

Interim report

Investigation into reportable cattle mortality level on board the [REDACTED]
Portland Fremantle Eilat, Aquaba, Adabiya October - November 2006

1. Purpose

To report on the investigation into the cause of the mortalities in cattle loaded for the [REDACTED] and to make recommendations with the objective of reducing the likelihood of a recurrence.

The report does not include an investigation of sheep deaths. The mortality rate for sheep deaths did not trigger the reportable level.

2. Summary

The cause of the high number of mortalities on board the [REDACTED] was investigated.

The likely contributing causes were:

- Prolonged recumbency and leg infections
- An outbreak of acute pneumonia
- Heat stress

A higher than normal incidence of lameness and recumbency was evident early on in the voyage and persisted. For example, eleven bulls were lame on day four of the voyage. The lameness caused mortalities and injuries from prolonged recumbency. Sixty one cattle died by 2 November which equates to 0.79% of the cattle consignment.

On 2 November adverse climatic conditions were experienced (high temperatures and humidity). One hundred and seventy nine cattle died whilst in the port of Eilat between 3 and 6 November. There is evidence that pneumonia was a significant problem in the port of Eilat. The AQIS accredited veterinarian has stated that many of the friesians died of septicaemia from wounds. The mortality level in the friesians was higher than other breeds.

3. Background

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

1. accredited veterinarian end of voyage report.
2. report from the exporter.
3. records from the registered premises.
4. reviewing documentation presented to AQIS prior to obtaining permission to leave for loading.
5. report by the master of the vessel.

4.3 Discussion

The mortality rate was as follows

Date	Mortalities
Up to 2 November	61
3 – 5 November	179
6 November	7

The reportable mortality trigger for a long haul cattle voyage is 1 per cent. The reportable mortality level was triggered some time between 3 and 6 November but likely on 3 November. The AAV has reported that the daily mortality figures were not documented whilst in port. Whilst at sea the mortalities are calculated and the cadavers disposed of daily. However whilst in port the cadavers were left in the pens because they could not be disposed of and a total port mortality was calculated on departure.

Historically the mortality rates for bulls to the Middle East have been as below:

Year	Class of cattle	Number of cattle exported	Mortality rate (%)
2004	Bull adult	29,599	0.54
2004	Bull calf	22,432	0.34
2005	Bull adult	44,039	0.36
2005	Bull calf	12,922	0.53

Lameness in the friesian cattle was a significant problem from early in the voyage. The cattle were treated with antibiotics and anti inflammatories with variable response. The AAV considered that the floors were “sloppy” for the voyage. The table demonstrates that the volume of water consumed did rise from 20 litres per head per day early the voyage to 35 litres per day.

In the end of voyage report, the AAV included the causal factors with the high incidence of lameness are:

- Friesians recumbent for longer than beef breeds
- Abrasive flooring in deck 2 to 7 (deck 1 is smooth concrete)
- Relative incoordination of friesians on rising with abrasions resulting
- Wet flooring

The AAV report concluded that a combination of prolonged recumbency and relative difficulty arising on the abrasive flooring can cause skin damage which become infected because of the wetter than normal conditions, once infected the cattle spend an increased time recumbent and the cause of death is septicaemia.

Action	Dates
NOI and CRMP submitted and processed	25 September to 10 October 2006
4657 Cattle loaded in Portland	12 October 2006
3148 cattle loaded in Fremantle	18 October 2006
Arrived port of Eilat – Israeli port	3 November
Unloaded 7525 bulls in Eilat 179 cattle died whilst at port of Eilat	3 – 6 November
Departed Eilat	5 November
Arrived Aqaba	6 November
Unloaded 32 bulls in Aqaba	6 November
AAV disembark vessel in Aqaba	6 November
Proceeded to Egypt and unload approximately 40,000 sheep	6 November onwards
Notice of a notifiable incident received by AQIS	6 November

The report covers only the cattle which were carried on this ship

4. Findings

4.1 Deaths in Registered Premises

The cattle exported from Portland were received at the [REDACTED] registered premises on 7 and 8 October. Approximately 90 were rejected on entry due to but not limited to, eye problems, ringworm, lameness and injuries. The records of the registered premises indicated 2 mortalities over the preparation period.

