

**Summary Report for Individual Task
551-8ST-1027
Operate Emergency Steering
Status: Approved**

DISTRIBUTION RESTRICTION: Approved for public release; distribution is unlimited.

DESTRUCTION NOTICE: None

Condition: Given avesselunderway in an Operational Environment (OE), during both day and night, under all weather conditions, as part of a drill or in response to actual emergency. You are required to operate the emergency steering.

Standard: Operated emergency steering in accordance with TM 55-1925-273-10-2, or TM 55-1915-200-10, or TM 55-1905-223-24-9, or TM 55-1905-223-10, or TM 55-1925-236-12 depending on the vessel.

Special Condition: None

Special Standards: None

Special Equipment:

MOPP:

Task Statements

Cue: None

DANGER
None

WARNING
None

CAUTION
None

Remarks: This task applies to any vessel with emergency steering system.

Notes: Adhere to all safety, warnings, caution and danger statement for this task.

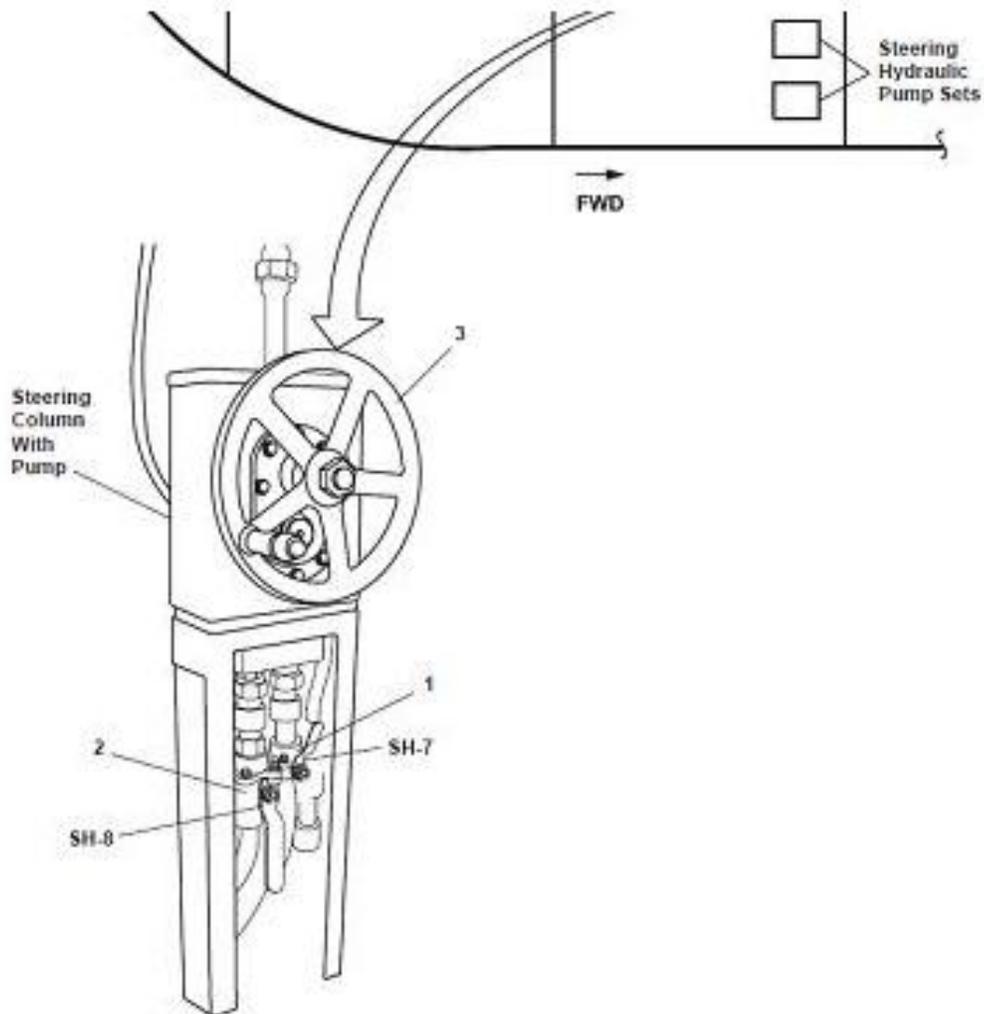
Performance Steps

1. Operate emergency steering on a Large Tug (LT)

a. Perform hand hydraulic steering if power is lost at the steering hydraulic power pack on an LT.

(1) Open the SH-7 HAND PMP C.O.V. valve and the SH-8 HAND PMP C.O.V. valve to secure the flow of hydraulic oil to and from the emergency steering pump. (Figure 551-8ST-1027_01)

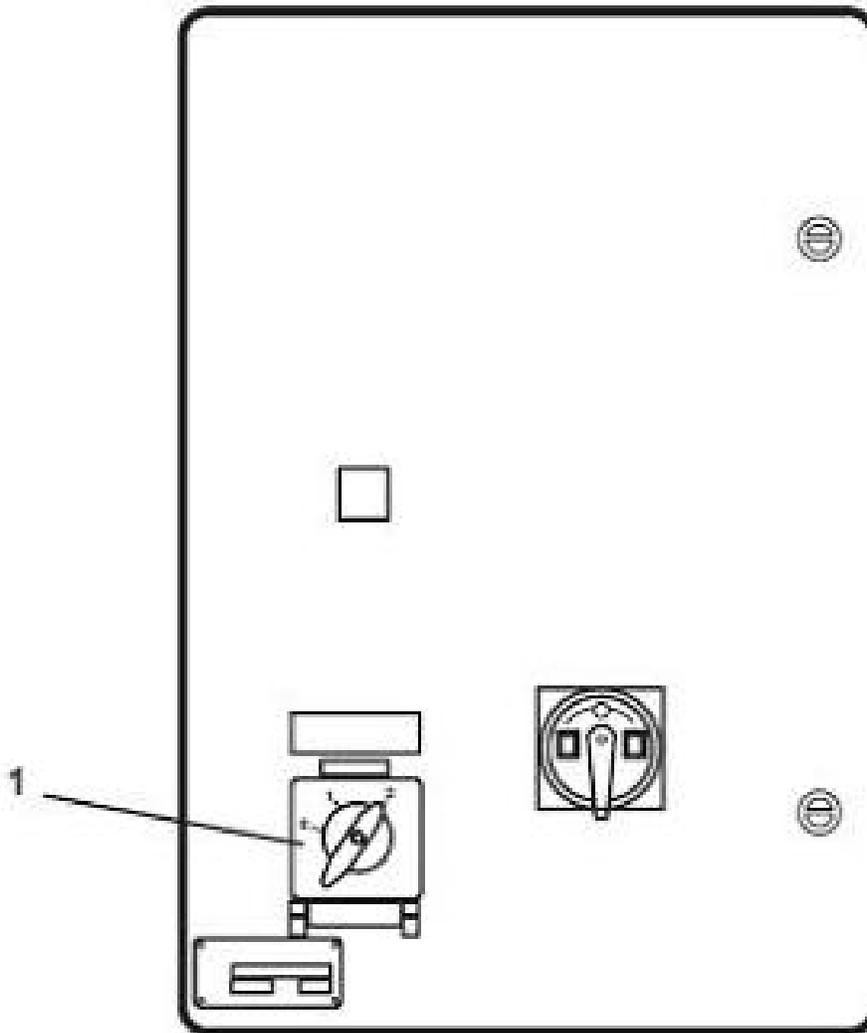
Note: The valve is open when the handle is horizontal. The valve is closed when the handle is vertical.



Hand Pump Isolation Valves

(2) Secure both steering pumps by placing each steering gear motor controller selector switch in the STOP position (Item 1). (Figure 551-8ST-1027_02)

Note: Vessel heading is indicated on the bulkhead mounted compass repeater. Use the sound powered telephone headset to communicate with the pilothouse for course changes.



Steering Gear Motor Controller

(3) Steer the vessel.

Note: Two crewmembers are required for this operation.

" If rudder movement to the left is required, one crewmember rotates the handwheel (Item 3, Figure 551-8ST-1027_01) to provide hydraulic pressure and flow to the steering gear. Stop rotating the hand wheel when the desired rudder angle is attained.

" If rudder movement to the right is required, repeat the above step.

NOTE: Once the malfunction is repaired, the steering system can return to normal operation.

(4) Close the SH-7, HAND PMP C.O.V. valve and the b. SH-8, HAND PMP C.O.V. valve to secure hand-hydraulic steering. (Figure 551-8ST-1027_01)

b. Perform manual power-hydraulic steering when a malfunction results in loss of control in the pilothouse, but power is still available at the steering hydraulic power pack auxiliary machinery space (AMS) 2 on an LT.

