C. Handout.

1. "Every Navyman a Leader" - ALLHANDS reprint June 1958.

2. General Order 21 on Naval Leadership.

D. Self-development. Naval Officers' Correspondence Course, "Leadership," NAVPERS 10903.

III. INTRODUCTION.

A. Definition of Leadership. Leadership is influencing people to cooperate willingly toward some desirable goal.

B. Necessity for Leadership in Damage Control.

1. Effective group action in any situation largely depends on the kind of leadership provided. Weak, disinterested leadership, which fails to live up to the responsibilities inherent in the role of the leader, fosters half-hearted performance by those being led. In contrast, dynamic, enthusiastic leadership breeds success.

2. Directing crew members under the stress of actual emergencies calls for the highest qualities of leadership. This leadership is not remote but is personal and direct. It is essential to the success for control of casualties at sea. An important ingredient is high morale, which is generally attained over a long period. Morale can be built through conducting emergency drills, developing a CAN DO attitude, and by careful follow-up or constructive criticism offered to crew.

3. Frequently in emergencies, the leader tries to do everything himself. While this is admirable in one sense and deserves an "E" for effort, it is a poor leadership practice which tends to negate all the drills and training which prepared for the emergency. Also, the repair party or lifeboat crew, or whatever the group, is deprived of leadership which often results in men standing around with special assignments.

4. Leadership is not inborn but is acquired by practice and self-analysis. The ability to lead effectively comes from hard work, knowledge and enthusiasm. The references listed are recommended to assist conscientious leaders in developing their leadership abilities, ashore or afloat.

IV. PRESENTATION.

A. Prepare for Leadership in Damage Control.

1. Improve your leadership ability by study and analysis. After each drill consider how you could have improved your commands for speed and effectiveness.

2. Know your gear, remote controls, location of equipment and capacities, compartments protected with CO_2, etc.

3. Know damage control procedures, accesses, best communications, etc.

4. Know and understand your men, their capabilities and preferences, their strength, habits of speech, and their knowledge of gear and the ship.

5. Understand the damage control organization and training plans and procedures.

6. Instill pride and promote the concept of teamwork during all training drills.

B. Earn Your Mens' Confidence.

1. Have self confidence (gained by knowing your job).

2. Show the "CAN DO" spirit at all times (lead enthusiastically-enthusiasm is contagious).

3. Instruct sympathetically and patiently (remember that learning ability varies from person to person).

4. Ask questions pertaining to their duties and operations, indicating your interest (this keeps your group alert and serves as a review for them).

5. "Pat on back" for good performance (an excellent way to build moral, especially when praise is done publicly).

6. Re-instruct, if poor performance (repetition is an excellent training technique).

7. Treat each man according to his nature, but play no favorites on the rules you lay down (you must know your men to do this effectively).

8. Take blame on yourself when you have failed to communicate or to instruct (remember that poor performance is often the result of poor leadership. When your group performs poorly, review your own performance first).

9. It is generally better to rebuke men privately (however, during a drill it may be necessary to correct them "on the spot." Be forceful, but avoid being over-critical).

10. Remember that swearing doesn't help much in getting a job done.

C. During Drills.

1. Conduct each drill as an actual emergency but without unnecessary hurry.

2. Take overall charge of the operation. There can only be one leader.

a. Station yourself in a good spot to observe all operations.

b. Always give direct and exact commands or orders and see that they are understood and carried out properly.

c. Direct the whole operation, but don't talk too much. If you have trained your crew well, they will know what to do with a minimum of direction from you.

d. Keep damage control central informed and make sure that you are informed regarding all aspects of the emergency situation in your area.

e. Don't jump into things yourself, except in an emergency. Stand back where you can take in the entire situation and direct the action.

f. Rotate assignments, providing replacements are adequately trained. Thus each man will know more than one emergency job and will understand and work better with others.

g. Maintain order, discipline and a sense of purpose during emergencies and in training and qualifying personnel. This will maintain interest, prevent boredom and will improve efficiency.

D. After Drills.

1. Before securing, hold a critique. Ask the men how they thought the drill went and how they would suggest improving action next time.

2. Give praise and constructive criticism as appropriate. Cite how specific steps and extra effort could have improved performance.

3. Stress the importance of having all gear properly stowed and ready for instant use the next time.

4. Plan necessary training afloat to correct week spots or improve performance.

5. Plan for appropriate training ashore during the next available in-port period.

E. Instruction Periods. A well organized training session must be planned in advance, using a lesson plan. (See appendix A for lesson plan format.) If possible, keep groups small for best learning and keep sessions short. These are the four steps in any well-organized lesson:

1. Preparation.

a. Prepare learners by putting them at ease.

b. Motivate, i.e., explain the "why" or the reasons for the instruction and the gear. Show how instruction will be of value to them as individuals.

c. Explain new terms and gear.

2. Presentation.

a. Tell and show how gear is used, slowly and clearly.

b. Identify and review the key points (especially safety aspects).

3. Application.

a. Let each man in turn use the gear.

b. Question him on key points, purpose of gear, etc.

4. Test. Run the group through the operation or tell them that the test will be at the next drill and that their performance will be watched closely.

V. SUMMARY.

A. The leader must learn his duties, plan his actions, and instruct his men in advance.

B. He must earn the confidence of the crew through effective leadership practices.

C. He must appraise his group's performance and take corrective action promptly when necessary.

D. He must know the principles of good instruction.

E. Suggest enrollment in Naval Officers' Correspondence Course, "Leadership," NAVPERS 10903, as a means of self-development.

VI. TEST.

A. Q. What are some of the things a leader in damage contrpl should do in advance?

A. 1. Know his ship and gear.
2. Know damage control procedures.
3. Know his men.
4. Understand the importance of damage control organization and training.
5. Study to improve his leadership ability.

B. Q. What are some of the ways a leader can win the confidence of his men?

A. 1. Have self confidence.
2. Show a "CAN DO" spirit at all times.
3. Instruct with sympathy and patience.
4. Give "pats on back" for good performance.
5. Re-instruct, if performance is poor.
6. Treat each man differently according to his nature, but play no favorites on the rules.
7. When you have failed to communicate or instruct, take blame yourself.

C. Q. What are some pointers on TAKING CHARGE at a drill or emergency?

A. 1. Station self in good spot to observe.
2. Direct the operation but don't talk too much.
3. Keep damage control central informed.
4. Don't jump in and do it yourself, stand back and direct.

D. Q. Before securing from a drill, what are several important things to do?

A. 1. Get the group's reaction to their performance and their comments for improvements.
2. Hold a critique to praise or constructively criticise as appropriate.
3. Stress importance of gear being stowed ready for instant use.
4. Plan necessary training afloat and ashore.

E. Q. What are the four steps of a well organized lesson?

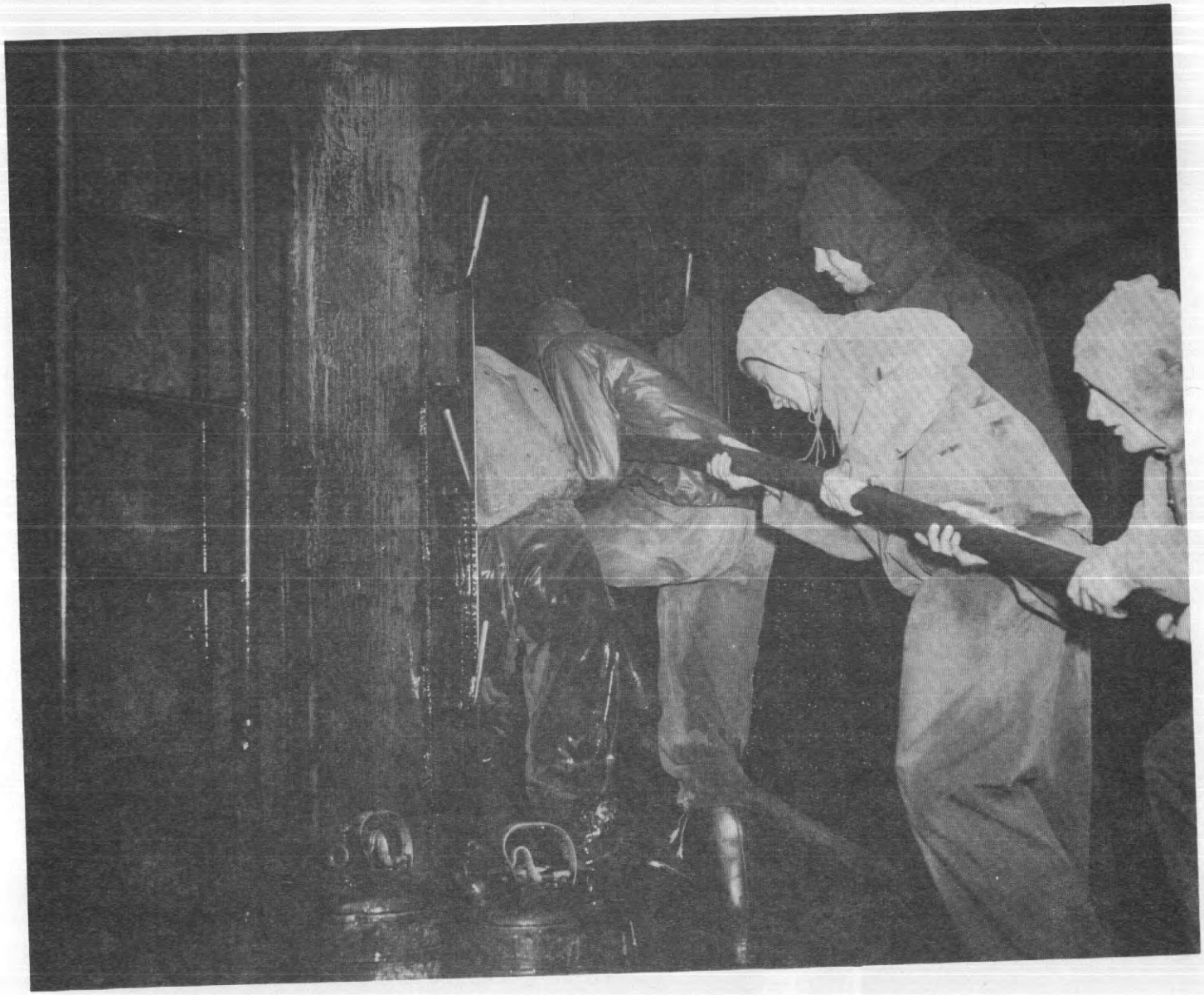
A. 1. Prepare group for instruction.
2. Present instruction to group.
3. Have group apply knowledge gained.
4. Test the group.

F. Q. What is meant by "motivation" during a lesson?

A. Motivation is explaining the "why" or the background reasons to arouse interest and a desire to learn.

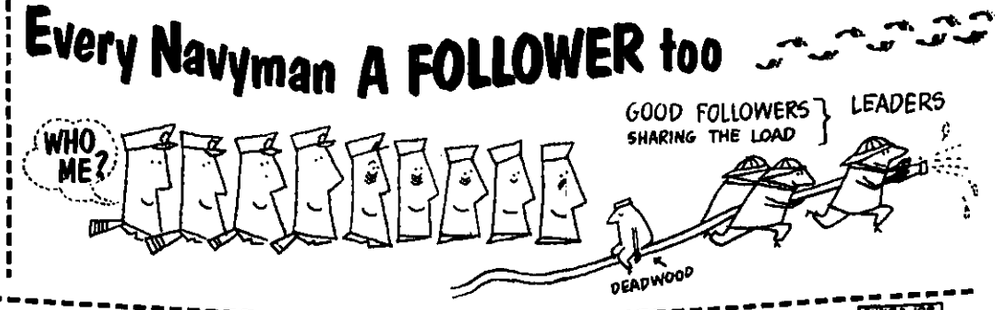
G. Q. What is leadership?

A. Leadership is the influencing of people to cooperate willingly toward some desirable goal.



Every Navyman A LEADER

Every Navyman A FOLLOWER too



YOUR JOB: K-P

KNOWLEDGE IS POWER. Know how your job and unit fit in with other activities aboard ship. Keep studying. Be a source of up-to-the-minute information. Keep your men posted on what the ship is doing, and their port in the operation.

YOU: the inner man

SELF APPRAISAL—When you know yourself you can make improvements. Don't let your weak points get you down. Make the most of your strong points—strengthen the weak ones. Have the courage to say you "don't know" and find someone who does. A man needs to know his job to make quick decisions. Stick by your decisions once you make them.

WHO'S WHO: man to man

KNOW YOUR MEN and treat them as individuals. Find out their abilities, capacities, endurance. Show an interest in their health, their personal problems, leisure-time activities—an understanding of your men will help you to keep things running smoothly. If you don't know your men—your men won't know you.

