Marine Safety Investigation Unit

Transport Malta

SIMPLIFIED SAFETY INVESTIGATION REPORT

201611/006 REPORT NO.: 23/2017 November 2017

MV *CATHERINE*
Serious injury to crew member
In the port of Leixos, Portugal
05 November 2016

Course of events

At 1822 (ship's time – UTC +1), on 05 November 2016, an able seaman (AB) on board the Maltese registered roll-on roll-off (ro-ro) ship *Catherine* was severely injured during cargo operations. He was discharged from the ship and was transferred to a local hospital for further treatment.

Catherine, a 21,287 GT vessel, was berthed at the port of Leixoes, Portugal. She was scheduled to depart at 2100. The weather was fine and the loading deck was reportedly dry.

Sunset was at 1825 and the deck lights were switched on. By around 1800, only a few ro-ro units were left for loading (Figure 1). The ro-ro units were marshalled in by a port stevedore, driving a tug master. No other stevedores were engaged to undertake the loading operation.

Figure 1: Loading of trailers on weathe deck

Two crew members were appointed as signallers. One AB was assigned to guide the tug master driver to stow the trailer units in their respective position. The second AB was responsible to signal the tug master to lower the trailer on the trestle. Both ABs had been also tasked with the lashing of the ro-ro units.

At about 1821, one of the trailers (Figure 2) was hauled up the weather deck at the rear of MAFI[1] roll-trailer.

Figure 2: Photo of trailer involved in the accident

The first AB, who was positioned at the back adjacent to the roll-trailer, signalled the driver to stop. A trestle was placed underneath the trailer by the second AB who then signalled the driver to lower the trailer on the trestle and disengage the tug master.

Meanwhile, the first AB walked behind the trailer to lash roll-trailer. Evidence available indicates that the driver reversed the tug master, entrapping the AB between the trailer and the MAFI (Figure 3).

Figure 3: The MAFI roll-trailer and approximate position of accident

[1] MAFI is a roll-trailer used in the transport of cargo.

At the time of the accident, the second mate was lashing cargo in the forward part of the ship and no other officer was present to watch over the loading of the trailer unit.

Sustained injuries

The AB suffered neurovascular injuries to his right lower leg. A detailed medical examination revealed a minor fracture of the femoral trochlea, bone contusion in the posterior tibial plateau, and haemarthrosis with extensive oedema and haematic suffusion in the soft tissues.

Ship's crew

Catherine was manned by a crew of 20. The manning was in excess of the number on the Minimum Safe Manning Certificate. The master, navigating officers and engineers were Russians and the remaining crew members were Filipino nationals. The injured AB was 40 years old and qualified to STCW[2] Support Level A-II/5. There was no evidence to suggest that the injured crew member was either fatigued or under the effects of alcohol or drugs.

Health and safety in ports

Practical guidance on ro-ro operations is provided in the International Labor Organization's (ILO) Code of Practice 'Safety and health in ports' (2005), *inter alia*, Section 7.9.2, paragraph 4, which states that *"[a]ll large vehicles and trailers being reversed or manoeuvred into stowage positions on deck, should do so under the direction of a signaller... [s]ignallers should satisfy themselves that no person is in a position of danger, particularly in any trapping area behind a reversing vehicle. Drivers should not move their load/vehicle unless a signaller so directs. Drivers should immediately stop their vehicles at any time the signaller is not within their field of*

[2] International Convention on Standards of Training, Certification and Watchkeeping for Seafarers 1978, as amended.

vision." Moreover, where crew members work with the port stevedore, section 2.1.5 recommends joint safe systems of work.

Safety management system and risk assessment

The Company implemented a safety management system (SMS). The SMS on cargo operations cautioned that:

- *"tug drivers do not have all round vision, make sure the tug driver can see you at all times*;
- *behind a stowed or secured cargo unit or other equipment (e.g. trestle) is not a safe location as it may be struck by a unit being positioned*; and
- *Connecting / disconnecting the tug may cause unexpected movements of the unit*."

Additionally, on board instructions cautioned the crew assisting in the stowage of ro-ro units, to be engaged exclusively with this task, and trailers are chocked on both sides of the wheelbase before disconnecting the tug master.

