REPUBLIC OF THE MARSHALL ISLANDS

Maritime Administrator

AL RAWDAH CASUALTY INVESTIGATION REPORT

Fall and Fatality of Wiper

Port Des Galets, l'île de La Réunion | 30 January 2019

Official Number: 4160

IMO Number: 9349564

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PART 1: EXECUTIVE SUMMARY

The Republic of the Marshall Islands-registered AL RAWDAH, managed by United Arab Shipping Company Limited Dubai Branch (the "Company"), was berthed at Port Des Galets Container Terminal in l'île de La Réunion, an overseas French territory in the Indian Ocean on 30 January 2019.

The Wiper fell into an open fan duct while replacing a damaged impeller for the No. 5 Starboard Engine Room ventilation fan. The Wiper fell about 20 meters (m) to the bottom of the duct. The crew of AL RAWDAH attempted to lift the Wiper out of the duct by stretcher but were unable to remove him. A shoreside rescue team boarded the ship and removed the Wiper from the duct. The Wiper was found to be unresponsive with no pulse. Cardiopulmonary resuscitation (CPR) was given; however, the Wiper was pronounced deceased by medical personnel.

The Republic of the Marshall Islands Maritime Administrator's (the "Administrator's") marine safety investigation concluded that the exact cause of the Wiper's fall could not be determined since there were no direct witnesses.

1. Causal factors which likely contributed to the fatality of the Wiper include:
   (a) failure to comply with the Company's Safety Management System (SMS) requirement to complete a Permit to Work (PTW) in any situation where there was a risk of falling more than 2 m;
   (b) failure to utilize a safety harness by the Wiper while working in the vicinity of the open duct; and
   (c) failure to utilize a safety grating over the top of the duct when safety harnesses were not used.

PART 2: FINDINGS OF FACT

The following Findings of Fact are based upon the information obtained by the Maritime Administrator.

1. Ship particulars: *see* chart to right.

2. In October 2018, damage to the impeller for the No. 5 Starboard Engine Room ventilation fan was observed by the crew of AL RAWDAH. The necessary spare parts that were ordered were delivered on board on 19 December 2018.

3. It was determined by the Chief Engineer (C/E) that the replacement of the damaged impeller would be conducted while the ship was in port alongside and conducting cargo operations.

4. The impeller is coupled to an electric motor, mounted vertically in the fan duct, which is about 20 m deep *(see Figure 1)*. The motor is connected to the duct shell door. The door is mounted with hinges on one side and secured by bolts and nuts on the other three sides. The door provides direct access to the motor and impeller. The fan duct is not fitted with fall protection or anchor points for a safety line.

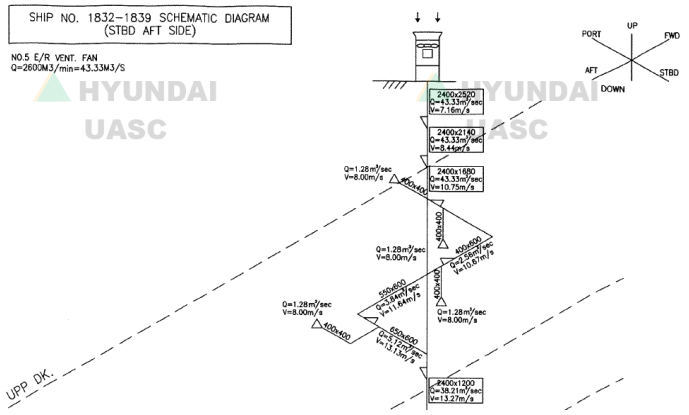

Figure 1: Schematic Diagram for No. 5 Starboard Engine Room vent duct.

Incident Description

5. On 30 January 2019, AL RAWDAH was berthed at Port Des Galets Container Terminal in l'île de La Réunion and cargo operations were in progress. The replacement of the fan impeller was scheduled to be completed on this day.

SHIP PARTICULARS

Ship Name
AL RAWDAH

Registered Owner
Al Rawdah Limited

ISM Ship Management
United Arab Shipping Company Limited Dubai Branch

Flag State
Republic of the Marshall Islands

IMO No.	Official No.	Call Sign
9349564	4160	V7VM8

Year of Build	Gross Tonnage
2008	75,579

Net Tonnage	Deadweight Tonnage
44,706	85,326

Length x Breadth x Depth
293.2 x 40.0 x 21.1 meters

Ship Type
Container

Document of Compliance Recognized Organization
Lloyd's Register

Safety Management Certificate Recognized Organization
Lloyd's Register

Classification Society
Lloyd's Register

Persons on Board
25

6. At 0600[1] on 30 January 2019, the Second Engineer (2/E) conducted a briefing with the Engine Room crew to discuss the work assignments for the day. This included the lifting and installation of the new ventilation fan impeller.