THE MEN you work for

TRY TO UNDERSTAND your boss's problems. Put yourself in his shoes. Respect his position and training. Let him know your full range of experience and talents so that you can do your own job better. Assume responsibility for the work you do, and know how to delegate work to others.

PASSING THE WORD

KNOW THE NAVY WAY—give orders correctly. Give orders to man in charge, not the group. Follow chain of command—up and down. Insist on attention. Avoid bossy attitude. Show confidence in your ability.
Don't waste words—be definite, cleor, concise ond use simple language.
Don't use senior's name to add weight to your order.
Don't issue an order you don't intend to enforce.

COOPERATION works both ways

GIVE FULL CREDIT to men when and where credit is due.
Accept responsibility for mistakes made by your men.
Let your men know you appreciate their good work and see that others do too.
Earn the respect of your men by being courteous to subordinates os well as superiors.
Don't threaten punishment to make orders more effective.
Don't think up jobs just to keep men busy.

RECOGNITION: what's in it for [me / you]

COMPLIMENT IN PUBLIC. Don't overflatter.
If you are satisfied with their work, say so.
Spot poor work quickly—praise good work equally as fast.
Express interest in every man's ideas even if you disagree.
Grant favors when deserved.
Encourage sense of responsibility by emphasizing importance of a job well done.
Look after your men—be interested in their promotion.
Be proud of your crew.

GO TO BAT for your men

BE GENUINELY INTERESTED in your men's leisure-time activities, their quarters, their health, safety, and family.
Assure them that they can turn to you *first* when in trouble and then—come through for them!
Insist on the best possible facilities for your men.
Be a good listener when it comes to personal problems and really try to help rather than pass the buck.
Don't pick on one man.
Help them to prepare for advancement.

KNOW-HOW in giving instructions

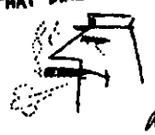
KNOW THE "KNOW-HOW" of explaining to others why the job must be done, the Navy's mission, the mission of your ship and the immediate tasks ot hand. It is not enough to be able to do the job yourself.
Be able to *show* what you want done as well as explain *what* you want done.
Encourage men in difficult jobs.
Build a sense of teamwork by using group action to speed accomplishment.
Ask for questions and stimulate discussion.

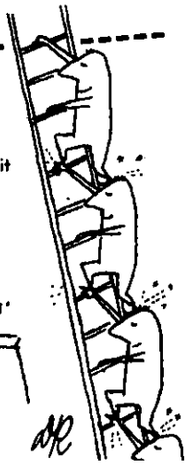
WHEN THINGS GO WRONG there's a right way to right them

BEFORE you give that blast be sure the man knows why he is being "chewed out."
Discipline does not necessarily mean punishment. Punish as a last resort.
Avoid making criticism a personal thing.
Bawl him out in private—not in front of people he works with.
Consider whether action was intentional or accidental. Get the whole story.
Be impartial—be fair. Never act in anger.
Use common sense.
Consider the man's past record.
Give the man the benefit of the doubt.
Support correct action.
Know the reason for discipline.

CHAIN REACTION

FOLLOW THE RULES yourself.
Insist on chain of command. This good habit works up and down the ladder.
Don't confuse popularity with respect.
Be honest with your men.
Know what's going on around you.
Be consistent in your demands.
Reward worthwhile action.





Prepared by ALL HANDS Magazine June 1958

GENERAL ORDER
NO. 21

NAVY DEPARTMENT
Washington, D. C., 1 May 1963

LEADERSHIP IN THE UNITED STATES NAVY AND MARINE CORPS

Part I—Discussion

The United States Navy-Marine Corps records of victorious achievements on land, at sea, and in the air in peace and war have won for these services an honored position in our great nation. This heritage was passed on to us by our leaders, both officer and enlisted, whose outstanding examples of courage, integrity and devotion to duty are historically significant. They accomplished their missions successfully by high caliber leadership and personal example. The strength of our nation and of our services depends upon courageous, highly motivated and responsible individuals.

Part II—Objective

The objective of this general order is to achieve an ever-improving state of combat readiness by:

a. Emphasizing that successful leadership at all levels is based on personal example and moral responsibility.

b. Insuring that every man and woman are themselves examples of military ideals.

c. Requiring personal attention to and supervision of subordinates.

Part III—Action

1. The Chief of Naval Operations and the Commandant of the Marine Corps shall be directly responsible for maintaining optimum leadership standards. The Under Secretary of the Navy shall be responsible for the proper implementation of this order.

NOTE: This general order supersedes General Order No. 21 dated 17 May 1958 C. G. O. 9

General Order No. 21

2. Fleet, Force, Type and Administrative commanders shall review each command's leadership posture as an integral part of military inspections and shall include their evaluation in inspection reports.

3. Every command and every major office and bureau of the Navy Department shall, on a continuing basis, review its leadership standards; each shall take effective measures to improve them and shall develop an awareness of the need for good leadership by providing programs for instruction in leadership principles and practices.

4. All persons in responsible positions, military and civilian, shall require that their subordinates discharge their duties in accordance with traditional concepts of Navy and Marine Corps standards, paying particular attention to:

a. Moral responsibility.
(Article 0702A, *Navy Regulations* - Paragraph 5390, *Marine Corps Manual.)*

b. Personal example of behavior and performance.
(Article 1210, *Navy Regulations* - Paragraph 5390, *Marine Corps Manual.)*

c. Established standards for personnel development.
(Article 0710, *Navy Regulations* - Paragraph 1500, *Marine Corps Manual.)*

d. Integration of principles and practices of leadership into everyday routine.
(Article 0709, *Navy Regulations* - Paragraph 5390, *Marine Corps Manual.)*

e. Effective organization and administration.
(Article 0704, *Navy Regulations* - Paragraph 3000, *Marine Corps Manual.)*

For emphasis and ready reference these articles are reprinted with this General Order.

/s/ Fred Korth
Fred Korth
SECRETARY OF THE NAVY

0702A. Commanders' Duties of Example and Correction

All commanding officers and others in authority in the naval service are required to show in themselves a good example of virtue, honor, patriotism, and subordination; to be vigilant in inspecting the conduct of all persons who are placed under their command; to guard against and suppress all dissolute and immoral practices, and to correct according to the laws and regulations of the Navy, all persons who are guilty of them; and to take all necessary and proper measures, under the laws, regulations, and customs of the naval service, to promote and safeguard the morale, the physical well-being, and the general welfare of the officers and enlisted persons under their command or charge.

1210. Conduct of Persons in the Naval Service.

All persons in the naval service shall show in themselves a good example of subordination, courage, zeal, sobriety, neatness, and attention to duty. They shall aid to the utmost of their ability, and to the extent of their authority, in maintaining good order and discipline, and in all that concerns the efficiency of the command.

0710. Training and Education.

The commanding officer shall:

1. Endeavor to increase the specialized and general professional knowledge of the personnel under his command by the frequent conduct of drills, classes, and instruction, and by the utilization of appropriate fleet and service schools.

2. Encourage and provide assistance and facilities to the personnel under his command who seek to further their education in professional or other subjects.

3. Require those lieutenants (junior grade) and first lieutenants who have less than two years commissioned or warrant service, and all ensigns and second lieutenants:

(a) To comply with the provisions prescribed for their instruction by the Chief of Naval Personnel, the Commandant of the Marine Corps, or the chiefs of other appropriate bureaus.

(b) To keep journals, to attend classes, and to receive appropriate practical instruction, as the commanding officer deems advisable.

4. Detail the officers referred to in paragraph 3 of this article to as many duties successively as practical. This rotation of duties should be completed during the first two years of the officer's commissioned service. The commanding officer shall indicate on the fitness report of each such officer the duties to which he has been assigned, the total period of assignment, and the degree of qualification in such duties.

5. Designate a senior officer or officers to act as advisors to the officers referred to in paragraph 3 of this article. These senior officers shall assist such junior officers to a proper understanding of their responsibilities and duties, and shall endeavor to cultivate in them officer-like qualities, a sense of loyalty and honor, and an appreciation of naval customs and professional ethics.

0709. Welfare of Personnel.

The commanding officer shall:

1. Use all proper means to promote the morale, and to preserve the moral and spiritual well-being of the personnel under his command.

2. Endeavor to maintain a satisfactory state of health and physical fitness in the personnel under his command.

3. Afford an opportunity, with reasonable restrictions as to time and place, for the personnel under his command to make requests, reports or statements to him, and shall insure that they understand the procedures for making such requests, reports, or statements.

4. Insure that noteworthy performance of duty of personnel under his command receive timely and appropriate recognition and that suitable notations are entered in the official records of the individuals.

5. Insure that timely advancement in rating of enlisted personnel is effected in accordance with existing instructions.

0704. Effectiveness for Service.

The commanding officer shall:

1. Exert every effort to maintain his command in a state of maximum effectiveness for war service consistent with the degree of readiness prescribed by proper authority.

2. Report to his appropriate senior any deficiency which appreciably lessens the effectiveness of the command.

3. Report, with his recommendations, to the bureau or office concerned, whenever, in his opinion, his authorized allowances of personnel or material exceed or fall short of requirements.

CHAPTER 5

EMERGENCY SEAMANSHIP-FOR DECK PERSONNEL (LESSON PLANS)

O'HARA'S Highline Transfer with Navy Tug – Phase III, NORPAC

CHAPTER 5

EMERGENCY SEAMANSHIP - For Deck Personnel (Lesson Plan)

SECTION 5.1

HIGHLINE TRANSFER

I. OBJECTIVES.

A. To stress the importance of highline transfer in replenishment and mercy missions.

B. To familiarize deck personnel with highline equipment.

C. To acquaint personnel with transfer procedures.

D. To outline safety precautions required during highline operations.

II. MATERIAL.

A. References.

1. Replenishment at Sea - NWP 38(A).

2. MSTS Highline Transfer Bill, Section 1.11.

3. COMSTSINST 3180.1 (latest revision), Subj: Replenishment at sea (alongside method) from specially equipped MSTS tankers.

B. Training Aids.

1. Film, MN-6552B, Fueling and Replenishing at Sea -- Replenishing, 20 minutes, B & W, sound.

2. Illustrations. Refer to the illustrations here and in NWP 38(A).

3. MSTS Technical Film Report 1-61, MSTS Tankers Replenishing Fleet Oilers at Sea, 15 minutes, color and sound.

III. INTRODUCTION.

A. Introduce self and subject; define the term "Highline Transfer".

B. State Objectives.

C. Outline Scope.

1. Gear used in highline transfer operations.

2. Procedures for coming alongside.

3. Station keeping.

4. Rigging for passing the gear.

5. Transfer procedures.

6. Retrieving the gear.

7. Communication, hand and light signals.

8. Safety precautions

D. Arouse General Interest. MSTS civil-service-manned ships are equipped with naval highline transfer gear and their crews are trained to conduct transfer operations. MSTS ships must be prepared for replenishment-at-sea operations and to participate in numerous rescue and mercy missions which require the safe and expeditious transfer of personnel or stores. The ability of a naval ship to remain at sea when required depends on the capabilities of ship's crews to accomplish these transfers skillfully and safely.

E. Develop Personal Interest. Who can tell? You may be the one whose life and health will be preserved as a direct or indirect result of a highline ship-to-ship transfer. In such a case, you would be deeply concerned regarding the ability of the ship's crew to accomplish the transfer safely and promptly. Regardless of your assignment, you will be a vital member of a team responsible for actions on which life may depend. So be sure that you can do the job right.

IV. PRESENTATION.

* A. Terms. The terms, "delivering ship" or "control ship" and "receiving ship" or "approach ship" will be used throughout. MSTS ships may serve as either the "delivering" or "receiving" ship and should be prepared to furnish the transfer gear as delivering ship.

1. Delivering ship - the control ship, holds steady on course and speed, and is responsible for furnishing handling rigs.

2. Receiving ship - makes the approach, keeps station alongside until stores or personnel are aboard, then makes the departure.

