

CHAPTER 6.4

**Conventional Weapons Handling Procedures Afloat (AE, AO, and AOE)
Combat Logistics Force Ships (Ammunition Ships)**

6.4.1 General

6.4.1.1 Three classes of ships, AE, AO, and AOE, are part of the combat logistics force which provide ordnance and ammunition logistics support to underway fleet combat forces. This interface enables fleet units to maintain their readiness posture at the desired level through a sustained period.

6.4.1.2 This chapter provides information that will aid in the safe, efficient handling of explosives and the standardization of procedures which provides guidance for ammunition ships personnel involved in pier onload and offload, stowage, movement, Underway Replenishment (UNREP), and underway combatant download.

6.4.2 Responsibilities

6.4.2.1 The first lieutenant shall:

- a. Have overall responsibility for the direction of all ammunition handling evolutions.
- b. Inform the officer of the deck when the deck department is ready for UNREP.
- c. Keep the commanding officer, executive officer, and the officer of the deck informed regarding progress and estimated time of completion of ammunition handling evolutions.
- d. Furnish qualified rig teams for all UNREP stations.

6.4.2.2 The cargo ordnance officer shall:

- a. Supervise the ammunition handling evolutions under the direction of the first lieutenant and make detailed assignments of personnel to special responsibilities during ammunition handling.
- b. Promulgate the ammunition handling notice.
- c. Ensure that safety precautions are promulgated and that all personnel involved are informed regarding proper ammunition handling techniques.

- d. Ensure the ordnance UNREP checklist (figure 6-4-1) is completed.

- e. Ensure proper stowage and security of ammunition.

- f. Direct the movement of ammunition.

- g. Estimate evolution completion times.

- h. Provide forklift drivers that are properly qualified and certified and possess explosives driver's licenses.

- i. Provide roving patrol when ammunition is staged and out of the magazine.

6.4.2.3 The supply officer shall:

- a. Ensure proper accounting and reporting of all ammunition transactions.

- b. Provide ammunition checkers at appropriate UNREP stations.

- c. Provide forklift drivers with an explosives license when requested.

- d. Ensure flexibility of meal hours is maintained to feed UNREP personnel.

6.4.2.4 The chief engineer shall:

- a. Ensure fire hoses are extended and charged in accordance with Naval Warfare Publication (NWP) 14.

- b. Ensure electric or diesel forklifts, three dimensional forklifts, and ammunition elevators are ready for use.

- c. Ensure qualified personnel are readily available to repair forklifts, charge batteries, and keep ammunition elevators in operation.

- d. Ensure electric or diesel forklifts, three dimensional forklifts, and ammunition elevators are ready for use.

ORDNANCE
UNREP CHECK SHEET

UNREP SHIP _____
 TIME/DATE _____
 STATIONS _____
 NUMBER OF PALLETS _____
 VERTREP _____

48 HOURS PRIOR

Plan of the day notice for work parties _____
 Identify slings required _____
 Ordnance requirements coordinated with supply and operations officer _____

24 HOURS PRIOR

Advise damage control assistant via chief engineer of type ammunition to be transferred or received and hose teams required. _____

12-6 HOURS PRIOR

Brief flight deck control _____
 Brief flight deck officer _____
 Advise air boss if VERTREP _____
 Arrange refreshments _____

6-2 HOURS PRIOR

Forklifts _____
 Electrics charged - Magazine on deck _____
 Diesels tested, watered, oil tested (Supply) _____
 All forklifts spotted - include flight deck assigned crew _____
 Get magazine count - stowage compatibility brief supervisors _____
 (A) Ammo flow and staging including VERTREP _____
 (B) Forklift failure procedures _____
 (C) Elevator equipment procedures _____

2-1 HOURS PRIOR

Handling crew _____
 Lifts belts, gloves, tools, and band cutters _____
 Forklifts staged _____

Figure 6-4-1. Ordnance UNREP Check Sheet

e. Provide helicopter fire party during Vertical Replenishment (VERTREP).

6.4.2.5 The operations officer shall:

- a. Provide UNREP planning conference briefings.
- b. Ensure that electronics emission conditions meet safety requirements for ammunition UNREP in accordance with NAVSEA OP 3565/NAVAIR 16-1-529 (NOTAL) and NAVELEX 0967-LP-624-6010 (NOTAL).

6.4.2.6 The communications officer shall:

- a. Provide radio and/or flag hoist communication with the customer ship during UNREP.
- b. Provide hand-held walkie-talkies to appropriate stations and personnel during UNREP.
- c. Secure all nonessential transmitters during ammunition UNREP.

6.4.2.7 The air officer (when embarked) shall:

- a. Ensure the flight deck is ready for VERTREP.
- b. Ensure the tower and flight deck are appropriately manned.
- c. Ensure helicopters are ready for VERTREP.
- d. Provide landing signal, chain, chock, and pale pendent hookup personnel.

6.4.2.8 The medical officer shall:

- a. Be prepared to receive possible casualties.
- b. Provide corpsmen as required.

6.4.2.9 The administrative division shall:

- a. Provide phone talkers on the bridge.
- b. Provide master-at-arms to patrol the ship during the evolution to keep nonessential personnel clear of ammunition handling areas and enforce no smoking regulations.

6.4.2.10 Safety Supervisors. Officers or senior petty officers shall be assigned as safety supervisors during UNREP evolutions at designated transfer stations.

6.4.2.11 Supervisory Petty Officer. Cargo ordnance division petty officers shall direct the flow of ammunition and ensure proper stowage and securing of ammunition and handling equipment.