Catherine's SMS also contained guidelines on the assessment of risks. A comprehensive risk assessment related to cargo operations was documented by the vessel's managers in Form ES18/057. It covered key activities, hazards and corresponding control measures. The control measures against personnel injury identified in the risk assessment included:

- *crew briefing on the Code of Safe Working Practice for Merchant Seamen*;
- *crew / stevedore directing the vehicles should keep out of the way of moving vehicles, and particularly those that are reversing, by standing to the side, and where possible should remain within the driver's line of sight*; and
- *second crew member required to monitor the tug traffic and to act as relay to report any danger to the tug master. This relay has to see the tug driver and the 'chock man'.*

In addition to the above, the SMS obliged the crew members to review risk assessments prior to each operation, to ensure that work procedures take into account control measures relevant to the task planned, and are made available to the crew members for reference, when necessary.

Local loading procedure[3]

Catherine called at the port of Leixoes every week. The master reported that the crew was familiar with the cargo operations. The locally arranged procedure on the vessel's weather deck involved two able seamen acting as signallers. One was supposed to guide trailers to their designated stow area.

The second AB had to place the trestle under the trailer and signal the driver to lower and disengage the tug master. The signal was by hand and a whistle was provided to be used at each phase of the operation, to indicate to the driver to proceed to the next step. The two crew members were also tasked with cargo lashings. Both lashing and trestle operations necessitated the crew members to work near the moving vehicles and away from the driver's field of vision.

Cause of the injury[4]

The direct cause of the injuries was the AB becoming entrapped between two cargo units during the cargo loading operation.

[3] A statement of events by the tug master driver was not provided; a request by the MSIU had not been forthcoming from the port stevedore. Thus, the safety investigation was unable to establish as to whether the driver backed the tug master to line up the trailer with other ro-ro units (as reported by the master), disengaging the tug's fifth wheel caused unexpected movement or the signal given by the AB from underneath the trailer was misread by the driver.

[4] The purpose of a marine safety investigation is to determine the circumstances and safety factors of the accident as a basis for making recommendations, and to prevent further marine casualties and incidents from occurring in the future.

Perception of risk

There was no evidence to suggest that either an on board risk assessment or toolbox talk had been conducted at Leixoes. Neither was a safe system of work discussed with the crew members and the stevedore. The loading of the trailer on the weather deck was unsupervised and the crew did not use chocks to prevent sudden or unexpected trailer movements. With no safety briefing, the work practice adopted by the ABs and the port stevedore was contrary to the requirements of the SMS and the recommended safety measures were not enforced.

It was deemed possible that the frequent calls at the port of Leixoes, and the repetitive nature of cargo operations led the crew members to accept a higher degree of risk. This would seem to be the reason for the lack of on board review of risk assessment and safety briefings. It was also evident that the two ABs were also tasked to carry our other jobs which exposed them to hazardous situations. It was apparent to the safety investigation that the previous accident-free cargo operations may have induced a false sense of security amongst the crew.

Moreover, it was considered likely that these practices had eventually become the norm. Evidence submitted to the MSIU showed that the crew members had made adaptations to the Company's SMS which possibly went undetected and hence never analysed. Indeed, the injured AB recounted in hospital that he was aware of the risks but felt that after five months on board, he had a good understanding of the risks associated with ro-ro ships.

RECOMMENDATIONS

In view of the master's review of on board risk assessments following the accident, meeting between the crew and the stevedore on personnel safety, and subsequent satisfactory safety audit of cargo operations by the Company, no recommendations are made in this safety investigation report.

SHIP PARTICULARS

Vessel Name:	*Catherine*
Flag:	Malta
Classification Society:	DNV GL
IMO Number:	9209453
Type:	Roll-on Roll-off
Registered Owner:	CLDN Ro Ro SA
Managers:	Euroship Services Ltd., UK
Construction:	Steel
Length Overall:	182.20 m
Registered Length:	170.96 m
Gross Tonnage:	21,369
Minimum Safe Manning:	15
Authorised Cargo:	Ro-ro cargo

VOYAGE PARTICULARS

Port of Departure:	Rotterdam, The Netherlands
Port of Arrival:	Leixoes, Portugal
Type of Voyage:	International
Cargo Information:	4367.5 mt of ro-ro cargo
Manning:	20

MARINE OCCURRENCE INFORMATION

Date and Time:	05 November 2016 at 1822 (LT)
Classification of Occurrence:	Serious Marine Casualty
Location of Occurrence:	Inland waters / Port area
Place on Board	Open deck cargo space
Injuries / Fatalities:	One serious injury
Damage / Environmental Impact:	None reported
Ship Operation:	Alongside moored / loading
Voyage Segment:	Arrival
External & Internal Environment:	Weather was clear with light Easterly wind. The sea was slight to moderate and the air temperature was 16 °C. Sea temperature was 17 °C.
Persons on board:	21