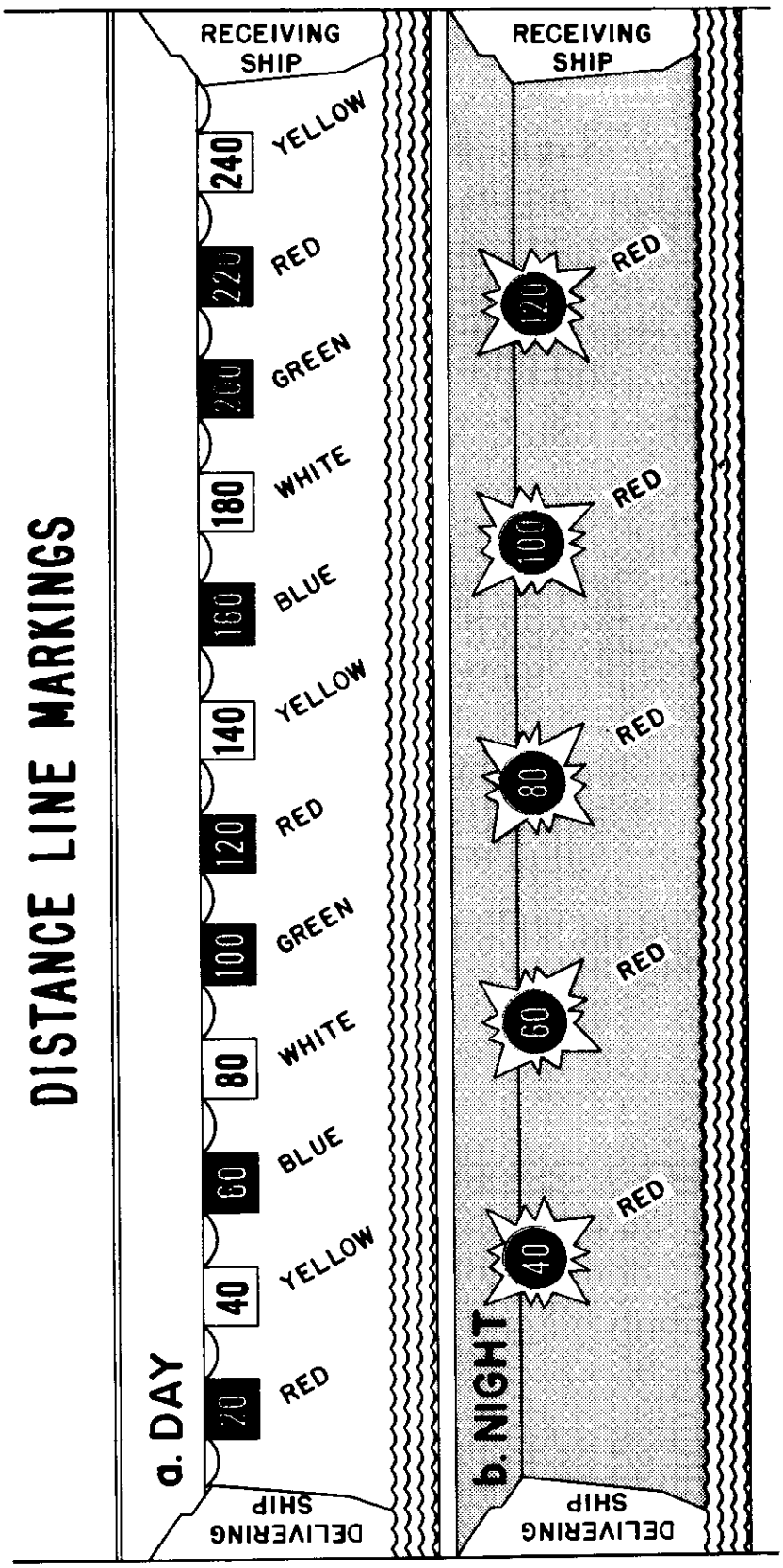
* B. Gear. While wire highlines are used for fueling-at-sea and general transfers of stores, only the nylon highline is to be used for personnel transfers. Current manila highlines may be continued in use until replacement is necessary, when nylon will be substituted. Highline transfer gear consists of the following:

* 1. 350 feet of nylon line. Three-inch manila line was formerly used for a 300-pound maximum load and five-inch manila line was used for a 600-pound load. However, three-inch nylon is now authorized as a satisfactory substitute for five-inch or smaller manila lines for highline operation, including personnel transfer. It should be noted that while nylon has a longer life and greater strength than manila, it is also more elastic and thus has more "bounce" than manila highlines. New nylon also tends to be "slick" and must be handled with more care than manila highlines. This three-inch nylon line, or highline, provides a track for the trolley block.

* 2. Shackle. A 5/8 inch (or up to 1 inch) shackle is attached to the end of the highline which is passed to the receiving ship. While a pelican hook is used in other highline transfers, only this shackle is to be used in personnel transfers.

3. A trolley consisting of a double sheave snatch block that rides the highline with either the transfer-at-sea chair or Stokes litter suspended from it. The trolley block shall be painted with white enamel.

4. Inhaul line. 350 feet of one-inch manila line with a thimble on one end for shackling to the trolley (delivering ship side). When used with the Stokes litter, the inhaul line is shackled to the head end of the litter. The


DISTANCE LINE MARKINGS
RECEIVING SHIP
240
YELLOW
220
RED
200
GREEN
180
WHITE
160
BLUE
140
YELLOW
120
RED
100
GREEN
80
WHITE
60
BLUE
40
YELLOW
20
RED
DELIVERING SHIP
a. DAY
RECEIVING SHIP
120
RED
100
RED
80
RED
60
RED
40
RED
DELIVERING SHIP
b. NIGHT

inhaul line is used for hauling the transfer-at-sea chair or litter from the receiving ship to the delivering ship.

5. Outhaul line. 350 feet of 1-inch manila line with a thimble on one end for shackling to the trolley (receiving ship side). When used with the Stokes litter the line is shackled to the foot end of the litter. The outhaul line is used for hauling the transfer-at-sea chair or litter from the delivering ship to the receiving ship.

6. Bridle messenger line. This line consists of:

a. 180 feet of 21-thread manila line.

b. An eye spliced in the receiving ship end of the messenger for attaching the shot line or heaving line.

c. A thimble on the delivering ship end for shackling the messenger to the bridle.

7. Heaving lines. For safety, a special heaving line consisting of a monkey fist attached to a line-throwing gun line is recommended for use in lieu of the line-throwing gun. A device defined as a Bolo in NWP 38(A) has been used successfully. It consists of a four-inch wooden handle secured about four feet from a weighted object on the end of a gun line. The weight is swung in a circle above the head to gain momentum before releasing it. Regular heaving lines are also used as standby lines for recovering personnel in the event of a highline failure and for bending on between the shot line and the messenger.

8. Station-to-station sound-powered phone/distance line combination. This combination serves as a means of communication and to indicate distance between ships. It is composed of:

a. 300 feet of 21-thread manila line married to 300 feet of two-conductor telephone wire.

b. Markings. The distance line carries, in daylight, painted canvas markers or colored buntings (8 x 10 inches) with numbers marked on them, or red flashlights at night, to indicate distance in feet between the two ships.

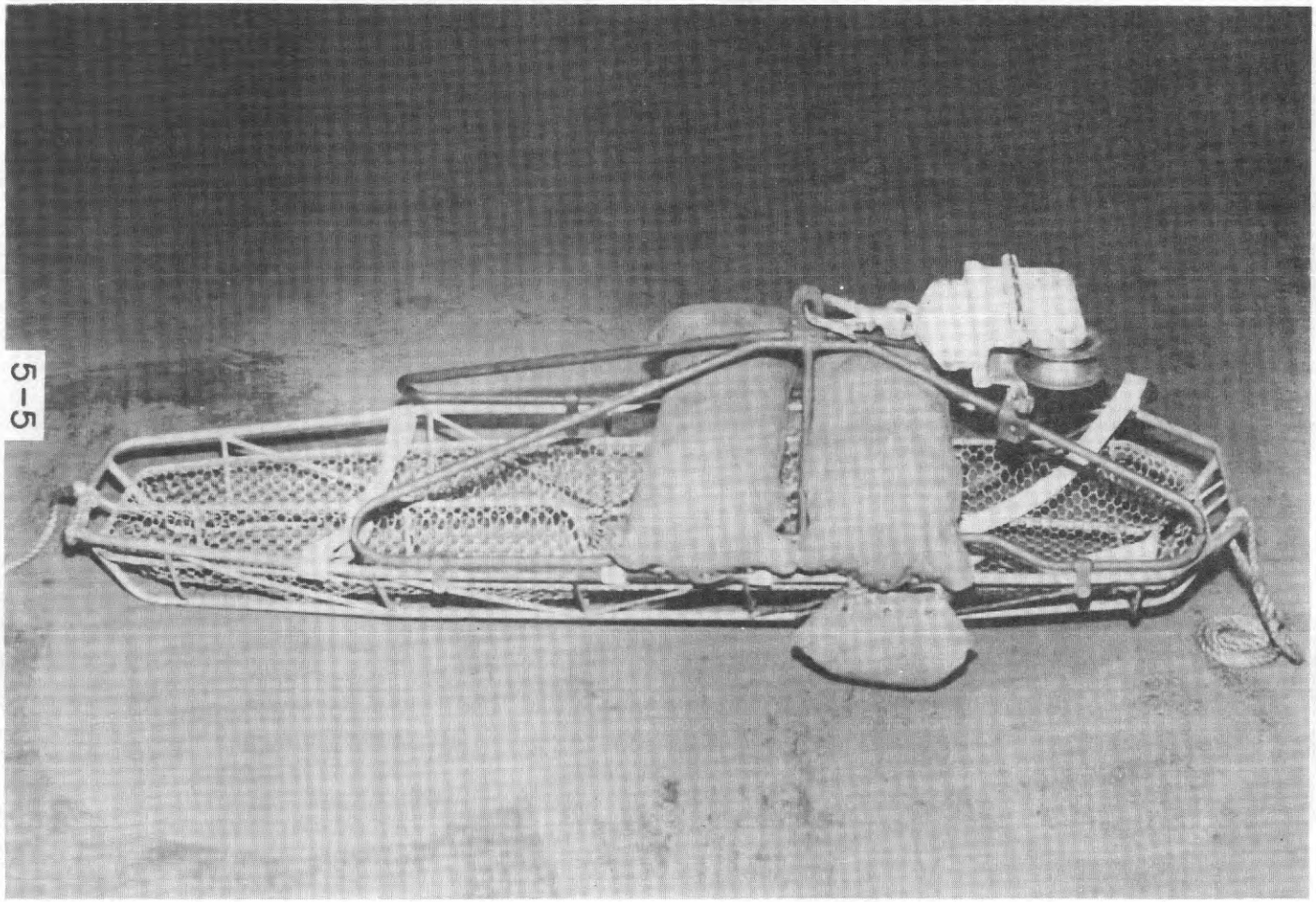
c. Sound-powered telephones. Two-conductor telephone cables with double male jack-boxes on each end are used. Jack-boxes must be secured tightly and made watertight by wrapping them in plastic bags. Telephone lines must be hand-tended on the receiving ship. Talkers on inter-ship lines should not wear neck straps in order to prevent injuries resulting from rapid surging of the ships while alongside.

* d. Bridge-to-bridge sound-powered phones. USNS ships conducting highline transfers with commissioned ships should be prepared to receive a bridge-to-bridge telephone cable for use in addition to the station-to-station line. In such cases, the bridge-to-bridge line will generally be the phone/distance line combination.

9. Line-throwing guns. Two line-throwing guns are required. To insure readiness, the guns should be tested by firing a blank cartridge before use. Because the line-throwing gun is dangerous, only the shoulder .45 caliber gun, with buoyant, illuminated projectiles, is to be used.

10. Helmets and jackets. The line-throwing gunner will wear a highly visible red helmet and red jacket. The signalman will wear a green helmet and jacket (or shirt) of light green and will use prescribed hand signals to parallel orders passed over the sound-powered phones. All other personnel engaged in the transfer operations will wear orange-colored life jackets and helmets.

RIGGING THE STOKES LITTER



11. Station markers. By day a three-foot square green bunting or painted canvas is draped over the rails of both ships to indicate the location where the gear is to be passed for the transfer of stores and personnel. Other colored station markers are used for various commodities, as red for fuel oil, and a station marker box is used by night as specified in NWP 38(A).

12. Hand signals. Colored flags or paddles are used by day and colored flashlights or wands are used at night. Hand-flag and light signals must be used at all times on replenishment stations to parallel orders passed over the sound-powered phones.

* 13. Bridle. A bridle shall be used consisting of a triangular plate with three holes at the base for shackling in the telephone/distance lines, the highlines, and the outhaul line. The messenger line is shackled into another hole at the opposite corner. All lines attached to the bridle will be tagged with weatherproofed ID tags. The bridle plate will be painted white, with black letters to identify each hole.

14. Electric megaphones. Portable electric megaphones serve as the primary emergency means of bridge-to-bridge communications. They must be tested before each operation, be available on the bridge, and should not be used as a matter of routine. However, they may be used successfully during the final approach prior to passing of the telephone lines. Bridge voice radio circuits may be used during an emergency as a secondary means of communications.

15. Fenders. Heavy fenders should be rigged on the delivering ship to protect the sides on which delivery is being made. Fenders are made up in groups of threes, suspended from the deck by vertical lines and held in place by fore-and-aft preventers.