No abnormal circumstances were noted during the preparation of the cattle in the registered premises notwithstanding that all cattle were treated with Micotil which is a treatment which has been used in the feedlot industry to reduce the incidence of respiratory disease in cattle. The 4657 cattle were loaded on the [REDACTED] on 12 October 2006. The cattle were Friesian type cattle except for 191 beef cattle.

The cattle in Western Australia were prepared at three registered premises – [REDACTED], and [REDACTED] and [REDACTED]. There were no deaths in the registered premises during the period of preparation between 14 and 18 October 2006. The 3148 cattle were loaded on 17 October 2006.

4.2 Loading

The weights and position of the cattle on board the vessel are included in Attachment 1 heat stress risk assessment summary and Attachment 2 actual weights of cattle. The summary of the information relating to loading is:

- In general the Friesians were heavier than the beef cattle
- The cattle were loaded in accordance with the heat stress risk assessment
- The total weight of the consignment matches the information entered into the heat stress risk assessment.
- There were some cattle with average weights of over 450 kilograms in the Friesians

The table below outlines the number of lame cattle treated on a daily basis.

Date	Day	Number of lame cattle
13/10/2006	1	0
14/10/2006	2	5
15/10/2006	3	7
16/10/2006	4	11
17, 18, 19/10/2006	5, 6, 7	25
20/10/2006	8	53
21/10/2006	9	27
22/10/2006	10	30
23/10/2006	11	35
24/10/2006	12	38
25/10/2006	13	21
26/10/2006	14	54
27/10/2006	15	51
28/10/2006	16	43
29/10/2006	17	72
30/10/2006	18	92
31/10/2006	19	168
1/11/2006	20	89
2/11/2006	21	39

The documentation supplied by the exporter indicates that the volumes of antibiotics on board the [REDACTED] at the beginning of the voyage was in accordance with the ASEL. However the antibiotics volumes required by ASEL may not be sufficient if a significant disease process is detected during an export voyage.

The climatic condition for the cattle decks were as follows

Day of voyage	dry bulb	wet bulb	humidity	Deaths	Daily water consumption
1	18	17	81	0	20
2	17	15	70	0	20
3	19	16	73	0	20
4	18	16	80	0	20
5,6,7	24	22	83	3	20
8	24	22	83	1	20
9	24	23	91	1	25
10	29	27	78	0	25
11	30	29	85	1	25
12	30	28	85	5	30
13	30	28	85	1	35
14	31	29	86	3	35
15	31	29	86	5	35
16	29	27	85	4	35
17	31	29	86	8	35

18	31	29	86	7	35
19	31	29	86	8	35
20	33	32	86	7	35
21	30	27	78	7	35
22	Not available				
23	Not available				
24	Not available.				
25	Not available				
26	Not available				

The AAV collated the daily report for days 5, 6 and 7 because these days were partly in Fremantle port. The AAV did not record the climatic conditions whilst in the port of Eilat. The AAV recalls the conditions as being "mid 20s and low humidity".

The temperatures and humidity were the median of the 7 cattle decks. The water consumption increased from 20 to 35 litres per day over the voyage.

In the heat stress risk assessment, the freisian cattle were described as "mid coat" and prepared in the acclimatization zone 1 which is south eastern Australia. The booklet "Development of a heat stress risk management model" by Maunsell Australia Pty Ltd includes information on threshold climatic conditions which will cause heat stress and deaths. For a 300 kilogram friesian with a mid coat the threshold wet bulb temperature for heat stress is 28.2. The temperature at which the type of animal will die is 32.9. For Euro cross bull calves the threshold wet bulb temperature for heat stress is 30.3 and the temperture for death is 34.2.

The conditions from day 11 were higher than the heat stress threshold for the friesians and very close to the heat stress threshold for the European type bulls. The adverse climatic event heat episode on day 20 is higher than the threshold for heat stress and very close to the threshold for deaths in the freisians. Based on the sudden increase in mortalities after day 20, the heat stress experienced may have compounded the effects of leg injuries / infections and predisposed the otherwise healthy cattle to respiratory disease. Approximately 125 of the 179 which died whilst in the port of Eilat were friesians. The AAV report stated between 30 and 40 of the cattle were euthanased.

