



Australian Government

Australian Transport Safety Bureau

Fire on board the livestock carrier *Ocean Drover*

Fremantle, Western Australia, 9 October 2014

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Postal address: PO Box 967, Civic Square ACT 2608
Office: 62 Northbourne Avenue Canberra, Australian Capital Territory 2601
Telephone: 1800 020 616, from overseas +61 2 6257 4150 (24 hours)
Accident and incident notification: 1800 011 034 (24 hours)
Facsimile: 02 6247 3117, from overseas +61 2 6247 3117
Email: atsbinfo@atsb.gov.au
Internet: www.atsb.gov.au

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Addendum

Page	Change	Date

Safety summary

The information contained in this Preliminary report is released in accordance with section 25 of the Transport Safety Investigation Act 2003 and is derived from the initial investigation of the occurrence. Readers are cautioned that new evidence will become available as the investigation progresses that will enhance the ATSB's understanding of the accident as outlined in this Preliminary report. As such, no analysis or findings are included in this report.

What happened

On the morning of 9 October 2014, a fire started in *Ocean Drover's* crew accommodation while the livestock carrier was berthed in Fremantle and preparing to load cargo. The fire quickly spread and the ship's crew and a number of the port's emergency response teams fought to control it for the rest of the day. Four of the ship's crew sustained smoke inhalation requiring medical treatment; one being hospitalised for smoke inhalation and burns.

By the time the fire was extinguished the following day, the accommodation areas and the ship's navigation bridge had been extensively damaged.

What the ATSB has found so far

Initial analysis by the ATSB and the Western Australia Department of Fire and Emergency Services (DFES) indicates that the fire started in one of the central forward cabins on the upper deck. The fire quickly spread and engulfed both the upper deck and the bridge deck above.

Investigation direction

The investigation is ongoing and will focus on:

- the circumstances and mechanisms of the fire initiation and spread
- the operation and efficacy of the ship's fire detection, protection and extinguishing systems
- crew training and shipboard emergency response.

Contents

The occurrence	1
Detection of the fire	1
Shipboard response	2
Emergency response	3
Context	5
<i>Ocean Drover</i>	5
Crew	5
Fire protection arrangements	5
Port of Fremantle	6
Investigation direction	6
General details	7
Occurrence details	7
Ship details	7
Sources and submissions	8
Sources of information	8
Australian Transport Safety Bureau	9
Purpose of safety investigations	9
Developing safety action	9

The occurrence

The information contained in this Preliminary report is released in accordance with section 25 of the Transport Safety Investigation Act 2003 and is derived from the initial investigation of the occurrence. Readers are cautioned that new evidence will become available as the investigation progresses that will enhance the ATSB's understanding of the accident as outlined in this Preliminary report. As such, no analysis or findings are included in this report.

At 0700¹ on 9 October 2014, the livestock carrier *Ocean Drover's* (Figure 1) crew began the final preparations to load cattle in Fremantle, where the ship was berthed. The first transport of livestock for export was expected to arrive on the wharf at 0800 and the boatswain (bosun) and 21 ordinary seamen (OS) were preparing the livestock pens.

Figure 1: *Ocean Drover*



Source: ATSB

At the time, most other crewmembers, including watch keepers, were in the accommodation spaces after breakfast. One able seaman (AB) and an oiler (oiler 1) were asleep in their cabins after their night watches. Another oiler (oiler 2), who was due to start work in the engine room, was in his cabin (A1 in Figure 2).