Note: No change to valve alignment is necessary for this steering method.

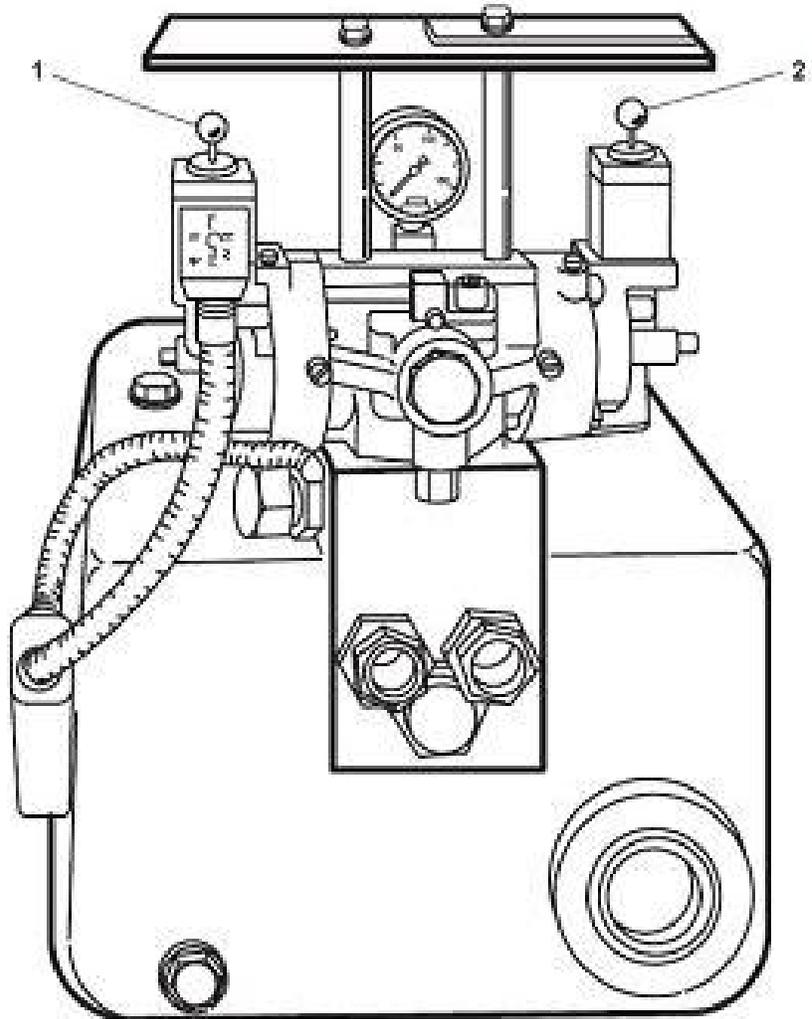
(1) Set the change-over switch to LOCAL CONTROL (position 3) on the steering gear motor controller. (Figure 551-8ST-1027_02)

Note: There are two power packs, one for each rudder. The vessel heading is indicated on the bulkhead mounted compass repeater. Use the sound powered telephone headset to communicate with the pilothouse for course changes.

(2) Steer the vessel.

(a) Adjust the course to the left by pressing down on the port control valve handle (Item 1) on each power pack. (Figure 551-8ST_1027_03)

(b) Adjust the course to the right by pressing down on the starboard control valve handle (Item 2) on each power pack. (Figure 551-8ST_1027_03)



Rudder Power Packs

c. Secure manual power-hydraulic steering after the malfunction is repaired on an LT:

(1) Set the change-over switch (Item 1) to remote control position 1 on the steering gear motor controller. (Figure 551-8ST-1027_02)

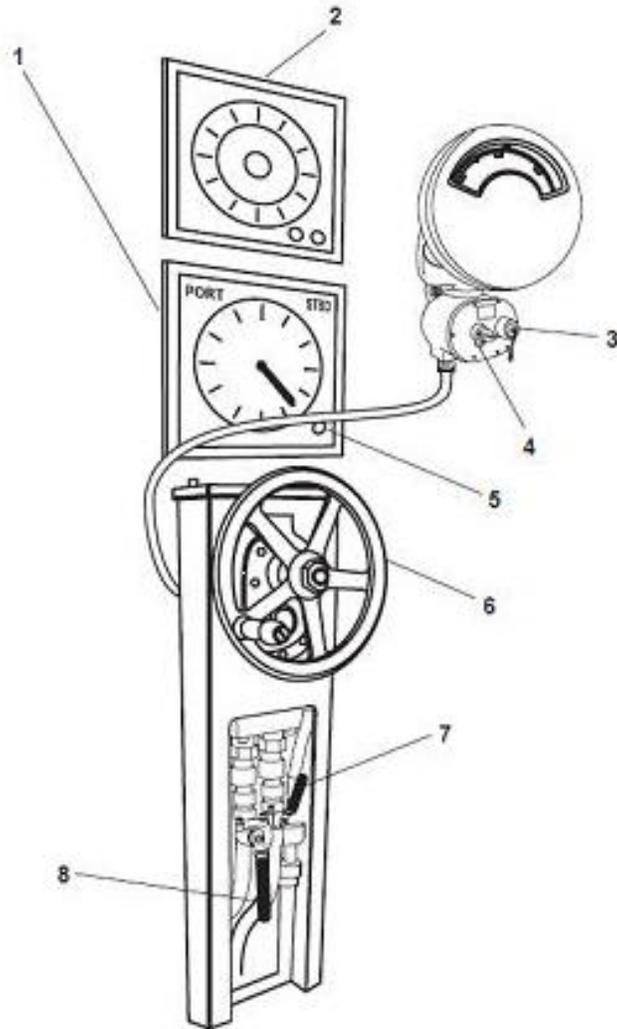
(2) Operate the steering system under usual conditions in accordance with WP 0077 00, Volume 1.

(3) Return the equipment to the desired readiness condition.

d. Refer to the gyro compass repeater (which is fed from the vessel's gyro compass in the pilothouse), as it displays the vessel's heading at the emergency steering station, which aid steering operations during steering emergencies.

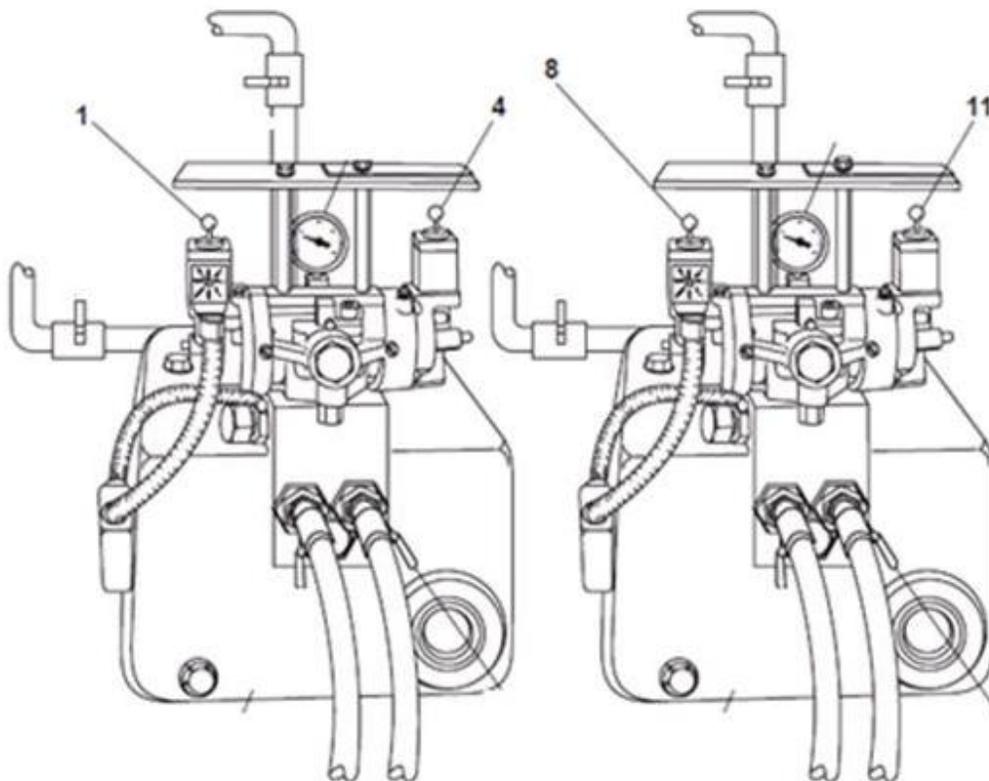
e. Use the steering gear emergency hand pump to provide hydraulic pressure and directional control to the steering gear in an emergency

