Australian Government

Department of Agriculture and Water Resources

Mortality Investigation Report 56

Cattle exported by sea to Japan in January 2015

October 2015

Summary

On 2 January 2015, two consignments of cattle were exported on the same vessel from Brisbane to Japan.

In the consignment exported by Edwards Livestock Company Pty Ltd there were five mortalities in the 420 cattle exported, a mortality rate of 1.19 per cent. This exceeds the reportable mortality level of one per cent for cattle on voyages of ten days or greater duration as prescribed by the *Australian Standards for the Export of Livestock* (ASEL). In the other consignment of 659 cattle, there was one mortality, a mortality rate of 0.15 per cent, which is less than the ASEL reportable mortality level.

Only the consignment of 420 cattle that exceeded the reportable mortality level is considered in this report. Of the five cattle that died, four were treated for illness during the voyage – two for respiratory disease and two for injuries. One animal was euthanased during the voyage due to a leg fracture.

Respiratory disease and injuries sustained as a result of very rough weather during the voyage were the main factors contributing to the mortalities. High humidity and heavy rain with a sudden change to the northern hemisphere winter may have also contributed to the mortalities.

1. Information Reviewed

The department investigated the mortalities by reviewing the following information:

- Report from the exporter
- End of voyage report, daily voyage reports, and additional information from the accredited stockperson who accompanied the consignment onboard the vessel
- Documents and additional information from the Australian Government Accredited Veterinarian (AAV) who prepared the consignment
- Report from the master of the vessel
- Report from Australian Maritime Safety Authority (AMSA)
- Documents from the regional departmental veterinary officer
- Records from the registered premises
- The department's records from previous and subsequent voyages.

2. Background

This reportable mortality incident is the fourth recorded in a consignment of feeder cattle exported to Japan since the introduction of ASEL in 2005. The previous three incidents are described in Mortality Investigation Report 43: Cattle Exported to Japan in March 2012; Mortality Investigation Report 44: Cattle Exported to Japan in January 2013 and Mortality Investigation Report 45: Cattle Exported to Japan in May 2013. There have been 279 consignments of cattle exported to Japan in the last 10 years, comprising 161,761 cattle. The overall mortality rate of all of these consignments is 0.12%.

The department does not routinely require a veterinarian to be on board for feeder cattle exports from Brisbane to Japan. On voyages where there is no veterinarian on board, the LiveCorp accredited stock person is responsible for reporting to the department and works with the Master of the vessel and the crew to maintain the health and welfare of the livestock on board.

3. Investigation Findings

The Exporter

Edwards Livestock Company Pty Ltd of this consignment is experienced in preparing feeder cattle for Japan and has a history of low mortality voyages. From January 2005 until January 2015 the company has exported a total of 35 consignments of feeder cattle to Japan, with an overall mortality rate of 0.26% (38 mortalities out of 14,595 cattle). This is the exporter's third reportable mortality incident.

The Livestock

The cattle in the consignment were:

- Angus crossbreed
- steers
- approximately 8 – 12 months of age
- 282 - 293 kg in weight
- body condition score of 4 out of 7
- most covered by short summer coats; some animals with patches of winter coat.

Preparation in the registered premises

The cattle were sourced from 14 properties in Queensland, New South Wales and Tasmania and assembled at one registered premises from 27 October 2014 to 2 January 2015. The cattle were held in isolation for 24 days from 8 December 2014. The registered premises has been used to prepare feeder cattle for export to Japan for more than 107 consignments since 2005.

Weather conditions in the registered premises were hot during the preparation period, with an average maximum temperature of 30.4°C in the 31 days prior to export. The highest maximum temperature during this period was 36.7°C (BOM 2014; BOM 2015).

A departmental veterinary officer inspected the cattle during pre-export quarantine on 30 December 2014. The cattle were observed to be healthy with no animals rejected. Permission to leave for loading was issued on 1 January 2015.

Loading onto the vessel

A departmental veterinary officer supervised loading. No cattle were rejected during loading, which started at 7:15 am and was completed by 11:35 am. The exporter's consignment of 420 cattle was loaded onto decks 3 and 4 of the vessel. The vessel has four decks with deck one being the lowest and deck four being the highest.