6.4.2.12 Ammunition roving watch shall check for the following:

- a. Unauthorized smoking.
- b. Personnel tampering with staged ammunition.
- c. Proper fire hoses are charged.
- d. Leaks in hoses.
- e. Leaks at fire stations.
- f. Oil leaks from equipment in the vicinity of the staged ammunition.
- g. Unauthorized personnel in ammunition staging areas.
- h. Report to the officer of the day, every half hour, the status and security of the staging areas.

6.4.2.13 The Explosive Ordnance Disposal officer shall:

- a. Ensure two members of the Explosive Ordnance Disposal team are present in the cargo handling area during all ammunition resupply operations.
- b. During VERTREP of ammunition position, one Explosive Ordnance Disposal member on the flight deck.

6.4.3 Material Handling Equipment

6.4.3.1 Material handling equipment is that equipment required to transport, handle, or transfer explosives or explosive components carried on board ammunition ships. Information contained in this paragraph is intended as a supplement to existing technical manuals, not as a substitute. A comprehensive listing of approved handling equipment for weapons can be found in NAVSEA OP 2173, volumes I and II (NOTAL). A specialized list of weapons handling equipment required to handle fleet issue unit loads during pier, shipboard, Connected Replenishment (CONREP) and VERTREP evolutions can be found in tables 2-1 and 3-1 of NAVSEA OP 3206, volumes II and III (NOTAL).

6.4.3.2 Handling equipment must be maintained at the optimum level of repair and weight tested at established

industrial activities in accordance with applicable maintenance requirement cards and technical manuals. If extensive maintenance or repair are required, refer to appendix A of NAVSEA OP 3206, volume III (NOTAL), for applicable equipment operating procedures. Periodic testing requirements for ordnance handling equipment are contained in NAVSEA SG 420-AP-MMA-010 (NOTAL).

6.4.4 Transporting Equipment. Transporting equipment includes the various types of trucks used to transport the ordnance carried on board ammunition ships to and from stowage. The trucks fall into the following categories: forklift, pallet lift, handlift, and hand truck. For details relating to description, operation, application, and preventive maintenance on the trucks, refer to NAVSEA OP 3206, volume I (NOTAL). Similar information on guided missile handling equipment, mine handling equipment, and equipment used to transport fleet issue unit load configurations can be found in sections III, IV, and V of NAVSEA OP 3206 (NOTAL).

6.4.5 Dunnage Systems. The dunnage systems employed by ammunition ships consist of two basic types: metal (athwartships and diagonal) and wire net. For application of these systems to the different classes of ammunition ships, general installation techniques, and special configurations for unique loads, refer to chapter 5 of NAVSEA OP 3206, volume I (NOTAL).

6.4.6 Pier Loadout

6.4.6.1 Planning and Coordination. Planning, prior to a pier loadout operation, ensures proper loading of the ammunition ship and an orderly transfer of ammunition between the ship and the ordnance facility. Ammunition ships are loaded in accordance with a specific cargo load plan which shows the location of each item of ammunition. The plan is developed by personnel at the ordnance facilities at Earle, NJ, and Concord, CA. Upon request from higher authority, personnel from these activities will visit the ammunition ship, prior to pier loadout, and formulate the cargo plan, using the replenishment schedule as a guide. There is some flexibility in the plan to accommodate possible changes in the replenishment schedule.

6.4.6.2 Cargo Stowage. Representatives from both the ammunition ship and the ordnance facility determine the final stowage of ammunition at a preloading conference. They must consider the following items:

- a. Designated deckloading capacity of the ship.
- b. Cubic volume and weight of ammunition items.

- c. Distribution of ammunition for proper trim and stability at sea as scheduled transfers are made.

- d. Provisions for adequate, clear, working spaces within the holds.

- e. Safe location of ammunition in relation to the ship's vulnerability to mine or collision damage.

- f. Metal dunnage system usage requirements.

- g. Explosive compatibility of ordnance material.

6.4.6.3 Ammunition Loading. The ordnance facility does the loading; however, the ship's commanding officer retains the final responsibility for ensuring that his/her ship is properly loaded within its designed capabilities. Loading procedures must comply with NAVSEA OP 3206 (NOTAL) and must be in accordance with NAVSEA OP 4 (NOTAL) and U.S. Coast Guard, Code of Federal Regulations 46 CFR, Part 146 (Transportation or Storage of Military Explosives). Except as authorized by the Chief of Naval Operations, deviations from the requirements of 46 CFR, Part 146, are not permitted. Should a situation arise in which it appears to be infeasible to meet the requirements of 46 CFR, Part 146, a request for waiver of the specific requirements may be submitted to the Chief of Naval Operations (N411) via the Naval Sea Systems Command. This policy, as currently set forth in OPNAVINST 8023.2C (NOTAL), is not to be construed to interfere with the commanding officer of any ship, that transports military explosives, to take emergency action for the safety of his/her ship, or to meet any military emergency. Should such emergency action result in the deviation of the requirements of 46 CFR, Part 146, the deviation shall be reported to the Chief of Naval Operations (N411) at the earliest opportunity.

6.4.6.4 Equipment Required. Ammunition ships are equipped with loading gear, such as 10-ton cargo booms and 5-ton cranes, making the use of pier cranes optional for loading operations. However, loading can be expedited through the use of pier and floating cranes. The following handling equipment is required:

- a. Pallet sling MK 93 MOD 0 or pallet hoisting sling MK 70 MODs 1 and 2.

- b. Pallet sling MK 123 MOD 0.

- c. Electric forktrucks, 4,000-pound capacity, with a minimum 28-inch spacing between the forklift tines (inside dimensions).

- d. Pallet lift truck, 4,000-pound capacity.

e. In addition to the above handling equipment, the following items are also required: additional metal stanchions must be available for the stowage of unit loads in areas where metal dunnage is used; lashing gear and tomming gear; and wood dunnage. Refer to NAVSEA OP 3206, volume I, chapter 5 (NOTAL), for detailed descriptions of the items.