16. Snatch blocks. Snatch blocks are used to provide fairleads for the outhaul and inhaul lines and for the highline, as necessary.

* 17. Transfer-at-sea chair. This chair is used to transfer personnel other than stretcher cases. The transfer chair is rigged to the double trolley block. Only one man could be transferred at a time when using the three-inch manila highline. The single chair transfer method is the one normally used; however, a double-chair transfer may also be effected. For transferring two men simultaneously, a five-inch manila line and two trolley blocks were used, with each chair hung off from a separate block. The two blocks are bolted together at their attachment points for inhaul and outhaul lines and the two chairs are bolted together side by side. With the substitution of three-inch nylon for five-inch or smaller manila highlines, the nylon highline may now be used for both single or double chair transfers because of its greater strength. Handling lines should be shackled to the double trolley block and to the chair to aid in their control on deck. These should be $1\frac{1}{2}$ fathoms of $2\frac{1}{2}$ inch manila.

18. Stokes litter. The Stokes litter is used to transfer sick or injured personnel. It is outfitted with a protective frame and flotation gear rigged to protect the patient from injury in case of highline failure or accidental submergence. (See article VII).

19. Tools. Each transfer station must be equipped with the following tools for emergency breakaway, rigging and unrigging:

a. Hammer, ball peen.

b. Wrench, 8-inch crescent.

c. Marlinspike.

d. Pliers, side-cutter.

e. Bolt cutters, 36 inch.

APPROACH, RIDING ALONGSIDE, AND DEPARTURE

A.
CONTROL SHIP STEADY ON COURSE AND SPEED. FLIES R AT THE DIP (ON RIGGED SIDE)

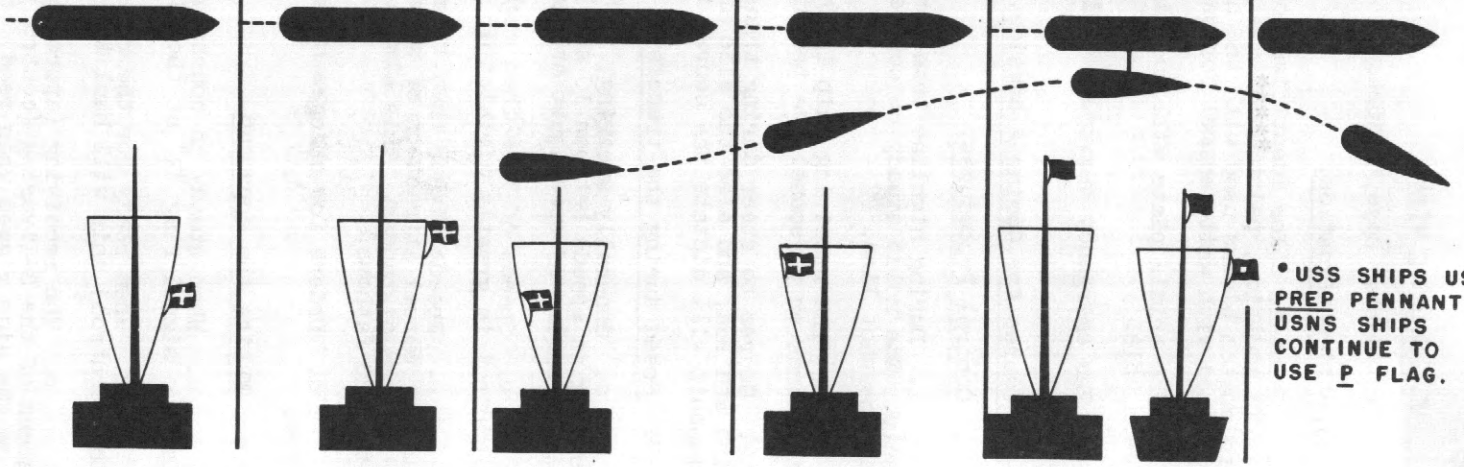
B.
CONTROL SHIP READY FOR THE APPROACH. FLIES R CLOSE-UP

C.
APPROACH SHIP READY TO MAKE APPROACH. FLIES R AT THE DIP (ON RIGGED SIDE)

D.
COMMENCING APPROACH. APPROACH SHIP HOISTS R CLOSE-UP

E.
AS FIRST LINE IS SECURED, BOTH HAUL DOWN R. BOTH FLY B AT THE FORE IF TRANSFERRING FUEL OR AMMUNITION. FIFTEEN MINUTES BEFORE DISENGAGING APPROACH SHIP HOISTS •P AT THE DIP. ON DISENGAGING, THE APPROACH SHIP HOISTS •P CLOSE-UP

F.
WHEN THE LAST LINE IS CLEAR, THE APPROACH SHIP WILL HAUL DOWN •P. ON DEPARTURE, APPROACH SHIP CLEARS AHEAD AND AWAY.



•USS SHIPS USE PREP PENNANT; USNS SHIPS CONTINUE TO USE P FLAG.

f. Seizing wire.

g. Cotter keys, assorted.

C. Color Identification. **** with white enamel

1. Maintain color identification of all highline gear as specified in NWP 38(A). In addition, paint ***** all padeyes, pelican hooks, links, trolley blocks, and snatch blocks used with the highline and hauling lines. The trolley block is painted with white enamel for better visibility during night transfers.

2. The bridle plate will be painted *****, with black letters to identify each hole.

3. The emergency breakaway tools and toolbox should be painted **** and identified. ch#8

D. Procedures for Coming Alongside.

1. Control Procedures.

a. During highline transfer operations, the delivering ship is the control ship. She holds steady on course and speed, furnishes and handles rigs and passes the shot line.

b. The receiving ship is the approach ship and keeps station alongside until stores or personnel are transferred.

2. Course to steer during transfer. Courses are selected in relation to the wind and sea, and also the size and types of ships involved. Basically, good seamanship will dictate the course to steer.

3. Speed during the transfer.

a. Generally speaking, it is advisable to conduct highline operations while cruising at speeds between 10 and 15 knots. However, weather conditions influence the choice of speed just as they do in determining a course.

b. Speeds of less than eight knots are not advisable because steering control is greatly diminished.

c. Speeds higher than 15 knots may well be used if weather permits, but because of mutual attraction of ships at high speed, care must be taken to maintain maximum distances. This also applies to ships operating in shallow water of less than 20 fathoms.

* d. Orders for changes of engine speed should be given in number of revolutions.

4. Making the approach.

a. When steady on course and speed, the delivering or control ship will hoist the signal flag "R" at the dip on the side rigged.

b. When ready for the receiving or approach ship to approach, the delivering (control) ship will haul the signal flag "R" close-up.

c. The receiving (approach) ship, having taken station 300-500 yards astern of the delivering (control) ship, will hoist the signal flag "R" at the dip on the side rigged when ready to come alongside.

d. The receiving (approach) ship will haul "R" close-up when commencing her approach. An approach speed of five knots greater than the delivering ship is used, gradually reducing to the delivering (control) ship's speed when about a ship's length from the desired position.

e. The shot line will be fired and the gear will be sent over by the delivering (control) ship as soon as both ships are in proper relative position.

f. Both ships will haul down the signal flag "R" as soon as the bridle messenger has been passed.

g. Transfer operations in ice fields can be accomplished only with both ships stopped, and lying as close alongside as possible. To accomplish this, a polynya (an open water lake within the ice field) should be found if possible. If a polynya cannot be found, the transfer must be carried out in the ice pack. The greatest hazard in approaching another ship while in the ice pack lies in the danger that pressure generated by the approaching ship will force intervening ice blocks through the hull of one or the other (or both) of the ships, or will damage the rudder and screws of the ship approached. For that reason, a bow to bow approach (Chinese landing) is generally the safest for mooring alongside in ice.

5. Station keeping.

a. A distance of 60 to 80 feet between ships should be maintained during station-keeping, depending upon wind and sea conditions. Large ships may open up to 120 feet. *

b. Drawing in too close can inhibit steering control in one or both ships whereas drawing too far apart will place undue strain on the gear.

c. Variation in the velocity of flow of water around the hull of a ship underway creates areas of increased pressure (force) in the vicinity of the bow and stern, and decreased pressure (suction) amidships. When two ships are close to each other underway, these areas take on added importance because of the intermingling of pressure areas. Effects vary with the distance between ships, size and shape of hulls, speed, and depth of water.

d. The best position for ships close aboard is exactly abeam or, if the receiving ship is considerably smaller than the delivery ship, in the area between the bow and stern pressure areas.

e. A continuous rudder is usually necessary in order to keep station while alongside. Greater rudder angles are required when ships are closer than 80 feet, and a reduction in speed will occur as a result. This complicates the station-keeping problem further for both ships.

f. It is the responsibility of the receiving ship to make course or speed corrections as necessary.

g. Close communication and liaison must be maintained between the two ships' conning officers.

6. Departure of the receiving ship.

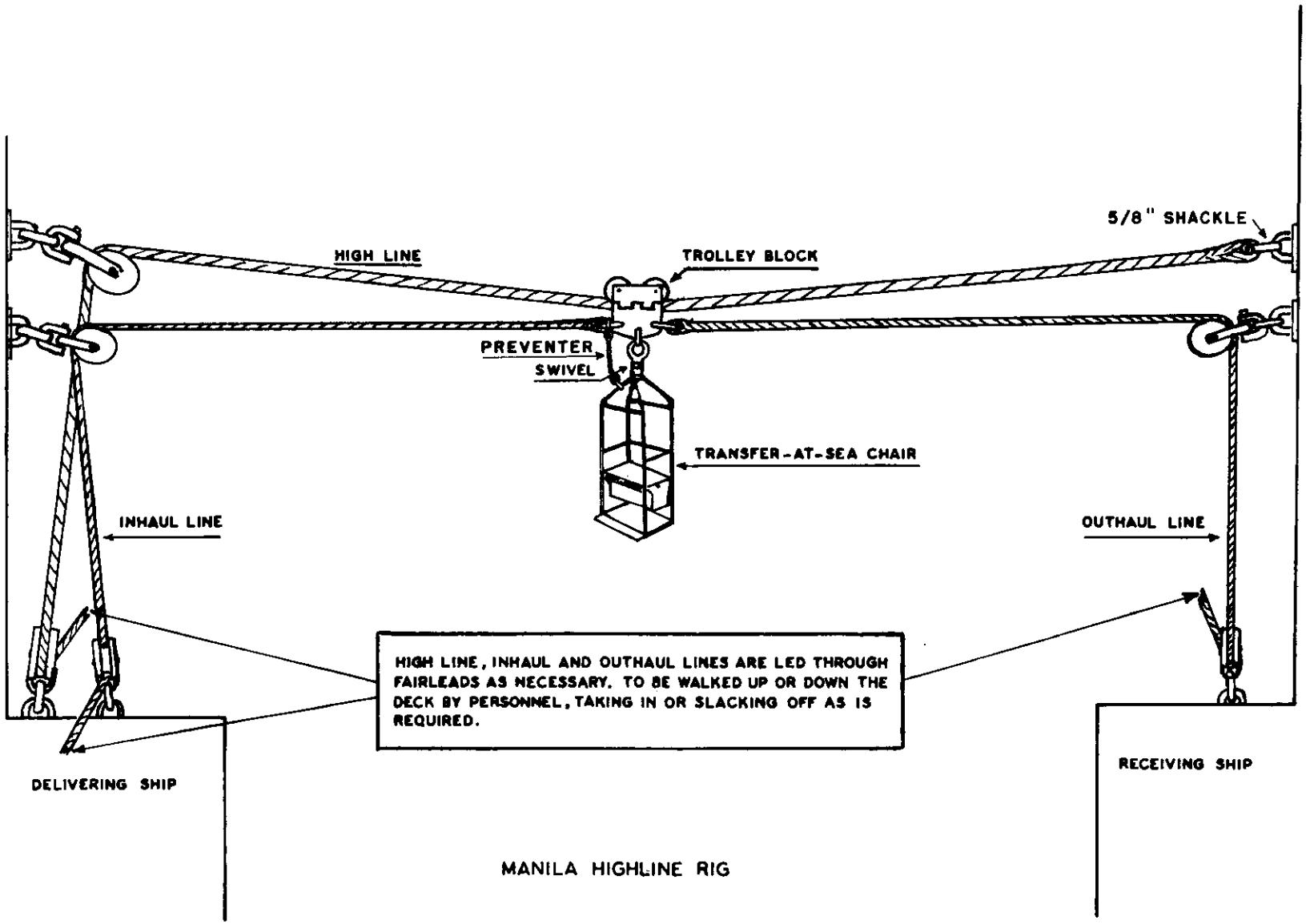
a. Fifteen minutes before estimated disengagement, the receiving (approach) ship will hoist the signal flag "P" at the dip on the outboard yardarm.

b. When disengaging, the signal flag "P" will be hoisted close-up.

c. When the last line is clear, the receiving (approach) ship will haul down the signal flag "P".

