Anchor Dragging: Risk Management, Preventive Measures, and Insurance Coverage

Anchor dragging is a frequently encountered and significant risk factor in maritime operations that poses a serious challenge for ship operators. During anchoring operations, the ship aims to remain fixed at a specific point by deploying the anchor onto the seabed along with laying of sufficient length of anchor chains. This stability ensures the safe anchoring of the vessel. However, various environmental factors and changes in surface conditions can lead to the loss of grip of the anchor along with anchor chains on the seabed, resulting in dragging.

A dragged vessel may collide with other ships, damage the maritime seabed, or even run aground. These scenarios can cause significant economic, environmental, and operational losses in maritime activities. Anchor dragging is a critical issue that must be addressed meticulously by ship owners, captains, and other maritime professionals. This circular will discuss technical evaluations to prevent anchor dragging, preventive measures to be taken, and the liabilities covered under insurance policies.

To prevent anchor dragging, it is first necessary to fully understand the primary factors that lead to this situation. Any incident of anchor dragging can result from a combination of multiple factors. The main factors can be categorized as follows:

Meteorological Factors: Maritime activities are directly influenced by weather conditions. Strong winds, wave movements, current changes, and tidal effects can directly impact the anchor's holding power. Especially when wind speeds reach 40 knots or more, the risk of the ship being dragged from its anchorage point increases significantly. Additionally, sudden changes in wind direction can prevent the anchor and laid down chain from settling properly on the seabed, causing it to slip and drag. In areas with strong underwater currents, the combined force of the currents and winds further increases the risk of dragging. Tidal events that cause rapid fluctuations in water levels can also weaken anchor hold.

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Technical Factors: The technical condition of the vessel's anchoring system can also directly affect dragging incidents. Insufficient anchor chain length, worn-out chains or shackles, and poor anchor grip on the seabed can lead to dragging. Additionally, anchors designed for hard seabed's have limited holding power, and incorrect anchor selection can result in dragging. A weak anchor system significantly reduces the vessel's resistance to external forces.

Poor Planning and Inadequate Assessment: Inadequate planning before an anchoring operation also increases the risk of dragging. Without taking into account factors such as sea depth, seabed structure, weather conditions, and environmental threats, anchoring may fail to keep the vessel stationary at the desired point. Such poor planning is one of the primary contributors to anchor dragging incidents.

Vessel Condition: Factors that affect the stability of the ship, such as ballast condition, can pose risks during anchoring. When a ship is inadequately ballasted, winds and currents can increase its tendency to drag. To avoid running aground or colliding with other vessels, the ship must anchor in a balanced and stable manner.

Human Errors: One of the most significant causes of anchor dragging are human error. Insufficient training, improper anchoring plans, and incorrect anchor placement can lead to accidents. Additionally, neglecting bridge watch duties and failing to follow proper anchor watch procedures can prevent the necessary measures from being taken to avoid dragging. Human error constitutes a significant portion of maritime accidents, and continuous training and adherence to proper procedures are essential to mitigate these issues.

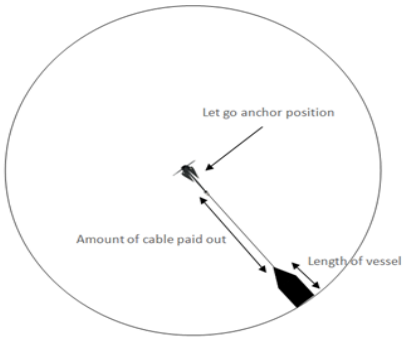
Anchor dragging is not only a technical failure but also an indication of operational shortcomings. Therefore, all contributing factors must be carefully assessed, and preventive measures must be implemented diligently. Ship owners and captains must take appropriate safety precautions, considering all possible risks during anchoring operations.

SIGNIFICANT ACCIDENT ANALYSES:

Vessel Name	Case	Possible Causes of the Accident
Stena Alegra	On October 28, 2013, the Ro-Pax vessel Stena Alegra grounded due to anchor dragging caused by winds reaching 76 knots (approximately 140 km/h). The vessel was subsequently rescued by tugs the following day when weather conditions improved.	According to investigations, one of the main causes of the incident was the captain's failure to prepare an anchoring plan, the decision to use a single anchor despite storm warnings, and the failure to keep the main engine on standby, which reduced the vessel's manoeuvrability.
Thunder	On August 9, 2006, the general cargo vessel *Thunder* dragged anchor and ran aground off Mostyn without an up-to-date sea chart. The vessel was later rescued in coordination with port authorities and a pilot.	Investigations revealed the absence of updated charts for the anchorage area and insufficient ballast, which did not provide adequate stability. Human error played a significant role in this accident.
Celtic Spirit	On March 1, 2018, the general cargo vessel Celtic Spirit dragged anchor due to severe weather conditions and collided with two other vessels in the anchorage area. Despite damage to all three vessels, there were no injuries or environmental impact.	The investigation determined that the accident occurred due to the watch officer failing to notice the chain was slack, deactivation of alarms, and failure to properly follow anchor watch procedures.