6.4.6.5 Preliminary Operations. The following procedures should be used in preparing the ammunition ship for receiving fleet issue unit loads of ammunition from dockside:

- a. Mate the port and starboard sections of the elevators to be used (AE 21/23 class ships).
- b. Clear the area between the elevator to be used and the side of the ship nearest the dock of all material and equipment not necessary to the operation.
- c. Review the stowage plan to determine the holds and levels where loads are to be stowed.
- d. Establish phone communication between the personnel in the holds and the main deck area.
- e. Position the dock crane (if used) and transportation conveyance adjacent to holds to be loaded.
- f. Ensure the proper emission control condition is set.
- g. Ensure fire fighting equipment is made available in accordance with NAVSEA OP 4 and NAVSEA OP 3317.

6.4.6.6 Stowage Operation. Fleet issue unit loads of conventional weapons are hoisted aboard the ship and lowered to the predetermined hold or level via elevator. From there, the loads are transported to the prescribed stowage area and secured.

6.4.6.7 Pier Offload. The ammunition ship may have to offload unit loads of conventional weapons considered to be non-serviceable due to age, damage, etc. The operation is essentially the reverse of loadout.

6.4.7 Underway Replenishment

6.4.7.1 Objectives of Replenishment. In order to carry out the Navy's mission, fleet units must be capable of remaining at sea for prolonged periods, fully armed and ready to carry out any assigned task. To accomplish this objective, the Navy transports munitions loaded on ammunition ships to safe areas in the theater and shuttles the ammunition, as required, to combatants in the task force.

The fleet combatants receive resupply of ammunition by means of an UNREP. An UNREP is a transfer of a commodity between two ships while underway. Two methods of transfer are employed: horizontal transfer via CONREP rigs and vertical transfer via helicopter VERTREP. The goal of an UNREP is the safe delivery of the maximum amount of munitions in the minimum amount of time. An UNREP must be accomplished in such a manner that it does not interfere with the primary mission of the supported force. For detailed instructions on all aspects of replenishment at sea, refer to NWP 14 (NOTAL). For transfers between ships of the North Atlantic Treaty Organization nations, see Allied Technical Publication (ATP) 16 (NOTAL).

6.4.7.2 Organization and Command

6.4.7.2.1 Officer in Tactical Command. The officer in tactical command is the senior commander of the UNREP force and the supported force and is responsible for the proper execution of the entire replenishment operation.

6.4.7.2.2 UNREP Force Commander. The UNREP force commander is the senior commander or commanding officer of the replenishment ship. The UNREP force commander is authorized the direct liaison with the supported force commander and is responsible for:

- a. Consolidating munitions prior to replenishment.
- b. Recommending to the officer in tactical command a replenishment course and speed for optimum replenishment conditions. The UNREP force commander shall advise the officer in tactical command of any unusual limitations or characteristics of the replenishment ship which might affect the replenishment or influence the order alongside.
- c. Exercising responsibility for the movement of the replenishment ship en route to the rendezvous area and initiating movement reports as necessary.
- d. Ensuring passage through the designated rendezvous point on time. After contact with the supported force has been established, the UNREP force commander may alter his/her course and speed (unless otherwise directed by the officer in tactical command) to facilitate rendezvous.

6.4.7.2.3 Supported Force Commander. The supported force commander is the senior commander or commanding officer of the ship to be replenished. The support force commander is responsible for:

- a. Selecting and promulgating rendezvous time and place.

b. Ensuring the submission of requirements as far in advance as possible.

c. Issuing the order alongside.

6.4.7.3 Replenishment Conference. A replenishment conference is an excellent means of improving the performance of units participating in an UNREP. When a conference can be held, it may be possible to develop a customized plan for a particular UNREP. Particular items which are particularly worthy of discussion are the types and number of rigs to be used; requirements and submission of requirements; and use of experimental rigs, equipment, and techniques.

6.4.7.4 Planning. The overall efficiency of an UNREP is directly proportional to the thoroughness of planning. Even in the case of a small UNREP, thorough planning is required. Transfer rate, breakout problems, rigs, and emission control condition are factors which must be considered when planning an UNREP. To minimize time alongside, plan combinations of CONREP and VERTREP, emphasizing the most efficient method or combination of methods of transfer. Figures 1-2 through 1-5, located in chapter 1 of NWP 14 (NOTAL), are excellent aids for use in the planning of UNREP operations.

6.4.8 Underway Transfer of Ammunition

6.4.8.1 Basic Consideration. The transfer of ammunition at sea is the most exacting and hazardous of all replenishment operations. The greatest of care must be taken to avoid accidents which could result in the destruction of both the ammunition ship and the ship(s) alongside. Great emphasis must be placed on the safe and expeditious handling of munitions.

6.4.8.2 Personnel Requirements. Personnel engaged in the transfer of ammunition shall be qualified and certified and shall observe all safety precautions while handling explosives. They must also be thoroughly familiar with the methods used and their limitations. NAVSEA OP 3347 (NOTAL) and NAVSEA OP 4 (NOTAL) contain safety precautions and handling procedures applicable to ammunition. Because various types of mobile and nonmobile handling equipment are used in transferring ammunition, personnel who work with handling equipment should be familiar with NAVSEA OP 2173 (NOTAL) and section 5 of this instruction. It is of particular importance that care be used when handling new types of ammunition. Technical developments, especially in missiles, lead to new transfer methods and handling equipment. Personnel must master new techniques in handling ammunition and missiles to achieve safe and expeditious transfers.