Mortalities and treatments during the voyage

Five mortalities occurred in the consignment of 420, three mortalities occurred between days 14 and 18 of the voyage and two mortalities occurred after the vessel docked in port.

Stocking density and mortality percentage by deck is shown in Table 1. The stocking densities were in accordance with ASEL requirements. Mortalities occurred on all decks except deck two. Four mortalities in this consignment occurred on deck four, and one mortality occurred on deck three. Cattle in the other consignment were housed on decks one and two. There was one mortality in this other consignment, which occurred on deck one.

Table 1 – Stocking density and overall mortality percentage by deck

Deck	Stocking density (m^2 per animal)	Mortality %
1	1.07	0.09
2	1.07	0
3	1.07	0.09
4	1.04	0.37

Daily voyage reports (DVRs) submitted by the accredited stockperson on board recorded treatments and mortalities that occurred throughout the voyage. A total of 40 cattle required treatment during the voyage. According to daily voyage reports 17 cattle were treated with an antibiotic for pink eye, 19 cattle were treated for leg swelling and nine were treated for stress. One animal was treated with antibiotics following treatment for bloat. All treatments were given at the recommended dose and the stockperson tracked the progress of treated cattle.

Post mortem findings

Post mortems were completed on three of the mortalities by the onboard stockperson. Reports from the post mortems were provided to the department and the exporter. Based on the information available including clinical signs and post mortem findings, two of the mortalities can be attributed to pneumonia (respiratory disease). One mortality was due to euthanasia for a leg fracture, and two further mortalities occurred after the vessel docked in port and were attributed to traumatic injuries.

Conditions during the voyage

Table 2 shows the daily weather conditions during the voyage to Japan. The vessel experienced rough weather conditions throughout the voyage. Seas were rough from day 1, with extremely rough to high seas from day 7-18 of the journey. The stockperson on the voyage noted that the weather conditions were exceptionally rough compared with previous voyages to Japan. The stockperson also noted that the rough sea conditions had greatest impact on the top two decks of the vessel, where the cattle from this consignment were housed.

Table 2 – Daily weather conditions

Day	Conditions
0	Sailed
1	Seas rough, swell moderate long
2	Seas rough, swell moderate long
3	Seas rough, swell moderate long
4	Seas rough, swell moderate long
5	Seas moderate, swell moderate
6	Seas moderate, swell moderate
7	Seas very rough, swell heavy
8	Seas very rough, swell heavy
9	Seas rough, swell moderate
10	Seas rough, swell heavy
11	Seas high, swell heavy long
12	Seas high, swell heavy long
13	Seas high, swell heavy long
14	Seas very rough, swell heavy long
15	Seas very rough, swell heavy long
16	Seas very rough, swell heavy long
17	Seas very rough, swell heavy long
18	Seas rough, swell moderate
19	Arrived in port

Table 3 shows the wet bulb temperature and humidity throughout the voyage. Wet bulb temperatures on all decks remained between 24˚C and 29°C for the first 14 days of the voyage, with a decrease in temperature to between 23˚C and 12˚C over the final four days of the voyage with the change in climate

to the northern hemisphere winter. The relative humidity ranged between 71% and 80% throughout the journey.

The heat stress threshold is the maximum wet bulb temperature at which body temperature can be effectively controlled by the animal. The mortality limit is the wet bulb temperature at which the animal can no longer control their body temperature, resulting in death. For Angus crossbreed cattle the heat stress threshold is 30°C and the mortality limit is 33.2°C (Maunsell Australia Pty Ltd 2003). These temperatures were not reached during this voyage.

Daily voyage reports recorded adequate ventilation and no heat stress throughout the voyage, however the stockperson's report noted that the ship encountered hot weather conditions with high humidity for the majority of the voyage, including some periods of heavy rain. The majority of treatments occurred in the last five days of the voyage as the vessel experienced very rough high seas and the temperature and humidity decreased.

