Appendix B:

Extract from the P-200 manual – Emergency procedures

APPENDIX B – EXTRACT FROM THE P-200 MANUAL – EMERGENCY PROCEDURES

P-201 Verbal procedures

P-202.05.02 Reporting by the helmsman in the event of lack of steering

If the helmsman is unable to maintain the ordered course, this shall immediately be reported to the officer of the watch:

'Officer of the watch, unable to maintain course'

If the rudder is not responding, this shall immediately be reported to the officer of the watch:

'Officer of the watch, the rudder is not responding'

The officer of the watch must then implement procedures for emergency steering; see **P-233** in the bridge manual.

P-230 Propulsion and power problems

P-230.01 Purpose

The purpose of this procedure is to ensure uniform performance of the immediate actions to be taken in the event of loss of propulsion, steering or power supply. All such situations must be notified by the officer of the watch over the PA system, with the following announcement:

"Emergency manoeuvre x 3, the bridge has lost steering/propulsion/power supply. Key personnel to proceed to their designated positions'

By key personnel is meant:

- The CO, the XO and the MEO take up position on the bridge
- The first engineer, first and second electrical engineers, second engineer and third engineer take up position in the machinery control room
- The officer on watch and boarding boat crew prepare 'Sjøbjørn'
- The bosun or bosun's assistant readies the anchor
- The radio operator takes up position in Radio
- The operations officer takes up position in the command information centre /on the bridge; responsible for external assistance
- The weapon engineer officer (WEO) takes up position in the operations room to attend to ordnance equipment (only in the event of a black-out).

The procedures set out below for the different scenarios shall then be followed.

P-230.02 Procedure in the event of loss of propulsion (engines stopped)

The following actions are to be implemented by the OOW on the bridge:

1. Steer away from the closest danger using the ship's movement momentum. If possible, steer up against the wind/current.
2. Order start-up and connection of alternative mode of propulsion.
3. Ready the bow thruster; bow thruster mode is the primary emergency mode if the propellers are lost.
4. Ready the starboard anchor.
5. Set the navigation lights/day signal to 'not under command' if the problem persists.
6. Monitor operations, and calculate time to closest danger if the vessel is drifting without propulsion.

P-230.03 Procedure in the event of loss of propulsion control (engines still running)

The following measures are to be implemented by the OOW on the bridge:

1. Steer away from danger
2. Locate Ship Control. If the throttle indicator on the centre console is not lit, check the IPMS. If Ship Control is not available on the centre console or the IPMS, try pressing the Backup button.
3. If Ship Control is still not available on the centre console, re-activate backup and reduce the pitch to zero or negative, to reduce the speed or stop, depending on the local conditions.
4. If backup does not work, order initiation of emergency mode from the aft generator room
5. Use the communication system or engine order telegraph to issue engine orders
6. If the rpm is low, keep the pitch low in accordance with the combinator curve. Order higher rpm if necessary.
7. If stopping the vessel is extremely time critical, use the ‘Emergency Stop’ button on the centre console and follow the steps in P-230.02

P-230.04 Procedure in the event of loss of steering

The following actions are to be implemented by the OOW on the bridge:

1. Reduce the speed.
2. Stop if the conditions so require
3. Initiate emergency steering in acc. with P-233
4. Start the bow thruster, remember speed limitations.
5. If the aft propellers are required for manoeuvring – split the rudders towards the centreline, starboard rudder port 35, port rudder stbd. 35.

P-230.05 Procedure in the event of loss of power supply / blackout

The following actions are to be implemented by the OOW on the bridge:

1. Initiate Emergency Steering Position 2, steer away from danger
2. Establish communication with MCR and the steering gear room using the sound-powered circuit
3. If the vessel was sailing in cruise mode when the blackout occurred, propulsion will be maintained. If the vessel was sailing in CODAG mode, the gas turbine will disconnect, slow down and stop, and the gears will automatically switch to cruise mode. If the vessel was sailing in Turbine mode, the diesel engines will automatically start up and be connected. At the same time, the gas turbine will disconnect and stop. In order words, cruise mode will be automatically established from all modes in the event of a blackout. However, unforeseen events may occur that prevent this from taking place in accordance with the procedure.
4. Pitch control is lost – most recently ordered pitch persists. Press the backup button for pitch. You now have rpm control on the throttles, and pitch control on the arrow keys.
5. Set at least 90 rpm on the shafts (corresponds to 5 or more forward on both). Set the pitch to zero or negative to stop the vessel. Note that it takes some time for the pitch to change, so keep holding down the button. Order initiation of emergency pitch mode if backup does not work. If pitch control is not achieved and the propulsion machinery is still running, the final option is to activate Emergency Shut Down on the centre console. Emergency Shut Down shall only be used to prevent critical situations from arising or to limit damage. (The engines cannot be immediately restarted after an emergency stop.)
6. Ship Control is automatically transferred from SCC to the centre console if Ship Control was located on the IPMS when the blackout occurred.
7. Turn on the navigation lights by turning the switch on the local panel to local and exhibit lights as required if sailing in the dark.
8. Ready the anchor
9. Order readying of the bow thruster when possible
10. Prioritise means of propulsion in consultation with the engine officer of the watch, and inform the electrical engineer/engine officer of the watch of the situation regarding times/dangers.
11. Consider launching ‘Sjøbjørn’ to push the bow or stern away from danger. This is conditional on the vessel being stationary and there being virtually no wind or current. It will be ineffective under other conditions.
12. K-bridge has 2 UPSs with a supply duration of 20–30 minutes. Establish a chart table on the bridge wing with the aid of a laptop with GPS input from a handheld DAGR GPS receiver.
13. Radar rotation stops, so the radar image is lost.
14. If the situation persists and the laptop runs out of power, transfer the position to the paper charts and establish course and position plotting on the chart table.
15. Establish paper logbook.