7. Emergencies and emergency departures during highline transfers.

a. A casualty to the gyro compass, a steering casualty, or loss of power may result in a collision between the two ships, so a well prepared plan of action should include the following elements:



MANILA HIGHLINE RIG

(1) Alert the ship alongside.

(a) The danger signal on the ship's whistle is the most positive and rapid method.

(b) Sound-powered phones, megaphones, electric megaphones, voice radio, and visual signals may also be used.

(2) Inform the ship alongside by any of the communication or signaling methods.

(3) When orders for an emergency breakaway are received at the transfer station, the following hand and light signals are used to indicate readiness and for execution:

(a) A red flag or paddle is rotated in a semicircular arc from one side of the body overhead to the other side of the body. Both the starting and answering signals signify that the station is in all respects ready to execute the emergency breakaway. With both stations ready, the signal is executed by dropping the signaling hand from the overhead position.

(b) By night a red light is used. The method of signaling and executing is the same as for the above day signal.

(4) Commence breakaway procedures.

(a) They must be started immediately upon hearing the danger signal.

(b) The signal flag "P" must be used.

(c) Both ships should take steps to avoid collision.

b. If a collision should occur, it is essential that measures for controlling damage and maintaining watertight integrity be initiated immediately.

E. Rigging for Passing the Gear.

1. Delivering ship.

* a. Two padeyes, one over the other, are welded well up on the ship's structure. (On small ships, padeyes may be welded to collars and bolted to booms).

b. A snatch block is shackled to each padeye.

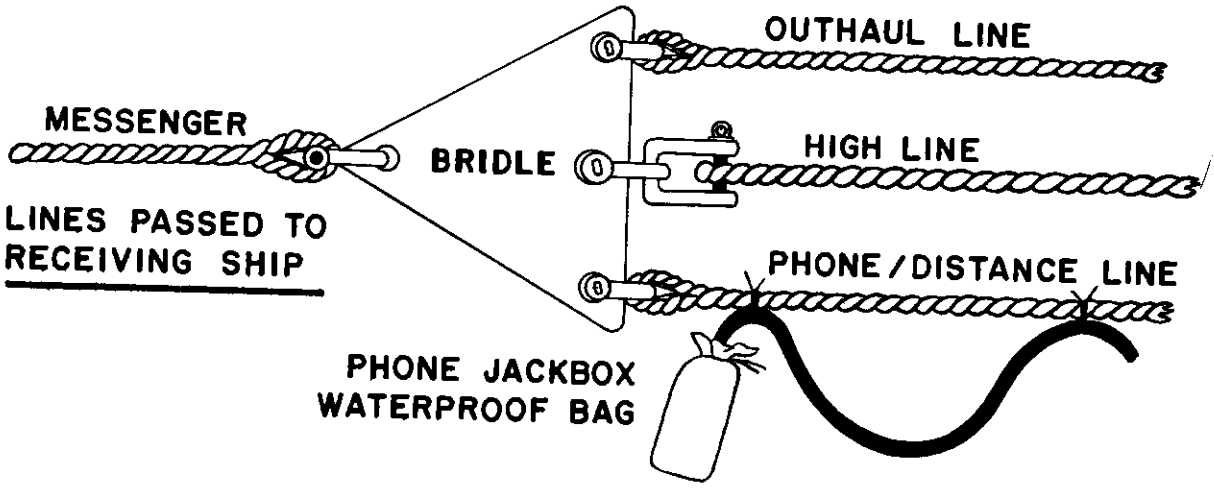
* c. One end of the highline is rove through the trolley block and upper snatch block. From there it is rove through other fairlead blocks as necessary.

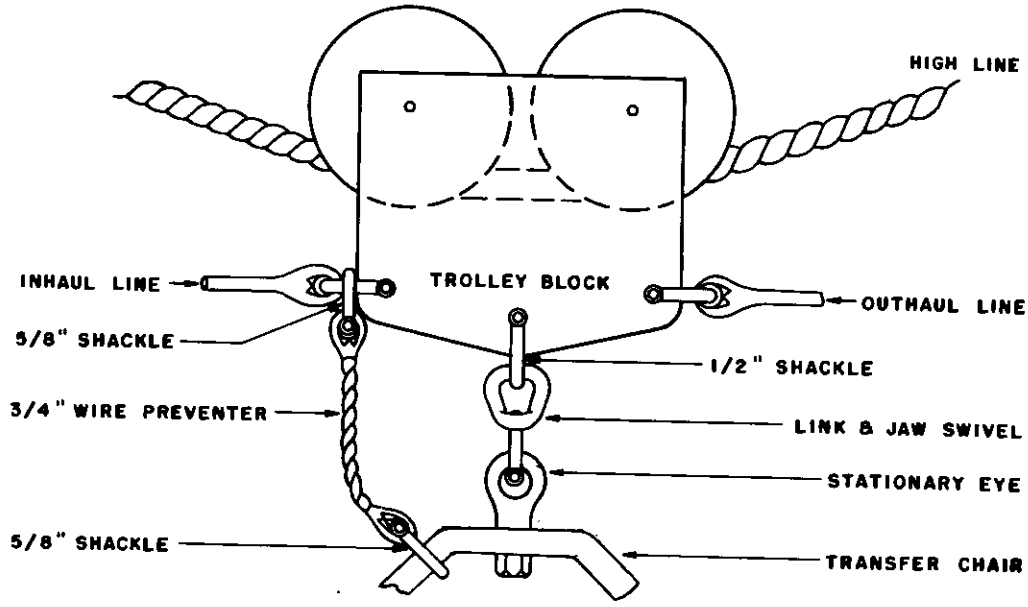
* d. The other end of the highline has a 5/8 inch (or up to 1") shackle which is attached to the messenger bridle to be passed over.

e. The inhaul line is attached to the delivering ship's side of the trolley block and then is rove through the snatch block on the lower padeye. From this point it is led through fairleads as necessary.

f. One end of the outhaul line is shackled to the outboard side of the trolley block and then is rove through the snatch block on the lower padeye. From this point it is led through fairleads as necessary.

g. The phone/distance line is attached to the bridle. The zero end remains aboard the delivering ship.





TRANSFER-AT-SEA CHAIR HIGH-LINE TROLLEY BLOCK

h. All lines are faked down for free running. They must not be coiled.

i. When the receiving ship is in proper position, both ships pass the word "stand by for shot line - all hands take cover" over the megaphone and topside loudspeaker system.

j. The officer-in-charge of the delivering ship's highline station will sound one blast on a mouth whistle or pass the word "standby" on the electric megaphone.

k. The officer-in-charge of the receiving ship's highline station, when ready with all hands under cover, will reply with a two-blast signal on the whistle or pass the word "ready" on the electric megaphone.

l. After ascertaining that all hands in the vicinity of the receiving ship's highline station are under cover, the officer-in-charge of the highline station in the delivering ship will give the order to toss the special heaving line over or to fire the shoulder line-throwing gun. THE GUN WILL NOT BE FIRED EXCEPT BY ORDER OF THE OFFICER-IN-CHARGE.

m. When passing the gear, care must be exercised to keep the lines out of the water.

2. Receiving ship.

a. Little preparation is necessary aboard the receiving ship. MSTS ships are rigged with two padeyes, one above the other for the highline and outhaul line blocks. For ships such as commercial carriers, wire straps could easily be rigged to the mast or boom for shackling in blocks.

b. Only those hands designated by the officer-in-charge will leave cover to retrieve the shot line. No other personnel will leave cover until all shot lines are aboard and the word is passed on the topside loudspeaker system, "shot line secure".

c. When the shot line is received, it is hauled in until the messenger and bridle are aboard.

d. The phone/distance line must be unshackled from the messenger bridle and led to a position where distance markers can best be seen by the conning officer. It is then kept taut.

e. The highline is unhooked from the bridle and is secured to the upper padeye by its 5/8 inch (or up to 1") shackle. This establishes the highline connection.

f. The outhaul line is unshackled from the bridle and is rove through a snatch block shackled to the lower padeye. From there, it is led through fairleads as necessary to keep it clear for hauling.

F. Transfer Procedures. ALL LINES MUST BE TENDED BY HAND WHEN TRANSFERRING PERSONNEL. WINCHES MUST NOT BE USED. As an additional precaution, both ships must have their emergency boats on the unengaged side cleared away, the motors tested, sea painters rigged, and boats swung out ready for use.

1. On the delivering ship, the load is engaged to the trolley block and a strain is taken and kept taut on the highline by from 20 to 35 men.

a. By taking a strain on the highline they lift the load clear of the deck and rail.

b. The strain should be taken by walking the highline down the deck. DO NOT HAUL IT HAND-OVER-HAND.

REPLENISHMENT OPERATION SIGNALS

VISUAL FLAGHOIST

CONTROL SHIP

 R DISPLAYED ON FORE YARDARM ON SIDE RIGGED	AT THE DIP:	AM STEADY ON COURSE AND SPEED AND AM PREPARING TO RECEIVE YOU ON SIDE INDICATED
	CLOSE-UP:	READY TO RECEIVE YOU ON SIDE INDICATED
	HAULED DOWN:	FIRST LINE SECURED

APPROACH SHIP

 R DISPLAYED ON FORE YARDARM ON SIDE RIGGED	AT THE DIP:	AM READY TO COME ALONGSIDE
	CLOSE-UP:	COMMENCING APPROACH
	HAULED DOWN:	FIRST LINE SECURED
 P *DISPLAYED AT THE OUTBOARD YARDARM	AT THE DIP:	EXPECT TO DISENGAGE IN 15 MINUTES
	CLOSE-UP	AM DISENGAGING (AT FINAL STATION)
	HAULED DOWN:	CLEAR OF DELIVERING SHIP

*USS SHIPS USE THE PREP PENNANT. USNS SHIPS CONTINUE TO USE P FLAG.

BOTH SHIPS

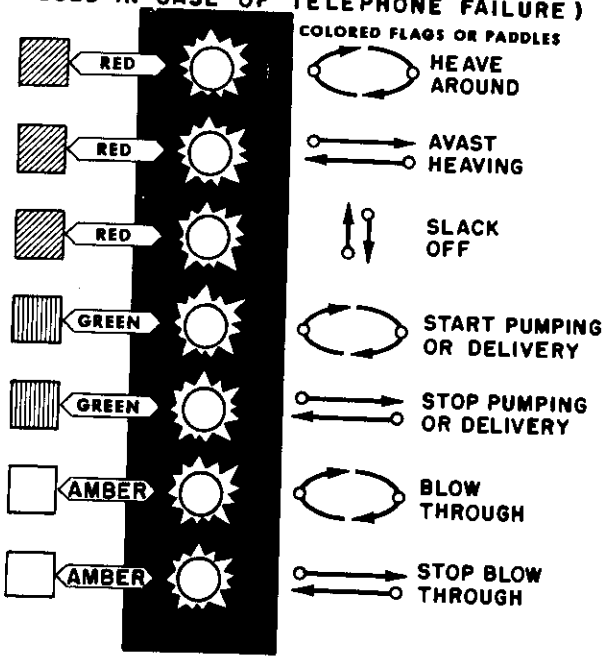
 B	AT THE FORE:	DANGER! TRANSFERRING AMMUNITION, FUEL OIL, GASOLINE, DIESEL OIL, ETC.

HAND AND LIGHT SIGNALS

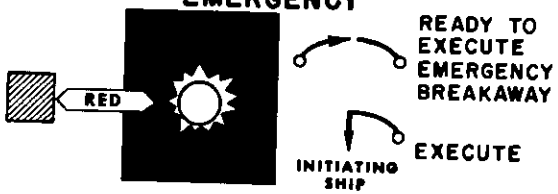
DAY COLORED FLAGS OR PADDLES	NIGHT FLASHLIGHTS OR WANDS	SIGNAL	MEANING

STANDBY

(PARALLELED WITH TELEPHONE AND TO BE USED IN CASE OF TELEPHONE FAILURE)



EMERGENCY



3. The crew member designated as signal man must be dressed in a light green helmet and jacket (or shirt), and must be familiar with all signals.

4. It is a good idea to reproduce all highline transfer signals on a convenient board for ready reference and to mark the hand and light standby signals on the backs of the signal paddles.

* I. Lighting. White lights must not be used in highline transfers at night because of their blinding effect.

