



Investigation into reportable goat mortality level on sea voyage from Port Kembla, New South Wales to Tamatave, Madagascar, December 2007.

1. Purpose

To report on the investigation into the cause of mortalities in goats exported by sea to Madagascar, and to make recommendations with the objective of reducing the likelihood of a recurrence.

2. Summary

Overall for this voyage, there were 54 mortalities of the 2,124 goats loaded as a single consignment which equates to a mortality rate of 2.54%. There was only this consignment for one exporter on this vessel.

The main causes of the reportable mortality rate on this voyage were pneumonia and enteritis (consistent with salmonellosis).

3. Background

The investigation into the mortality was carried out by reviewing the following information:

1. Daily and end of voyage reports from the AQIS accredited veterinarian's (AAV) who accompanied the consignment on board the vessel;
2. Report from the exporter;
3. Records from the registered premises;
4. Records from the AAV who prepared the consignment;
5. Report by the master of the vessel.

Table 1: Chronology of Events

Dates	Day of Voyage	Action	Cumulative Voyage Mortality Total	Cumulative% Mortalities
21/12/07	1	Goats loading in Port Kembla. 2124 Total goats loaded.	-	-
22/12/07	2	1 mortality	1	0.05
23/12/07	3	1 mortality	2	0.09
24/12/07	4	2 mortalities	4	0.19
25/12/07	5	2 mortalities	6	0.28
26/12/07	6	4 mortalities	10	0.47
27/12/07	7	5 mortalities	15	0.71
28/12/07	8	0 mortalities	15	0.71
29/12/07	9	5 mortalities	20	0.94
30/12/07	10	4 mortalities	24	1.13
31/12/07	11	2 mortalities	26	1.22
01/01/08	12	3 mortalities	29	1.37
02/01/08	13	3 mortalities	32	1.51
03/01/08	14	2 mortalities	34	1.61
04/01/08	15	0 mortalities	34	1.61

05/01/08	16	2 mortalities	36	1.70
06/01/08	17	4 mortalities	40	1.88
07/01/08	18	1 mortality	41	1.93
08/01/08	19	2 mortalities	43	2.02
09/01/08	20	4 mortalities	47	2.21
10/01/08	21	1 mortality	48	2.26
11/01/08	22	1 mortality	49	2.31
12/01/08	23	1 mortality	50	2.35
13/01/08	24	Discharging in Madagascar 4 goat mortalities	54	2.54
TOTAL		54	54	2.54

The reportable mortality trigger for a goat voyage is 2 per cent. The reportable mortality level was triggered on day 19, 8 January 2008.

4. Findings

3.1 Mortalities in Registered Premises

The goats exported from Port Kembla were delivered to the registered premises between 28 October and 5 December 2007. The goats were held at the registered premises until loading on 21 December 2007. The records of the registered premises indicated 24 mortalities over the preparation period. There were a variety of causes of mortality including 6 goats that died of enteritis (consistent with salmonellosis).

The consignment initially consisted of 2,750 head of goats, 24 died in the registered premises and 602 goats were rejected from the consignment at the registered premises for the following reasons:

- . 14 goats had positive test results for either Caprine Arthritis Encephalitis, Caprine Johne's disease or Q fever and were rejected as they did not meet the importing country requirements;
- . 545 goats came from properties of origin which were not in accordance with the importing country requirements.
- . 43 goats were rejected by the exporter as they did not meet the Australian Standards for the Export of Livestock (ASEL).

This consignment of goats were inspected three times prior to loading by AQIS officers and once by the AAV. Additional inspections were undertaken because of the large number of goats to be exported by sea and the length of the voyage.

3.2 Loading

The records from the exporter indicate the stocking density of the goats was in accordance with the ASEL.

Table 2: Loading Details

Deck	Type	Average weight (kg)	Number	Total
1	Boer bucks	50	300	559
1	Boer does	50	45	
1	Boer does	30	214	
2	Boer does	30	856	856
3	Angora does	30	396	709
3	Angora bucks	55	67	
3	Boer does	30	246	
				2124

3.3 Journey

The climatic condition for the goat decks were as follows:

Table 3: Climatic conditions:

