



MANAGEMENT SYSTEM MANUAL

ARM 8.6 R/V Armstrong Loss of Steering

Originator:

Gary McGrath

Approved By:

Al Suchy

1. Purpose

The following section outlines the Loss of Steering Procedure and instructions for the port and starboard hydraulic steering.

2. Responsibility

It is the responsibility of the Chief Engineer to ensure that all engineering personnel respond to Loss of Steering emergencies in a timely manner and to have adequate instructions available to handle those emergencies. The Chief Mate is responsible for the bridge personnel.

3. References

- a) Matthews Marine Systems, Inc. - Operation Manual for the AGOR 27
- b) Port Steering Hydraulic System – Drawing Number 050-0315-01, As Built
- c) Starboard Steering Hydraulic System – Drawing Number 050-0315-01, As Built

4. Procedure

a. Initial Failure

On discovery that steering has been lost, the Bridge Watch is to switch to alternate NFU modes of steering on bridge:

- Kongsberg Non Follow-up (NFU) Pushbuttons
- Kongsberg Non Follow-up (NFU) Joysticks Port and Starboard Bridge Wings

Notify the engineer on watch of failure. Engineers shall check the following:

- Steering pumps
- Hydraulic tank levels and temperatures
- Steering motors, hydraulic piping, and feedback tiller arms

b. Failure of NFU Bridge Modes

- Bridge watch notify engineer on watch of steering loss.
- MCS (Main control system) takes control and engineer verifies control of steering from the NFU joystick



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- If steering control is verified at MCS control is sent back to Bridge control
 - Bridge returns to desired steering mode
 - If unable to regain bridge control, MCS maintains steering with local NFU joysticks from MCS
 - If MCS Mode fails, control is to be transferred to the Steering gear local control.
 - At least 3 personnel are required in the steering gear room. Communication is to be via sound powered phone.

c. Emergency Steering Instructions from MCS

- Communication shall be established between the Bridge and MCS using the sound powered phone
- Depending on the casualty emergency steering will be performed with one rudder only while the other rudder is amidships (0 rudder angle).
- Steering is performed using the NFU joystick from the MCS panel. Rudder commands are given from the bridge and are followed up in the MCS.

d. Emergency Steering Instructions from Steering Gear Room

- Control will be transferred from 'Remote Bridge' to using the 'Transfer Switch'. Select either 'Local Port 2A' or Local Port 2B' located on the 2 control panels port and starboard
- Using the 'Toggle Steering' lever toggle to match rudder commands from the bridge.



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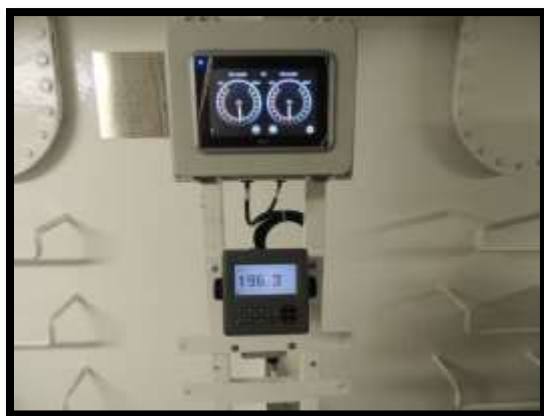
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- Communications are established using the sound powered phone
- From the centerline phone station, commands are received from the bridge and given to the operators at each port and starboard rudder matching the required heading.
- Caution: Note that the electronic rudder angle indicator (RAI) screen is facing forward therefore the port and starboard rudders are opposite of the physical location.



Rudder Angle and Heading Indicator (electronic and mechanical)



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e. Emergency Steering Instructions during Hydraulic Cylinder Failure

The following valve configuration is to be used during emergency operation. Instructions are mounted on plaques on the aft bulkhead, centerline of the steering gear room.

Emergency Operation with Port Cylinder (refer to References b and c)

Manifold valves 9.2 and 9.3 are open

Manifold valves 9.7 and 9.9 are closed

Shipboard piping valves 27.5 and 27.6 are open

Shipboard piping valves 27.3, 27.4, 27.7 and 27.8 are closed

Emergency Operation with Starboard Cylinder

Manifold valves 9.5 and 9.6 are open

Manifold valves 9.7 and 9.8 are closed

Shipboard piping valves 27.2 and 27.4 are open

Shipboard piping valves 27.1, 27.2, 27.5 and 27.6 are closed

5. Reporting

When a casualty of steering occurs the USCG requires filing a USCG 2692. This form can be found on the 'Z' drive under *Z:\USCG Forms*