Detection of the fire

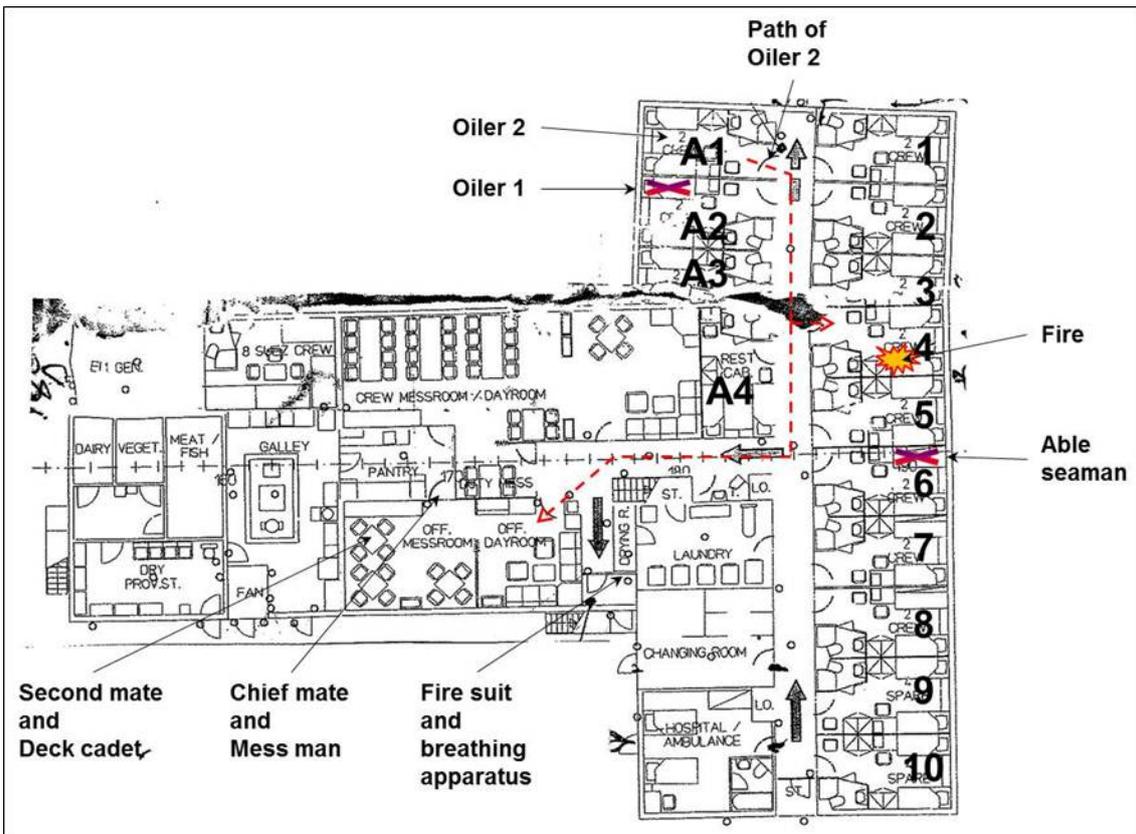
Shortly after 0745, oiler 2 left his cabin and immediately smelled smoke and heard a crackling sound. He traced the sound to a nearby cabin (number 4) and, upon opening its door, was confronted by flames, intense heat and thick black smoke. He dropped to his hands and knees and hurried away toward the officer's mess room to raise the alarm. The door of cabin number 4 was left open.

It was about 0750 when oiler 2 ran into the officer's mess room shouting that there was a fire. The chief mate, second mate, deck cadet (cadet) and mess man were in the mess room. At about the same time, the ship's fire alarms began to sound.

The chief mate, second mate and cadet went forward along the alleyway to investigate, however, they soon had to retreat because of the dense smoke, and all exited the accommodation onto the open deck on the starboard side. The second mate and cadet collected the self-contained breathing apparatus (BA) and fire suit from the nearby locker in preparation to fight the fire.

¹ All times referred to in this report are local time, Coordinated Universal Time (UTC) + 8 hours.

Figure 2: Diagram of upper deck accommodation showing key locations



Source: Wellard Ships with annotations by ATSB

At 0750, *Ocean Drover's* master was on the navigation bridge (Figure 3) when he was alerted by the bridge fire detection system panel indicating a fire in the accommodation.² Shortly thereafter, the ship's fire alarms began to sound. Opening the aft bridge door, the master saw and smelled the smoke, which was quickly spreading across the deck and up the stairwell.

