Safety Flash

Failure of moonpool railing system caused man overboard situation in moonpool

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A crew member was working in the moonpool area when they lost balance and fell in but managed to grab hold of the guidewire, preventing an uncontrolled fall into the sea.

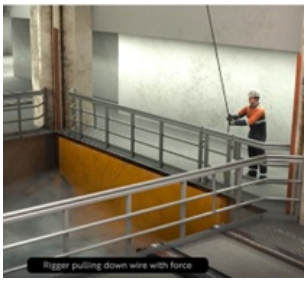
IOGP Life Saving Rules:

Line of fire

What happened?

A crew member was working in the moonpool area when they lost balance and leaned against a removable railing section intended to act as a primary safety barrier. The railing post failed, causing the gate to swing inward toward the moonpool. They fell into the moonpool but managed to grab hold of the guidewire, preventing an uncontrolled fall into the sea. They gradually slid down the guidewire until reaching the guidewire weight, at water level inside the moonpool.

Co-workers intervened immediately, raised a man overboard alarm, and using a boathook pulled the crew member to safety. The crew member was recovered within 52 seconds of the initial fall. The crew member sustained a dislocated shoulder and was transported to hospital for treatment.



What went right?

Crew reaction was immediate and effective. Crew worked as a team, using clear communications, and the rescue was made quickly with available tools. Emergency response procedures were followed, and medical support was provided without delay. These actions prevented a potentially fatal outcome.

What went wrong?

- The removable railing and gate system were not included in the structural inspection or maintenance programs, leading to unnoticed deterioration over an extended period.
- Organizational responsibilities for maintaining and inspecting removable

barriers were unclear.
- The railing was being relied upon as a primary safety barrier, but its condition had not been verified before use.
- There was no task guidance/procedure for work close to removable barriers.
- Previous observations from crew members about railing condition had been reported but were closed without appropriate actions because the reporting and follow-up process did not ensure that the concerns were properly captured, understood or escalated.

It is to be emphasised that the person involved was performing their work correctly and that the root causes were systemic, related to design, inspection, communication, and structural integrity management.

What was the cause?

The **immediate cause** of the railing post failure was advanced structural degradation, leading to the gate opening unexpectedly when the post detached at deck level. The degraded condition of the barrier was not identified.

These **root causes** were identified:

- Inadequate design/material selection: Dissimilar metals were not evaluated for long-term use in the marine environment; no secondary securing mechanisms.
- Inadequate inspection and monitoring: Removable railings not included in structural inspection programs.
- Inadequate communication between organisations: No clear ownership between vessel owner and operator for barrier inspection and integrity.
- Procurement/technical specifications not aligned with operational use: Guidewires delivered outside expected operational characteristics (stiffness/lubrication).
- Inadequate development of procedures: No documented process for tasks performed near unsecured or removable barriers; hazard not captured in pre task risk assessments.
- Reporting system: Hazardous conditions were documented, but not escalated with actionable follow-up.

Lessons to learn

- Structural barriers (railings, gates, removable posts, gratings, hatches) should be treated as structural safety-critical elements and included in formal inspections and preventive maintenance systems.
- Assess compatibility of materials – be particularly careful with dissimilar

metals in the marine environment.
- Ensure there is clearly understood “ownership” and responsibility for maintenance of structural integrity.
- Ensure hazard reports have verifiable, actionable, documented follow-up.
- Removable barriers should have secondary locking mechanisms and should be positively secured prior to use.
- Pre-task risk assessments should take into account the possibility of barriers failing, and include checks of physical protection measures.
- When things DO go wrong and barriers DO fail, there’s no substitute for the team being prepared: Emergency preparedness and teamwork can significantly reduce the severity of an incident.

Members may wish to refer to

- Raising awareness on safety barriers such as railings and gratings [Transport Safety Investigation Bureau of Singapore, 2019]