



Australian Government
Department of Agriculture

Mortality Investigation Report 43

Cattle Exported to Japan

January 2014



Summary

On 22 March 2012, two consignments of cattle were exported on the same vessel from Australia to Japan.

There were seven mortalities in one consignment of 600 cattle, a mortality rate of 1.17%. This exceeds the reportable mortality level of one per cent prescribed by the *Australian Standards for the Export of Livestock* (ASEL).

In the other consignment of 1,530 cattle, there were twelve mortalities, a mortality of 0.78%. Only the consignment of 600 cattle is considered in this report. Of the seven cattle that died, one animal was treated during the voyage for a limb injury. The remaining six animals were not identified as being sick or injured prior to death. No definitive cause for the mortalities could be determined. High temperature and humidity developed from the start of the voyage causing heat stress which may have contributed to some of the mortalities.

1. Information Reviewed

The department investigated the mortalities by reviewing the following information:

- Report from the exporter
- End of voyage report, daily reports and additional information from the stockman who accompanied the consignment onboard the vessel
- Report from the Australian Accredited Veterinarian (AAV) who prepared the consignment.
- Report from the master of the vessel
- Information provided by AMSA
- Report from the department's regional veterinary officer
- Records from the registered premises
- Departmental records from previous and subsequent voyages.

2. Background

This reportable mortality incident is the first recorded in a consignment of feeder cattle exported to Japan since the introduction of the ASEL in 2005.

Consignments of feeder cattle exported to Japan are prepared in registered premises in Queensland and exported from the port of Brisbane. All voyages of feeder cattle to Japan have included two consignments of cattle exported by two different exporters. In the 12 months preceding this voyage, 13,558 feeder cattle were exported to Japan in 14 consignments on seven voyages. Fourteen mortalities were recorded during the 14 consignments, an overall mortality of 0.1%. Voyage mortality ranged from 0.0% to 0.95%. Three exporters are involved in the trade and two different vessels are used. The average voyage duration for voyages on the same vessel as the reportable consignment was 12 days.

The department does not routinely require a veterinarian to be on board as a standard requirement 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

3.1. The Exporter

The exporter of this consignment is experienced in preparing feeder cattle for Japan and has a history of low mortality voyages. Prior to this consignment, the company had exported a total of six consignments of feeder cattle to Japan. A total of 2,790 cattle were exported across the six consignments, with two consignments recording a single mortality, giving an overall mortality of 0.07%. Company personnel were once employed by a different export company that exported 39 consignments of feeder cattle to Japan without incident between 2007 and 2011.

3.2. The Livestock

The cattle in the consignment were representative of cattle commonly exported by sea from Australia to Japan. That is, the cattle were:

- Angus crossbreed
- approximately 11 months of age;
- 279 - 289 kg in weight;
- body condition score of 2.5 - 3 out of 5
- covered by short summer coats (around 1 cm).

3.3. Pre-export Preparation in the Registered Premises

The cattle were sourced from six properties and assembled at one registered premises from 27 February to 22 March 2012. The registered premises where the animals were held has been used to prepare feeder cattle for export to Japan for more than 70 consignments since 2005. There was no significant difference in shipboard mortality between cattle prepared at this registered premises and cattle prepared at other registered premises for export to Japan.

Weather conditions in the registered premises were temperate during the preparation period. During pre-export preparation, 37 cattle were rejected because they did not meet importing country requirements. There were no reports of illness in the cattle, and no cattle died during their time in the registered premises.

A departmental veterinarian inspected the cattle on 20 March 2012. The cattle were observed to be healthy with no animals rejected or needing further attention. Permission to leave for loading was issued the following day, 21 March 2013.

3.4. Loading onto the Vessel

A departmental veterinarian and export control officer supervised loading. Neither the department nor the exporter rejected any cattle during loading. Loading started at 7:25 am and was completed by 2:30 pm. The exporter's consignment of 600 cattle was the last to load onto Decks A and B, the highest decks of the vessel.