Note: The emergency steering station permits steering of the vessel in the event of a main steering system failure. (Figure 551-8ST-1027_04)



Emergency Steering Station

- (1) Refer to the rudder angle indicator (Item 1) to view the rudder angle in degrees.
- (2) Consult the compass repeater (Item 2) to view a display of the reading from the vessel's gyrocompass.
- (3) Turn the synchronizer control ON and OFF using the synchronizer control ON/OFF switch (Item 3), which is located beneath a screw-off cover.
- (4) Control the illumination level of the compass repeater using the dimmer control (Item 4).
- (5) Control the illumination level of the rudder angle indicator display using the dimmer control (Item 5).
- (6) Provide manual control for the emergency steering pump using the hand wheel (Item 6).
- (7) Secure the flow of hydraulic oil to and from the emergency steering pump using the SH-7 Hand PMP C.O.V. valve (Item 7) or the SH-8 Hand PMP C.O.V. valve (Item 8).
- f. Perform manual-powered emergency steering using the steering system hydraulic power pack and motor controller, which has the required controls and indicators. (Figure 551-8ST-1027_05)



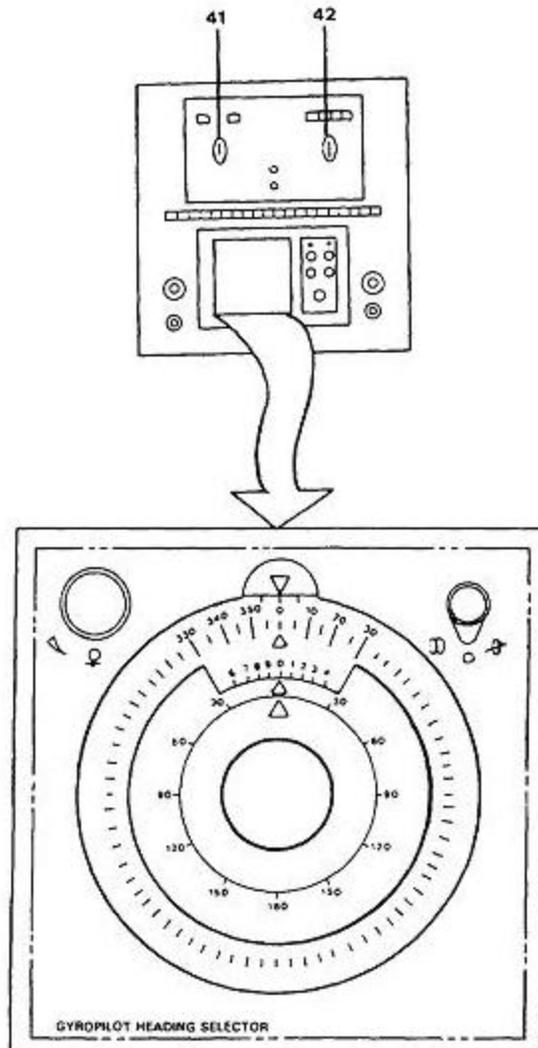
Steering System Hydraulic Power Pack and Motor Controller

(1) Control rudder movement to port using the port hand level (Item 1 or Item 8).

(2) Control rudder movement to starboard (STBD) using the STBD hand lever (Item 4 or Item 11).

2. Operate emergency steering on a Logistic Support Vessel (LSV) if the steering system fails.

a. Select the #2 pump position at the steering console PUMP SELECTOR switch (Item 41) or if you are operating on the #2 pump, select the #1 pump position. (Figure 551-8ST-1027_06)



Pilothouse Steering Cabinet

CAUTION

Caution: If a low hydraulic fluid level alarm is present, steer the vessel with as little rudder movement as possible. The low level may have been caused by a leak which could deplete the hydraulic fluid of the power unit in use.

b. Attempt to steer the vessel. If unable to steer, select the non-follow-up (NFU) mode with the MODE SELECT switch (Item 42).

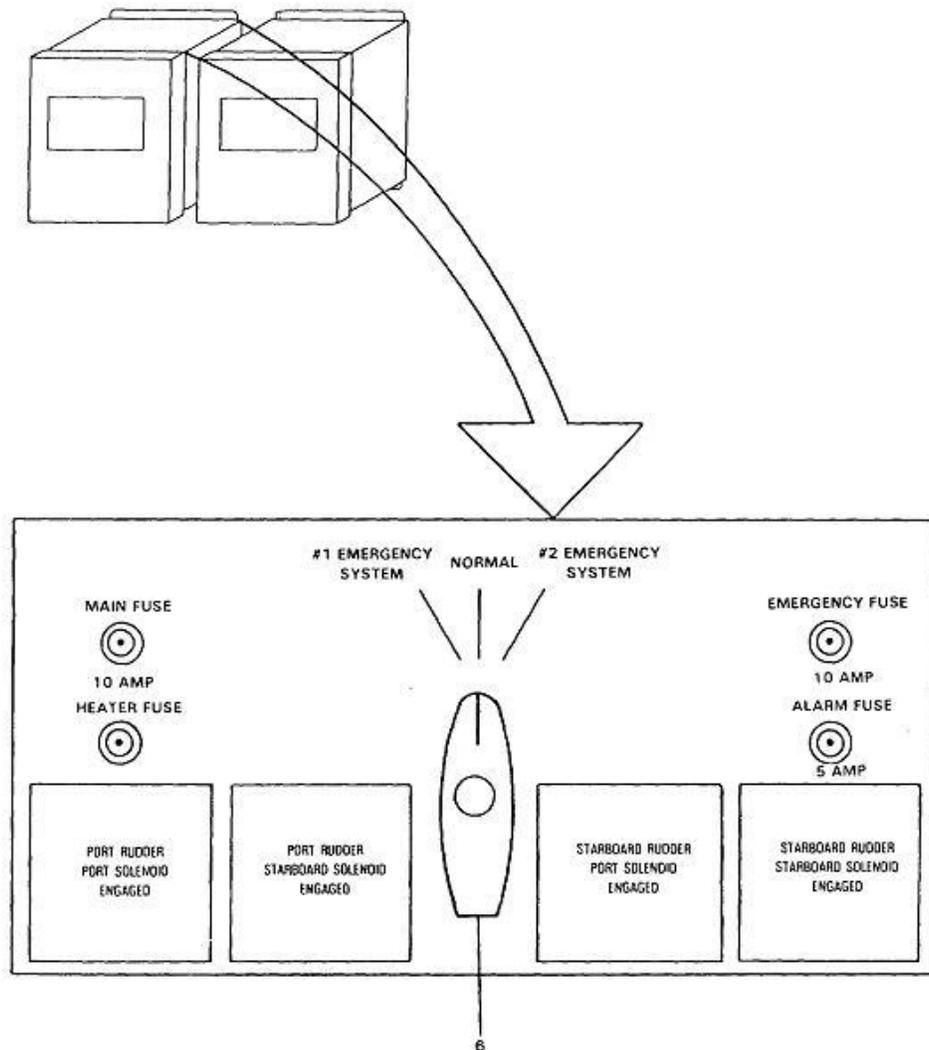
Note: Caution: If a low hydraulic fluid level alarm is present, steer the vessel with as little rudder movement as possible. The low level may have been caused by a leak which could deplete the hydraulic fluid of the power unit in use.

c. Dispatch an engineer to determine the cause of the loss of steering if steerage is available.

d. Isolate any leaks by closing appropriate valves.

e. Dispatch a crew member to the Emergency Steering System Station and establish communication on the sound powered telephone system if steering is not possible from the pilothouse.