P-233 Emergency steering

P-233.01 Emergency procedure

If the rudder does not respond, the officer of the watch must immediately reduce the speed or stop the vessel unless the tactical situation renders this impossible.

P-233.01.01 Initial response

Procedure	Task	Comment
Initiation	When the helmsman notices that the rudder(s) is/are not responding, he must report the following to the officer of the watch: **'RUDDER/RUDDERS NOT RESPONDING'**	If the helm is unmanned, the officer of the watch will notice that the rudders do not follow the set AP order
	The officer of the watch orders: **Set Non Follow Up, test emergency steering bridge! – Report status of pumps'**	If the helm is unmanned, the officer of the watch carries out the order himself, or orders a lookout to operate the steering console if needed. The helmsman takes pump status readings on the steering console.
	The helmsman presses the NFU button on the steering console, performs a rudder angle test and reports: **'Rudder responds/does not respond – pump 1 starboard running, both port pumps stopped'**	
	If the rudder does not respond, the officer of the watch assistant makes the following announcement over the PA system: **'Emergency x 3. The bridge has lost control of the rudder. Key personnel to proceed to their designated positions'**	
	On this order, the helmsman leaves the helm and proceeds to the steering gear room as quickly as possible Electrical engineers proceed to the steering gear room as quickly as possible	If the helm is unmanned, the officer of the watch orders a lookout to go down. Pay careful attention to the ceiling height in the steering gear room.
Select Emergency Steering	- The first to arrive sets both pumps on the port side to local NFU. There are two starter cabinets on each side. If a pump is running/starts, initiate emergency steering immediately from the port side. - If the pumps do not start, try the same on the starboard side. - If you are unable to start any of the electric pumps, initiate Emergency Steering Position 2	
Emergency	Establish communication with the bridge Report the following:	

Steering Position 1	**'STEERING GEAR UNMANNED' 'INITIATING EMERGENCY STEERING STB/PORT SIDE POS 1'**	

P-233.01.02 Emergency Steering Position 1

Procedure	Task	Comment
Emergency Steering Position 1	**Select valve set:** The steering gear has two sets of solenoid valves. Try one of these sets. If it works, use it. If not, try the other set.	
	Reports: Report to the bridge: **'EMERGENCY STEERING READY"**	
	Follow orders from the bridge Use the solenoid valves to set the rudder to the position ordered by the bridge. Use the same commands as on the bridge.	
	When one rudder is under control, use available personnel to set the other rudder to midship.	
Shutdown	When the bridge orders: ***'RETURN TO NORMAL STEERING'*** Bring the rudder back to the zero position.	
	From Emergency Steering Position 2: Close the yellow valves on both	
	From both emergency steering positions: Turn the switch on all starter cabinets to remote. There are 2 cabinets on the port side and 2 cabinets on the starboard side	Control will then be transferred to the bridge. (If control is not transferred to the bridge, activate and deactivate the NFU. This should transfer control to the centre console).
	Notify the bridge: **'RUDDER CONTROL TRANSFERRED TO BRIDGE'** The bridge will then perform a steering gear test.	
	Never leave the steering gear until the bridge gives the green light via the communication system!	

P-233.01.03 Emergency Steering Position 2

Procedure	Task	Comment
Start-up and operation	**Establish communication with the bridge** Report the following to the bridge: **'STEERING GEAR MANNED. 'INITIATING EMERGENCY STEERING POS 2'**	The purpose is to avoid the engine starting during the emergency steering procedure. (Can cause damage).
	On the steering gear unit you are using: - Set the pumps to stop - Open the yellow valves using the attached spanner	The purpose is to prevent the engine from starting during the emergency steering procedure. (Can cause damage). The valves are located aft on the steering gear.
	Reports Report to the bridge: **'EMERGENCY STEERING READY'**	
	Follow orders from the bridge Use the manual pump to move the rudder to the position ordered by the bridge.Use the same commands as on the bridge.	One turn on the pump adjusts the rudder angle by ½ degree
	Set the other rudder to midship Once you have gained control of and readied one of the rudders for emergency steering, use available personnel to apply the same procedure to the other rudder and bring the rudder angle to midship	
Shutdown	When the bridge orders: ***'RETURN TO NORMAL STEERING'*** Bring the rudder back to the zero position.	
	From Emergency Steering Position 2: Close the yellow valves on both steering gear units	
	From both emergency steering positions: Turn the switch on all starter cabinets to remote. There are 2 cabinets on the port side and 2 cabinets on the starboard side	Control will then revert to the bridge
	Notify the bridge: **'RUDDER CONTROL TRANSFERRED TO BRIDGE'** The bridge will then perform a steering gear test.	
	Never leave the steering gear until the bridge gives the green light via the communication system	

P-233.01.04 Communication between the steering gear room and the bridge

Communication shall primarily be established by selecting Engine Conference on the audio unit. Soundpower Steering Conference is a secondary means of communication.

The rudder order telegraph can be used as an alternative to rudder orders via the communication system, by the OOW moving the arrow and pressing the buzzer. The steering gear [room] follows up by moving the arrow to the same position and confirming on the buzzer. Personnel in the steering gear [room] must never leave the steering gear before the bridge confirms that it has gained control of the rudder.