6.4.8.3 Characteristics of Ammunition Ships (AE, AO, AOE). Ammunition ships are specifically designed to transport and transfer ammunition. Their holds are sheathed, ventilated, and provided with sprinklers for ammunition safety. Some ships have VERTREP facilities and certain classes are equipped to transfer fuel and provisions as well as ammunition. Normal replenishment speed for ammunition ships, when transferring ammunition, is 12 to 16 knots. Fast combat support ships (AOEs) and major combatants can transfer ammunition at higher speeds when weather and sea conditions permit. The replenishment speed will be promulgated by the officer in tactical command. For data on transfer stations and capabilities of ships, refer to the following:

a. UNREP Stations Capabilities Handbook NAVSHIPS 0905-487-2010 (NOTAL).

b. Fleet Underway Replenishment Guide, COMNAVSURFPACINST 3180.2E (NOTAL) or COMNAVSURFLANTINST C9010.1E (NOTAL).

c. Fleet and type commander directives.

6.4.8.4 Special Handling Equipment. Ammunition, missiles, and components require special handling equipment for intership transfer because of the large weight and size of the load and because missiles and components are easily damaged during handling. For information on UNREP hardware and equipment, refer to NAVSEA S9570-AD-CAT-101 (NOTAL).

6.4.8.5 Palletized Ordnance. Conventional ammunition is normally transferred on pallets in fleet issue unit loads. Transfer of palletized ordnance requires the use of special slings. For data on the configurations of palletized ordnance unit loads that have been authorized for transfer at sea, refer to MIL-STD 1323 (NOTAL) drawings and NAVSEA OP 3206 volumes I, II, and III. Ammunition ships carry pallet trucks for use by receiving ships in clearing pallets from landing areas.

6.4.8.6 Preparing Missiles and Boosters. Missiles and boosters are normally transferred either in their containers or in the MK 6 dolly. The receiving ship's strikedown system dictates the choice of container or dolly. NAVSEA OP 3192 (NOTAL) and NAVSEA OP 3206 (NOTAL) contain procedures for loading and unloading missiles and boosters into and from the MK 6 missile transfer dollies. Missile components are normally transferred on pallets. MK 45 handlift trucks are available on the ammunition ship for use by the receiving ship if desired. The receiving ship shall provide the information in paragraph 6.4.8.7 to the delivery ship.

6.4.8.7 Exchange of Information. After the replenishment schedule has been determined, the following information shall be exchanged:

a. Commodity identification by type, quantity, and naval ammunition logistics code required at each station.

b. Order of transfer of missiles and boosters, i.e., booster-booster missile-missile or booster-missile booster-missile.

c. Direction that missiles and boosters should face during transfer as dictated by receiving ship's strikedown system.

d. Need to receive partial pallet loads of ammunition if full pallets cannot be handled.

e. Requirements for special handling equipment to expedite strikedown.

f. Missile Return Arrangements. When the receiving ship plans to return missiles, it shall advise the delivery ship of:

(1) Number and type of missiles.

(2) Sequence of transfer cycle: before receiving new missiles or alternately receiving and returning missiles.

(3) Handling equipment requirements.

g. The delivery ship shall advise the receiving ship on the following items:

(1) Transfer stations to be used.

(2) Transfer rigs to be used.

(3) Breakaway procedures to be used when transfers are complete.

(4) Any required deviations from the receiving ship's desired plan.

6.4.8.8 Invoices. Ammunition transfers at sea are normally accompanied by itemized invoices. The receiving ship checks and signs the original invoices and returns them to the delivery ship in the last transfer. If time does not permit this, return them by guard mail or regular mail as soon as possible.

6.4.8.9 Report. It is the delivery ship's responsibility to prepare and submit reports required for the loss or damage of ammunition during transfer; this responsibility is transferred to the receiving ship when the ammunition safely reaches its deck.

6.4.8.10 Preparing Ships for Transfer. Most of the preparation required by the delivery and the receiving ship for the transfer of ammunition is contained in chapters 4 and 5 of NWP 14 (NOTAL). The common preparations in chapter 2 of NWP 14 (NOTAL) also apply. Refer to NWP 14, chapters 4 and 5 (NOTAL), for the list of rigs, in order of preference, the basis for selecting the rigs, and information on preparing transfer stations on the delivery and receiving ships. The checkoff lists of figures 6-4-2 through 6-4-9 should be completed to ensure that all necessary equipment is available, transfer stations are properly rigged, and required personnel are available and aware of their duties. Give specific attention to the following preparations:

a. Limit breakout of ordnance, prior to the replenishment operation, to that required to preclude a significant reduction in the transfer rate.

b. Both ships provide wedges, chocks, and preventers to preclude rolling and shifting of ammunition on deck.

1. Receive and review all station checkoff lists.	_____
2. Check each station to see that it is properly rigged for the method of transfer.	_____
3. Check the distance line for proper length and markings.	_____
4. Ensure that any required handling equipment is in place, operating, and manned.	_____
5. See that any required carriers are on-station (such as cargo nets, skip boxes, transfer-at-sea chair or transfer bags).	_____
6. Start, warm up, and test winches.	_____
7. Ensure that the brake is set on the cargo boom's topping lift winch, and the winch pawl is engaged. If winch is not equipped with a pawl, attach a preventer stopper to the topping lift wire (as appropriate).	_____
8. Rig the proper station markers.	_____
9. Have two bolos and one line-throwing gun ready for use at each station to be used. Test line-throwing gun and examine firing pin. Have extra projectiles and shot lines on-hand.	_____
10. Prepare and test sound-powered phones.	_____
11. Have all men on-station in prescribed uniform with life jackets, hard hats, and other special clothing as required.	_____
12. Rig in movable equipment and fittings that project over the engaged side and are not required during the replenishment (that is, lifeboats and sea painter).	_____
13. Test lifeboat engines. Ready lifeboat for lowering.	_____
14. Have movies, fleet freight, and mail ready for immediate transfer.	_____
15. Have all specified rigs ready for use.	_____
16. In freezing weather, have sand available for use on icy areas. Whenever practicable, remove ice from working areas prior to replenishment.	_____
17. Have repair and emergency tools on-station and ready for use.	_____
18. Make readiness report to officer of the deck.	_____
Remarks:	