3.5. Mortalities and Treatments During the Voyage

Seven cattle died in the consignment of 600 cattle giving a mortality of 1.17%. ASEL prescribes the reportable mortality level for cattle on voyages greater than ten days as 1.00%. The reportable mortality level was reached on day 13, the second last day of the voyage.

This vessel has five decks, designated A to E, A being the highest and E the lowest deck. Cattle in the consignment were housed on decks A and B. Mortalities for this consignment occurred on both deck A and B. Stocking density and mortality percentage by deck is shown in Table 1. The stocking densities were in accordance with ASEL requirements.

Table 1 – Stocking density and mortality percentage by deck

Deck	Stocking density (m ² per animal)	Mortality %
Deck A	1.11	1.3%
Deck B	1.10	1.3%
Deck C	1.06	0.7%
Deck D	1.17	0.3%
Deck E	1.12	0.0%

Cattle in the other consignment were housed on decks B to E and mortalities occurred on all decks except deck E. No statistically significant differences in mortality rate were observed between decks.

A chronology of treatments and mortalities that occurred during the voyage is shown in Table 2.

Table 2 - Chronology of treatments and mortalities during the voyage

Day	Daily Mortalities	Cumulative Mortality	Cumulative Mortality %	Treatments/Comments
0	0	0	0.00%	600 cattle loaded in Brisbane
1	0	0	0.00%	
2	0	0	0.00%	
3	2	2	0.33%	
4	0	2	0.33%	
5	0	2	0.33%	
6	1	3	0.50%	2 steers treated for pinkeye
7	0	3	0.50%	1 steer treated for a limb injury
8	0	3	0.50%	1 steer treated for lumpy jaw 1 steer treated for a limb injury
9	0	3	0.50%	
10	0	3	0.50%	3 steers treated for limb injuries
11	0	3	0.50%	2 steers treated for limb injuries
12	1	4	0.67%	5 steers treated for limb injuries (one treated steer failed to recover and died on day 13)

Day	Daily Mortalities	Cumulative Mortality	Cumulative Mortality %	Treatments/Comments
13	2	6	1.00%	1 steer treated for a limb injury
14	1	7	1.17%	593 cattle discharged in Japan

Sixteen cattle received antibiotic (long acting penicillin) treatment for pink eye or limb injuries. The antibiotic was given at the recommended dose rate and the stockman tracked the progress of treated cattle. The stockman reported that all of the cattle recovered except for one steer that died on day 13. Limb injuries also occurred in the other consignment of cattle with two of the twelve mortalities being euthanased because of broken legs.

3.6. Conditions During the Voyage

Throughout the voyage the wet bulb temperatures on all decks ranged between 14°C and 31°C and the relative humidity ranged between 78% and 86%. Table 3 includes data from the stockman’s daily voyage reports. Temperatures varied during the voyage and were hottest during days three to seven.

Table 3 - Wet bulb temperature and humidity during the voyage for Decks A and B

Temp = Temperature, Hum = Humidity

Day	Deck A		Deck B		Deck C		Deck D		Deck E	
	Temp	Hum	Temp	Hum	Temp	Hum	Temp	Hum	Temp	Hum
1	26	83	26	83	27	83	27	83	27	83
2	27	83	27	83	27	83	27	83	27	83
3	30	83	30	83	30	83	31	83	30	83
4	29	83	29	83	29	83	29	83	30	83
5	29	83	29	83	29	83	29	83	29	83
6	29	83	29	83	29	83	29	83	30	83
7	28	83	28	83	29	83	29	83	29	83
8	27	83	27	83	27	83	28	83	27	83
9	26	82	25	82	26	82	26	82	26	82
10	22	83	21	81	22	81	22	81	21	80
11	19	79	19	86	19	82	20	82	19	81
12	22	81	23	81	23	81	24	82	24	81
13	14	78	15	78	17	79	18	82	19	82
14	Discharging in Port									