1. During approach and alongside. The delivering ship will show two shaded red 25-watt hull contour lights during the approach and while the approach ship is alongside. These lights will be rigged at the rail to mark the extremes of that portion of the ship's side. They will be shaded vertically to prevent their being readily seen from the delivering ship. The delivering ship will also show dimmed red truck lights and a wake light during the approach. The wake light must be shaded so that it illuminates only the wake. The truck and wake lights are turned off after the receiving ship is alongside.

2. Obstruction lights. A row of six life jacket type flashlights, fitted with red lenses and spaced at intervals of about two feet along the highest obstruction point of each landing area or deck edge, shall be displayed to aid the officer-in-charge during transfer operations.

3. Lights for fittings. Transfer chairs and trolleys shall be illuminated by clipped-on or taped-on clusters of three red one-cell flashlights.

* 4. Working area lights. Working areas on deck shall be illuminated by red cargo lights.

J. Safety Precautions.

1. All assigned personnel (except signalman and line-throwing gunner) must wear orange-colored life jackets.

2. All hands aboard the receiving ship MUST take cover prior to tossing of the special heaving line or firing the shot line. Use only the .45 caliber shoulder gun with buoyant, illuminated projectile.

3. All lines MUST be hand-tended. WINCHES WILL NOT BE USED, WHEN TRANSFERRING PERSONNEL.

4. Do not stand under the load or in bights of lines.

5. Have the emergency boats ready for launching.

6. Do not conduct a transfer at night or in rough weather unless an emergency exists.

7. Personnel to be transferred at night must be furnished a mouth whistle and with two waterproof life jacket-type flashlights burning brightly and secured to the life jacket.

* K. Transfer by Helicopter. When helicopters are available, they should be used fully. Their advantages are obvious: their use avoids the need for and the hazard in ships going alongside one another; their speed saves time; and their use avoids special rigging, gear, and preparation.

V. SUMMARY.

A. Explain the terms "delivering ship" and "receiving ship".

B. Review flag hoist procedures.

C. Discuss station keeping and departure.

J. Safety Precautions.

1. All assigned personnel must wear orange-colored life jackets, (except the signalman who wears a green jacket and the line-throwing gunner who wears a red jacket). Personnel exposed in the vicinity of the transfer station also wear helmets.

2. All hands aboard the receiving ship MUST take cover prior to tossing of the special heaving line or firing the shot line. Use only the .45 caliber shoulder gun with buoyant, illuminated projectile.

3. All lines MUST be hand-tended. WINCHES WILL NOT BE USED WHEN TRANSFERRING PERSONNEL. New nylon highlines tend to be slick; use more men on them.

4. Do not stand under the load or in bights of lines.

5. Have the emergency boats ready for launching.

6. Do not conduct a transfer at night or in rough weather unless an emergency exists.

7. Personnel to be transferred at night will be furnished a mouth whistle and two waterproof life jacket-type flashlights burning brightly and secured to the life jacket.

8. Telephone talkers on intership phones should not wear neck straps in order to avoid possible injury when ships surge alongside. ch#8

K. Transfer by Helicopter. When helicopters are available, they should be used fully. Their advantages are obvious: their use avoids the need for and the hazard in ships going alongside one another; their speed saves time; and their use avoids special rigging, gear, and preparation.

V. SUMMARY.

A. Explain the terms "delivering ship" and "receiving ship".

B. Review flag hoist procedures.

C. Discuss station keeping and departure.

1. Distance between ships, from 60 to 120 feet, depending upon weather conditions and sizes of ships involved.

2. With ships too close together, a certain amount of steering control is lost.

3. Because of the variations of flow of water around two ships underway, caution must be exercised in positioning ships.

4. It is the receiving ship's responsibility to take corrective action in keeping distance and position alongside the delivering ship.

5. The receiving ship is responsible for breaking away.

6. In an emergency breakaway, the danger signal is the best way to alert the ship alongside.

D. Rigging the Gear.

1. The highline is passed through the upper snatch block on the delivering ship after reeving it through the trolley. The other end has a 5/8 inch (or up to 1") shackle which is secured to the upper padeye on the receiving ship.

2. On the delivering ship, one end of the inhaul line is shackled to the trolley and the other end is passed through the lower snatch block and fairleads as necessary.

3. On the receiving ship, one end of the outhaul line is rove through the snatch block in the lower padeye and led through fairleads as necessary. The other end was previously shackled to the trolley by the delivering ship.

4. When using the Stokes litter, the inhaul and outhaul lines are shackled to the ends of the litter instead of to the trolley block. The litter must be equipped with a protective frame and flotation gear as shown in article VII.

5. Running lines are not to be coiled; they must be faked to run free.

VI. TEST AND APPLICATION.

A. Test. Use these and additional questions as an oral quiz.

1. Q. What is the purpose of the highline transfer?

A. The highline transfer is used for replenishment-at-sea operations and in rescue and mercy missions. The nylon highline is used for the transfer of personnel and/or light freight in weather conditions which prevent the safe use of boats.

2. Q. Explain the exchange of oral or whistle signals prior to firing the shot lines.

A. The officer-in-charge of the delivering ship's transfer station will sound one blast on the mouth whistle, or will pass the word "stand by" on the electric megaphone. The officer-in-charge of the receiving ship's transfer station will reply with two blasts on the mouth whistle, or will pass the word "ready" on the electric megaphone when all hands are under cover.

3. Q. When is the electric portable megaphone to be used?

A. Only as an emergency means of communication, such as in failure of the sound-powered phones.

4. Q. How is the highline gear aboard the receiving ship rigged?

A. The distance line is secured at a location where it can be seen easily by the conning officer and is then kept taut. The highline's 5/8 inch (or up to 1") shackle is attached to the upper padeye. The outhaul line is rove through the snatch block secured to the lower padeye, and through fairleads as necessary. The outhaul line is led down the deck and manned.

5. Q. Compare the use of nylon line for highlines with manila line.

A. Nylon has greater strength, increased safety, and longer life. However, being more elastic than manila, it tends to have more "bounce" in use. New nylon is "slick" and requires more care in handling than manila until it is worn in.

6. Q. On which side of the ship is the signal flag "R" displayed in highline transfer of personnel?

A. On the same side on which the transfer gear is rigged.

7. Q. How is the highline transfer station marked?

A. By a three-foot square green bunting by day and by a red light station marker box by night.

8. A. How would you rig the highline gear aboard the delivering ship?

A. Pass the highline through the trolley block and the upper snatch

block, then through fairleads as necessary. Run it down the deck and man it with 20 to 35 men. Pass the inhaul line through the lower snatch block and through fairleads as necessary. Run the inhaul line down the deck and man it. The other end is shackled to the trolley block. Shackle the messenger line, highline, outhaul line and phone/distance line to the bridle. Attach a heaving line and shot line to the messenger.

9. Q. What distinctive clothing does the man wear when firing the shot line?

A. Red helmet and jacket.

10. Q. When the signal flag "R" is hoisted close-up aboard the receiving ship, what action is indicated?

A. She is commencing her approach for highline transfer of personnel.

11. Q. In an emergency breakaway, what is the most positive and quickest way of alerting the other ship?

A. Sound the danger signal on the ship's whistle.

12. Q. When the signal flag "R" is hoisted close-up aboard the delivering ship, what action is indicated?

A. She is in all respects ready to commence highline operations for transfer of personnel.

13. Q. What painting system is used to identify padeyes, links, blocks, and bridle used with the highline gear and hauling lines?

A. They are painted white for ready identification.

14. Q. What lines are attached to the bridle which is hauled in by means of the messenger line?

A. The highline, the outhaul line, and the phone/distance line.

15. Q. What signal flag is used to indicate the transfer of light freight instead of personnel?

A. YANKEE is used to indicate the transfer of light freight; ROMEO is used in personnel transfers.

16. Q. How is communciation established between ships engaged in highline transfer operations?

A. Before passing the messenger line, signal flags, radio-telephone and electric portable megaphones are used. After the messenger line and bridle is passed, signals between ships are given via sound-powered phones, paralleled by hand-flag or light signals.

17. Q. Why must the transfer litter be equipped with a protective frame and floatation gear?

A. To protect the patient from injury by the highline gear if it parts and to keep the litter floating upright and the patient's head out of the water.

VII- Protection for Transfer Litter at Sea

A greatly improved protective frame and flotation gear for use in the transfer of litter patients at sea has been developed by the Bureau of Ships.

The purpose of the frame is to protect the patient from injury by the highline gear if it parts, and the flotation equipment keeps the litter floating upright and the patient's head out of water.

The development, which was cooperated in by the Norfolk Naval Shipyard, was based on the following design requirements:

- Maintain the patient at a level position while the litter is supported by highline.
- Support the patient in a safe position under static conditions in the water with sling and trolley devices attached and also under towing conditions, if practicable, such as would occur if the highline carried away.
- Protect the patient from being injured by the falling parts of the rigging in case of highline failure.
- Protect the patient from possible injury when the litter strikes the side of the ship or the trolley device strikes the patient while it is being retrieved under dynamic conditions underway.

The new litter meets these requirements and is considered a great improvement over previous types. The protective frame and the arrangement of the flotation gear on the litter were thoroughly evaluated, and the chances of a patient's being injured by a falling trolley or of a patient's turning face down in the water in case of highline parting have been eliminated.

For compactness and easier stowage the guard frame is collapsible and can be folded down upon the litter. Also, when not in use, the float bags should be stowed inside the litter.

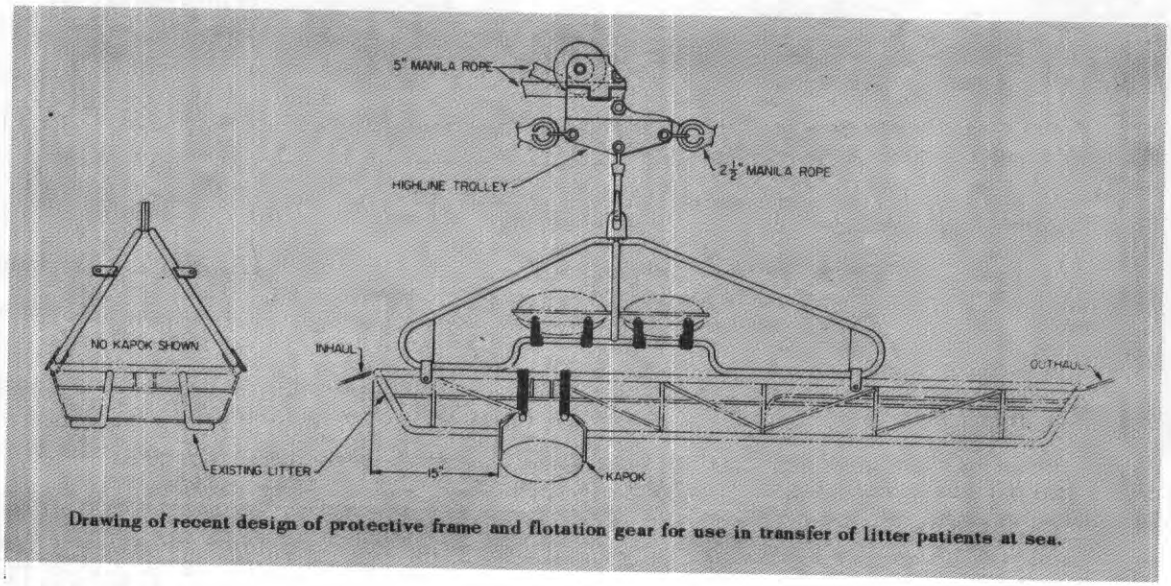
Each float bag contains about 4 pounds of Kapok or 8 pounds of fiberglas, materials that may be obtained from surveyed life preservers. Three coats of international orange plastic compound are recommended for painting the float bag exteriors.

Rigs used previously during underway transfer of patients at sea were unsatisfactory and dangerous. If a highline parted during a transfer and the patient dropped into the water, the gear remained secured to the litter and it was possible for the patient to be turned face down in the water.