Figure 6-4-2. Deck Department Replenishment Checkoff List

1. Light off additional boilers, as necessary.	_____
2. Put generators on the line, as required.	_____
3. Warm up all deck machinery.	_____
4. Maintain fire-main pressure at 100 psi.	_____
5. Lead out and inspect necessary firefighting equipment.	_____
6. Check all sound-powered phones and circuits that will be used, both intership and intraship.	_____
7. Warm steam cargo pumps. Test all pumps, including electrical. Recirculate oil.	_____
8. Make readiness report to officer of the deck.	_____
9. Set restricted maneuvering conditions, when directed.	_____
Remarks:	

Figure 6-4-3. Engineering Department Replenishment Checkoff List

1. Receive or send requisitions, ration items in short supply, and prepare hatch check sheets.	_____
2. Conduct prereplenishment conference to disseminate information to checker, hatch officers, and leading petty officers.	_____
3. Prestage number of net loads at each transfer station.	_____
4. Predesignate deck space that will be used for transfer, and label the space accordingly.	_____
5. Man replenishment-at-sea detail when called away. Man phone talker stations, status boards, and supervisor stations.	_____
6. Furnish checkers for cargo transferred and received at each station.	_____
7. Prepare cargo scheduled for transfer.	_____
8. Record water cuts, ullage gauges, and temperature of tanks before and after.	_____
9. Make readiness report to officer of the deck.	_____
Remarks:	

Figure 6-4-4. Supply Department Replenishment Checkoff List

Night Replenishment Station # _____

(Petty officer in charge of station will complete this checkoff list in addition to the station checkoff list required for day replenishment.)

1. Have at least two chemical light wand illuminated shot line projectiles on hand for each ship expected alongside. _____
2. Test batteries and bulbs in all flashlights. _____
3. Ensure that a green chemical light or one-cell white flashlight and a whistle are attached to each life jacket in use. _____
4. Have station marker light box properly prepared. Show correct commodity for transfer. _____
5. Have obstructions, fittings, and attachment points marked with red chemical lights or one cell and flashlights. _____
6. Have appropriate colored-lens flashlights or wands available for hand signals. _____
7. Mark each messenger line with canvas tags. _____
8. Rig distance-line illumination. _____
9. Rig lifeline illumination. _____
10. Illuminate working station lighting. _____
11. Ensure approach and station lights have been tested. _____

Remarks:

Figure 6-4-5. Night Replenishment Checkoff List

Missile/Cargo STREAM Station # _____	
(For night replenishment, note supplemental checkoff list.)	
1. Ensure that wires are free of kinks and are spooled on the drum with no riding turns. Additionally, ensure that winch clutches are engaged and that clutch engaging levers are secured in place with toggle pins.	_____
2. Test winches and sliding block in accordance with approved procedures.	_____
3. Ensure that trolley, cargo drop reel, cargo hook, messenger-rigged SURF Traveling Actuated Remotely (STAR), traveling Standard Underway Replenishment Fixture (SURF), and Standard Tension Replenishment Alongside Method (STREAM) manila or burton out haul are properly rigged.	_____
4. Ensure that inhaul is in tension mode.	_____
5. Check pelican hook for ease of operation and presence of cotter pin.	_____
6. Ensure that the messenger is faked down for running and properly attached to the rig.	_____
7. Have line-throwing gun and one bolo at each station to be used. Test line-throwing gun and examine firing pin. Have extra projectiles and shot lines on-hand.	_____
8. Rig station marker.	_____
9. Have signal paddles available.	_____
10. Fake down phone line and test phone.	_____
11. Have required station and emergency tools available.	_____
12. Have cargo nets, net shorteners, skip box, and transfer bag available, as required.	_____
13. Muster men assigned.	_____
14. Make readiness report to first lieutenant.	_____
Remarks:	

Figure 6-4-6. Missile/Cargo STREAM Replenishment Checkoff List

Housefall Station # _____

(For night replenishment, note supplemental checkoff list.)

1. Ensure that wires are free of kinks and are spooled on the drum with no riding turns. Additionally ensure that winch clutches are engaged and that clutch engaging levers are secured in place with toggle pins. _____
2. Ensure that trolley block is properly installed (modified housefall rig). _____
3. Check operating cargo hook. _____
4. Have all swivels free and well lubricated. _____
5. Have all shackles properly secured. _____
6. Check pelican hook for ease of operation and presence of cotter pin. _____
7. Fake housefall block messenger down for running. _____
8. Have line-throwing gun and one bolo at each station to be used. Test line-throwing gun and examine firing pin. Have extra projectiles and shot lines on-hand. _____
9. Rig station marker. _____
10. Have signal paddles available. _____
11. Fake down phone line and test phone. _____
12. Test all winches. _____
13. Have required station and emergency tools available. _____
14. Have cargo nets, net shorteners, skip box, and transfer bag available, as required. _____
15. Muster men assigned. _____
16. Make readiness report to first lieutenant. _____

Remarks:

