KISH P&I CLUB

# *Loss Prevention Circular KISHPNI-LP-09-2021*
## *(Damage to Submarine Cables Caused by Anchors & Moorings)*

***Vessel owners are recognizing that costly damage to submarine communications cables could be prevented by securing anchors more diligently before a vessel gets underway.***
***New information about causes of cable breaks shows that dragging anchor while under way is a more common cause of damage than previously believed. The vessels at fault were identified using AIS and their owners were likely to be charged with losses sustained by the cable owner. However all cable owners recognize that preventing these incidents in the first place is in everyone's interest, hence the purpose of this circular which is extracted from ICPC (International Cable Protection Committee) Bulletin.***

**►Background:**
The cause of faults to submarine cables around the world has been closely monitored since the formation of ICPC in 1958. Since then the general consensus within the submarine cable industry has been that the majority of faults are caused by fishing:

| Cause | Percentage |
|---|---|
| Fishing | 67% |
| Anchors | 8% |
| Dredging | 2% |
| Other | 23% |

In 2006 the first Automatic Identification System (AIS) aerial was erected by BT (A submarine cable owner and ICPC Member) in the South West of the UK and provided the means for monitoring the position of vessels over 300GT. In the event of a cable fault this cable owner was able to match the time and position of the failure with vessel data from AIS and determine if there was a correlation. This enhancement in root cause analysis is causing the submarine cable industry to reconsider its thinking on the probable cause of many submarine cable faults.

**►Port Proximity:**
The ICPC has been aware of the risk of damage to submarine cables due to vessels dragging whilst at anchor and some cable owners provide overlays for port radars that show the location of submarine cables. Some of these owners have also started to use AIS to provide early warning of when a vessel is likely to be dragging at anchor and approaching a submarine cable, however such use of AIS is not widespread for all types of vessels. During the early part of 2008 a number of incidents of vessels' anchors causing damage to submarine cables were documented both in waters around the UK and elsewhere in the world.

**►Vessels Underway:**
The use of AIS has proved invaluable in determining the cause of some submarine cable faults and has also revealed the extent of faults caused by the anchors of vessels that are underway. From only two years; cable owners have observed 21 submarine cable faults around the UK alone. As can be seen in table below, the causal distribution changed significantly during a selected period as a sample:

***Announcing that our expertise have taken greatest care for indubitability of the material in this document, Providing guidelines & notices, Permitting the usage of the info & data in training, familiarization and any other possible and legitimate loss prevention activities; KishPNI accepts no Liabilities or claims whatsoever arising from or related to the inadequate use or improper interpretation of the delivered knowledge, advising all recipients to Endeavor the essential Due Diligence in carrying out their management & operational activities upon and through which, KishPNI club is providing support & assistance.***

| Cause | Pre one year | For two years |
|---|---|---|
| Fishing | 67% | 33% |
| Anchors | 8% | 48% |
| Dredging | 2% | 0% |
| Other | 23% | 19% |

There were 10 cases of anchor damage to submarine cables and all involved vessels that had been underway with their anchors deployed. Some of these vessels damaged multiple underwater cables underway.

*We have used a sampled data to further highlight the importance of taking precautionary measures by the vessels plying in the cable-laid sea-areas.*

The damage to a submarine cable by an anchor can be evidenced over an extended length of cable. The point of contact can usually be localized by a typical deformation of the armoured wires but the strain induced can cause damage for hundreds of metres in both directions. The typical result of anchor damage to a submarine cable is shown below:

In all of the cited examples of damage to a submarine cable by a vessel's anchor, the cable owners are either in correspondence or have agreed compensation with the vessel's surveyors and P&I Club members. Many cable owners have received compensation for damage to their submarine cables caused by anchors. If settlement is not forthcoming, cable owners have a reputation for obtaining compensation for their losses and damages can easily exceed US$1M per incident.

***Announcing that our expertise have taken greatest care for indubitability of the material in this document, Providing guidelines & notices, Permitting the usage of the info & data in training, familiarization and any other possible and legitimate loss prevention activities; KishPNI accepts no Liabilities or claims whatsoever arising from or related to the inadequate use or improper interpretation of the delivered knowledge, advising all recipients to Endeavor the essential Due Diligence in carrying out their management & operational activities upon and through which, KishPNI club is providing support & assistance.***

The ICPC's members are working with the shipping industry to prevent vessels' anchors from 'running-out' whilst underway. The ICPC therefore urges all vessel owners to be vigilant in ensuring that their anchors are securely stowed prior to passage.
We have included the extracts of two MARS reports related to the subject matter discussed earlier and have also added "Lessons learned from the uncontrolled movement of mooring chain" at the end of this circular.

