

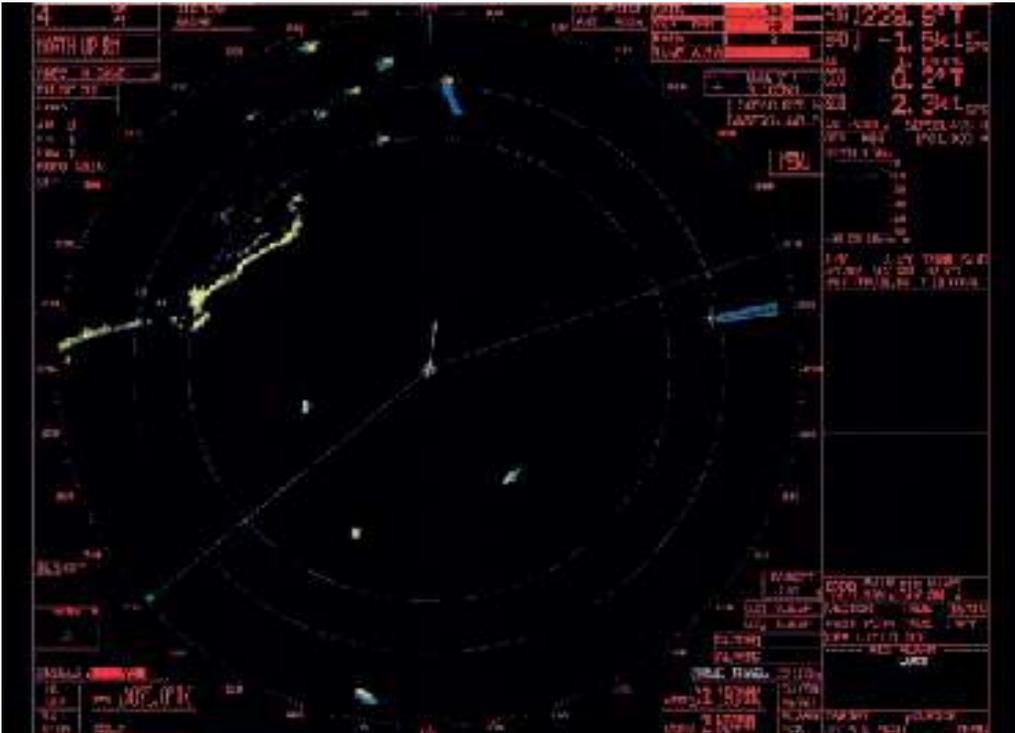
KISH P & I LOSS PREVENTION CIRCULAR KPI-LP-92-2012 (An Anchor Dragging Incident & Lessons to be Learnt)

► **Narrative:**

While waiting to berth, a fully loaded oil product tanker was anchored about 1 mile from the nearest shoal patch. The wind was forecast to increase to Beaufort Force 9 that night. The master wrote his night orders, stating that he should be called if the anchor dragged or if required at any time. He then went to bed having given no instructions to be called if the weather deteriorated beyond a specified threshold. Later, a weather forecast was received stating 'storm force winds soon'.

The wind increased to Beaufort Force 10 and several other vessels nearby either dragged their anchors or sailed from the anchorage.

The product tanker remained at anchor. In the early hours of the morning the ship started to drag her anchor towards the shoal patch. This had not been detected by the OOW, who was monitoring the ship's position using only a single radar range and bearing line from a fixed beacon.



The extracted AIS Data & ship's position

The port's duty Vessel Traffic Services Officer (VTSO), who was monitoring the anchorage called the ship by VHF radio and asked the OOW to confirm if the ship was dragging anchor. Several minutes later the OOW alerted the duty engineer, who went to the engine room to start the main engine. The OOW then called the master. The master arrived on the bridge a few minutes later and sent the second officer and the duty seaman forward to recover the anchor.

The master remained alone on the bridge hoping that, if all else failed, the ship would pass over the shoal patch even though the state of the tide was approaching low water. Once the main engine was started, the master, concerned

that he could damage it, used only half ahead power to try to clear the shoal patch.

The ship grounded stern-first onto the shoal around 30 minutes after starting to drag anchor, and pounded onto the rocky bottom several times as it pitched in the heavy seas.

The rudder was put out of action and indicated on the bridge that it was hard-over. The port authority sent a tug to assist, however the ship continued to drag her anchor until the wind finally abated and the anchor held in deeper water on a rising tide.

The ship sustained significant damage to the shell plating along her length; the hull was heavily indented, but it was not breached and there was no pollution. The rudder and the steering compartment were badly damaged.

The damages to the steering compartment



► Lessons to be Learnt:

1. The master chose to remain at anchor when gale force winds onto a lee shore were forecast. The master could have chosen to move to an anchorage further from danger, or headed out to sea until the weather warning had passed.

2. The position of the anchor had not been plotted, and no swinging circle had been drawn on the chart. The method used to warn if the vessel was dragging anchor was ineffective.

Plotting the anchor position and estimating a bridge swinging circle is necessary to determine whether a vessel is dragging anchor. The Admiralty Manual of Navigation, Volume 1 provides best practice for plotting a ship's swinging circle at anchor.

3. The OOW did not notice that the ship was dragging anchor. He called the duty engineer and the master only after he had been told by the VTSO. This failure delayed the master's response by around 30 minutes.

Had the OOW noticed that the ship was dragging anchor, and acted quickly and decisively in calling the master and engineer, the grounding could have been avoided.

4. The master did not leave clear instructions for the OOW on how to determine if the ship was dragging anchor. Similarly, he had not left instructions on when he should be called, or when crew should begin making preparations to leave the anchorage.

Such instructions should consider:

- Maximum tolerable wind speeds
- Limiting forecast wind limits
- Whether other vessels are dragging anchor or aborting the anchorage
- The availability of deck and engine machinery.

5. Choosing to leave an anchorage early, rather than waiting for the ship to drag anchor and deal with a critical situation while being blown onto a lee shore, would be the more prudent action.

6. The master over-estimated the ability of the anchor windlass and the crew to recover the anchor while the vessel was dragging. Anchors are not designed for use in gale force winds, or to stop a ship that is dragging, as the load placed on the equipment is too great.

When considering whether to abort an anchorage, the anchor windlass's limitations should be taken into account as part of assessing the risk of remaining at anchor.

7. The master's use of the engine was insufficient to stop the ship's progress towards the shoal. If the master had mobilised extra personnel to assist him on the bridge, and the engine had been placed at full power ahead, the accident might just have been avoided.

It is generally recommendable that as soon as you recognise that your vessel is in a critical situation, take positive action to use all available crew and resources to stop it from getting worse.