Figure 6-4-7. Housefall Station Replenishment Checkoff List

Burton Station # _____	
(For night replenishment, note supplemental checkoff list.)	
1. Ensure that whip is free of kinks and is spooled on the drum with no riding turns.	_____
2. Check operation of cargo hook.	_____
3. Have all swivels free and well lubricated.	_____
4. Have all shackles properly secured.	_____
5. Fake messengers down for running.	_____
6. Have line-throwing gun and one bolo at each station to be used. Test line-throwing gun and examine firing pin. Have extra projectiles and shot lines on-hand.	_____
7. Rig station marker.	_____
8. Have signal paddles available.	_____
9. Fake down phone line and test phone.	_____
10. Test all winches.	_____
11. Have required station and emergency tools available.	_____
12. Have cargo nets, net shorteners, skip box and transfer bag available, as required.	_____
13. Muster men assigned.	_____
14. Make readiness report to first lieutenant.	_____
Remarks:	

Figure 6-4-8. Burton Station Replenishment Checkoff List

1. Ensure rudder operational PMS check has been conducted within 48 hours of UNREP.	_____
2. Notify EOOW of expected approach speed and speed requirement upon completion. Verify plant lineup for evolution.	_____
3. Cargo and personnel manifest available on bridge (if applicable).	_____
4. Fuel type and quantity requirement posted on bridge.	_____
5. As applicable: Set the replenishment detail.	_____
6. Post name, rank, lineal number of all commanding officers and the name, hull number, voice call of all ships on status board.	_____
7. Test bullhorn and place in vicinity of captain's chair.	_____
8. Ensure sound-powered circuits and engineering 'E' call sound power circuits are tested and set up.	_____
9. Take assigned waiting station as directed by OTC.	_____
10. Personnel qualification standards qualified master helmsman at the helm. Helm safety supervisor on station.	_____
11. Determine replenishment order.	_____
12. Set HERO condition, if applicable.	_____
13. Receive manned and ready reports from main control, cargo control, after steering, bridge, replenishment stations and departmental reports. Set restricted maneuvering conditions, when directed.	_____
14. ROMEO at dip, ready to go alongside (300 to 500 yards flashing light at night.)	_____
15. ROMEO at close-up, commencing approach. Haul up day shapes (at night turn on task and contourlights, signal ROMEO by shielded directional signal lamps or Nancy).	_____
16. Pass the word over the IMC: "On the (name of ship); stand by for shot line(s), (port/starboard side, fwd, aft, midships, all stations); all hands topside take cover."	_____
17. When first messenger is in hand, haul down ROMEO. Put smoking lamp out while refueling or handling ammunition.	_____
18. Fifteen minutes prior to disengaging, receiving ship only, PREP at the dip.	_____

Figure 6-4-9. Bridge Replenishment Checkoff List

19. Replenishment complete, last station disengaging, PREP close-up.	_____
20. When last line is clear, haul down PREP.	_____
21. When clear (200 to 300 yards) of delivery ship, haul down day shapes (switch to normal running lights at night).	_____
Remarks:	

Figure 6-4-9. Bridge Replenishment Checkoff List (Cont'd)

c. Cover the landing area with rubber matting when bare ammunition is to be transferred.

d. The receiving ship's plan must provide for keeping the landing area clear for arriving ammunition and for expediting strikedown.

e. Ensure the receiving ship has adequate special handling equipment, i.e., MK 45 handlift truck and pallet trucks. If not, it should request the delivery ship to transfer the equipment at the beginning of the evolution. The receiving ship must return all borrowed special handling equipment to the delivery ship when the operation is complete.

6.4.8.11 Load Limitations. The following requirements must be strictly followed:

a. Loads for transfer must meet the requirements for the transfer rig used and for the type of ammunition or missile to be transferred.

b. Safe transfer loads and load limitations established by the Naval Sea Systems Command for the transfer method used.

c. Types of loads, weight limitations, and handling equipment prescribed in NAVSEA OP 3206 for the transfer of ammunition and missiles.

d. Limit loads for transfer to those that can be safely handled under existing conditions. Commanding officers should reduce loads below the permissible maximums during adverse conditions.

6.4.8.12 Test Loads. Prior to transfer of any type of ammunition, test the rigs by cycling a dummy load. The weight of the dummy load must be equal to or greater than the weight of the heaviest loads to be transferred.

6.4.8.13 Handling and Transfer Procedures. Useful sources of information on the transfer of ammunition and missiles are NAVSEA OP 3206 (NOTAL), NWP 14 (NOTAL), MIL-STD 1326 (NOTAL), and NAVSEA S9570-AA-MMA-010 (NOTAL). The following procedures apply to transfer of ammunition and missiles:

a. Use mechanical handling and strikedown equipment, such as roller conveyors and slides, whenever available.

b. Transfer missiles and missile components simultaneously so that if the operation is interrupted, missiles

that are already on the combatants will be complete for operational purposes.

c. Adhere to the order for transfer of missiles and boosters as specified by the combatants.

d. Ensure that the missile is oriented in the direction specified by the receiving ship.

e. When an awkward or sensitive missile or ammunition load is to be transferred, use tag lines, a load stabilizer, or a stream strongback to prevent the load from rotating and to control the pendulum action of the load.

f. If the receiving ship does not have the landing area in which to handle full pallet loads, the ammunition ship should send only partial loads.

g. Transfer loose rounds and individual small containers in skip boxes, metal pallet crates, or cargo nets.

h. Once a transfer dolly is unloaded, return it to the delivery ship for reloading and retransfer.

6.4.8.14 Precautions. Replenishment ships shall make ready for use one fire hose, with applicator attached, at each transfer station and one additional hose at each hold, elevator access, or compartment containing or working military explosives when the hatch serving the hold is open. The hoses shall be of sufficient length to reach all portions of the hold or compartment. All hoses shall be charged except when they are exposed to freezing temperatures. Ships, other than replenishment types, shall have two fire hoses, with applicators attached, at each transfer station. All fire hoses shall be charged, except in freezing weather. On carriers, when compliance would result in charged salt water hoses crossing fire control or damage control boundaries (zebra hatches), quick-reel aqueous film forming foam systems may be used in lieu of saltwater hoses, provided that overhead sprinklers in the hangar bay are available and appropriate conflagration stations are manned.