MARS (Extract):

## 1-Damage to Underwater Cables:

Arriving about a week early for her loading, a general cargo ship that had almost arrived at the pilot station, was instructed to wait off-limits. After hastily consulting the charts and publications, and being aware of hi-jacking and piracy threats in the region, the master selected an offshore anchorage just outside the twelve mile line, but within visual range of the signal station. After turning the ship around in heavy traffic and steaming back about fifteen miles, the master anchored in the chosen spot in depths of about 25 metres, paying out five shackles. During the final approach to the anchorage, he noted charted submarine cables in the vicinity and, perhaps due to the subconscious feeling that he was anchoring in 'high seas', coupled with a momentary lapse of concentration, he mistakenly interpreted each one-cable division on the large scale chart's latitude scale as one mile. As a result, the master was under the impression that he was four miles clear of the nearest submarine cable, but, in fact, had anchored 0.4 miles from it.
*None of the bridge team realized the slow dragging of the anchor.*

After about four days the ship, which was always wind-rode, slowly dragged anchor, snagged and damaged the submarine communication cable. Unfortunately, none of the bridge team realized the slow dragging of the anchor, having monitored the ship's position by distant radar ranges, which failed to change appreciably.

**Root Cause / Contributory Factors:**

1) **Hasty, forced decision to select an anchorage offshore.**
2) **Wrong interpretation of distance scale.**
3) **Poor bridge team management, error chain not identified.**
4) **Inadequate clearance from submarine cable.**
5) **Inadequate scope of cable under prevailing conditions.**
6) **Ineffective anchor watch.**

***Announcing that our expertise have taken greatest care for indubitability of the material in this document, Providing guidelines & notices, Permitting the usage of the info & data in training, familiarization and any other possible and legitimate loss prevention activities; KishPNI accepts no Liabilities or claims whatsoever arising from or related to the inadequate use or improper interpretation of the delivered knowledge, advising all recipients to Endeavor the essential Due Diligence in carrying out their management & operational activities upon and through which, KishPNI club is providing support & assistance.***

**Lessons Learnt:**

1) **Harbour movement instructions for an inbound vessel must be communicated well in advance of her arrival.**
2) **The bridge team organization must ensure that every action of one member is monitored and approved by another so that an error chain is not allowed to develop.**
3) **If there is sufficient room, a longer scope of cable must be paid out than the normal length of four to five times the depth.**

Damage to underwater cables and pipelines by ships' anchors continue to produce very large civil liability claims against ship-owners, not only for repairs but also for the resulting interruption of production or supply of power, communications or products such as oil or gas. It now appears that in respect of vessels damaging underwater facilities. In certain jurisdictions, and as occurred recently in the Persian Gulf, where a vessel is reported to have damaged a communications cable some distance away after dragging anchor in heavy winds, criminal proceedings may be brought against vessels' masters and they and/or crews may be arrested. When anchoring, masters should ensure that the anchor is dropped well away from any underwater cables or pipelines, taking into account the local weather forecast and the likely track of the anchor if it starts to drag. Masters should also be mindful that ships may move a considerable distance very quickly in such circumstances unless the main engine is ready for immediate use.

***

## MARS (Extract): **2-Anchors Dislodged at Sea:**

Three vessels reported that their bower anchors were dislodged from the stowed position during bad weather. In one case, an anchor along with the chain was lost. In the other two cases, the anchors and chain were recovered due to prompt action taken by the ships' staff.

*The procedures in the company's safety management system were not followed.*

Regardless of the circumstances, such incidents are a direct result of inadequate precautions and lashings taken for sea passage in heavy weather conditions. The following procedures must be considered to be the minimum:

**1. Brakes are to be tightened and the operating handle lashed to prevent the brake from working loose.**

**2. A minimum of two wire rope strops of appropriate strength and in good condition led through different links on the chain, must lash each anchor and be tightened to equal tension, with independent turnbuckles.**

**3. Each bow stopper must be fully seated with locking bolt secured in place.**

**4. If appropriate, the windlass gear may be engaged after housing and lashing the anchors, taking care that only the brake, lashings and the bow stopper are all bearing equal stress.**

**5. The brake system must be regularly checked for proper condition and optimum adjustment.**

**6. Finally, the anchor lashings must be checked at sea daily, especially prior to encountering bad weather.**

***

***Announcing that our expertise have taken greatest care for indubitability of the material in this document, Providing guidelines & notices, Permitting the usage of the info & data in training, familiarization and any other possible and legitimate loss prevention activities; KishPNI accepts no Liabilities or claims whatsoever arising from or related to the inadequate use or improper interpretation of the delivered knowledge, advising all recipients to Endeavor the essential Due Diligence in carrying out their management & operational activities upon and through which, KishPNI club is providing support & assistance.***

KISH P&I CLUB

# An Added Value: Lessons learned from the uncontrolled movement of mooring chain

**►The incident:**

There was a sudden and uncontrolled movement of very heavy mooring chain during chain laying operations. A vessel was laying a 170mm diameter bottom chain from a suction anchor.