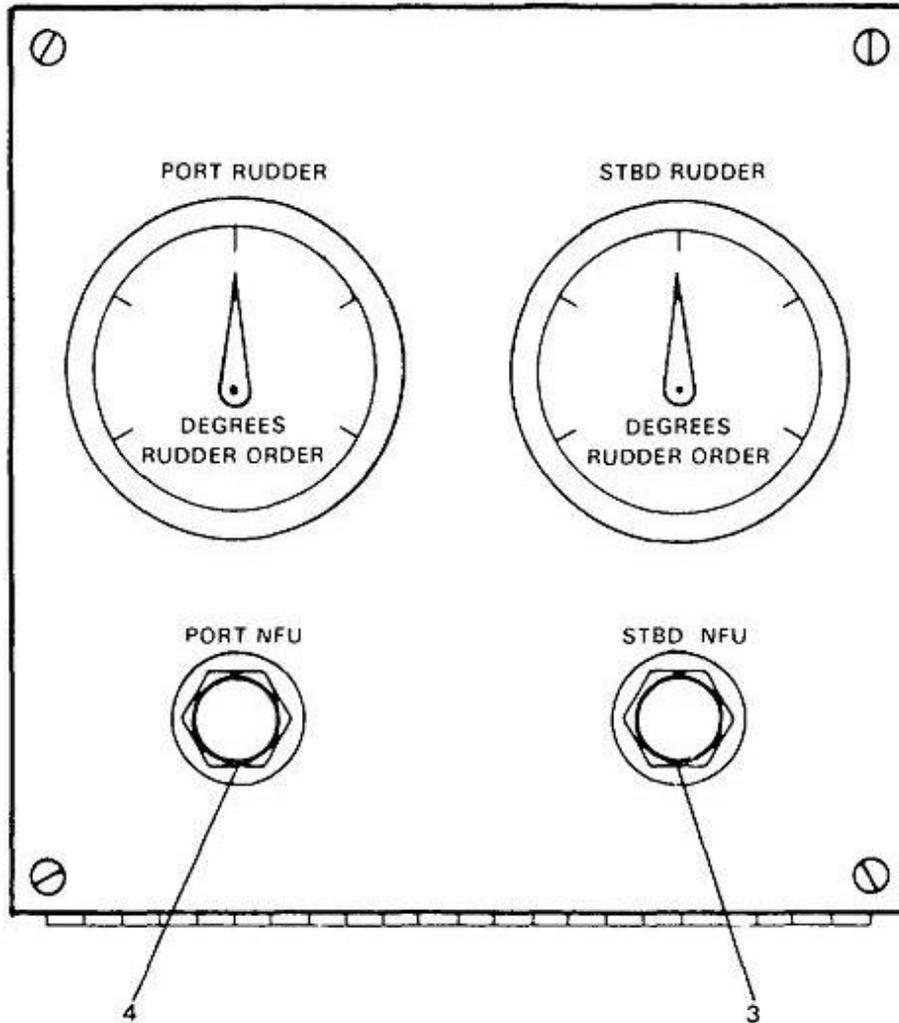
f. Switch the Emergency Transfer selector (Item 6) located in the Emergency Steering System Station, to #1 Emergency System position. (Figure 551-8ST-1027_07)



Pilothouse Steering Cabinet

g. Attempt to steer the vessel using the Emergency Steering Station joysticks (Items 3 and 4) at the direction of the helmsman. (Figure 551-8ST-1027_08)

Note: The PORT NFU joystick controls the port set of rudders and the STBD NFU joystick controls the starboard set of rudders. NFU indicates the rudders are in Non Follow Up mode and are independently operated by the joysticks.



Emergency Steering Station

(1) Move the joystick(s) to the left for left rudder or to the right for right rudder.

(2) Keep moving the joysticks until the rudders are in the desired direction until the joysticks are released.

Note: The joysticks are spring loaded and will return to the middle when released.

3. Operate emergency steering on a Landing Craft Utility (LCU).

Note: Knowledge the Soldier must have:

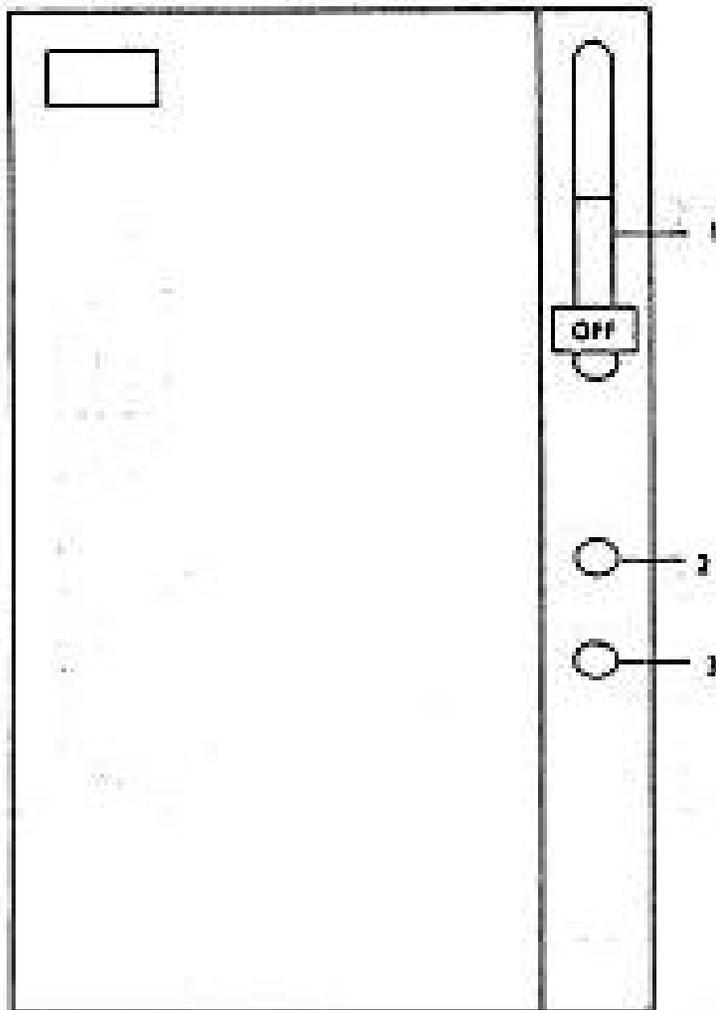
K-1: The steering gear is designed for primary control from the pilothouse, but also includes control components for emergency operation from the steering gear room.

K-2: When normal pilothouse steering control is disabled, control can be switched to the steering gear room using one of the two local control units bulkhead mounted near the pumpsets.

a. Select Unit A if control of pumpset A is desired.

b. Select Unit B if control of pumpset B is desired.

c. Check to verify that the power switch (Item 1) is in the On position. The power indicator light (Item 2) will be lit if the power is applied to the pumpset. (Figure 551-8ST-1027_09)



Steering Gear Motor Controller

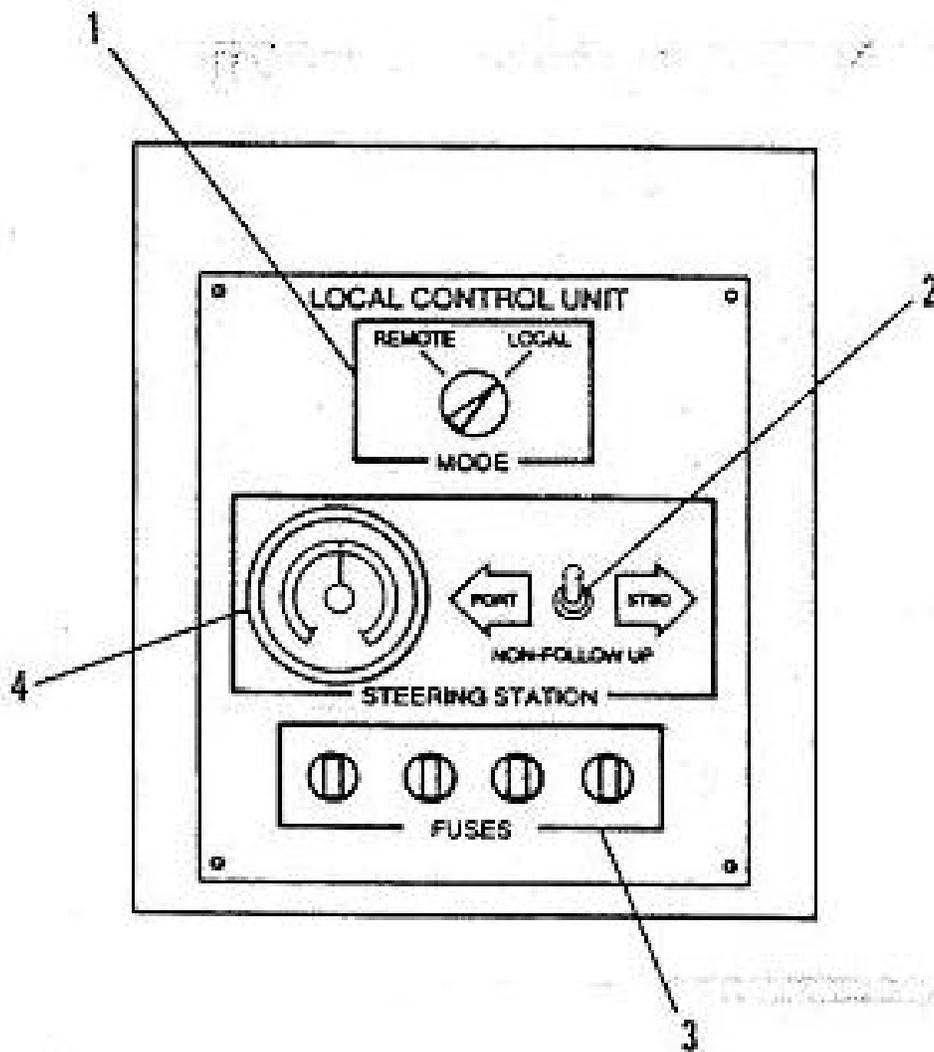
- d. Switch the control transfer switch to LOCAL to provide rudder control (Item 3).