Table 3 - Wet bulb temperature and humidity during the voyage for Decks 1 to 4 (source: stockperson's daily voyage reports)

	Deck 1		Deck 2		Deck 3		Deck 4		Daily
Day	Temp	Hum	Temp	Hum	Temp	Hum	Temp	Hum	Mortality
1	25	79	27	79	26	79	24	78	0
2	26	79	27	79	27	79	24	79	0
3	27	79	28	80	28	80	26	79	0
4	27	79	28	80	28	80	27	79	0
5	27	79	28	80	28	80	27	79	0
6	26	79	27	79	28	80	25	79	0
7	27	79	28	80	29	80	27	79	0
8	29	79	27	79	27	79	24	78	0
9	27	79	28	80	29	80	28	80	0
10	27	79	27	79	28	80	28	80	0
11	26	79	27	79	25	79	24	78	0
12	26	79	27	79	26	79	24	78	0
13	26	79	26	79	25	79	24	78	0
14	27	79	27	79	26	79	24	78	1
15	23	78	22	77	21	77	19	74	1
16	19	76	18	75	17	79	16	74	0
17	17	74	18	75	17	79	15	73	0
18	16	74	17	74	15	73	12	71	1

Feed and water

From day two until the final day of the voyage, cattle consumed an average of at least 5.6 kg fodder/animal. This meets the ASEL-prescribed level for a minimum feed allowance of 2.0% of live weight per animal per day. On the first day of the voyage, the cattle consumed less than this amount. This has previously been noted to be a normal time frame for cattle to acclimatise to the onboard environment. The feed provided to the cattle during the voyage was the same feed that was provided during the preparation period in the registered premises. The master of the vessel and the stockperson reported that all cattle had sufficient water available at all times, with a minimum of two water troughs per pen.

Discharge

Discharge of cattle at Shinmoji was performed slowly due to injuries sustained by the cattle during the journey. There were two mortalities in port prior to discharge, which can be attributed to traumatic injuries sustained throughout the journey.

4. Australian Maritime and Safety Authority Evaluation of the Vessel

The Australian Maritime Safety Authority (AMSA) did not conduct an investigation because the voyage mortality level of the combined consignments was 0.55%, which is less than the ASEL reportable mortality level of 1%.

An AMSA Surveyor conducted the next scheduled pre-loading inspection of the vessel on 9 March 2015 as per *Marine Orders Part 43* and approved the loading of livestock for subsequent voyages.

5. Conclusions

The investigation did not find any information to link the mortalities to the preparation of the cattle in the registered premises or the loading of the vessel. The cattle were prepared and loaded in accordance with ASEL requirements. AMSA did not identify any deficiencies with the vessel during the routine pre-loading inspections.

The investigation determined that one mortality was due to euthanasia as a result of injuries sustained during the voyage, two mortalities were due to pneumonia, and a further two mortalities in port were a result of traumatic injuries sustained during the voyage.

6. Actions for subsequent voyages

The cattle in this consignment were housed on the top two decks of the vessel, which were more severely affected by the rough weather conditions than the lower decks. It is likely that a combination of rough shipping conditions and high temperatures and humidity with a sudden change to cooler weather resulting in injuries and stress were the main contributors to the mortalities during this voyage. The department applied the following conditions to the exporter's next consignment to Japan:

1. An AAV accompanied the consignment to report on the health and welfare of the livestock.
2. Cattle were vaccinated according to the manufacturer's recommendation with a vaccine against *Mannheimia haemolytica* and Bovine Herpes Virus Type 1 (to protect against Bovine Respiratory Disease and Infectious Bovine Rhinotracheitis Virus).

This consignment departed Brisbane on 9 March 2015. No mortalities occurred in the consignment during the voyage.

Since then the department has also applied conditions to include bedding (sawdust) on consignments of cattle exported from Brisbane to Japan and have continued to require vaccination against *Mannheimia haemolytica* and Bovine Herpes Virus Type 1 (to protect against Bovine Respiratory Disease and Infectious Bovine Rhinotracheitis Virus).

7. References

BOM 2014, 'Daily Weather Observations', *Oakey, Queensland December 2014 Daily weather observations*, Australian Government Bureau of Meteorology, Melbourne, available at bom.gov.au/climate/dwo/201412/html/IDCJDW4093.201412.shtml, accessed 17 March 2015.

BOM 2015, 'Daily Weather Observations', *Oakey, Queensland January 2015 Daily weather observations*, Australian Government Bureau of Meteorology, Melbourne, available at bom.gov.au/climate/dwo/201501/html/IDCJDW4093.201501.shtml, accessed 17 March 2015.

Maunsell Australia Pty Ltd 2003, *LIVE.116 Development of a heat stress risk management model*, Meat and Livestock Australia, North Sydney.