Heat stress threshold is the maximum wet bulb temperature at which body temperature can be effectively controlled by the animal. Mortality limit is the wet bulb temperature at which the animal will die. For Angus crossbreed cattle the heat stress threshold is 30°C and the mortality limit is 33.2°C¹. For this consignment, the temperatures recorded on the daily reports indicate that cattle on both decks were exposed to temperatures at the heat stress threshold by day three. On day three there were two mortalities and the stockman reported that some cattle were panting. The wet bulb temperature did not exceed 30°C on Decks A or B during the voyage and there was no clear correlation between the recorded daily temperatures and mortalities.

According to the master’s report, the ship encountered rough weather conditions on day one and two of the voyage which caused some cattle to fall over on Decks A and B. In response to rough sea

conditions, the master instructed the crew to monitor the cattle 24 hours a day from day one onwards. Furthermore, from day three onwards the cattle were washed every day because of the high heat and humidity. Washing heat-stressed cattle is recommended as it provides relief from the heat, reduces the possibility of mortality and improves the animals' welfare.

From day four to seven the rough weather conditions improved. Rough weather conditions were encountered again on days eight and eleven and the Master changed course to avoid the rough conditions. As shown in Table 3, temperature and humidity decreased from day four onwards.

3.7. Feed and Water

Feeding was performed manually two times per day, giving at least the ASEL-prescribed level of 2% of liveweight per animal per day. On the first two days of the voyage, the cattle consumed less than the ASEL minimum feed requirement. According to the stockman on board, this is the normal time frame for cattle to acclimatise to the onboard environment. The stockman reported that the cattle ate well during the remainder of the voyage. 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 vessel has an automatic watering system with water troughs located in all pens. The stockman reported that the feed troughs were also filled with water once the feed had been consumed, and that all cattle had sufficient water available at all times.

3.8. Discharge

Discharge of cattle at Shinmoji port in Japan was unremarkable.

3.9. Australian Maritime and Safety Authority (AMSA) 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 0.89%, which is less than the ASEL reportable mortality level of 1.00%.

An AMSA Surveyor conducted the next scheduled pre-loading inspection of the vessel on 18 May 2012 at Brisbane as per *Marine Orders Part 43* and approved the loading of livestock for subsequent voyages.

4. Conclusions

During the voyage, there were three episodes of rough weather conditions during which cattle were visibly injured. Ten animals were treated for limb injuries and all but one animal recovered. It is not clear if the rough weather contributed significantly to the reportable mortality event.

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. AMSA did not identify any deficiencies with the vessel during the routine pre-loading inspections. No significant mortality difference between decks was observed. The cattle were prepared and loaded in accordance with ASEL requirements and ate well during the voyage.

The investigation could not determine the cause of the mortalities. High temperature and humidity and potentially non-visible injuries sustained during the rough weather may have contributed to some of the mortalities. However, no significant differences were seen between the two consignments on the voyage for either of these potential causes for mortality.

5. Actions

The department applied the following conditions to the exporter's next consignment to Japan:

1. That an AAV accompany the consignment to report on the health and welfare of the livestock
2. That the cattle loaded by the exporter are provided with an additional 10% space above that required by the ASEL.
3. The AAV must provide daily reports to the department in accordance with ASEL Appendix 5.1.
4. The travel and load plan supplied to the department must include the number and class of livestock to be loaded on each tier / deck.
5. The end of voyage report must specify the number of deaths that occurred on each tier / deck and the number of deaths in each class of livestock.

This consignment departed Brisbane on 18 May 2012. No mortalities occurred during the voyage.

6. References

1. Maunsell Australia Pty Ltd. 2003. *LIVE.116 Development of a heat stress risk management model*. Sydney: Meat and Livestock Australia.
2. Gaughan, J. 2003. 'LIVE.219 Wetting cattle to alleviate heat stress on ships' in *Tips & Tools*. Sydney: Meat & Livestock Australia.