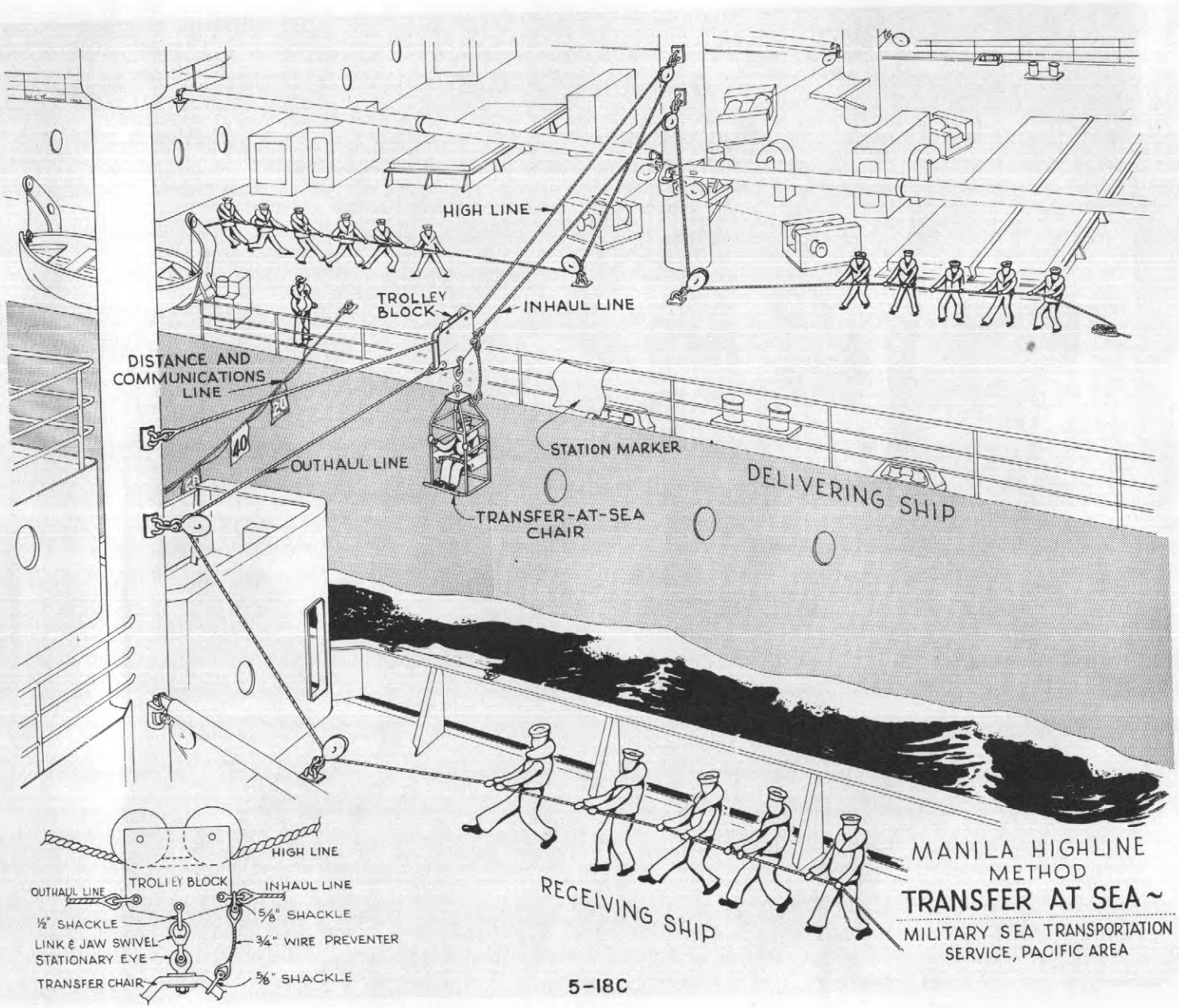
The weight of the trolley blocks and slings caused improper flotation. If the litter landed in the water in an upright position, the trolley block would almost certainly smash into the patient's head or body, and would result in serious if not fatal injury. Further injury was also possible after the litter was waterborne since the trolley block could be pulled over the patient toward the head or foot of the litter by the strain taken on either the inhaul or the outhaul lines, which are shackled to the trolley.

An aluminum protective frame for use by all surface ships is being stocked in the Ships Parts segment of the Navy Supply System under FSN-HF-2090-670-0178.

Allowance lists of all surface ships should be modified to indicate one protective frame, FSN 2090-670-0178, and flotation gear in accordance with hull standard plan BuShips Number 805-1627751, Rev. E. (supersedes BuShips Plans Numbers 1627751 Rev. A, 1626565, and 1543413) "Protective Frame for Handling Litter Transfer at Sea." This plan provides details, a list of materials, and general notes. The accompanying diagram is a current version of the litter design.



Drawing of recent design of protective frame and flotation gear for use in transfer of litter patients at sea.


HIGH LINE
TROLLEY BLOCK
INHAUL LINE
DISTANCE AND COMMUNICATIONS LINE
40
OUTHAUL LINE
STATION MARKER
TRANSFER-AT-SEA CHAIR
DELIVERING SHIP
RECEIVING SHIP
HIGH LINE
TROLLEY BLOCK
INHAUL LINE
OUTHAUL LINE
½" SHACKLE
5/8" SHACKLE
LINK & JAW SWIVEL
STATIONARY EYE
¾" WIRE PREVENTER
TRANSFER CHAIR
5/8" SHACKLE
MANILA HIGHLINE METHOD
TRANSFER AT SEA ~
MILITARY SEA TRANSPORTATION SERVICE, PACIFIC AREA

5-18C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LIFE
PRESERVERS

CHAPTER 5

EMERGENCY SEAMANSHIP - For Deck Personnel (Lesson Plans)

Section 5.2

TOWING

I. OBJECTIVES.

A. To familiarize personnel with emergency towing procedures.
B. To acquaint personnel with towing equipment aboard USNS ships.
C. To familiarize personnel with safety precautions necessary in towing.

II. MATERIAL.

A. References:

1. BUSHIPS Manual, Chapter 29.
2. NAVPERS 16118-B, Seamanship, Chapter 10.
3. International Code of Signals, H.O. 87, Volume I, Appendix D.
4. MSTS Towing and Salvage Bill (Section 1.9).
5. COMSTS INSTRUCTION 4740.1B (Subj: MSTS ocean tow procedure).
6. Marine Salvage Operations, by Brady, page 171.

III. INTRODUCTION.

A. Introduce self and subject (Towing).

B. Establish scope of session and state objectives.

C. Arouse interest by posing the following questions:

1. What equipment would we use and how would we rig our ship if we had to be towed? (Each ship or class of ship may be rigged somewhat differently.)

2. What equipment would we use and how would we rig our ship if we had to tow another ship?

3. What is a catenary? Why is it important to have a good catenary in the towline of ships without a towing engine?

IV. PRESENTATION.

A. Ship Towing. See Section 1.9, Towing and Salvage Bill, for procedures in approaching and taking a ship in tow, and for letting go. Generally this merely requires the exercise of good seamanship to determine the best side of approach under the wind and sea conditions. A heaving line or shot line is passed, the tow's messenger and towline are hauled aboard, and the towline is secured. Care must be exercised in getting underway to avoid strain and parting of the towline. Start ahead slowly on the same heading as the tow. The tow can help by veering the towline slowly as it takes the strain. In letting go, the towing ship's stern is maneuvered as close to the tow's bow as possible and the towing ship's pelican hook is tripped to cast off the towline with its messenger

USCGC CHEROKEE TOWED DISABLED SS HELLESPONT OVER 100 MILES BEFORE TURNING HER OVER TO A COMMERCIAL TUG OFF CAPE HENRY JAN 1956

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EMERGENCY ASSIGNMENTS MSTS FORM 3541-2 (1-55)

USNS	RATING	ROOM	POSITION CODE NO.
	ABM		167-2

	EMERGENCY STATION AND DUTIES	
FIRE, COLLISION & EMERGENCY STATION	FIRE STATION Ø1-95-1 and 2 LEAD OUT FIRE HOSES	
A B C DEFENSE STATION	REPAIR I RIG WASHDOWN HOSES	
ABANDON SHIP STATION	BOAT NO. 12 A	2nd IN COMMAND RELEASING GEAR*STERN TENDER

Emergency signals, safety-at-sea instructions and your duties in an emergency are listed in the ship's station bill which is posted throughout the ship. You will be held responsible for knowing these signals, instructions, and your assigned stations and duties.

(over)

OTHER EMERGENCY DUTIES

1. STEERING CASUALTY

2. ENGINEERING CASUALTY

3. MAN OVERBOARD

4. DARKEN SHIP

5. TOWING

6. MANEUVERING

7. HIGHLINE TRANSFER

APPROVED *(Signature- First officer)*

attached. These are hauled back aboard by the tow.

1. Generally, all seagoing tows are taken astern.

a. Astern towing avoids possible damage to the ships from heavy seas or swells; it also leaves each vessel free to ride the sea and swell at will.

b. The great difficulty in towing a large vessel on the high seas lies in the alternate straining and slackening of the towing hawser, caused by pitching of both ships and the tendency of the tow to sheer off, range up on, or fall behind the towing vessel.

c. Ships designed for towing have a towing engine (on the stern of the towing ship or on the bow of the tow) which maintains a constant tension on the towline. Other ships can tow or be towed only by the fixed towline method.

2. Scope of hawser.

a. In the fixed towline method, it is important to try to keep the ships "in step"; that is, to adjust the scope of the towline, if possible, so that the ships meet and ride over seas at the same time.

b. Generally speaking, the longer and heavier the towline used, the easier the towing will be. A decided dip or catenary acts as a spring, preventing variations in the tension from being thrown upon the towline in sudden jerks. The sag of the bight (catenary) depends not only on its length but also upon its weight.

c. If the length of hawser is such that one vessel is in the trough while the other is on a crest, the towline will first slacken and then come taut with a sudden jerk, which produces a much heavier than normal stress.

d. When a large vessel is being towed in deep water, 200 fathoms is about the minimum for a good shock-absorbing catenary.

e. If circumstances make it impossible to provide a sufficiently long scope, speed must be reduced.

f. There should never be enough stress on the towline to hoist its entire length out of the water.

3. Speeds in towing.

a. The speed at which a vessel can be towed depends upon her size and type, and upon whether or not she can provide any assistance with her own screws.

b. Sea and weather conditions also have an effect upon towing speeds.

c. Under normal conditions, a large non-self-propelled vessel may be towed by the fixed towline method at speeds of from 5 to 9½ knots. Better speeds are possible in ships equipped with a constant tension towing engine. Liberties, C-2s, and Victory ships make excellent towing ships when their revolutions are kept down to reduce cavitation and surging and to provide a steady thrust. Reference (5) recommends about 5 RPMs for each knot of speed.

d. In towing a non-self-propelled vessel, an increase in speed may be obtained if her screws are allowed to turn over freely--to idle. Caution: In a vessel with an unlocked screw being towed, the main engine lubricating system must be in operation or bearing failures may occur when her screw starts to turn from the pressure of the water.

e. A towing watch is set on the fantail of the towing ship and proper towing lights are displayed at night.

4. MSTS ocean tow procedures for normal towing operations are contained in reference (5). This includes information which will also be useful in emergency towing operations--towline pull for type of hull, towline pull at various speeds, a check list for MSTS ocean tows, and valuable information on towing gear, towing speeds, and towing procedures.

B. Ship Being Towed. Preparations to be towed by the fixed towline method, using the anchor chains and anchor windlass, are as follows:

1. Hang off one of the anchors of the ship to be towed and break open the anchor chain in preparation for rigging the towline.

2. Break out the towing (insurance) wire. Lead the bitter end forward along the side on which the towing ship will approach, in through the bow chock, and shackle it onto the anchor chain. Attach a manila messenger to the other end and lead it aft.

3. Receive the towing ship's heaving line and bend it on to the messenger. Pass the messenger out to the towing ship and then pass the towline.

4. The tow veers its anchor chain to the desired length and is towed by the chain on the anchor windlass wildcat. The windlass is engaged in gear, with the brake set up and stoppers or preventors secured to bitts.

5. In exceptional cases, the towing ship may pass her towing wire to the tow or both ships' towing wires may be shackled together where an exceptionally long towline is required.

6. A towline watch is set at the towing station on the bow and proper lights are displayed at night (sidelights and stern light).

C. Communication and Signals.

1. Radio-telephone and/or radio communication between the towing ship and the tow is essential. Under favorable conditions, power-megaphones can be used.

a. Towing signals as listed in International Code of Signals, H.O. 87, Volume I, Appendix D, and the MSTS Towing and Salvage Bill, Section 1.9, are used.

b. Towing signals are made by single international code flag by day, exhibited by hand or by hoisting. By night, flashing light towing signals are used; whistle signals may also be used. With other ships in the vicinity, care must be exercised to avoid confusion with blinker or whistle signals.

c. Establish communication between the towing station forward and the bridge of the tow and between the bridge and the fantail of the towing ship.

