



Australian Government

Australian Quarantine and Inspection Service

Investigation into reportable sheep mortality level on an export voyage from Fremantle to Kuwait, Bahrain, Jebel Ali (UAE), Muscat (Oman), August and, September 2007

1. Purpose

To report on the investigation into the cause of the mortalities in sheep exported by sea in August and September 2007 and to make recommendations with the objective of reducing the likelihood of a recurrence.

2. Summary

The cause of the reportable number of mortalities was investigated. There were 1,923 mortalities from 76,149 sheep loaded which equates to a mortality rate of 2.53%. The voyage had sheep exported by the one exporter.

The likely cause of mortalities was enteritis (consistent with salmonellosis).

3. Background

The investigation into the cause of the mortalities was completed by reviewing the following information:

1. AQIS accredited veterinarian's (AAV) end of voyage report.
2. AAV Daily Reports
3. Report from the exporter.
4. Records from the registered premises.
5. Report by the master of the vessel.

Table 1: Summary of chronology of events

Action	Date
Sheep loaded in Fremantle	27 & 28 August 2007
Discharged sheep in Kuwait	11-14 September 2007
Discharged sheep in Bahrain	15 September 2007
Discharged sheep in Doha	16-17 September 2007
Discharged sheep in Jebel Ali	18 September 2007

Table 2: Chronology of Events

Dates	Day of Voyage	Action	Cumulative Voyage Mortality Total	Cumulative% Mortalities
19/08/2007	-	Assembly of sheep	-	-
28/08/2007	-	76,149 sheep loaded in Fremantle	-	-
29/08/07	1	97 mortalities	97	0.13
30/08/2007	2	165 mortalities	262	0.34
31/08/2007	3	172 mortalities	434	0.57
01/09/2007	4	175 mortalities	609	0.80
02/09/2007	5	164 mortalities	773	1.02
03/09/2007	6	152 mortalities	925	1.22

04/09/2007	7	135 mortalities	1060	1.40
05/09/2007	8	115 mortalities	1175	1.50
06/09/2007	9	107 mortalities	1282	1.68
07/09/2007	10	86 mortalities	1368	1.80
08/09/2007	11	84 mortalities	1452	1.91
09/09/2007	12	56 mortalities	1508	1.98
10/09/2007	13	66 mortalities	1574	2.07
11/09/2007	14	78 mortalities Arrived Kuwait	1652	2.17
12/09/2007	15	44 mortalities Discharging in Kuwait	1696	2.23
13/09/2007	16	31 mortalities Discharging in Kuwait	1727	2.27
14/09/2007	17	41 mortalities	1768	2.32
15/09/2007	18	45 mortalities Arrived Bahrain	1813	2.38
16/09/2007	19	36 mortalities Left Bahrain am, arrived Doha pm	1849	2.43
17/09/2007	20	44 mortalities Completed Discharge in Doha	1893	2.49
18/09/2007	21	Arrived in Jebel Ali (UAE) and completed voyage discharge.	1905*	2.50

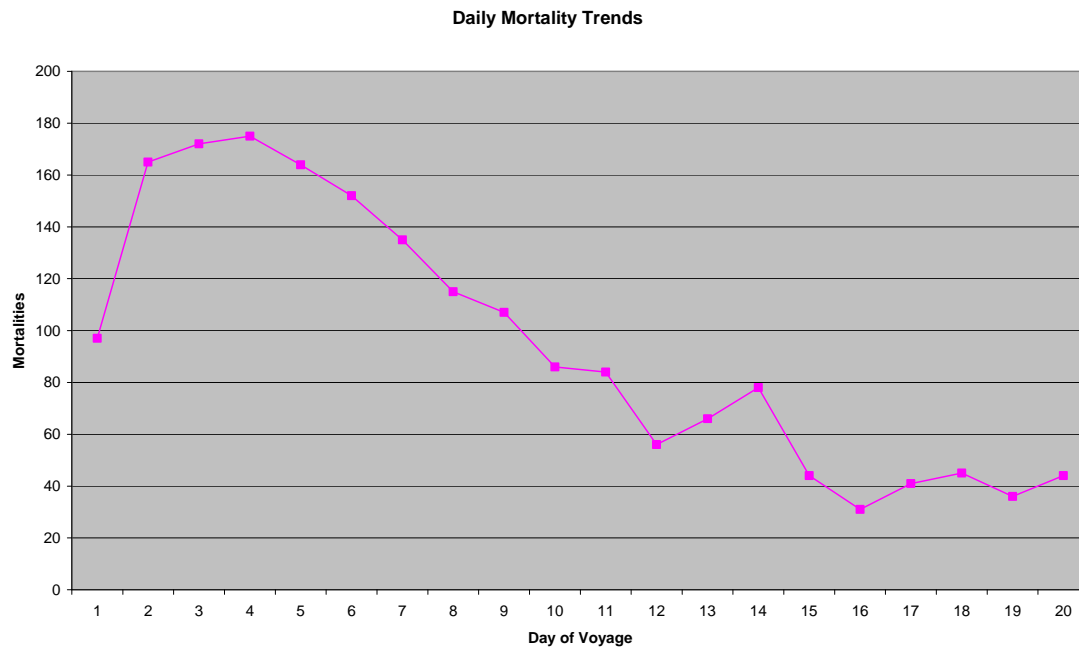
* The End of Voyage report indicates a total of 1905 mortalities.

