

# Breaking the error chain, part 2



**Eric Murdoch**  
**Chief Surveyor**  
+44 20 3320 8836  
eric.murdoch@ctplc.com

The purpose of the procedures for safe working is to prevent injuries. Short cuts taken by crew invariably result in reduced safety for the crew member themselves as well as others through failure to wear the correct personal protective equipment (PPE) or accepting increased risk for the convenience of completing a task quickly.

## Introduction

In the previous edition of *Standard Safety*, we discussed three collision cases in which human error and bad judgement by the bridge team led to a chain of errors, resulting in collisions. We explained how a simple action from any of the bridge team members could have broken the chain and prevented the incident.

In this review, we will look at two crew injuries and a fatal injury to a stevedore and explain how the error chain could have been broken.

## Case study 1

The ship in question was mid-ocean, navigating at full speed, when a crew member painting a mushroom ventilator fell overboard. The ventilators, positioned at the ship's side, had their tops above the side railing. A short ladder was used to reach the ventilator's top. While working on the ladder, the seaman leaned forward, the ladder slipped and the seaman fell a long distance before landing in the sea. The ladder had not been secured, the crew member did not wear a safety harness and neither a permit to work nor risk assessment had been completed. A second crew member was nearby, but was not holding the ladder. The principal cause was failure to secure the ladder. A short cut had been taken.

## Errors made

- Failure to secure the ladder against slippage
- Failure to wear a safety harness
- Failure to use a permit to work system
- Failure to properly supervise

## Breaking the chain

The error chain would have been broken if a fellow seaman had instructed the injured seaman to work safely by securing the ladder and wearing a safety harness. In addition, a rigorously applied permit to work system, which requires potentially hazardous tasks to be risk assessed before work is commenced, would have prevented the incident.

How often does a fellow seaman stand by and watch a colleague work dangerously? How often does a short cut become the accepted method of work?

# Breaking the error chain, part 2 continued

## Case study 2

In the second incident, a stevedore was killed when a ro-ro trailer fell onto and crushed him.

Stevedores loaded and discharged the ro-ro cargo. When the garage space was full, cargo was loaded on the ramp between the garage space and weather deck.

The loading process involved using a tug to haul the trailers on board and placing the trailer's head-end on a pedestal, before releasing the tug, applying axle lashings and wheel wedges. The trailer had air brakes that locked the rear wheels, but on this particular trailer, the air brakes were faulty and the brakes did not engage – something neither the ship nor the stevedores at the discharge port would have known.

The discharge was completed in the same way, but in reverse. However, removal of the trailer lashings and wheel wedges was only allowed when the trailer had been safely raised and secured by a tug. The stevedore at the discharge port assumed the trailer's air brakes were engaged. He had removed the lashings from the trailer's high-end and climbed under the trailer, when it moved forward, fell off the pedestal and crushed him.

### Errors made

- Removal of the high-end lashings before the trailer was safely secured by a tug
- Climbing under an unsupported trailer
- Failure to follow written procedures for safe working

### Breaking the chain

During the accident investigation, it was found that wheel wedges were not applied. The ship's crew had checked the lashings after loading but failed to notice the missing wedges and failed to apply them. Had the wedges been applied, the incident may have been avoided.

## Case study 3

In the third incident, a seaman was injured while freeing a trapped gangway, when the gangway suddenly became free and struck him.

The ship was alongside a tidal berth. The tidal range was small, but the gangway had become trapped between the quay and the ship. Had a proper gangway watch been kept, this situation would not have arisen. In order to free the gangway, the mooring ropes should have been slackened to allow the ship to come off the berth. In this instance, they used a crowbar and considerable force to prise the gangway free. It was not surprising that when the gangway did come free, it sprung and hit someone.

The principal cause was the method used to free the gangway. There was no danger posed by walking back mooring ropes and allowing the ship to come off the berth, which would have automatically freed the gangway. It is assumed the crew chose another method to save time and effort.

### Errors made

- Failure to maintain a proper gangway watch
- Failure to raise the gangway as the tide fell
- Failure to release mooring lines to allow the gangway to naturally come free

### Breaking the chain

The error chain would have been broken if the ship had operated with a safety culture that promoted diligence, safety and best practice.

This concludes our second article in a series of three articles on how human error can lead to a chain of errors and how the chain can be interrupted to avoid an incident. In the next and last edition, we will discuss a cargo overflow and a total loss.