The AAV and the Captain reported high temperatures and humidity two days prior to arrival in Eilat. The episode of high temperatures and humidity could have contributed to the incidence of respiratory disease and exacerbated any problems with lameness and downer cows. According to the Master's report, the large number of deaths (40) on deck 7 in the European and Pastoral cattle was attributable to pneumonia.

Based on post mortem results, the AAV concluded that septicaemia caused by leg infections accounted for 59 per cent of deaths and pneumonia accounted for 23 per cent of deaths. However because of the deaths occurred in port and the cadavers were left in the pens, the number of post mortems conducted was limited.

However the AAV noted that during the disposal of cadavers on 5 and 6 November, Pneumonia was found in 6 of 10 cattle observed. The 4 cattle in which pneumonia was not found showed signs of advance PM autolysis. The Master also also noted that the 40 "European type" cattle which died on deck 7 was mainly due to pneumonia. Shipping fever is an acute form of pneumonia generally induced by stress especially transport. Shipping fever could have contributed to the large numbers of deaths in the port of Eilat.

The vessel was in the port of Eilat for a longer time than would normally be expected to unload the consignment. The exporter has reported that security and clearance procedures were processed more slowly than normal because it was the [REDACTED] first voyage to the port of Eilat.

4.4 Deaths in post arrival quarantine

DAFF requested information from Israeli veterinary service regarding the number and causes of deaths in post arrival quarantine. DAFF is yet to receive a response. Additional conditions or recommendations may result from information supplied by the Israeli Veterinary service.

5. AMSA evaluation of the [REDACTED] on return to Australia

The vessel was inspected on arrival and livestock were permitted to load.

6. Conclusion

The likely factors contributing to the cattle mortalities on board [REDACTED] were:

- Lameness and secondary leg infections
- Pneumonia (shipping fever)
- Heat stress

Based on post mortem results, the AAV concluded that septicaemia caused by leg infections accounted for 59 per cent of deaths and pneumonia accounted for 23 per cent of deaths. However because a large number of the deaths occurred in port and the cadavers were left in the pens, the number of post mortems conducted on the cattle which died in the port of Eilat was limited. Based on the evidence of apparent deaths of pneumonia in the port, the actual percentage of deaths caused by pneumonia is very likely to be much higher than 23 per cent. Information from the Israeli veterinary service may clarify the causes of deaths in the port because a disease or mortalities detected in post arrival quarantine may be a spillover of the disease process onboard the [REDACTED].

6. Recommendations

For AQIS

1. The AEP for shipboard vets is revised to clarify the responsibilities because the AAV disembarked from the [REDACTED] in Aqaba. The ASEL 5.1 states the accredited veterinarian must remain with the consignment until the vessel has completed discharge at the final port of discharge.
2. AQIS does not approve Freisian bull exports from southern ports to the Middle East other than small consignments of breeder bulls with additional conditions

For the Exporter

1. [REDACTED] will be permitted to prepare, export, unload and report on one cattle voyage at a time. AQIS will consider a further Notice of Intention and consignment risk management plan (NOI/CRMP) once the end of voyage report for the most recent cattle voyage is supplied.

2. Additional conditions should be placed on future consignments via the NOI CRMP conditions:

- Sufficient antibiotics to provide appropriate treatment in the event of an outbreak of pneumonia over and above the drugs specified in the ASEL are loaded on the vessel.
- An additional accredited stockman is required for each voyage of cattle.
- Mandatory minimum period for cattle exported from southern ports to the Middle East of 3 clear days in the registered premises.
- Fifteen per cent additional space over and above the ASEL and the heat stress risk assessment specifications

The details of the actual weights and stocking densities for each consignment is audited against the immediately after export.

For the livestock export industry

The livestock export industry should undertake an epidemiological investigation into the contributing factors for respiratory disease in cattle and sheep undertaking export voyages. The investigation should evaluate and recommend measures to manage the risk of respiratory disease during export voyages.

AQIS may formulate additional conditions and recommendations once the information from Israeli veterinary services is received.

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10 January 2007