Note: Knowledge the Soldier must have:

K-1: Communication with the pilothouse is also required for heading information.

NOTE: When maneuvering the ship in close quarters, the bow thruster water jet will normally be operated in conjunction with the steering gear. Refer to the LCU Operator's Manual (TM 55-1905-223-10) and the bow thruster water jet maintenance manual (TM 55-1905-223-24-6) for additional information about the bow thruster system.

- e. Set the LOCAL/REMOTE CONTROL switch (Item 1) to LOCAL. (Figure 551-8ST-1027_10)

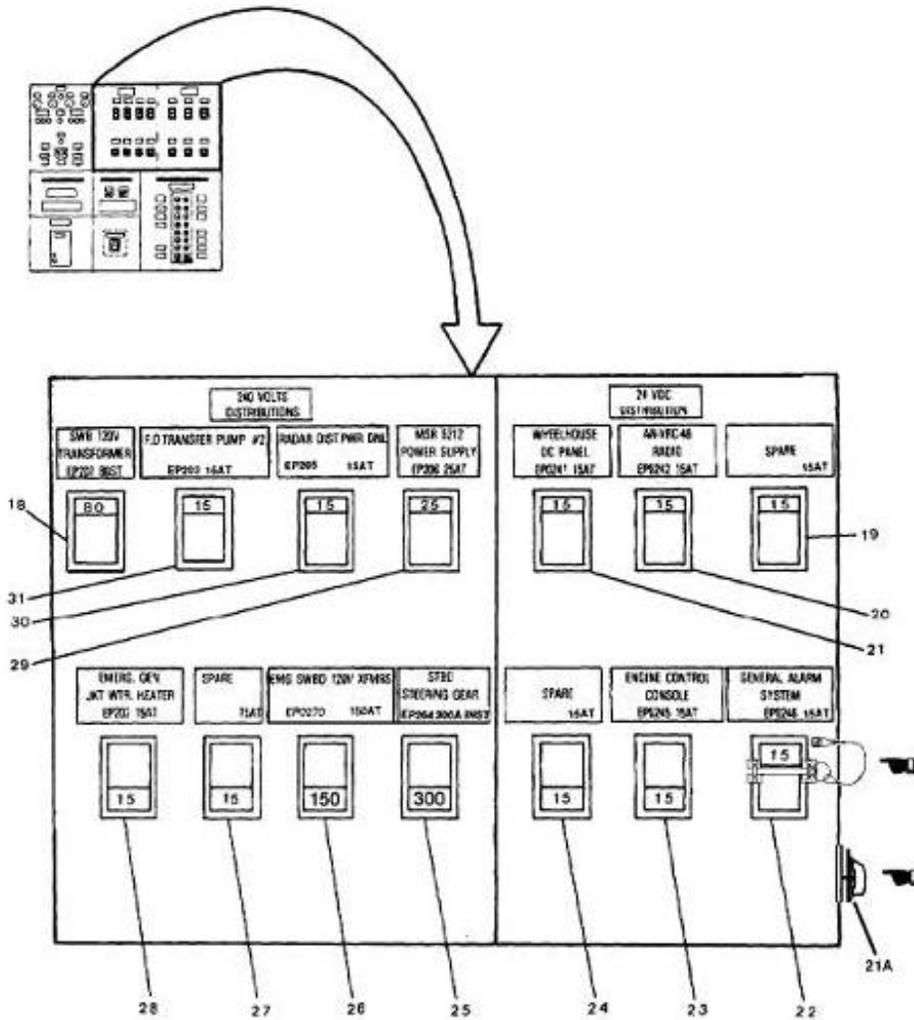


Steering Gear Room Local Control Unit

- f. Operate rudders using the spring loaded switch in the STEERING STATION block.
- g. Move the switch to the left for left rudder control or to the right for the right rudder control (Item 2).
- h. Provide protection for electrical circuits (Item 3).
- i. Release the switch when the rudder has reached the desired angle as indicated in the rudder indicator (Item 4).

4. Provide STBD steering gear with amperage overload protection using the STBD steering gear on an LCU (Item 25). (Figure 551-8ST-1027_11)

Note: The STBD STEERING GEAR circuit breaker (Item 25) is located on the emergency switchboard. This breaker provides electrical power and overload protection when using the starboard steering gear.

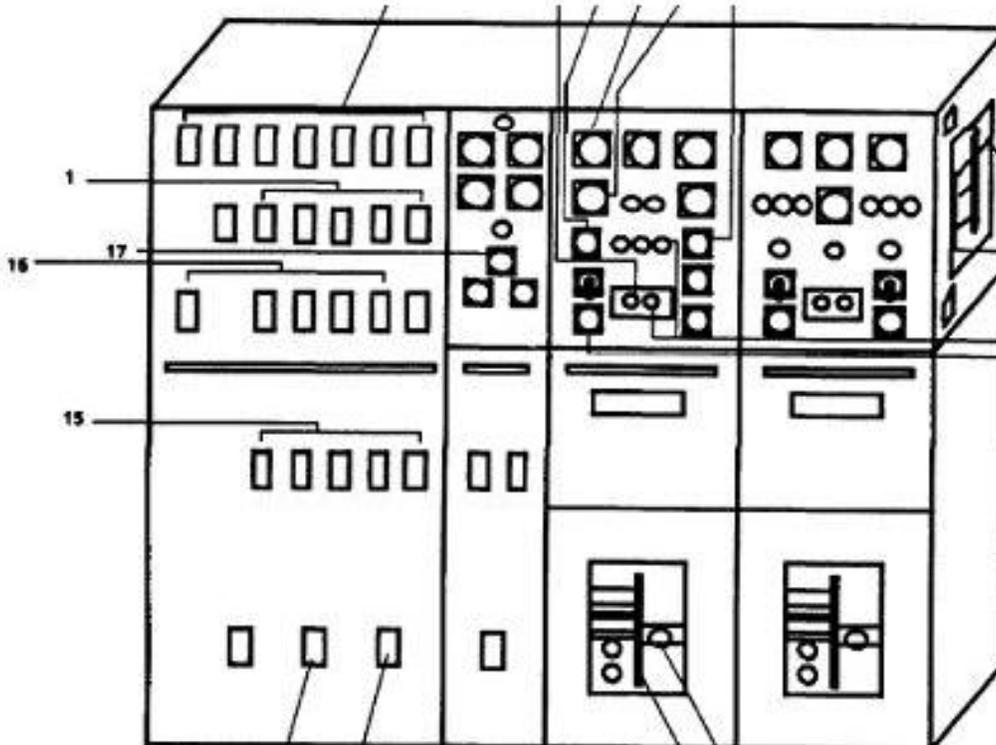


Emergency Switchboard

- a. Set circuit breakers to the ON position (Item 16). (Figure 551-8ST-1027_12)

Note: The PORT STEERING GEAR circuit breaker (item 16) is located on the main switchboard. This breaker provides electrical power and overload protection for the port steering gear.