When the chain end was approaching, the shark jaw was engaged onto the chain to remove tension, in order to enable handling of the chain end from its chain locker.

The last few chain links of the bottom chain then moved uncontrolled over the chain handling unit and rolled/dropped on deck, under its own weight, in between the chain lifter and the winch hangar.

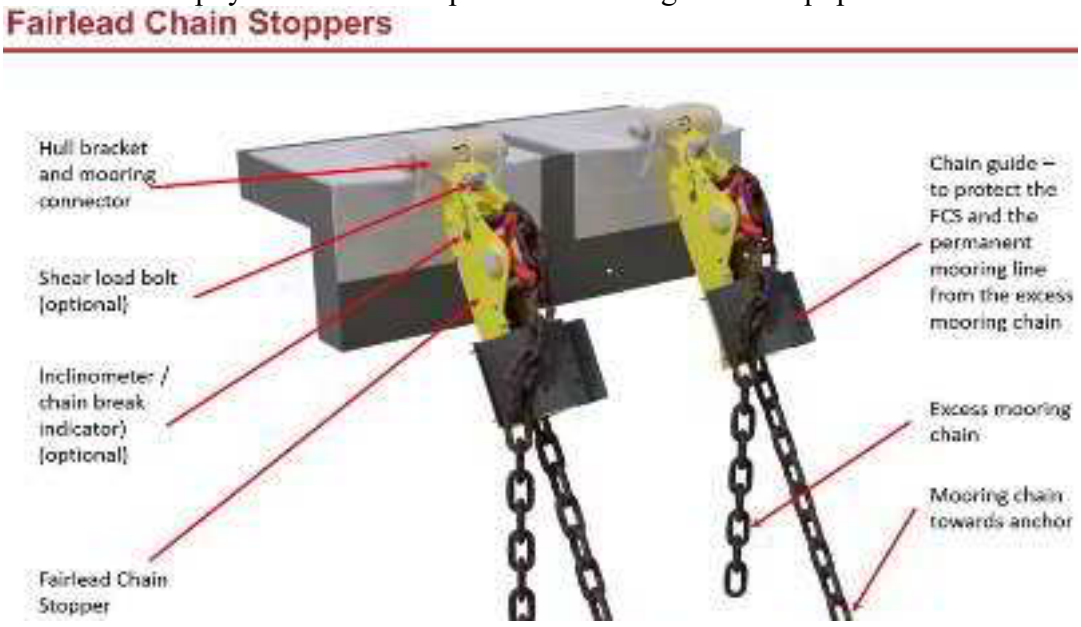
The Bosun was located close to where the chain dropped and moved away when he noticed the uncontrolled chain movement starting.

**According to investigation:**

The circulation pump on the chain handling unit tripped, causing the chain lifter to loose its holding force, and hence the chain catenary forward of the unit pulled the tail end over.

**►Findings:**

- This was a new vessel with as yet, a lack of full implementation of required safety systems.
- There was insufficient job safety preparation and risk management in place.
- There was inadequate understanding of the failure modes for the system.
- The vessel's generic procedures & job safety analyses were not re-visited with respect to project-specific loads and factors.
- The chain handling unit was not included in the vessel anchor handling and tow manual.
- There were no physical barriers in place for working around equipment.




**Lessons learned:**

- Implement additional physical barriers on deck.
- Update vessel documentation including procedures and manuals.
- Assess the need for additional technical barriers on chain handling unit and circulation pump (including upscaling of pump and set-up on alarm).
- Formalization of training and familiarization.

***Announcing that our expertise have taken greatest care for indubitability of the material in this document, Providing guidelines & notices, Permitting the usage of the info & data in training, familiarization and any other possible and legitimate loss prevention activities; KishPNI accepts no Liabilities or claims whatsoever arising from or related to the inadequate use or improper interpretation of the delivered knowledge, advising all recipients to Endeavor the essential Due Diligence in carrying out their management & operational activities upon and through which, KishPNI club is providing support & assistance.***