He retreated into the bridge and called the chief engineer to apprise him of the fire. He asked the chief engineer to proceed to the engine room and prepare the fire pump. The master then exited the bridge through the starboard doorway and went below to the upper deck where he met the chief mate. They agreed that entering the accommodation should be attempted by the second mate, who had already begun donning the fire suit.

Shipboard response

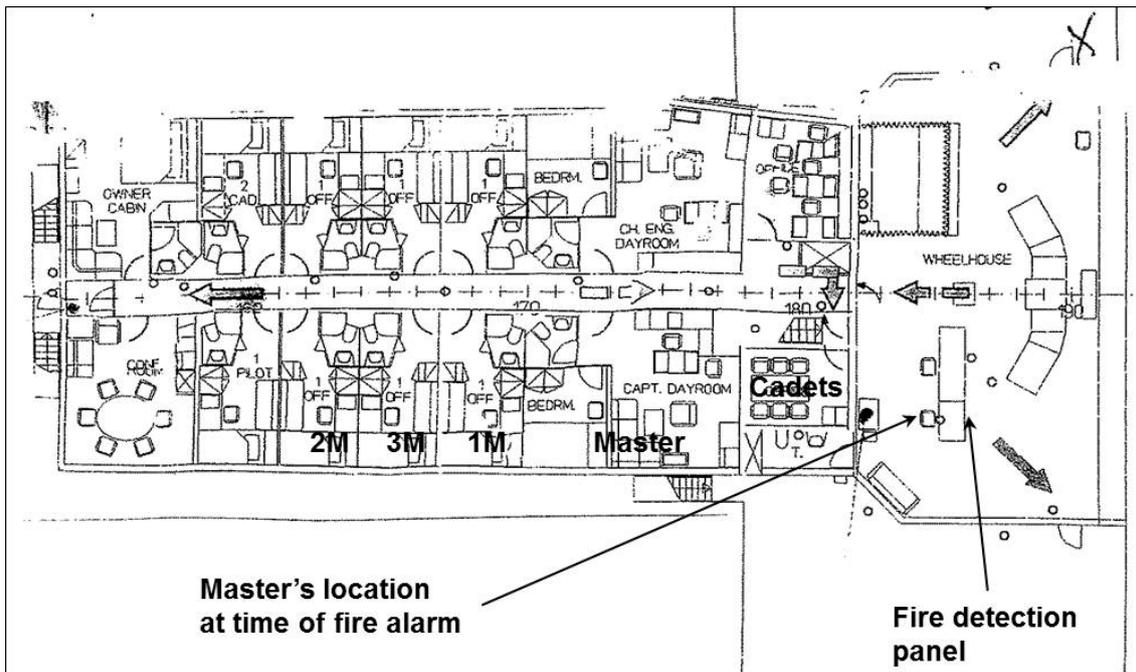
The sounding of the fire alarm throughout *Ocean Drover* alerted the crew. They began moving to the ship's upper deck, above the livestock pens and toward the accommodation and muster stations. Thick black smoke was now coming from the accommodation and the crew began to assemble in teams as practised during fire drills.

The chief mate and the bosun met on the starboard side of the accommodation. After some discussion, the bosun directed the assembled teams to close ventilators and prepare fire hoses to boundary cool the accommodation superstructure from all accessible sides.

At about 0800, the second mate, wearing a fire suit and BA, entered the accommodation via the starboard upper deck doorway. He began moving toward the crew cabins to investigate.

² The audiovisual alarm on the panel is designed to go into alarm for a short time before sounding the fire alarms throughout the ship.