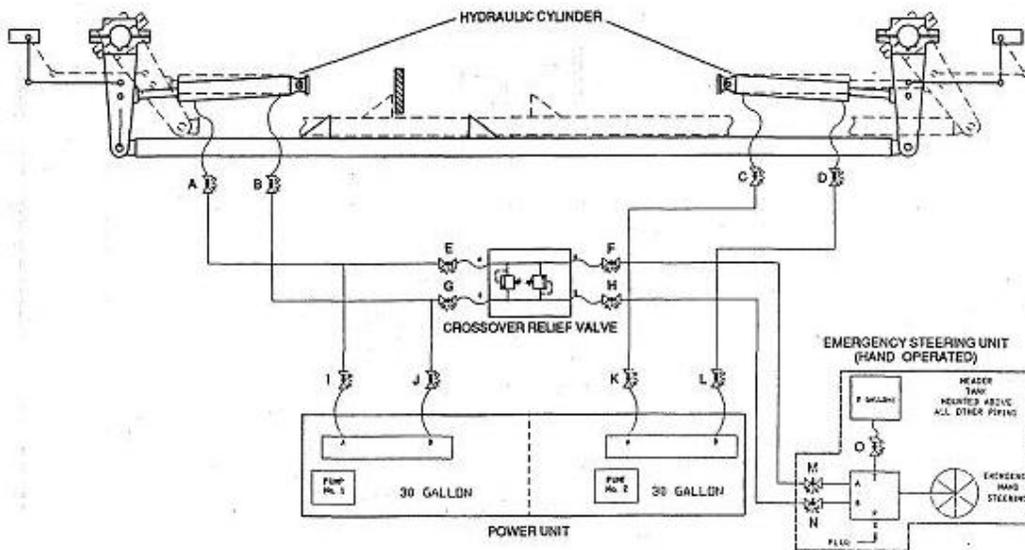
Warning: Before applying power to steering hydraulic pump motors, verify that the rudders are clear aft of the vessel. Secure permission from the proper authority to move the rudders. Station a crew member at the pumpset motor control panel to press the STOP pushbuttons in the event that there is faulty or improper performance of either pumpset during the preoperational checks of steering system.



Main Switchboard

b. Align the steering gear hydraulic piping system. (Figure 551-8ST-1027_13)

Note: Aligning the steering gear hydraulic piping system is a troubleshooting procedure as all the valves should already be in proper alignment. A laminated placard showing the proper valve alignment should be readily available in the steering room.



Steering Gear Hydraulic Piping System

- (1) Close all valves in the steering gear hydraulic steering gear piping system.
- (2) Open valve B, LOCK VLV-PORT STRG RAM.
- (3) Open valve D, LOCK VLV-PORT STRG RAM.

(4) Open valve C, LOCK VLV-STBD STRG RAM.

(5) Open valve A, LOCK VLV-STBD STRG RAM.

(6) Open valve G, UNIT No. 1 ISLN.

(7) Open valve H, UNIT No. 2 ISLN.

(8) Open valve E, UNIT No. 1 ISLN.

(9) Open valve F, UNIT No. 2 ISLN.

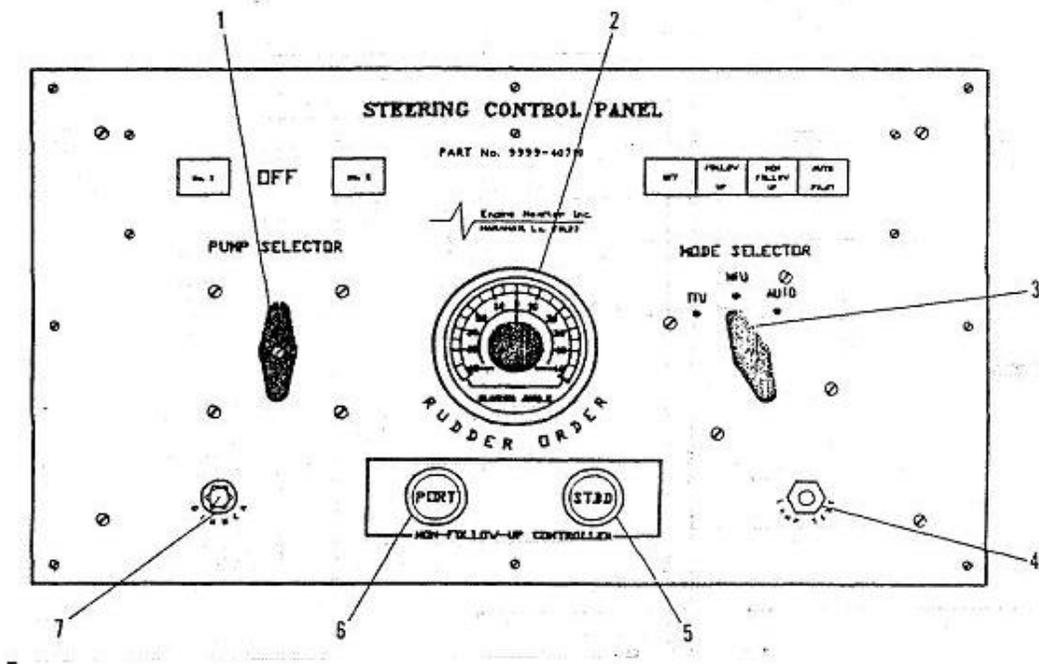
(10) Open valve I, Pump Unit No. 1.

(11) Open valve J, Pump Unit No. 1.

(12) Open valve K, Pump Unit No. 2.

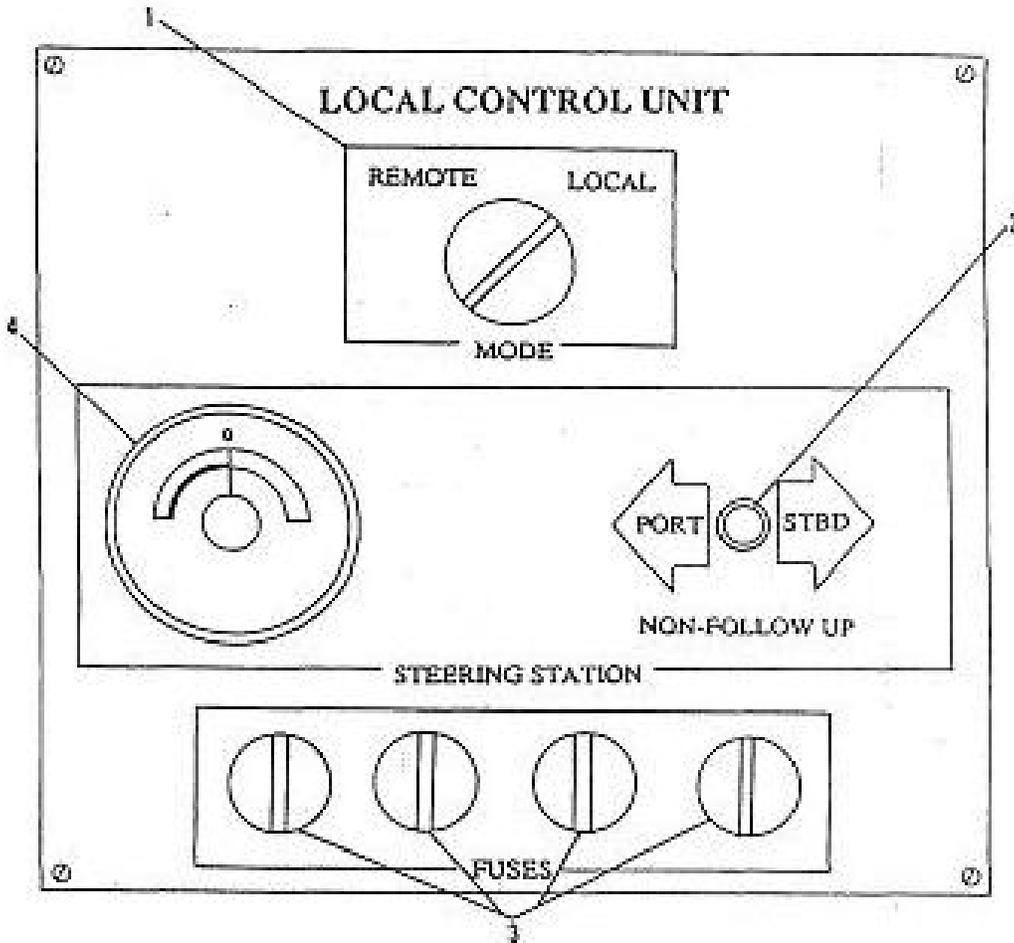
(13) Open valve L, Pump Unit No. 2.

c. Verify that the mode selection switch (Item 3) is in the OFF positions on the STEERING CONTROL PANEL (located in the pilot house). (Figure 551-8ST-1027_14)