6.4.8.15 References. The following publications contain information that, if used to formulate ammunition handling plans, will result in a smooth, safe, and professional operation:

a. NWP 14 (Replenishment at Sea) (NOTAL).

b. ATP 16 (Replenishment at Sea North Atlantic Treaty Organization (NATO)) (NOTAL).

c. OPNAVINST 8023.2C (U.S. Navy Explosive Safety Policies, Requirements, and Procedures) (NOTAL).

d. MIL-STD 1323 (Palletizing Fleet Issue Unit Loads) (NOTAL).

e. NAVSEA S9570-AD-CAT-101 (UNREP Hardware and Equipment manual) (NOTAL).

f. NAVSEA OP 4 (Ammunition Afloat) (NOTAL).

g. NAVSEA OP 2173 (Approved Handling Equipment for Weapons and Explosives), Volumes I and II (NOTAL).

h. NAVSEA OP 3192 (Missile Dolly MK 6 MODs 1, 2, 3, and 4) (NOTAL).

i. NAVSEA OP 3206 (Handling and Stowage of Naval Ordnance Aboard Ammunition Ships), Volumes I, II and III (NOTAL).

j. NAVSEA OP 3347 (U.S. Navy Ordnance Safety Precautions) (NOTAL).

k. NAVSEA OP 3565/NAVAIR 16-1-529 (Radio Frequency Hazards to Ordnance, Personnel and Fuel) (NOTAL).

l. NAVSEA OP 4118 (Handling, Packaging and Transportation of Underwater Mines MK 52, MK 55, MK 56, and MK 57) (NOTAL).

m. NAVSEA S9570-AA-MMA-010 (Underway Replenishment Ordnance Handling Equipment and Transfer Units) (NOTAL).

n. U.S. Coast Guard, 46 CFR, Part 146 (Transportation or Storage of Military Explosives) (NOTAL).

6.4.9 Vertical Replenishment

6.4.9.1 Concepts of VERTREP. VERTREP provides a capability for augmenting and enhancing UNREP. It also permits increased flexibility and considerable latitude in replenishment planning, particularly regarding time and location of the UNREP operation. There are some advantages of VERTREP that should be considered in determining the method of UNREP, particularly:

a. Reduction in overall time required to replenish the supported unit.

b. Reduction or elimination of time that screening ships are required to be off station.

c. Reduction in personnel involved.

d. Capability of replenishing units in a dispersed formation.

e. Capability to replenish units engaged in tasks which make it impossible for them to come alongside.

f. Capability of replenishing units in heavy weather conditions when alongside steaming is hazardous or impossible.

g. Capability of replenishing units on station in shallow water or at anchor.

6.4.9.2 While the VERTREP transfer rate is normally less than the CONREP transfer rate for a major fleet unit, VERTREP can be used to distinct advantage by eliminating the time for approach, hookup, and disconnect in an alongside transfer. This is particularly true during small-scale replenishments when less than 75 short tons are to be transferred. VERTREP transfer rates of up to 180 short tons per hour or 120 lifts per hour can be achieved by a CV or LHA utilizing two helicopters. Some small units cannot receive loads at this maximum rate because of small or partially obstructed VERTREP platforms. To minimize alongside time for small units, a combination of VERTREP and CONREP can be used. Air-Capable Ship Aviation Facilities Bulletin No. 1 specifies the various requirements for all platforms.

6.4.9.3 VERTREP Helicopters. Currently, the H-46 is the most widely used VERTREP helicopter. The H-46 can VERTREP ammunition on its external cargo hook or by internal loading. The H-46's tandem rotor configuration allows maneuverability without the wind restrictions normally associated with tail rotor helicopters. Thus, ships may vary course and speed while undergoing VERTREP. The H-2 series helicopters have a limited VERTREP capability because of their configuration and operational limitations. The H-3 series helicopters were not designed with a VERTREP capability. However, several have been modified by the addition of an external hook, and they therefore have a limited capability. CH-53 helicopters are equipped with external cargo hooks and are used by the Marine Corps for vertical lifts and by the Navy for vertical on board delivery operations. UH-1 helicopters are equipped with external cargo hooks and have a weight-limited VERTREP capability. Refer to NWP 3-04.1 (NOTAL) for the general capabilities of the type of helicopter employed. The number of helicopters used during a VERTREP will depend on:

- a. Number of helicopters available.
- b. Type and number of ships being replenished.
- c. Distance between ships.
- d. Ability of the receiving ship to keep the cargo drop area(s) clear.
- e. Ability of the delivery ship to provide ammunition at a sufficient rate.
- f. Administrative flights scheduled by the helicopter coordinator.
- g. Helicopter aircrew proficiency and training requirements.

6.4.9.4 Ships Stationing. See figure 9-1 of NWP 14 (NOTAL) for typical ship stations for VERTREP.

6.4.9.5 Helicopter Coordinator. The replenishment group commander will designate a helicopter coordinator to control and coordinate all helicopters and VERTREP operations. Normally, the helicopter coordinator will be the senior commanding officer of the replenishment ship with VERTREP helicopters embarked and participating in the operation. The helicopter coordinator will make appropriate recommendations to the replenishment group commander concerning:

- a. Recommended replenishment course for optimum relative wind for helicopter operation.
- b. Delivery ship position in the formation to shorten the distance between transferring and receiving ships to enhance VERTREP effectiveness without hazarding other ships in formation.
- c. Coordination of helicopter administrative flights through the officer in tactical command.

