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Marine safety investigations & reports

Fatality on board the livestock carrier *Zebu Express*

Investigation number: 42

Investigation status: Completed

Summary

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On 22 July 1991, the Netherlands flag livestock vessel Zebu Express was lying at anchor in Darwin Harbour. The Master & Second Mate had left the ship, the Chief Officer being the Officer in Charge.

In the morning the Chief Engineer & Second Engineer began working in the bow thruster compartment, cleaning the electrical motor of the bow thruster.

Early in the afternoon the Chief Engineer observed the Second Engineer to be in physical difficulty in the lower part of the compartment & raised the alarm. He then made several attempts to assist the Second Engineer, entering the compartment without using a breathing apparatus.

Both the Chief Engineer & Second Engineer collapsed in the lower part of the bow thruster compartment. Attempts to rescue the two men were made by the Assistant Engineer, wearing a self contained compressed air breathing apparatus, but he was unable to effect a rescue.

The bodies of the Chief Engineer & Second Engineer were eventually recovered from the bow thruster compartment by members of the Darwin Fire Service.

A surveyor of the Australian Maritime Safety Authority conducted an investigation into the incident under the provisions of the Navigation Act.

Conclusions

The deaths of the two engineers resulted from their failure to follow the well publicised safety procedures for safe entry into, and rescue from, enclosed spaces.

It is considered that:

1. The Second Engineer died as a result of becoming asphyxiated by accumulated vapour produced by the Drew Electric electrical cleaner being used in a confined, enclosed space without adequate ventilation.
2. The Chief Engineer also died as a result of being asphyxiated by the accumulated toxic Drew Electric vapour when he went to the assistance of the Second Engineer without donning breathing apparatus.
3. The on-board operational procedures were deficient in that: the crew had not been properly trained in the use of emergency equipment, specifically the breathing apparatus, and in emergency procedures; the officers failed to implement standard safety procedures for when working in an enclosed space.
4. The absence of the Master and the Second officer reduced the capability of the crew to deal with the emergency situation that arose.
5. Some form of mechanical, fresh-air ventilation should be available for use in bow thruster compartments, to provide for periods of maintenance work involving chemical solvents and cleaners.
6. The hazard-warning label on the Drew Electric drum did not accurately reflect the dangers inherent in the chemical. The word "safe" was misleading, referring only to its non-flammable properties. Drew electric is extremely hazardous in confined spaces where the ventilation is inadequate. While this hazard was noted, the general impression of the wording did not fully impart the danger of asphyxiation.
7. The Owners should have ensured that the ship was provided with all available safety data on the chemicals placed on board for domestic use.
8. The data on 1. 1. 1 -trichloroethane contained in the ICS Chemical Guide is inadequate in that it does not indicate, under the headings "The Main Hazard" and "Effect of Vapour" that vapour may cause asphyxiation.

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General details

Date:	22 Jul 1991	Investigation status:	Completed
Time:	N/A	Investigation type:	Occurrence Investigation
Location:	Darwin		
State:	NT		
Release date:	20 Aug 1993	Occurrence category:	Accident
Report status:	Final	Highest injury level:	Fatal

Vessel details

Vessel:	Zebu Express
Flag:	Nethe
IMO:	17038 Z
Type of Operation:	Motor livestock carrier
Damage to Vessel:	Nil
Departure point:	N/A
Departure time:	N/A

Destination: Darwin, NT

Injuries

	Crew	Passenger	Ground	Total
Fatal:	2	0	0	2
Total:	2	0	0	2

 Last update 01 April 2011

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