7. After lunch at approximately 1300, the 2/E completed a risk assessment for the lifting and installation of the new impeller. The risk assessment identified hazards associated with the lifting and installation of the impeller but did not identify the hazards presented by working around the open duct.

8. The 2/E was aware of the procedures that a PTW was required when working from a height but did not issue a PTW for the impeller replacement since he failed to identify the fall risk.

9. The 2/E then conducted a Toolbox Talk with the Fitter, Oiler, and Wiper. The risks and precautions to be taken while lifting the impeller to the Fan Room were also discussed. These included the procedures to be followed for the lift, the proper positioning of crewmembers, and the required personal protective equipment (PPE). It was determined by the 2/E, during the Toolbox Talk, that boiler suits, safety shoes, hard helmets, gloves, safety glasses, and safety harnesses were required based on the work being conducted.

10. Shortly after the Toolbox Talk, the impeller was safely lifted to the Fan Room *(see Figure 2)*. All crewmembers assigned to complete this task signed the risk assessment form at the conclusion of the Toolbox Talk.

Figure 2: Fan Room with the No. 5 Starboard Engine Room ventilation fan open and the replacement impeller on the deck after lifting.

11. At approximately 1315, the crew began working to replace the damaged impeller. The bolts of the No. 5 Starboard Engine Room fan duct door were removed. Two chain hoists were then used to swing the door open so the crew could have direct access to the impeller. Once the door was open and the fan motor and impeller were clear of the duct, the crewmembers decided that they would protect the open duct by securing ropes across the opening.

1 Unless otherwise stated, all times are ship's local time (UTC +4).

Figure 3: Open duct for the No. 5 Starboard Engine Room ventilation fan. The Wiper was standing between the motor and the opening.

12. At approximately 1330, the Wiper fell into the duct, presumably while pushing the fan duct door open in order to loosen the nuts and bolts holding the damaged impeller to the motor *(see Figure 3)*.

13. Following the Wiper's fall, the Oiler and the Fitter could see him lying at the bottom of the duct. They yelled to the Wiper but did not hear a reply.[2]

14. The Oiler immediately informed the 2/E that the Wiper had fallen. The 2/E ran to the Engine Control Room to inform the C/E. The C/E then informed the Master.

15. The Master raised the general alarm and announced via the public address system to organize a rescue team. At 1332, he informed the Chief Officer (C/O) of the nature and location of the emergency. He also called the local Agent and requested a shore rescue team and ambulance.

16. At about 1337, the C/O was lowered down to the Wiper by other crewmembers. The C/O started first aid when he reached the Wiper. The crewmembers then attempted to lift the Wiper out of the duct using a stretcher but were unable to do so. The C/O was then lifted out of the duct.

17. At about 1416, the shore rescue team boarded the ship. Within approximately 45 minutes the Wiper was lifted from the ventilation duct by the shore rescue team. At the time of removal, he was unconscious with no pulse. CPR was initiated by the shore rescue team at about 1530.

18. At 1620, the Wiper was pronounced deceased by the shore rescue team's medical personnel.

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2 The Oiler stated that he, along with the Fitter and 2/E, tried communicating with the Wiper. The Wiper was moving his hand every time someone called for him.

Crew Experience

19. The crew of AL RAWDAH consisted of 25 officers and ratings, which was more than required by the Minimum Safe Manning Certificate issued by the Administrator. All officers and ratings held valid Republic of the Marshall Islands issued seafarer documentation required for their position on board.

20. The 2/E joined the ship on 5 December 2018. He had been employed by the Company since September 2008, starting as an Engine Cadet.

21. The Wiper and Fitter both joined the ship on 25 May 2018. This was their first employment with the Company.

22. The Oiler joined the ship on 25 May 2018. He had been employed by the Company since February 2016.

23. The Administrator did not observe any indication that crewmembers involved with this incident had failed to receive the amount of rest mandated by the International Maritime Organization's (IMO's) Seafarers Training, Certification and Watchkeeping (STCW) Code, Section A-VIII/1, paragraphs 2 and 3 and the International Labour Organization's Maritime Labour Convention, 2006, regulation 2.3.

