STEAMSHIP MUTUAL

Risk Alert

# Safe mooring - Mooring failures during cargo operations

This Risk Alert has been written by Nahush Paranjpye of the Loss Prevention Team

## Introduction

The Club has experienced several claims, some of them large, where mooring lines have failed with resulting collateral damage to both the vessel and terminal facilities.

This Risk Alert highlights key factors for consideration when determining the deployment, arrangement and subsequent monitoring of moorings, with particular focus on the impact of cargo operations, berth location and potential changes in environmental conditions.

## Background

Following are some common scenarios:-:

- A sudden increase of wind speed resulting in one or more mooring lines failing and the brakes of other mooring line winches slipping with the vessel moving away from the jetty causing damage to the gangway and loading arm.
- Discharge of cargo on a fast-rising tide and with strong head winds resulting in lines parting and the vessel dropping astern causing damage to terminal facilities and an extended shut down.
- Failure of a mooring hook on a mooring buoy resulting in a vessel falling away from a berth,parting other mooring lines and rupturing a cargo hose.
- Vessel passing a moored vessel at excessive speed causing failure of mooring lines and damaging terminal facilities.

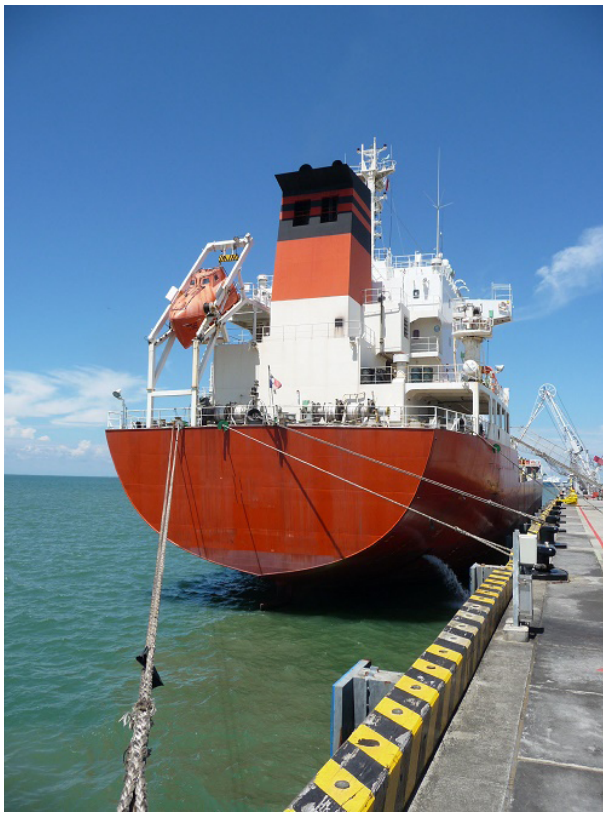
## Recommendations

The following are to be considered pertinent factors when risk assessing in port mooring activities.

## ASSESSEMENT & PLANNING

### Pre-arrival checks

- Robust planned maintenance programme for all mooring equipment in place and implemented
- Pre-arrival condition check of mooring equipment – machinery / fixed structures (bitts, fairleads, rollers, etc)
- Pre-arrival condition check of mooring ropes / wires / tails / stoppers. Remove/ replace/repair (as applicable) where faulty or degraded
- Layout and safety of mooring stations
- Personnel familiar with equipment and safe mooring practices in accordance with their SMS.



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- Winches properly tested for rendering (SSM Risk Alert)
- MBL of mooring lines
- SWL of mooring points
- Configuration of mooring equipment:-
  - Dedicated mooring winch
  - Lines turned up on bitts
  - Line tensions evenly distributed
- Considerations of windage area, reference approved mooring software (if available)
- Availability of tug(s), response time
- Pre-arrival notification of port/berth limitations from Agent / Terminal / Pilot (Guide to port entry)
- Emergency response in event of breakout

## Master Pilot Exchange

- Weather forecast / anticipated environmental conditions, requirement for additional moorings
- Mooring plan:-
  - Mooring lead and angle
  - Layout of lines / number / location / strength / condition
  - Mooring points available on board and on shore.
- Mooring efficiency - positioning of lines
  - Lines close to horizontal as possible
  - Head/stern/spring lines close to fore and aft line
  - Breast lines perpendicular to fore and aft line
- Order in which lines are deployed
- Risk of multiple lines on single mooring point
- Availability of alternate mooring points
- MBL of mooring lines
- Rating of shore mooring facilities, mooring hooks / bollards etc discussed and agreed with terminal/ pilot
- SWL of shore mooring points (Where available)
- Local data on winds, currents and tides
- Traffic movements and practice in port
- Availability, operation and suitability of tugs
- Guidance, considerations and recommendations from Pilot

## MONITORING

Very important to ensure appropriate awareness and information exchanges at the change of watch. Formal standing instructions and guidance to be available for watch keepers

Key considerations for continual monitoring of moorings and hand-over of information between watchkeepers:

- Compliance with company's SMS procedures
- Minimum manning levels for safe in port operations
- Effective communication
- Mooring layout
- Anticipated changes in freeboard due cargo or tides
- Early planning for use of additional moorings
- Port communication channels – for updates such as:
  - -passing vessel traffic
  - -storm warnings / weather alerts

- Weather watch – changes in wind direction / force, barometer, currents / tide tables / charts
- Changes to auto-tension settings (if applicable)
- Appropriate interval for checking moorings
- Change in condition of mooring ropes / wires / tails / stoppers – Chafing observed / corrective actions
- Contingency arrangements to muster staff at short notice if required
- Clear instructions / guidance for notifying senior officers of potential issues

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- DOCUMENTATION & REPORTING
- Log book entry – accuracy of record keeping
- Photographic evidence
- Master – Pilot Exchange Form & VDR download of Master / Pilot communication
- Early notification and documenting of concerns with regard to shore facilities
- Note of protest to terminal e.g.
  -Concerns over mooring arrangement
  -Concerns over mooring points / berth
- Note of protest to the charterers e.g.
  -Inadequate tug assistance
  -Unsafe terminal / berth
- Early notification of vessel owners / operators
- Early notification of Club

The above guidance is in addition to other widely available industry guidance which is not specifically addressed in this risk alert such as:-

- Use of correct PPE
- Safe practices when handling of ropes / wires
- Awareness of snap back zones.

## Suggested References

- Risk alerts from the club
  -RA08 – Safe Mooring Practice
  -RA07 – Mooring Line Care and Maintenance
  -RA50 – Mooring Winch Brake Holding Capacity
- OCIMF Mooring Equipment Guidelines
- IACS Req. 2004/Rev.4 2016/Corr.2 2017
- Code of safe working practices
- ILO - Accident prevention on board ship at sea and in port - Read Here

- ILO Safety and Health in Port (2016) Read Here