rigged With Air Delivery Equipment. |
| 55-450-12 | Air Transport of Supplies and Equipment: Helicopter External Loads for Sling, Nylon and Chain, Multiple Leg. |
| 55-450-15 | Air Movement of Troops and Equipment (Nontactical). |
| 55-450-18 | Air Transport of Supplies and Equipment: Internal and External Loads, CH-47 Helicopter. |
| 55-450-19 | Air Transport of Supplies and Equipment: Helicopter External Lift Rigging Materiel, Techniques and Procedures. |

FM 55-204

| | |
|------------------|--|
| 55-1100-204-12-7 | Air Transport Procedures: Internal and External Transport of XM454 Projectile in XM467 Container by U-6A Aircraft. |
| 55-1510-209-10/1 | Operator's Manual: Army Models U-21A, RU-21A, and RU-21D Aircraft. |
| 55-1520-209-10 | Operator's Manual: Army Model, CH-47A Helicopter. |
| 55-1520-210-10 | Operator's Manual: Army Model, UH-1D/H Helicopter. |
| 55-1520-217-10-1 | Operator's Manual: Army Model CH-54A Helicopters. |
| 55-1520-217-10-2 | Operator's Manual: Army Model CH-54B Helicopters. |
| 55-1520-219-10 | Operator's Manual: Army Model UH-1B Helicopter. |
| 55-1520-220-10 | Operator's Manual: Army Model UH-1C/M Helicopter. |
| 55-1520-227-10 | Operator's Manual: Army Model CH-47B and CH-47C Helicopters. |

By Order of the Secretary of the Army:

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PAUL T. SMITH

*Major General, United States Army
The Adjutant General*

FRED C. WEYAND
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