Steering Gear Control Panel

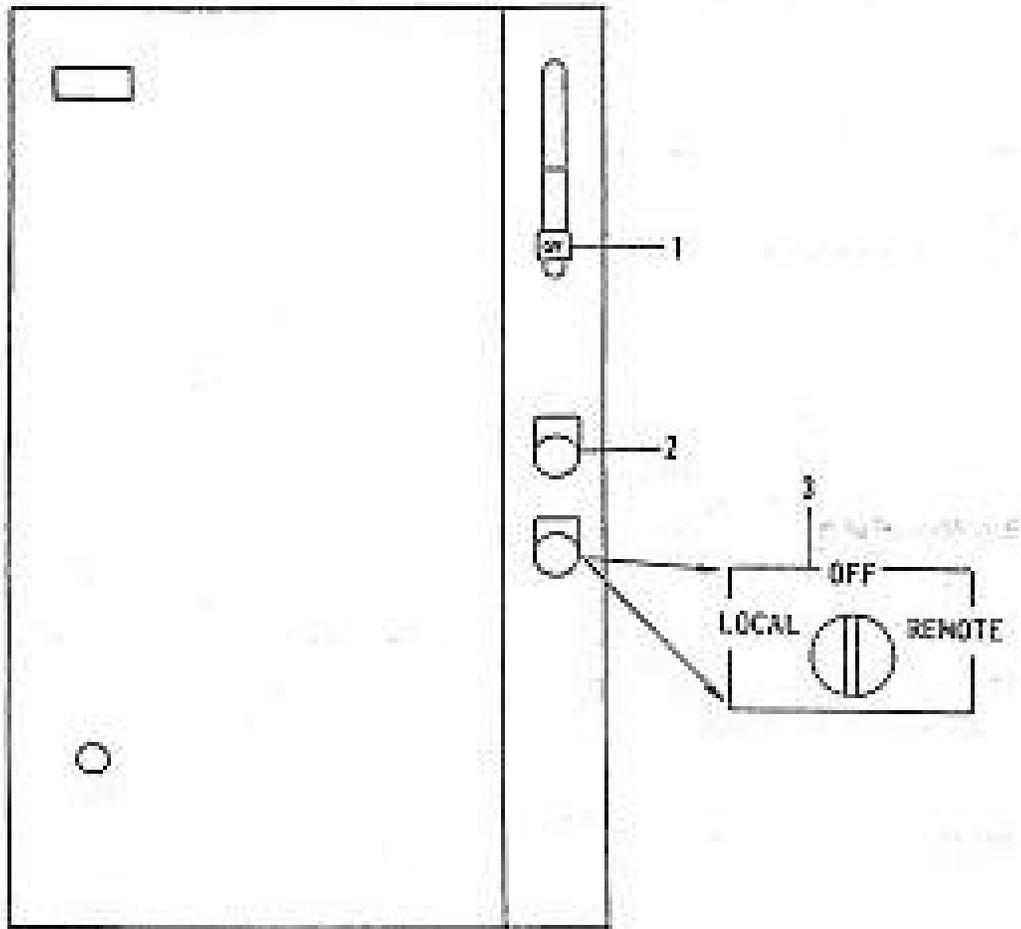
d. Make sure that the mode selection switch (Item 1) is in the REMOTE position on each panel on the LOCAL CONTROL UNIT (located in the steering compartment). (Figure 551-8ST-1027_15)



Steering Gear Local Control Unit

e. Operate using the steering gear local control unit.

(1) Confirm that the circuit breaker switch (Item 1) is in the ON position on each panel on the steering gear motor controller panel (located in the steering compartment). (Figure 551-8ST-1027_16)

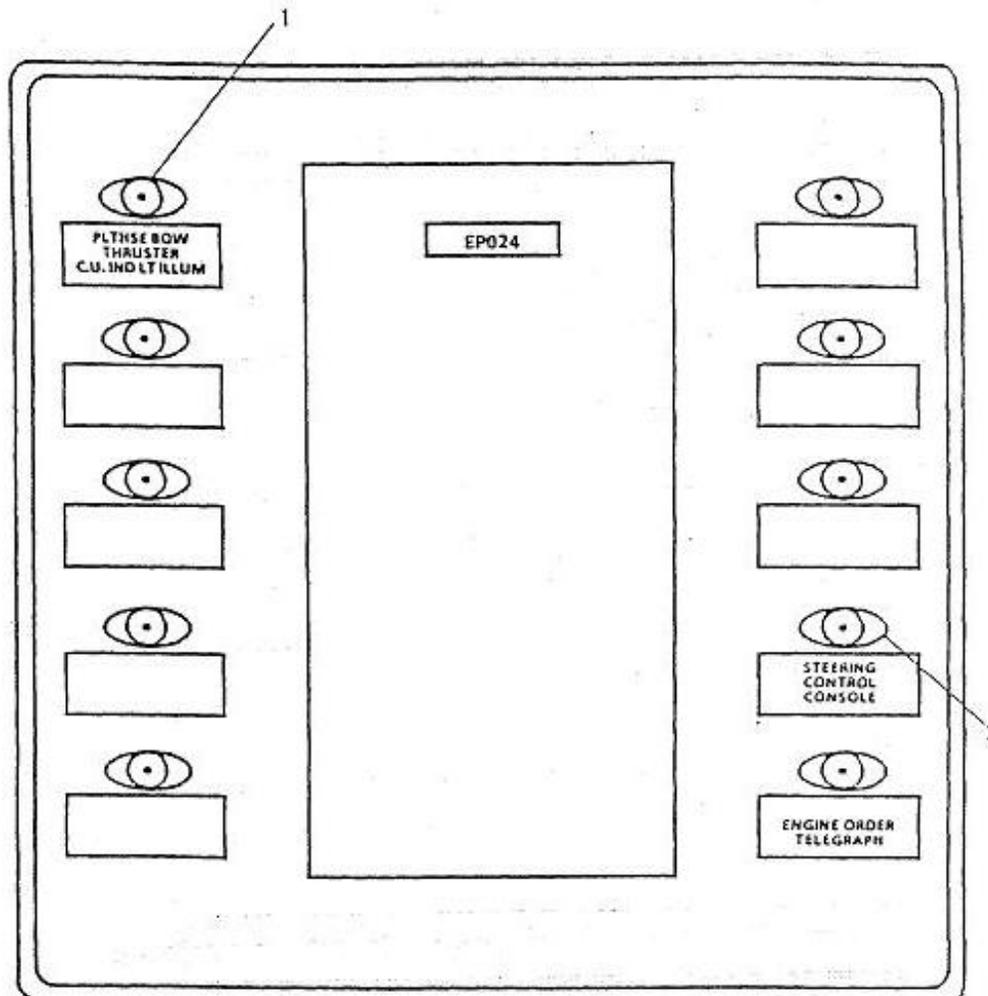


Steering Gear Motor Controller

(2) Confirm that the power light (Item 2) is lit.

(3) Verify that the LOCAL/OFF/REMOTE switch (Item 3) is in the REMOTE position on each panel.

f. Check that the STEERING CONTROL CONSOLE switch (Item 2) is in the ON position on the 24 volt distribution panel (located in the communications area). (Figure 551-8ST-1027_17).



Power Panel Box

g. Operate the steering gear system. (Figure 551-8ST-1027_14)

- (1) Press the lamp test pushbutton (Item 4).
- (2) Verify that all lamps light.
- (3) Adjust the DIMMER control switch (Item 7) for best reading level
- (4) Set the pump selector switch (Item 1) to the pump No. 1 position.

Note: The pump No. 1 run green power available indicator should light. If the indicator does not light, shutdown the system and notify unit maintenance.

WARNING

Warning: Do not operate the rudders without obtaining proper authority. Verify that all personnel and equipment are clear of the rudder areas and other moving parts.

- (5) Set the mode selector switch (item 3) to the non-follow-up (NFU) position.

Note: Warning: Do not operate the rudders without obtaining proper authority. Verify that all personnel and equipment are clear of the rudder areas and other moving parts.

h. Observe the rudder operation. (Figure 551-8ST-1027_14)

(1) Press the PORT NON-FOLLOW-UP CONTROLLER pushbutton (Item 6). This will move the rudder to port as shown on the rudder angle indicator.

(2) Press the STBD NON-FOLLOWUP CONTROLLER pushbutton (Item 5). This will move the rudder to starboard as shown on the rudder angle indicator.

(3) Set the MODE SELECT switch to the FOLLOW UP position.

(4) Turn the helm counter-clockwise and the rudder will move to port as shown on the rudder angle indicator and the rudder order indicator. (Item 2).

(5) Turn the helm clockwise and the rudder will move to starboard as shown on the rudder angle indicator and the rudder order indicator (Item 2).

(6) Direct the operator in the steering compartment to set the LOCAL CONTROL UNIT MODE selection switch (Item 1) to the LOCAL position. (Figure 551-8ST-1027_15)

(a) Set the NON-FOLLOW-UP toggle switch (Item 2) to the PORT position. This will move the rudder will move to port as indicated on the rudder angle indicator (Item 4).