Date	Dry bulb (°C)	Wet bulb (°C)	Humidity (%)	Daily water consumption (L)	Daily weather conditions from daily reports
21/12/07	N/A	N/A	N/A	N/A	Loading in port. Cloudy/N4/Moderate
22/12/07	26	23	78	1.5	Overcast/N7/Very rough
23/12/07	16	14	79	2.0	Overcast/SW8/Very rough
24/12/07	16	13	73	2.0	Overcast/SW7/Very rough
25/12/07	16.5	13	66	2.5	Overcast/SSW4/Rather rough.
26/12/07	18	15	77	2.8	Cloudy/N4/Moderate
27/12/07	20	18	81	2.8	Partly cloudy/NW5/Rather Rough
28/12/07	20	18	81	3.0	Overcast/SW5/Rough
29/12/07	20.5	16.5	66.5	3.3	Cloudy/SE4/Moderate
30/12/07	21	15.5	59	3.0	Cloudy/SW5/Rather rough
31/12/07	21	15.5	61	3.4	Partly cloudy/S5/Rough
01/01/08	21	17	66	3.0	Overcast/SE4/Moderate
02/01/08	22	17	57.5	3.0	Overcast/SE3/Slight
03/01/08	22	16	54	3.2	Overcast/rain/S5/Rather rough
04/01/08	24	18	58	3.3	Overcast/SE6/Rough
05/01/08	25	20.5	65	3.5	Overcast/E6/Rough
06/01/08	27	23	70	3.8	Partly cloudy/E5/Rather rough
07/01/08	28	24	72	4.5	Cloudy/NE4/Moderate
08/01/08	28	24.5	75	4.5	Cloudy/NE4/Moderate
09/01/08	29	27	81	4.5	Cloudy/NE4/Moderate
10/01/08	29	27	83.5	4.3	Overcast/N4/Moderate
11/01/08	29	26	79	4.8	Cloudy/W4/Moderate
12/01/08	29	26	79	4.8	Cloudy/W3/Slight. Arrived at Tamatave
13/01/08				4.8	Discharging at port.

The figures reported are averages across the 3 goat decks. No climate data available for 13/01/08 as the ship was discharging.

Table 4: Mortalities by Cause

Cause	Enteritis	Pneumonia
#	36	18

The data in Table 4 is based on clinical signs, post mortem findings and the veterinarian's end of voyage report.

Table 5: Mortalities by cause and breed.

Head	Breed	Weight (kg/head)	Age	Mortality	Cause	Mortality % of breed and sex	Mortality % of total mortalities
458	Angora	30-50	1-2yr	15	Pneumonia	3.27	28
286	Boer Bucks	50-60	1yr +	5	2 enteritis 3 pneumonia	1.75	9
1380	Boer X	30-50	1yr+	34	enteritis	2.46	63

	Does						
2124				54			2.54

From table 5, in general terms, the angora goats died of pneumonia and the boers goats mainly died of enteritis (consistent with salmonellosis). No onboard confirmation of the cause of pneumonia or enteritis was possible.

The AAV's end of voyage report concludes that rough weather encountered in the first 5 days of this voyage caused a decrease in water and fodder consumption and was a contributing cause of the outbreak of enteritis (consistent with salmonellosis).

The long duration of the voyage was also a significant factor in the number of mortalities that occurred on this voyage. The onboard veterinarian was proactive in administering antibiotic treatment and dietary manipulation in an attempt to prevent disease and mortalities.

The mohair length of the Angora goats made it difficult for the onboard veterinarian to closely observe the goats for nasal or ocular discharge and early signs of respiratory disease.

The information relating to the properties of origin of the goats that died on board were investigated. There were no identifiable factors that linked any of the properties of origin with the mortalities.

The live animal export industry has previously published information titled "LIVE 215 Minimising mortality risks during export of live goats by sea from Australia – May 2003". The report is available on the Meat and Livestock Australia website at www.mla.com.au

4. AMSA evaluation of the vessel upon return to Australia

AMSA examined the vessel on return to Australia and found no issues with the vessel's systems. The vessel was permitted to be re-loaded with livestock.

5. Conclusion

Long haul voyages for goats are very high risk.

There were two causes of the mortalities aboard this vessel: enteritis (consistent with salmonellosis) and pneumonia.

A contributing factor to the mortalities caused by enteritis (consistent with salmonellosis) was the rough weather in the first 5 days of the voyage.

The duration of the voyage was a significant factor in triggering the reportable mortality level.

6. Recommendations

The export of goats on voyages of longer duration than 10 days are not approved unless further satisfactory risk management procedures are developed over and above the ASEL to improve the animal welfare aspects on export voyages.

Additional conditions are placed on the exporter's approval of NOIs and CRMPs until animal welfare improvements are achieved.

The ASEL is modified to ensure mohair length is appropriate similar to ASEL 1.19

7. Actions

7.1 AQIS is considering the following additional conditions on the approval of NOI and CRMPs for the export of goats by sea on voyages of less than 10 days duration for all exporters:

- . a 5 clear day minimum period in the registered premises;
- . the exclusive feeding of the shipboard ration for the 5 clear days prior to leaving the registered premises for loading, and ;
- . The shipboard ration must include a minimum of 200 grams of chaff or hay per day per goat.

7.2 AQIS will consider approval of future consignments of goats for voyages less than 10 days for the specific exporter subject to the following conditions:

- . AQIS veterinarian or AQIS accredited veterinarian required on board;
- . 10 per cent additional space above the ASEL;
- . weighing individual animals in the registered premise;
- . a minimum of 10 days in the registered premise.

7.3 New or renewed export licences for goats by sea will be issued with a licence condition that only short haul voyages for goat exports will be permitted

7.4 NOIs and CRMPs submitted for the export of goats by sea on long haul (>10 days) voyages are currently not being approved.

6. Results

The exporter has not exported any consignments subsequent to the consignment discussed in this report.