Figure 3: Bridge deck plan



Source: Wellard Ships with annotations by ATSB

The AB asleep in his cabin (number 6) had been woken by the fire alarm. He could not see or smell any smoke and opened the cabin door to investigate. He was engulfed by heat and smoke and quickly retreated into the cabin. A short time later, shouting for help, he exited the cabin to escape but was overcome by smoke and collapsed in the cabin's doorway.

Meanwhile, the second mate, moving along the fore-aft alleyway heard the AB's calls for help, but the intensity of the heat and smoke prevented him from entering the cross alleyway. Retracing his steps, he returned to the starboard deck to reconsider rescue options.

Shortly afterwards, the second mate entered the accommodation through the changing room which led directly to the cross alleyway. With a fire extinguisher in hand, he crouched low and entered the alleyway. The smoke was very heavy and he could not see and could no longer hear any calls for help. The second mate dropped to a crawling position and began feeling his way further inside.

When the second mate had crawled a few metres, he felt a body lying in one of the forward doorways (the unconscious AB). He manhandled the non-responsive man out of the cabin doorway and along the alleyway from where he had entered. On deck, the AB remained unresponsive so the second mate placed his BA mask over the AB's face. Moments later, the AB coughed and was seen to be breathing. He was then moved well clear of the smoke and firefighting effort.

Meanwhile, oiler 1 who had been asleep in his cabin (number A2) had not been woken by the fire alarms. He awoke coughing in his smoke-filled cabin. When he tried leaving his cabin, he found the door handle hot and the cross alleyway filled with thick black smoke. He retreated into his cabin but after some thought, decided to leave the cabin. He moved to nearest exit door on the port side and made good his escape. Outside, he was assisted by crew to provide him relief from smoke inhalation and minor burns to his hands.

Emergency response

On the wharf, shore workers preparing for loading livestock had heard *Ocean Drover's* fire alarms. They saw smoke coming from the ship's accommodation. Multiple calls, from several sources,

were then received on the emergency telephone number (000) requesting fire brigade and ambulance assistance.

The Western Australia Department of Fire and Emergency Services (DFES) received the first of several calls reporting the fire on the ship at 0756. Multiple DFES fire appliances were immediately dispatched to fight the fire.

Meanwhile, on board *Ocean Drover*, at about 0800, the chief mate began directing the crew's firefighting efforts. The master went to the bridge, telephoned the agent and requested immediate assistance to fight the fire. Shortly afterwards, the master returned on deck and instructed the third mate to account for the crew. The third mate retrieved a crew list from the starboard lifeboat to carry out the task.

At 0802, the St John Ambulance state operations centre received a call from one of the ship's crew asking for assistance for the injured AB. The operations centre received a number of further calls seeking assistance and dispatched several ambulances to the port. The injured AB had been assisted onto the wharf for first aid and oxygen.

At 0811, the first DFES fire appliance arrived on the wharf. The fire officer in command directed a fire team to board *Ocean Drover* and assess the situation.

By 0825, further fire appliances, including four harbour tugs, had arrived on the scene. These assets began applying water to the outside of the ship and its accommodation block.

At about 0840, the fire officer in command instructed *Ocean Drover's* crew to be moved aft and well clear of the accommodation. The crew assembled near the engine room funnel, where the third mate completed accounting for the crew. The master was satisfied that no one was missing.

The DFES response team continued to fight the fire for the rest of the day (Figure 4). More than 50 fire appliances and over 100 personnel were involved. All of the ship's crew were medically assessed on the wharf and four were taken to Fremantle Hospital. The injured AB was admitted to the hospital while the other three were treated and released.

At 0930 on 10 October, DFES handed over control of the situation and *Ocean Drover* to Fremantle Ports. The ship's bridge and accommodation areas were extensively damaged—the wheelhouse and the bridge deck (excepting one cabin), the wheelhouse top air handling room and the majority of cabins and crew spaces on the upper deck had been gutted by the fire.