(b) Set the NON-FOLLOW-UP toggle switch (Item 2) to the STBD position. This will move the rudder to starboard as indicated on the rudder angle indicator (Item 4).

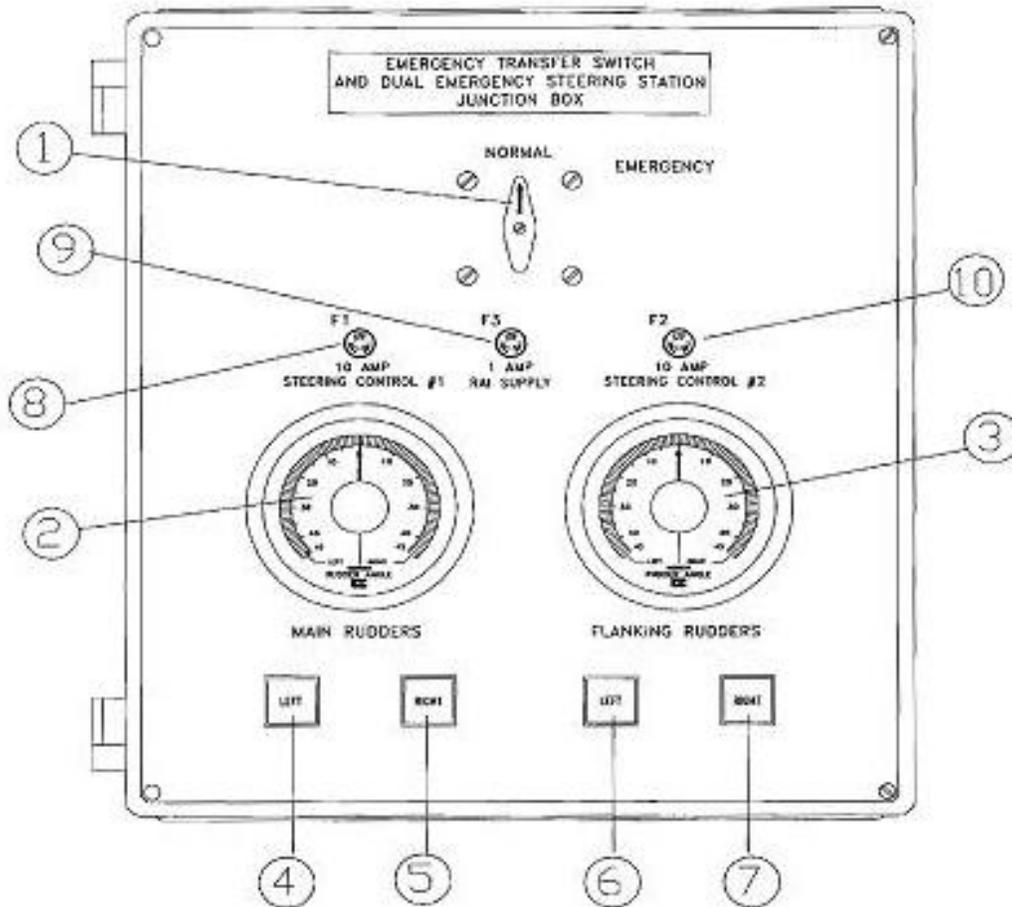
(c) Set the MODE selection switch (Item 1) to the REMOTE position.

(7) Set the PUMP SELECTOR switch (Item 1) to the PUMP No. 2 position on the STEERING CONTROL PANEL (Figure 551-8ST-1027_14)

Note: The pump No. 2 run green power available indicator should light. If the indicator does not light, shutdown and notify unit maintenance

i. Repeat the system check for pump No. 2 by repeating the steps for operating the steering gear and rudders.

5. Engage the Emergency Steering mode on a Small Tug. (Figure 551-8ST-1027_18)



Emergency Steering Panel - Engine Room Junction Box

a. Switch the emergency steering and transfer switch panel and junction box (in the engine room) from the NORMAL position to the EMERGENCY position (Item 1).

b. Use the MAIN RUDDER pushbuttons (Items 4 & 5) and the FLANKING RUDDER pushbuttons (Items 6 & 7) to operate steering in the Non Follow UP (NFU) mode.

(1) Turn the main rudders to the left, if needed, by pushing the LEFT pushbutton (Item 4). Release the button when the rudder angle indicator (Item 2) for the main rudders reaches the desired angle.

(2) Turn the main rudders to the right, if needed, by pushing the RIGHT pushbutton (Item 5). Release the button when the rudder angle indicator (Item 2) for the main rudders reaches the desired angle.

(3) Turn the flanking rudders to the left, if needed, by pushing the LEFT button (Item 6). Release push button when rudder angle indicator (Item 3) for the flanking rudders reaches desired angle.

(4) Turn the flanking rudders to the right, if needed, by pushing the RIGHT button (Item 7). Release push button when rudder angle indicator (Item 3) for the flanking rudders reaches desired angle.

Note: All power to the pilot house will be disconnected and transferred to the emergency steering station non-follow-up push buttons. The emergency rudder angle indicators are powered by a separate source, isolating it from the pilot house.

(Asterisks indicates a leader performance step.)

Evaluation Preparation: Ensure that all information, references and equipment required to perform the task are available. Use the FM and the evaluation guide to score the soldier's performance. Brief the soldier. Tell the soldier what he is required to do IAW the task conditions and standards.

PERFORMANCE MEASURES	GO	NO-GO	N/A
1. Operate emergency steering on a Large Tug?			
2. Operate emergency steering on a Logistics Support Vessel?			
3. Operate emergency steering on a Land Craft Utility?			
4. Provide STBD steering gear with amperage overload protection using the STBD steering gear on an LCU?			
5. Operate emergency steering on a Small Tug?			

Supporting Reference(s):

Step Number	Reference ID	Reference Name	Required	Primary
	TM 55-1905-223-10	OPERATORS MANUAL FOR LANDING CRAFT, UTILITY (LCU 2000 CLASS) (NSN 1905-01-154-1191) (REPRINTED W/BASIC INCL C1-9)	Yes	No
	TM 55-1905-223-24-9	UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE INSTRUCTIONS STEERING GEAR SYSTEM FOR LANDING CRAFT UTILITY (LCU) (NSN 1905-01-154-1191) (REPRINTED W/BASIC INCL C1-3) (THIS	Yes	No
	TM 55-1915-200-10	OPERATORS MANUAL FOR LOGISTIC SUPPORT VESSEL (LSV) (NSN 1915-01-153-8801) (REPRINTED W/BASIC INCL C1-6)	Yes	No
	TM 55-1925-223-24&P	UNIT, INTERMEDIATE DIRECT SUPPORT AND INTERMEDIATE GENERAL SUPPORT MAINTENANCE MANUAL (INCLUDING REPAIR PARTS AND SPECIAL TOOLSLIST) FOR MAIN REDUCTION GEAR FOR LARGE TUG (LT) (NSN 1925-01-247-7110) (THIS	Yes	No

Environment: Environmental protection is not just the law but the right thing to do. It is a continual process and starts with deliberate planning. Always be alert to ways to protect our environment during training and missions. In doing so, you will contribute to the sustainment of our training resources while protecting people and the environment from harmful effects. Refer to FM 3-34.5 Environmental Considerations and GTA 05-08-002 ENVIRONMENTAL-RELATED RISK ASSESSMENT.

Safety: In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Composite Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, NBC Protection, FM 3-11.5, CBRN Decontamination. In a training environment, leaders must perform a risk assessment in accordance with FM 5-19, Composite Risk Management. Leaders will complete a DA Form 7566 COMPOSITE RISK MANAGEMENT WORKSHEET during the planning and completion of each task and sub-task by assessing mission, enemy, terrain and weather, troops and support available-time available and civil considerations, (METT-TC). Note: During MOPP training, leaders must ensure personnel are monitored for potential heat injury. Local policies and procedures must be followed during times of increased heat category in order to avoid heat related injury. Consider the MOPP work/rest cycles and water replacement guidelines IAW FM 3-11.4, NBC Protection, FM 3-11.5, CBRN Decontamination.

Prerequisite Individual Tasks :

Task Number	Title	Proponent	Status
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551-88K-1201	Record Entries in Vessel Logs Onboard Class A & B Vessels	551 - Transportation (Individual)	Approved
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Supporting Individual Tasks : None

Supported Individual Tasks : None

Supported Collective Tasks : None