

## **KISH P & I LOSS PREVENTION CIRCULAR KPI-LP-69-2013** ***(Ships Getting Wild after Breaking Loose)***

### ► Introduction:

When ships due to any reason break loose of their moorings; they can be very dangerous for the area they are in; themselves as well as the people working on or near them.

The accidents can range from personal injury, significant contact damage to the vessel including ranging and grounding damage, damage to adjacent vessels, shore/terminal structures to pollution damage to the environment.

Most of these incidents happen during the onset of bad weather, with high winds acting on vessels with large windage areas.

Wind speeds recorded in some incidents range from 63 km/h to 120 km/h (Beaufort force 7 to 12). In many cases additional mooring lines were deployed in anticipation of high winds, ultimately to no avail. In a case reported by a reputable club; the vessel moorings were even supplemented by shore lines with load monitoring, however, the vessel still broke free due to excessive loads on the lines, seemingly as a result of abnormal tidal flow caused by restricted under keel clearance. Even tugs could not prevent her from ultimately grounding. In another case, the vessel got tugs to hold her alongside the berth, only to stand them down prematurely. The second time the vessel came off the berth she grounded resulting in substantial bottom damage. Ports around the world have various berth layouts and mooring facilities and are exposed to different wind, tidal and swell conditions. It is important that the Master takes into consideration the key critical aspects of any given port along with the vessel's characteristics, in order to ensure that the vessel is adequately moored to withstand the anticipated mooring forces, even in normal conditions.

It is equally important that the Master is ready to take extra precautions to keep the vessel alongside in adverse weather, tidal and swell conditions and is ready and able to vacate the berth safely when conditions make it difficult for moorings to cope.

### ► Need for a proper & adequate Risk Assessment process:

Although incidents of this nature may involve reports of defective mooring equipment or lack of attention to moorings, investigations suggest that in many incidents a proper risk assessment was not undertaken. Therefore it is recommended that appropriate risk assessments are carried out, taking into consideration the vessel's characteristics, type, size, trading pattern and the prevailing weather conditions. Factors to be taken into consideration include, but should not be limited to, the following:

Examples of wind, tidal, swell and weather related factors:

- ✓ Wind loads exerted onto a vessel's superstructure and hull above the waterline, which can form a large proportion of the total load on the mooring

system depending on the moored vessel's location and characteristics. This will surely affect the ship's stability as well. An empty tanker can have very large windage area but may be much more stable than a fully laden container vessel with relatively small GM being under the influence of the same wind-force.

- ✓ The effect of wind against tide or current and the effect of a change in tide direction on moorings.
- ✓ Wave loads on a vessel, which can vary depending on the vessel's response to waves of different periods and heights. Of special concern are moorings in relatively shallow water depths, in low tide and high wave conditions. These conditions can lead to violent vessel behaviour at the moorings (breaking waves, excessive motions, snatch loads etc.) and in extreme cases, loss of under-keel clearance in wave troughs for larger, deeper draught vessels. Forces resulting from steady currents in combination with other loadings, especially at low water levels in breaking wave conditions, which can also exert substantial loads on a ship's mooring warps.
- ✓ Tidal surges before, during and after storms, which may be well away from the area in which the vessel is berthed, causing unusually large tidal ranges and lower than expected water levels.

Examples of port/berth related factors:

- ✓ Characteristics and history of the port and berth and any unusual occurrences.
- ✓ Possibility of submarine volcanic activity; Tsunamis; etc in the area.
- ✓ Peculiar features of the berth such as overhanging berthing arrangements, obstruction by gantry cranes, wind funnelling effects from shore structures.
- ✓ Design/type, position, quality and adequacy of shore mooring equipment, including storm moorings and fenders, and of tugs.
- ✓ Exposure at the berth to wind, tide and swell conditions.
- ✓ Delay in the availability of shore mooring equipment, mooring gangs, pilots and tugs etc. in normal as well as emergency situations.
- ✓ Proximity of other vessels and hazards in the vicinity of the berth.
- ✓ Effect of passing vessels on vessels moored alongside.
- ✓ Availability of storm bollards, which may not be useable during cargo operations if moorings restrict working on the berth.
- ✓ Port/terminal procedures in the event of extreme conditions and their suitability.

Examples of vessel related factors

- ✓ Design/type and condition of mooring equipment, its limitations and weaknesses. (For example, some winch brakes are designed to render under excessive load to avoid the dangers of parting lines. OCIMF recommends that the winch break be set at 60% MBL (Minimum Breaking Load) of the mooring line. If the winch starts to render then the design conditions are being exceeded)
- ✓ Suitability of the mooring pattern - number of lines, lengths, angles and leads and the ability to maintain even tension on the lines.
- ✓ Manning level/crew availability for normal as well as adverse weather conditions.
- ✓ Weather forecast and warnings - reliability and frequency.
- ✓ Readiness of engines, thrusters, anchors and power on deck.
- ✓ Availability, condition and readiness of additional moorings.
- ✓ Ship's stability.

► **Conclusion:**

It is recommend that the Master carries out a proper risk assessment for the different mooring conditions and loadings to suit their specific vessel characteristics and mooring location in normal as well as adverse weather conditions. The Master is encouraged to be proactive in requesting information from the port, pilots and agents and in establishing how warnings will be broadcast by the port. However, he should not rely wholly on the information from other parties. In the event that deteriorating conditions are forecast, the Master should make timely decisions to ensure that the vessel is brought to a state of immediate readiness. Amongst other things the Master should make sure that, before conditions become extreme, the vessel is fully manned, is appropriately ballasted for heavy weather (with due regard to under keel clearance at the berth and in the port), has engines ready, and is in close contact with the terminal and port authorities in relation to timing and availability for stoppage of cargo operations, deployment of additional (storm) moorings, and for tugs, pilots etc. Most importantly, the Master will need to decide whether to remain alongside or depart from the berth to sea or a safe anchorage. It is worth bearing in mind that additional precautions such as extra mooring lines may not prevent a ship from breaking free from her moorings. In cases of bad weather approaching; leaving the berth & heading for open sea areas may be a preferable choice rather than staying in the port enclosure even with numerous line added.