Figure 4: *Ocean Drover* firefighting efforts



Source: Western Australia Department of Fire and Emergency Services

Context

On the morning of 9 October 2014, a fire started in *Ocean Drover's* crew accommodation while the livestock carrier was berthed in Fremantle preparing to load cargo. The fire quickly spread and the ship's crew and a number of shore emergency response teams fought to control it for the rest of the day. Four of the ship's crew sustained smoke inhalation requiring medical treatment; one being hospitalised for smoke inhalation and burns.

By the time the fire was extinguished the following day, the accommodation areas and the ship's navigation bridge had been extensively damaged.

Ocean Drover

At the time of the fire, *Ocean Drover* was the world's largest purpose-built livestock carrier with an overall length of 176.60 m and a capacity of 75,000 sheep or 18,000 cattle. The ship was built in 2002 at Uljanik Brodogradiliste shipyard, Croatia. It was registered in Singapore, classed by Registro Italiano Navale (RINA), owned by Wellard Estates (Australia) and managed by Wellard Ships (Singapore).

Crew

At the time of the fire, *Ocean Drover* had a crew of 51, including the master and 12 officers including trainees, all of whom were Croatian. Most of the ratings were Filipinos and included 21 ordinary seamen employed on board mostly with duties related to livestock handling. Three technicians were also on board for the ship's upcoming voyage.

The upper deck accommodated 34 crewmembers in 12 multiple berth cabins and two, single berth cabins. The three technicians were accommodated in the Suez Canal crew cabin, on the aft, port side of the upper deck.

The master held a Croatian master's certificate of competency, first obtained in 2005. He began his seagoing career in 1978. He joined *Ocean Drover*, his first livestock carrier, 6 weeks before the fire.

The chief mate began his seagoing career in 1992 and held a Croatian chief mate's certificate of competency. He joined *Ocean Drover* for the first time about 3 months before the fire.

The second mate went to sea in 2010 after his nautical training. He held a Croatian second mate's certificate of competency and a medical officer's certificate. He joined *Ocean Drover*, his first livestock carrier, about 3 months before the fire for his first assignment as second mate.

The able seaman (AB) in cabin number 6 had been at sea for 20 years. He had joined the ship for the first time about 1 month before the fire. The oiler in cabin number A2 first went to sea in 2011. *Ocean Drover* was his third ship and he had been on board for 3 months.

Fire protection arrangements

Ocean Drover was constructed to regulation and fitted with the prescribed fire detection and protection requirements. The ship was fitted with a *Consilium* fire detection system which included smoke, heat and flame detectors and manual call points arranged throughout the ship. The regulations, and therefore the design of the system, limited the requirements for the fitting of accommodation space fire detection and alarm equipment to common or general usage areas, rather than having all spaces protected. Fire alarms were signalled by bells in the accommodation and horns elsewhere.

Fire response equipment included dry powder and carbon dioxide portable fire extinguishers along with fire hose boxes, each equipped with a fire hose and spray / jet nozzle. Ventilation closing appliances and dampers were fitted throughout the ship, including in the livestock ventilation system.

The ship had two fire lockers—each fitted with a fireman’s outfit and self-contained breathing apparatus (BA) with spare air bottles. One fire locker was located in the starboard access to the upper deck accommodation and the other in the deckhouse for the stairwell down to the lower decks and starboard gangway (about 75 m aft of the first).

The upper deck crew accommodation area had 4 smoke detectors, 3 manual call points and 3 dry powder portable fire extinguishers fitted in port, starboard and centreline positions in the cross- and fore-aft alleyways. Fire alarm bells were fitted in positions about midway to the port and starboard ends of the cross alleyway and in the fore-aft alleyway adjacent to the stairwell. Fire detection and alarm equipment was also fitted in the mess room and other common and service spaces on this deck.

The ship’s crewmembers had completed (as a minimum) a basic firefighting course. Regular emergency muster and firefighting drills were held and each crewmember had a designated fire emergency response role which was displayed on emergency muster lists posted in common and work areas throughout the ship.

