



Australian Government
Department of Agriculture

Mortality Investigation Report 48

Cattle exported by air to Kazakhstan October 2013

May 2014



Summary

On 21 October 2013, Livestock Shipping Services (LSS) exported 321 cattle by air from Melbourne to Almaty (Kazakhstan). There were 49 mortalities during the flight, a mortality rate of 15.3 per cent. This exceeds the 0.5 per cent reportable mortality level for cattle on voyages less than 10 days as prescribed by the *Australian Standards for the Export of Livestock* (ASEL).

Inadequate ventilation in the double crates is considered the most likely cause of the mortalities.

This consignment was the fifth in a series of nine. Before this consignment the exporter had exported 1350 cattle in four consignments from Melbourne to Kazakhstan by air. On two of these consignments a similar load configuration was used. No mortalities were reported on these previous consignments. The department approved four subsequent consignments subject to the conditions that all cattle were loaded in single tier crates only. As of 30 November 2013, 1165 cattle have been exported in four consignments with no mortalities recorded.

Introduction

On 21 October 2013, Livestock Shipping Services (LSS) exported 321 cattle by air from Melbourne to Almaty (Kazakhstan). The flight route included a planned stop in Singapore. The total flight time was 17 hours 13 minutes in accordance with the planned flight schedule. The mortality rate on this consignment exceeded the 0.5 per cent reportable mortality level for cattle on voyages less than 10 days as prescribed by the *Australian Standards for the Export of Livestock* (ASEL). The purpose of this report is to investigate the cause of mortalities in cattle exported by air to Kazakhstan and to determine if any action is required to reduce the likelihood of a recurrence.

The Department of Agriculture investigated the mortalities by reviewing the following information:

- Report from LSS
- Documents from the Australian Government Accredited Veterinarian (AAV) who prepared the consignment
- Report from the stockmen who accompanied the animals
- Report from the Committee for Veterinary Surveillance and Supervision, Ministry of Agriculture of the Republic of Kazakhstan
- Report from the airline
- Report from an industry consultant engaged by Liveair
- Report from an industry consultant engaged by LSS
- Documents from the regional Department of Agriculture veterinary officer
- Records from the registered premises
- Department of Agriculture records from previous and subsequent journeys.

Before this consignment LSS had exported 1350 cattle in four consignments from Melbourne to Kazakhstan by air. These consignments occurred on 9 September 2013, 23 September 2013 and 7 October 2013 and 15 October 2013. No mortalities were reported on these consignments. Between November 2011 and this consignment, eight exporters have exported a total of 6533 cattle to Kazakhstan with no mortalities reported.

Investigation findings

Preparation in the approved premises

Cattle in this consignment were a mixture of angus, red angus and hereford heifers, six to twelve months of age, and weighing between 248kg and 318kg. The cattle were sourced from twelve

properties and entered pre-export quarantine on 28 September 2013. There were no reported mortalities or health issues while in pre-export quarantine. Before export an AAV administered a registered vaccine against infectious bovine rhino tracheitis (IBR) and bovine viral diarrhoea virus (BVDV) to all cattle in the consignment, in compliance with the importing country requirements and in accordance with the label directions. In addition the animals were tested for bovine tuberculosis, paratuberculosis, enzootic bovine leucosis (EBL) and brucellosis, with negative results. Two animals were rejected for export after pregnancy testing determined they were pregnant.

A Department of Agriculture veterinary officer inspected the cattle in pre-export quarantine on 18 October 2013; no cattle were rejected at this inspection. The AAV inspected the cattle on 20 October 2013 and confirmed the cattle were clinically healthy and free from any evidence of infectious or contagious disease; no cattle were rejected at this inspection.

Loading onto the aircraft

The cattle were transported from pre-export quarantine to Tullamarine International Airport by truck, which took approximately one hour. The cattle arrived around 4 am on 21 October 2013 and were loaded into nine single tier wooden crates and 20 double tiered wooden crates between 4 am and 8 am. A Department of Agriculture veterinary officer was present during loading and inspected the cattle; no cattle were rejected at this inspection.

The conditions of approval of this consignment required an extra 10% space above the minimum requirements specified in ASEL for animals loaded on the lower deck. Two single crates were loaded in the lower deck and met these requirements.

Loading of the aircraft was completed at 1.55 pm. On completion of loading all documentation including the *Special Load Notification to Captain* was provided to the airline. This form confirms the captain was aware live animals were being carried. The flight departed at approximately 2.06 pm.

Crates

Crates used for this consignment met the recommendations of the *Best practice design of crates for livestock by air* (Hogan and Willis, 2009). These recommendations were based on research completed by Meat and Livestock Australia and Livecorp in 2009 and are used as the standards for livestock crates in Australia. Both the single and double crate design used in this consignment have been used extensively for air transport of livestock from Australia since 2009.

However, reports provided by the two industry consultants provided conflicting opinions about whether the design of the crates allows sufficient airflow into the crate. The report from the airline also noted the aircraft manufacturer's concern about the crate design.

Load plan

The load plan for this consignment is shown at attachment 1. The number of mortalities in each crate is indicated. The 20 double crates are shown loaded together to form a solid block on the upper deck.