SMS

24. As required by the IMO's International Management Code for the Safe Operation of Ships and for Pollution Prevention (International Safety Management (ISM) Code), the Company's SMS provided procedures for shipboard tasks that included requirements for the use of PPE, conducting pre-task hazard assessments, pre-task briefing (also known as "Toolbox Talks"), and the issuance of a PTW when conducting various ship board tasks, including when working at height.

25. The Company's SMS included the following requirement pertaining to the use of safety harnesses:

> "Safety Harnesses must be used at any time work is being performed aloft, outboard of the vessel or when required to work at a height above deck anywhere on the vessel. A safety harness, including a shock absorber measuring 1.25 m in length and lifeline must be used when working: up mast or funnels, on stages; chairs; or cradles; over side; rigging gangways or accommodation ladders; in any situation where there is a risk of falling more than two meters."[3]

26. According to the ship's records, the 2/E, Fitter, Wiper, and Oiler completed the required safety familiarization training when they joined the ship in accordance with the Company's SMS procedures. It is noted that this familiarization training included notification of the requirement for written permits for working at heights, of which they acknowledged their understanding.

27. The Company's SMS required that boiler suits, safety shoes, hard helmets, gloves, safety glasses, and safety harnesses be worn while replacing the fan impeller. At the time of the incident, the Fitter was wearing a safety harness while the Oiler and Wiper were not.

3 *See* UASC SIMS Chapter – 9 Procedures For Safe Work Performance – Safety Harness Page 9/12.

PART 3: ANALYSIS

The following Analysis is based on the above Findings of Fact.

Cause of Fall

The cause of the Wiper's fall into the open fan duct cannot be determined since there were no direct witnesses. However, it is presumed that the Wiper lost his balance while working and fell into the open duct.

Risk Identification and Assessment

The Company's SMS required that safety harnesses be worn whenever there is a risk of falling more than 2 m. Given the depth of the ventilation duct, a safety harness was required to have been worn by any crewmembers working near the opening. In addition, this fall risk would have triggered the requirement for a PTW.

Prior to beginning the work, a risk assessment was completed, and a Toolbox Talk was conducted. However, the risk assessment failed to identify the risk of falling more than 2 m while working near the open ventilation duct. The fact that the planned work was going to be performed while standing on a fixed deck may have caused the 2/E and crewmembers performing this task to not recognize the hazard presented by the open duct. The failure to identify the risk of falling resulted in a PTW not being completed. In addition, safety harnesses were not identified as required PPE while working near the open ventilation duct due to the failure to identify the fall hazard in the risk assessment. While performing the work, the Fitter and Oiler were wearing safety harnesses while the Fitter was not.

At the time of the incident, the 2/E only had about six week's experience in the rank of 2/E. Participation by the more experienced C/E in the risk management process may have identified the hazards associated with working near the open ventilation duct and the requirement to wear safety harnesses.

PART 4: CONCLUSIONS

The following Conclusions are based on the above Findings of Fact and Analysis and shall in no way create a presumption of blame or apportion liability. The exact cause of the Wiper's fall cannot be determined since there were no direct witnesses.

1. Causal factors which likely contributed to the fatality of the Wiper include:
   (a) failure to comply with the Company's SMS requirement to complete a PTW in any situation where there was a risk of falling more than 2 m;
   (b) failure to utilize a safety harness by the Wiper while working in the vicinity of the open duct; and
   (c) failure to utilize a safety grating over the top of the duct when safety harnesses were not used.

PART 5: PREVENTIVE ACTIONS

In response to this very serious marine casualty, the Company has taken the following Preventive Actions.

1. Additional safety training was conducted for AL RAWDAH crewmembers regarding the proper use of PPE.
2. Safety awareness of all crewmembers to be increased by continuous training during shipboard visits by office staff, seminars, and shore based briefing sessions.
3. The promotion and evaluation system for officers was amended to include an increased focus on safety awareness and risk management for senior officers.
4. Grating was installed in the ventilation ducts of AL RAWDAH to prevent another fall into the casing.

PART 6: RECOMMENDATIONS

The following Recommendations are based on the above Conclusions and in consideration of the Preventive Actions taken.

1. It is recommended that the Company:
   (a) review and revise, as necessary, its senior officer familiarization as related to the SMS safe working practices and conducting risk assessments;
   (b) verify the onboard implementation of SMS safe work practices and pre-task risk assessments during audits and inspections; and
   (c) inspect other vessels within their managed fleet for the risk of fall into ventilation ducts during maintenance and implement preventive actions, as appropriate.

The Administrator's marine safety investigation is closed. It will be reopened if additional information is received that would warrant further review.