These accidents demonstrate that anchor dragging typically occurs due to a combination of systemic failures. Operational neglect, technical deficiencies, and inadequate planning are the underlying causes of dragging incidents. As illustrated by the examples above, it is essential to review the preventive measures that can be taken to avoid such accidents.

1. **Planning and Risk Assessment:** Anchoring operations should be integrated into the voyage planning process. Seabed analysis, depth assessment, backup anchor planning, and weather conditions should be determined in advance. The ship's captain and crew should receive appropriate training for each scenario. The main engine should be kept on standby as a precaution.



2. **Chain Length and Angle:** Adequate chain length increases the portion of the chain on the seabed, thereby improving the anchor's holding power. Ensuring the chain's catenary structure is maintained and using a second anchor during adverse weather conditions are critical measures. Insufficient chain length increases the risk of dragging.

3. **Position Monitoring:** The location where the anchor is dropped should be marked on the chart, and the swing circle should be defined. Position control should be performed using radar, ECDIS, and landmarks. ECDIS and GPS alarm limits should be set to activate at a deviation of 0.2 NM.

4. **Anchor Watch:** After anchoring, the chain's tension, sound, and direction should be regularly monitored, and any signs of dragging should be detected early. Periodic checks on position and chain tension should be performed.

Actions to Take in Case of Dragging:

In the event that anchor dragging is detected, the following actions should be immediately taken:

- Contact the chief engineer to prepare the main engine,
- Keep the windlass chain ready,
- Reinforce the bridge with appropriate personnel,
- Notify port authorities and nearby vessels, if necessary,
- Consider deploying a second anchor or re-anchoring entirely.

Even with the preventive measures mentioned above, it is not always possible to completely avoid maritime accidents. At this stage, it is crucial to examine anchor dragging incidents from an insurance perspective in greater detail.

Anchor dragging is considered a significant risk factor in marine insurance. Ship owners must have certain insurance coverages in place to address damages resulting from such incidents. Accidents caused by anchor dragging fall under the scope of Hull & Machinery (H&M) and Protection and Indemnity (P&I) insurance.

- **Hull & Machinery Insurance (H&M):** H&M insurance covers damage to the ship's physical structure and equipment. In case of damage to the ship caused by dragging, such as colliding with a pier or another vessel, the structural damage can be covered under this policy.

- **Protection and Indemnity (P&I) Insurance:** P&I insurance covers the ship owner's liabilities to third parties. In cases of anchor dragging, incidents such as collisions with other vessels, damage to piers, or environmental pollution are covered by this insurance.

Moreover, risks related to anchor dragging are not limited to insurance coverage; international maritime regulations also impose various provisions to ensure the safety of ship operations and reduce environmental harm. One of the key regulations, the SOLAS (Safety of Life at Sea) Convention, mandates the installation of systems to ensure safe operations and the implementation of necessary safety measures during anchoring.

In addition, the ISM Code (International Safety Management Code) requires the establishment of an effective safety management system on ships, which includes identifying and controlling operational risks in advance. Ships that do not comply with the ISM Code may face significant insurance risks and the possibility of being excluded from insurance coverage in the event of an accident, which could result in substantial financial liabilities for the ship owner.

Lastly, environmental pollution resulting from anchor dragging is addressed under the MARPOL (International Convention for the Prevention of Pollution from Ships) convention. Oil spills, chemical discharges, or other environmental damages caused during anchoring are subject to legal and insurance obligations under MARPOL. P&I insurance is activated to cover environmental damage and facilitate the restoration process.

Conclusion

Anchor dragging is a significant risk factor in maritime operations that threatens both human and cargo safety while causing severe environmental and financial losses. Effectively managing this risk is possible only through technical expertise, proper equipment usage, detailed operational planning, and full compliance with international maritime regulations.

Ship owners and captains must regularly maintain ship equipment, determine appropriate anchoring strategies according to weather and sea conditions, and develop effective emergency plans for potential risks. Likewise, continuous crew training, disciplined implementation of anchor watch practices, and active alarm systems are essential preventive measures to avoid anchor dragging.

From an insurance perspective, it is crucial to properly assess the risks related to anchor dragging and prepare policies that cover these risks in detail. Clear communication of the scope of Hull & Machinery and P&I insurance policies to ship owners ensures that insurance protection is valid in case of damage, as long as the vessel complies with international regulations (SOLAS, ISM Code, MARPOL, etc.). Non-compliance with international regulations can lead to administrative fines, compensation liabilities, and the invalidation of insurance coverage.

Additionally, environmental damage caused by anchor dragging, such as oil and chemical spills, has long-term financial and reputational consequences. Therefore, proactive preventive and corrective actions must be taken.

In conclusion, the risk of anchor dragging must be addressed holistically by all stakeholders in the maritime industry. Cooperation and continuous improvement are essential, as technical, operational, administrative, and insurance dimensions cannot be considered separately. Through effective risk management and proper strategies, losses due to anchor dragging can be minimized, thereby enhancing maritime safety and promoting environmental and economic sustainability.