Two of the previous consignments completed by this exporter and this airline have used 19 and 20 double crates loaded in a similar configuration without mortalities. In addition information provided by the airline shows that of six previous consignments on the same route, four had loaded over 19 double crates with no mortalities reported.

Conditions in-flight

The airline reports indicate that during the flight the aircraft environmental control systems performed as designed with no identified or known defects. All three air conditioning packs were operated using high flow for both sectors of the flight route (Melbourne - Singapore and Singapore -

Almaty). During sector one recording of the aircraft internal temperatures shows the temperatures in the range 23° C to 27° C.

The aircraft had a technical stop in Singapore which lasted one hour and seven minutes. The ambient temperature in Singapore during the stopover was 29° C. Reports from the airline confirm that during this stop cargo doors were closed and all three air conditioning packs were operated by the auxiliary power unit. In addition a supplementary air conditioning cart was connected and in operation while on the ground.

ASEL does not require an AAV or accredited stockmen to be on board; however a stockman accompanied cattle on this consignment. The stockman's report indicates there was a noticeable amount of vapour in the hold during the technical stop which was inconsistent with previous consignments. The report also notes that cattle in the lower tiers were visually inspected during the flight and appeared to be travelling well. Cattle in the upper tiers of the forward section of the hold were inspected four hours en-route between Melbourne and Singapore and showed cattle travelling well. No further inspection of the cattle in the upper tiers was recorded. The stockmen's report noted that visual inspection of the cattle in the upper tiers of the crates was difficult due to lack of openings in the crates and the height of the upper tiers of the crates above the floor.

Recording of the aircraft internal temperatures shows temperatures up to 32° C were reached in the main aft deck after departure from Singapore. In addition the stockman's report describes excessive condensation and moisture in the main deck after departure from Singapore. It is considered likely that temperatures inside the crates may have been higher than those recorded in the main aft deck by the aircraft's temperature monitoring system.

The total flight duration including the stop in Singapore was 17 hours 13 minutes which was as expected.

Mortalities

All mortalities occurred in the top tiers of the double crates (as shown in attachment 2). Forty nine cattle were found dead on arrival in Almaty. A post mortem was performed on two of the mortalities by veterinarians from the Committee for Veterinary Surveillance and Supervision, Ministry of Agriculture of the Republic of Kazakhstan. The post mortems determined death was caused by gas intoxication. Five animals were tested for anthrax with negative results.

Conclusions

Inadequate ventilation within the double crates is the most likely cause of the mortalities. The high mortality of cattle in the upper decks of the crates is consistent with inadequate ventilation causing increased temperature, humidity, carbon dioxide and ammonia levels during the flight. There was no identified or known defect in the aircraft's ECS. The placement of double crates loaded side by side in one block may have impacted the airflow on the main deck to the point where it influenced the compartment's environmental conditions. Inadequate ventilation was further compounded by a stop in Singapore with a hot, humid climate.

There were no significant differences identified in the preparation and procedures used for this consignment compared with previous consignments that may have contributed to the mortalities.

Actions

Immediately following this incident the department required the following:

- Full freighter consignments of cattle (i.e. entire cargo) to be exported using single tiered crates only.

The exporter resumed exports of cattle to Kazakhstan by air and since 30 November 2013 they have completed four consignments of 1165 cattle with no mortalities reported.

From 30 November 2013 the department has required the preparation of an Air Risk Management Plan for exporters using double tier crates to export cattle. Between 30 November 2013 and 31 January 2014 480 cattle have been exported by air to various destinations with no mortalities.

References

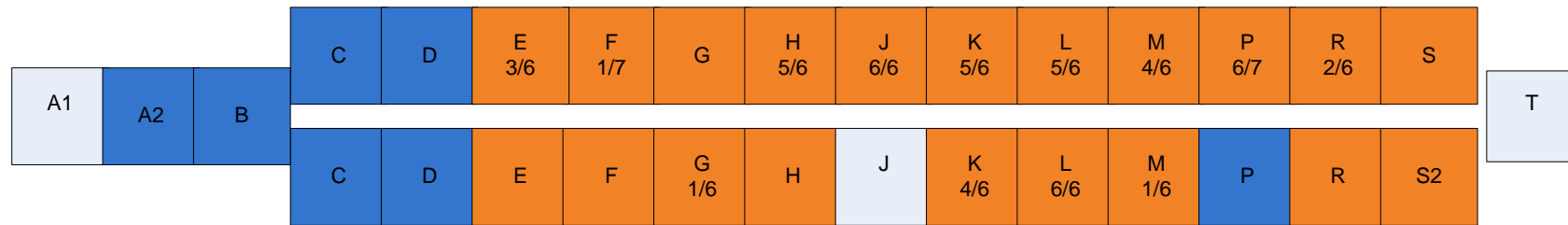
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Melbourne Airport, Victoria, October 2013, Daily Weather Observations. Australian Government Bureau of Meteorology (BOM)

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ATTACHMENT 1 - Load plan and mortalities

UPPER DECK



NOSE

LOWER DECK

TAIL



SINGLE TIER CRATE



DOUBLE TIER CRATE



VACANT SPACE



LETTER INDICATES PALATE POSITION
 NUMBER = NUMBER OF MORTALITIES IN TOP TIER OF THE CRATE OVER NUMBER OF
 CATTLE IN TOP TIER OF THE CRATE (BLANK = NO MORTALITIES)