6.4.9.6 VERTREP Equipment. Certain cargo handling, load-carrying, and auxiliary equipment is needed for VERTREP. Some items have been used for CONREP for a number of years. A few have been designed specifically for VERTREP. For applicable types of equipment, descriptions, and their proper uses, refer to NAVSEA OP 4098 and NWP 14 (NOTAL).

6.4.9.7 VERTREP Preparations. Plan a VERTREP operation several days before the actual flight operation. From 3 to 15 days before a scheduled VERTREP, distribute issue documents for customer ships to cargo hold captains. Hold a replenishment planning conference to develop a munitions breakout plan. From 1 to 3 days in advance of the scheduled delivery, begin breakout, strike-up, pallet assembly, and prestaging. Stage as much ammunition as possible near the VERTREP area before the actual operation begins. The primary concern when preparing loads is to provide a load that will ride safely in flight and arrive at the receiving ship undamaged. VERTREP loads differ from CONREP loads in that they are subject to extremely high winds from rotor downwash during hover and during the flight between ships. The detailed procedures in NAVSEA S9570-AA-MMA-010 (NOTAL) and NWP 14, chapter 9 (NOTAL), for preparing ordnance loads for VERTREP can also be used for preparing other types of loads of similar configuration. Prior to flight operations, ensure the VERTREP checklist in figure 6-4-10 has been completed.

6.4.9.8 Weight and Identification of Loads. As each load is made up, mark the load with its weight and any identification required by the customer. The method of marking depends on the procedure of the individual delivery ships. Use chalk, felt-tipped pen, or a tag. Tags may be color-coded for easier identification. VERTREP loads shall be color-coded when transfers are conducted under emission control conditions.

6.4.9.9 Sling Attachment and Staging Unit Loads. Prior to actual flight operations, ensure that the proper adjustable pallet slings are being used and that they are properly attached in accordance with the procedures outlined in NAVSEA S9570-AA-MMA-010 (NOTAL) and NWP 14 (NOTAL). Primary considerations in preparing and executing the flight deck cargo staging plan are outlined below:

- a. Sufficient clear space should be left on the deck to pull out the helicopter and to provide adequate clearance for takeoff and a landing area for possible emergency landings.
- b. Complete staging of the flight deck after VERTREP has commenced is permissible provided another certified landing area is available that is satisfactory to the helicopter detachment officer in charge.

1. Turn navigational aids on.	_____
2. Lay out VERTREP gear.	_____
3. Lower nets.	_____
4. Set ZEBRA in vicinity of flight deck.	_____
5. Preposition material handling equipment.	_____
6. Muster working party.	_____
7. Flag HOTEL ONE at the dip.	_____
8. Lower flagstaff, antennae, and obstructions (as appropriate).	_____
9. Conduct foreign object damage walkdown.	_____
10. Establish receive and transmit communications at helicopter control station.	_____
11. Have lifeboat manned and ready.	_____
12. Have crash and rescue team manned and ready.	_____
13. Have flight deck manned and ready.	_____
14. Hoist day shapes.	_____
15. Determine launch and recovery course and speed.	_____
16. Put smoking lamp out in vicinity of flight deck.	_____
17. Obtain permission from bridge to land and launch helicopter(s).	_____
18. For night operations:	
(a) Double-check darken ship.	_____
(b) Light suit on deck.	_____
(c) Wands on station.	_____
(d) Task lights energized.	_____
(e) Deck lights on.	_____

Figure 6-4-10. VERTREP Replenishment Checkoff List

c. All staged unit loads must be located within the hover area, bounded by periphery or hover lines, and be accessible for pickup by the hovering helicopter.

d. Sufficient room shall be left for hookup personnel to move about; always have an escape route available.

e. Load height will be such that hookup personnel can accomplish the task without climbing on loads. Hookup personnel should remain on deck at all times.

f. Sufficient room must be left between loads to reduce the possibility of snagging and tipping adjacent loads during pickup.

6.4.9.10 Load Transfer Procedures. Internal loads are usually far more time-consuming than external loads and should therefore be avoided except for transfer at great distances where a landing area is available for offloading. Before operations start, provide pilots and crewmen with the name, type, hull number, and location in the formation, frequencies, and tactical voice call of the receiving ship. As each load is picked up, display information, including destination and weight of each load, on a chalkboard from a position clearly visible to the pilot. An alternate method is to write the weight of the load with chalk on the side of the upper eye of the MK 106 sling, where it can be easily seen by the helicopter crewman

during hookup. As the helicopter nears the UNREP ship, its approach is announced over the deck edge speakers. All personnel shall clear the pickup zone, except hookup personnel who take positions alongside the load and hold the pendant up to signal the load location to the pilot. Guided by signals from the landing signal personnel, the pilot maneuvers the helicopter to hover over the load. A helicopter crewman, viewing the deck through the open cargo hook access hatch, advises the pilot via internal communication system, as to the helicopter's exact position over the load. As the helicopter hovers over the load, the hookup person hands the pendant to the aircrew in the cargo hatch and clears the area, moving toward the landing signal personnel. The crewman then slips the pendant over the safety hook and ensures that the load is secure and ready for lifting. That method ensures positive hookup of the pendant and eliminates unnecessary and unsafe chasing of the helicopter by hookup personnel. The aircrewman aboard the helicopter then gives the pickup and liftoff directions to the pilot in order to clear the load from the pickup area. The aircrewman aboard the helicopter is the primary director of the helicopter once it is in a hover over the pickup or drop area. The landing signal enlisted personnel shall also continue giving directions in case of internal communications failure or other emergencies of which the flightcrew is unaware. Radio transmissions to helicopters hovering over the VERTREP zone are distracting to the pilot and should be of an urgent nature only.