Port of Fremantle

The Port of Fremantle is a State Government owned port, managed by Fremantle Ports. The port is situated at the mouth of the Swan River and is the principal commercial port for Western Australia. It comprises the inner harbour, within the estuary of the Swan River, and an outer harbour.

In the 2013-2014 fiscal year, 65 livestock ships called at Fremantle. About 141,000 cattle and 1,700,000 sheep were exported through the port.

Under Western Australian emergency management legislation, the Department of Fire and Emergency Services (DFES) is the hazard management and control agency. The role of DFES in emergencies is described in the West Australian State Emergency Management Plans (WestPlan) which include plans for hazardous material (HAZMAT) and marine transport emergencies. Fremantle Ports is identified as a support agency for management of emergencies.

Investigation direction

Preliminary analysis of the evidence suggests that the fire originated in one of the forward, upper deck cabins, probably cabin number 4.

The investigation is ongoing and will focus on:

- the circumstances and mechanisms of the fire initiation and spread
- the operation and efficacy of the fire detection, protection and extinguishing systems
- shipboard emergency response and training.

General details

Occurrence details

Date and time:	9 October 2014 – 0750 AWST (UTC + 8 hours)		
Occurrence category:	Accident		
Injuries	Fatal: Nil	Serious: 1	Minor: 3
Primary occurrence type:	Fire		
Location:	Common user berth 1, Fremantle		
	Latitude: 32° 3.153' S	Longitude: 115° 44.246' E	

Ship details

Name:	<i>Ocean Drover</i>
IMO number:	9232852
Call sign:	9V8143
Flag:	Singapore
Classification society:	Registro Italiano Navale
Ship type:	Livestock carrier
Builder:	'Uljanik' Brodogradiliste dd, Pula (Croatia)
Year built:	2002
Owner(s):	Wellard Estates (Australia)
Manager:	Wellard Ships Pte Ltd (Singapore)
Gross tonnage:	29,770
Deadweight (summer):	13,462 t – capacity: 14,000 cattle or 70,000 sheep approximately
Summer draught:	8.716 m
Length overall:	176.76 m
Moulded breadth:	31.10 m
Moulded depth:	14.530 m
Main engine(s):	B&W 7S50MC-C, 2-stroke, single acting, in-line (vertical)
Total power:	11,060 kW at 127 rpm
Speed:	20 knots
Damage:	Accommodation and wheelhouse burnt out.

Sources and submissions

Sources of information

On 9 October 2014, investigators from the Australian Transport Safety Bureau (ATSB) attended *Ocean Drover* while the ship was in Fremantle, Western Australia. The master and directly involved crewmembers were interviewed and each provided their account of the occurrence. Photographs of the ship and copies of available, relevant documents were obtained. The bridge-top mounted VDR unit was removed for data recovery and analysis at the ATSB's Canberra laboratory.

Australian Transport Safety Bureau

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

Purpose of safety investigations

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

Developing safety action

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. The ATSB prefers to encourage the relevant organisation(s) to initiate proactive safety action that addresses safety issues. Nevertheless, the ATSB may use its power to make a formal safety recommendation either during or at the end of an investigation, depending on the level of risk associated with a safety issue and the extent of corrective action undertaken by the relevant organisation.

When safety recommendations are issued, they focus on clearly describing the safety issue of concern, rather than providing instructions or opinions on a preferred method of corrective action. As with equivalent overseas organisations, the ATSB has no power to enforce the implementation of its recommendations. It is a matter for the body to which an ATSB recommendation is directed to assess the costs and benefits of any particular means of addressing a safety issue.

When the ATSB issues a safety recommendation to a person, organisation or agency, they must provide a written response within 90 days. That response must indicate whether they accept the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

The ATSB can also issue safety advisory notices suggesting that an organisation or an industry sector consider a safety issue and take action where it believes it appropriate. There is no requirement for a formal response to an advisory notice, although the ATSB will publish any response it receives.