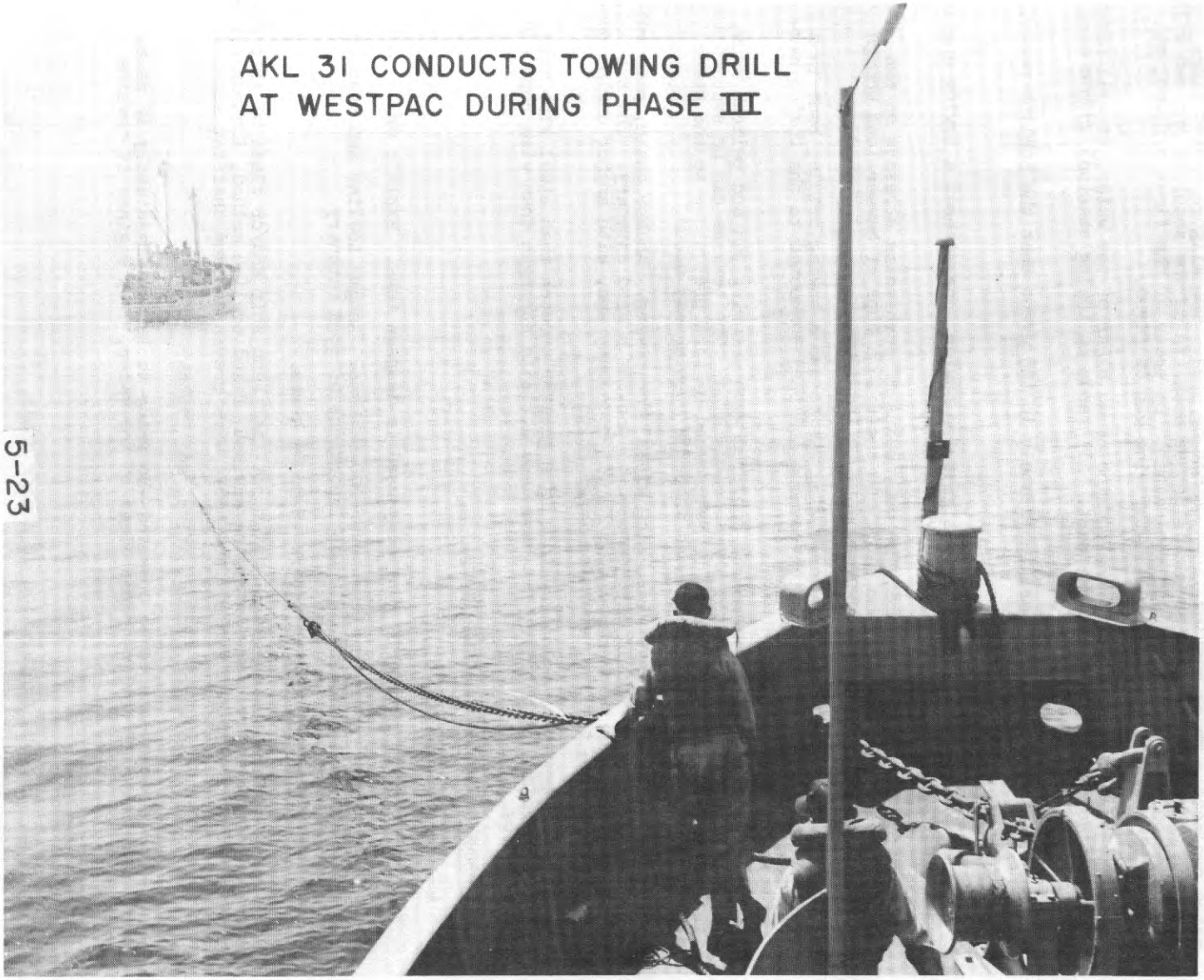
D. Precautions.

1. If the propeller shafts on the tow are not locked, the main engine lubricating system must be operating in order to prevent bearing failures when propellers are turned by the water pressure.

2. Never rig a tow that cannot be released immediately. An emergency may arise which may require casting off the towline immediately. Such tools as sledge hammer, axes, and knives should always be on hand for emergency use. In a towing ship equipped with a towing pad and pelican hook, the hook is tripped to let go quickly. Wire preventors are cast off first. The tow's messenger is attached to the towline and is let go and hauled in at the same time as the towline.

3. When towing in freezing temperatures, with ice on deck remove the ice if possible and have sand available.

AKL 31 CONDUCTS TOWING DRILL
AT WESTPAC DURING PHASE III



4. Use the .45 caliber shoulder line-throwing gun with buoyant, illuminated projectile where heaving lines cannot be used. The Kilgore rocket line-throwing gun has greater range but is not as accurate as the shoulder gun and will therefore only be used in exceptional cases. On order of the first officer, all hands will take cover when the line-throwing gun is fired.

5. During towing, if the towline comes clear of the water, it will have an excessive strain on it and may part. All hands at towing stations should then take cover.

6. Stop the propellers immediately in the event that the towline parts.

E. Ship's Towing Gear.

1. A ship not specially designed for towing, one without a towing engine, can tow another only by the fixed towline method.

a. In this method, the only means of cushioning stresses on the towing hawser is by veering the cable and chain to a scope of hawser long enough to provide a good catenary (downward dip) in the line.

b. Past practice for towing was to use a towing bridle, bent in a bight around a deck house or hatch coaming and then connected to the towing hawser.

c. Many ships are now equipped with a towing pad and pelican hook, conveniently located aft on the ship's centerline. The towline can be secured to this towing pad. It should also be reinforced by wire preventors to the stern bitts. Chaffing gear should be used wherever rubbing may occur.

2. All ships have "insurance wires" for towing. Anchor chain, paid out from the towed ship, should also be used to provide a good catenary. The two ships' insurance wires can be shackled together if necessary and, with anchor chain, provide an effective towline, even for large ships.

3. Manila or nylon towlines have greater stretch than steel wire rope, and can therefore be shorter, but have less ultimate strength than wire rope for the same tow.

V. SUMMARY. Review the key items.

A. The Towing Ship.

1. Towing astern is generally used in deepsea tows. Explain why.

2. Scope of towing line--over 200 fathoms. Longer towline and heavier gear make for easier towing. Stress importance of good catenary.

3. Speeds in towing astern--5 to 9½ knots.

4. Ship's towing gear. Point out that each ship and/or class of ship may be rigged differently. Review towing engines, fixed towline method, insurance wire, anchor chain, towing pad and pelican hook, wire preventors and chaffing gear.

5. Towline watch, communications and lights.

6. Precautions to be observed--Be ready to let go immediately if necessary, take cover if towline comes clear of the water, stop engines if towline parts.

B. The Tow.

1. Use and preparation of anchor chain.

FIRING THE KILGORE LINE - CARRYING GUN

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2. Rigging to pass the messenger line and towing wire.

3. Veering anchor chain to proper length and securing it on windlass.

4. Towline watch, communications and lights.

5. Precautions to be observed--operate main engine lubricating system when propellers are turning, check anchor windlass, take cover if possibility of towline parting.

C. Communications. Stress importance of good communications by radio-telephone and towing signals in H.O. 87.

VI. TEST AND APPLICATION.

A. Test. Use these and additional questions as an oral quiz:

1. Q. Are seagoing tows taken astern or alongside?
A. Astern, to avoid damage from seas or swells.

2. Q. What is meant by keeping ships "in step"? Why is this done in towing?
A. "In step" means to adjust the scope of the towline between ships so that both ships meet and ride over the seas at the same time. The ships will ride easier, will make better speed, and there will be less strain on the towline.

3. Q. Why is it important to provide a good catenary (downward dip) in the towline? How is this done?
A. A good catenary cushions stress on the towing hawser and will avoid parting it. Length and weight provide a good catenary. Use a long towline, with sufficient anchor chain to provide the necessary weight.

4. Q. What is the minimum length of towline to provide a good shock absorbing catenary?
A. About 200 fathoms for a large tow.

5. Q. Why should you take cover when the towline pulls clear of the water?
A. When the towline pulls clear of the water, it has an excessive strain on it and may part, whipping back onto the ship with great force.

6. Q. What is the top speed for a tow by the fixed towline method?
A. 9½ knots.

7. Q. What is the advantage of allowing a non-self-propelled tow's screws to turn over?
A. An increase in speed may be obtained.

8. Q. What precaution must be taken in a ship being towed with her screws unlocked? Why?
A. The main engine lubricating system must be in operation to prevent bearing failures when her screws start to turn from the pressure of the water.

9. Q. How are communications maintained between towing and towed ships?
A. By radio-telephone and/or radio, power-megaphones under favorable conditions, and by means of towing signals specified in H.O. 87.

10. Q. How are towing signals made by day and by night?
A. Towing signals and their meanings are listed in H.O. 87. By day, signals are made by a single international code flag, exhibited by hand or by hoisting. By night, signals are made by flashing light; whistle signals can also be used.

11. Q. How would you get a line across to the tow in order to haul in her messenger and towline?

A. By heaving line if close enough, otherwise by shoulder line-throwing gun.

12. Q. What gear does your ship have which would be used in towing or being towed?

A. Few ships have towing engines, but all have insurance wires; anchor chain and windlass; gear for use as towing bridles; wire preventors and chaffing gear; means for communications; and most ships are equipped with towing pads and pelican hooks.

13. Q. What are the advantages and disadvantages of manila or nylon towlines?

A. They have greater stretch than wire rope and therefore can be shorter. However, they are not as strong as wire rope.

B. Application.

1. Case studies. Review appropriate lessons from casualties and casualty reviews in Chapters 7 and 8 or from the group's experience.

2. Ship's gear. Check the ship's towing gear and discuss how it would be rigged, and procedures for both towing and being towed.

CHAPTER 5

EMERGENCY SEAMANSHIP - For Deck Personnel (Lesson Plan)

Section 5.3

MANEUVERING

I. OBJECTIVES.

A. To familiarize personnel with the natural, mechanical and maneuvering facets of shiphandling.

B. To develop an understanding of the importance of pre-planning in ship handling.

II. MATERIAL.

A. Training aids. Charts locally drawn as required.

B. References.

1. Ship Handling, King & Noel.
2. Knight's Modern Seamanship.
3. NAVPERS 16118-B, Seamanship, Chapter 8.
4. COMSTSINST P3120.2B, Section 19.6 b., Williamson Turn.

III. INTRODUCTION.

A. Introduce self and subject (Maneuvering)

B. State objectives of lesson.

C. Outline scope of lesson.

1. Natural Aspects.
   a. The weight of the ship (displacement).
   b. Wind effect.
   c. Current effect.
   d. Shallow water effect.
   e. Bank cushion and suction.
2. Mechanical Aspects.
   a. Power available.
   b. Propeller effect.

c. Single or twin screws and direction of rotation.

d. Rudder effect.

3. Maneuvering Aspects.

a. Use of the anchor in maneuvering.

b. Heaving to.

c. Williamson Turn.

d. General aspects.

D. Arouse General Interest. Ship handling is a combination of technical knowledge and practical experience. Both are essential. While we "learn by doing," we've got to know what we are doing. Therefore, it is important to first learn ship handling characteristics before attempting to apply them in practice. As we gain more practice through experience, our judgment and skill in ship handling will improve.

E. Develop Personal Interest. Most deck officers have a full appreciation of what has been created in the building of a ship--a sense of something alive and responsive. This, along with good judgment, an eye for distance, and a calm personality will help you become a proficient ship handler. The basis for good ship handling is knowing the principles of ship handling and the characteristics of your ship so that you can determine in advance how your ship will react under various conditions. Deck officers must not pass over the study of ship handling just because they may seldom get an opportunity to take the conn. Learning is an active process and ship handling can be learned by observing others and anticipating how you would manuever in the situation. You'll be better prepared when you do get the conn.

IV. PRESENTATION. There are many facets of ship handling, depending upon the conditions and the type of operation--whether anchoring or mooring, making a landing, leaving a pier or another ship, in restricted waters, at sea, emergency ship handling, in convoy, or in ice. Each requires detailed study and procedures. It is suggested that each be discussed in detail using the references as guides. Only general aspects will be covered here.

A. Natural Aspects.

1. Weight of Ship (displacement).

a. In general, the more power a ship has, the more readily she will respond to her engines. But it is obvious, for instance, that a motorcycle will accelerate faster than a truck. The same condition exists between the Queen Mary and a destroyer. Because of her great length, height and tonnage, the Queen Mary cannot be maneuvered as easily as the destroyer, even though her engines are more powerful.

b. The destroyer being lighter will pull ahead of the Queen Mary when both ships increase speed simultaneously. By the same token, when decelerating, the Queen Mary will carry her way longer than the destroyer. This is a very important point to bear in mind when approaching a pier or anchorage. Confidence in ship handling must be tempered with caution for this reason. It is generally easier to put way on than to take it off in close quarters.

2. Wind Effect.

a. A ship's area above the waterline is referred to as the sail area; the wind effect on a ship depends largely upon the sail area and the ship's draft. For example, a tanker down by the stern with the forward tanks empty and a high bow will have a large forward sail area and will not readily come up into the wind. On the other hand, a ship with a large deckhouse aft and down by the