Table 3: Mortality by deck

DECK	9	8	7	6	5	4 hold 2	4 hold 3	3 hold 2	3 hold 3	2 hold 2	2 hold 3	1 hold 2	1 hold 3
DAY													
1	15	32	18	9	1	2	3	10	2	3	0	2	0
2	32	31	38	27	1	10	4	8	6	7	1	0	0
3	29	32	25	34	1	14	6	12	5	7	4	2	1
4	36	33	28	25	1	12	5	8	10	6	4	6	1
5	34	20	29	23	6	14	1	6	5	10	5	10	1
6	26	28	27	21	0	10	5	6	8	6	9	5	1
7	29	20	25	24	3	5	4	4	5	5	7	3	1
8	11	17	29	11	3	9	3	6	8	6	3	8	1
9	20	12	11	22	4	6	4	9	5	5	6	0	3
10	14	15	14	15	4	2	2	6	3	2	1	5	3
11	14	14	15	15	0	8	1	4	2	2	4	4	1
12	11	6	15	9	1	2	1	1	3	3	1	2	1
13	9	9	16	10	1	2	1	5	2	6	2	2	1
14	20	9	11	5	3	2	3	7	4	5	2	4	3
15	9	3	4	7	0	2	1	6	1	5	0	5	1
16	5	3	9	3	0	0	0	6	0	1	1	3	0
17	4	4	6	6	0	6	0	4	4	3	1	2	1
18	0	0	6	11	1	2	3	5	4	6	1	3	3
19	0	0	6	0	2	0	1	11	1	7	2	3	3
20	0	0	2	1	1	0	3	20	2	13	0	2	0
TOTAL	318	288	334	278	33	108	51	144	80	108	54	71	26

4. Findings

Chart 1: Daily Mortality Trends



3.1 Registered Premises

The sheep exported from Fremantle were present at the registered premises from 19 August 2007 until loading on the 27/28 August 2007. The records of the registered premises indicated low mortalities over the preparation period.

3.2 Loading

The record of rejects indicated the main reasons for rejection at the wharf were lameness, eye problems and scabby mouth.

The records indicate the sheep were loaded in accordance with ASEL.

3.3 Journey

The climatic condition for the sheep decks were as follows

Table 4: Climatic conditions

Date	Dry bulb (°C)	Wet bulb (°C)	Humidity (%)	Daily water consumption (L)	Daily weather conditions from daily reports
29/08/07	22	18	66	Ad lib	
30/08/07	20	16	64	Ad lib	Yesterday very rough – wet pens and sheep on portside and forward pens from rain, sea spray and wave splash. Following sea and wind today
31/08/07	24	21	75	Ad lib	
1/09/07	26	24	84	Ad lib	
2/09/07	28	25	77	Ad lib	-
3/09/07	30	27	78	Ad lib	-
4/09/07	30	27	78	Ad lib	

5/09/07	27	25	84	Ad lib	Past equator and into hot end of trip.
6/09/07	29	26	78	Ad lib	
7/09/07	29	27	85	Ad lib	
8/09/07	28	26	85	Ad lib	
9/09/07	29	26	78	Ad lib	Approaching Gulf, due at first port of Kuwait day after tomorrow. Weather most favourable so far.
10/09/07	30	28	85	Ad lib	
11/09/07	35	29	63	Ad lib	In Gulf –ETA Kuwait tonight. Very hot overnight – conditions improving this morning with dryer N/E wind – expect Kuwait to be hot and dry and OK for animals.
12/09/07	32	24	49	Ad lib	Arrived Kuwait last night. Met dry wind yesterday afternoon and conditions on board improved after that.
13/09/07	32	26	61	Ad lib	Discharging Kuwait. Conditions OK for animals.
14/09/07	32	26	64	Ad lib	Completed discharge. Conditions good for animals.
15/09/07	32	25	59	Ad lib	Arrived Bahrain this morning. Hot and muggy night
16/09/07	34	31	83	Ad lib	Discharge completed Bahrain. Dry/hot day. Another steamy night last night, but dryer today.
17/09/07	32	30	84	Ad lib	Arrived Doha yesterday. Overnight conditions OK but humid in morning.

The mortalities commenced on the first night out of Fremantle. The clinical signs and post mortem findings were consistent with an outbreak of enteritis (consistent with salmonellosis).

4 Conclusion

The likely cause of the sheep mortalities on the vessel was enteritis (consistent with salmonellosis).

The patterns indicate that the problem was established within the sheep prior to loading onto the vessel.

5 Recommendations

Research and Development is undertaken to seek additional information whether the Australian Standards for the Export of Livestock are appropriate for sheep prepared for export from July to December to ensure are

- . adequate adaption to onboard shipboard ration and
- . adequate to detect a potential outbreak of enteritis (consistent with salmonellosis).

6 Actions

The investigation report was forwarded to the Livestock Export Standards Advisory Committee.

The following consignments had additional space allocated per animal. The amount of additional space is included in the column on the right. The consignment line in bold

within the table were exported to Saudi Arabia. The importing country requirements for Saudi Arabia normally include 10 per cent additional space.

Outcome of the voyage with additional conditions is as follows:

Number loaded	Number mortalities	Mortality rate	Additional space
12,516	177	1.41%	10 per cent
17,650	140	0.79%	10 per cent
55,520*	1,142	2.05%	10 per cent
65,364	385	0.59%	15 per cent
4,028	8	0.2%	10 per cent
14035	71	0.51	10 per cent

* The consignment had a reportable mortality level even though they had 10 per cent additional space above the ASEL. The AQIS investigation concluded the cause of the reportable mortality level was enteritis (consistent with salmonellosis).