**Mortality Report 82 - Buffalo exported by sea to Vietnam in November 2019**

[**Summary**](https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/investigations-mortalities/buffalo-vietnam-report-82)

On 2 November 2019, South East Asian Livestock Services Pty Ltd (SEALS) exported 1,012 slaughter buffalo and 226 slaughter cattle to Vietnam. The journey was completed in 11 days and discharged in Vietnam over 12 and 13 November 2019.

A mortality rate of 2.27% (23 head) was reported for the buffalo. The percentage of mortality for buffalo exceeds the reportable level of 1% on voyages of 10 days or more as prescribed by the *Australian Standards for the Export of Livestock* (ASEL). One cattle mortality was recorded on the voyage. The number of cattle mortalities did not reach the reportable level. Only the buffalo are the subject of this report.

Eight of the buffalo mortalities during the voyage were reported as being a result of ketosis/inanition, 7 were euthanased and 1 was attributed to peritonitis. No cause was determined for 7 mortalities, however the Australian Government Approved Veterinarian (AAV) suspected starvation due to the low body condition of the buffalo.

The department required the exporter to prepare and implement a comprehensive buffalo management plan and additional monitoring, oversight and reporting for future buffalo consignments.

[**Information reviewed**](https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/investigations-mortalities/buffalo-vietnam-report-82)

The department reviewed the event by assessing the following information:

1. reports from the exporter
2. daily reports, the end of voyage report and post-voyage debrief from the AAV who accompanied the consignment on board the vessel
3. load plans and ship space calculations from the exporter
4. documents from the AAV who prepared the consignment
5. reports from the Master of the vessel
6. documents and information from the regional department veterinary officer (DVO)
7. records from the registered premises (RP) where the buffalo were prepared for export
8. department records from previous voyages
9. the exporter’s approved arrangement and approved management plans
10. report from the Australian Maritime Safety Authority (AMSA) regarding its investigation into the vessel
11. weather records from the Bureau of Meteorology (BOM)
12. National Livestock Identification System (NLIS) records

[**Background**](https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/investigations-mortalities/buffalo-vietnam-report-82)

Prior to this voyage, SEALS has exported 33 consignments of slaughter buffalo to Vietnam with a total of 9,728 buffalo.

SEALS has reported 8 notifiable incidents due to shipboard mortalities involving consignments it has exported. Three of these occurred in buffalo consignments. The reportable mortality incident in 2017 (report #68 – involving cattle) occurred on the same vessel as this incident.

| Table 1: Previous notifiable incidents due to shipboard mortalities reported by SEALS |
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| **Year** | **Report #** | **Species** | **Market** |
| 2011 | 41 | Cattle | Brunei Darussalam |
| 2014 | 50 | Cattle | Vietnam |
| 2014 | 55 | Cattle | Vietnam |
| 2014 | 57 | Buffalo | Vietnam |
| 2017 | 68\* | Cattle | Brunei Darussalam and Sarawak |
| 2018 | 76 | Cattle | Philippines |
| 2018 | 77 | Buffalo | Indonesia |
| 2019 | 81 | Buffalo | Vietnam |

\*Report 68 occurred on the same vessel as this incident.

[**Investigation Findings**](https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/investigations-mortalities/buffalo-vietnam-report-82)

**The livestock**

The consignment consisted of 1,012 slaughter buffalo (814 bulls and 198 heifers) with an average weight of 478kg. The buffalo were sourced from 13 properties located in the Northern Territory.

84% (847 buffalo) of the consignment were sourced from two properties, property A (46%) and property B (38%). 87% (20 buffalo) of the mortalities were buffalo sourced from these 2 properties.

61% (14 buffalo) of the mortalities were buffalo sourced from property A. The buffalo were wild-caught at a separate property, in North East Arnhem Land, held for 4 to 7 days, and then trucked for over 12 hours to property A. The buffalo remained at property A for another 4 to 7 days before being trucked to the RP.

30% (7 buffalo) of the mortalities were buffalo sourced from property B. The buffalo are bred on property B then mustered and held in yards for 5 to 7 days before being trucked to the RP.

Both property A and B only handle the buffalo in the morning (while it is cooler) to reduce stress associated with heat and handling, and both feed the buffalo hay.

**Preparation in the registered premises**

Two RPs were used for preparation of the buffalo in this consignment. They are both located in the Northern Territory and are routinely used to prepare livestock including buffalo for export. The majority of the buffalo were held at RP1 (972), the remaining 40 were held at RP2. No mortalities occurred in the buffalo from RP2.

Throughout October the weather was mostly fine with a maximum temperature of 41.6°C recorded at a nearby weather station (Bureau of Meteorology, 2019). Humidity was recorded between 17 and 73%.

The buffalo were fed a mixture of irrigated Humidicola hay, fertilised Jarra hay, molasses and the shipping pellets used on the vessel. The RP staff noted that it took the buffalo two to three days to settle down onto feed. Once they had settled down, there were no animals identified as being shy feeders. The average daily consumption of the buffalo in RP1 was 13.3kg/head/day.

ASEL requires buffalo to be held in an RP for two clear days prior to long haul voyages (voyages 10 days or more). A clear day does not include the days on which the livestock arrived at or departed from the premises. Following the previous notifiable incident involving buffalo mortalities (Report #81), SEALS advised they would exceed the required time in the RP as much as possible to quieten the buffalo. The buffalo entered RP1 between August and October 2019 and were held until 1 November 2019. The waybill for 81 of the buffalo showed that they were inducted into RP1 on 31 October 2019. These buffalo left for loading on 1 November 2019. This is not compliant with the ASEL requirement for two clear days prior to long haul voyages.

973 buffalo at RP1 and 40 buffalo at RP2 were inspected by the Australian Government Accredited Veterinarian (AAV) who prepared the consignment. The AAV rejected 1 buffalo at the first RP due to ill thrift.

The DVO inspected a sample of the buffalo on 1 November 2019 and did not identify any issues or require any buffalo to be rejected from the consignment. However a full inspection was unable to be completed because many of the buffalo were wallowing in mud and unable to be accurately assessed for body condition.

SEALS reported that 5 buffalo mortalities occurred in RP1 in the week/fortnight prior to loading. SEALS did not conduct an investigation into the cause of these mortalities.

To manage the risk of heat stress, RP1 has permanent sprinklers set up in their yards which are used on all buffalo when weather conditions require it. The sprinklers were used on the buffalo for 20 minutes four times per day, unless it was very overcast or raining.

On 1 November 2019, 1,012 buffalo were treated for external parasites with Cattleguard® and transported to Darwin for loading.

**The vessel**

The vessel involved in this incident is a purpose built livestock carrier used for livestock export to a range of markets in South East Asia including Brunei Darussalam, Indonesia, Sarawak and Vietnam. There has been one previous reportable mortality event on this vessel (Report #68) involving cattle exported to Brunei Darussalam and Sarawak in April 2017.

**Loading onto the vessel**

Loading started at around 7pm on 1 November 2019 and finished at around 2am on 2 November 2019. The buffalo were sprayed with water on arrival at the port and during loading to cool them and reduce stress.

Hessian was hung from the rails on the pens in the vessel to allow the buffalo to be penned quickly and reduce the risk of buffalo getting caught in the rails.

**Conditions during the voyage**

An on-board AAV was engaged for this shipment as required by the department in response to SEALS’s previous notifiable incident involving buffalo mortalities (Report #81). The AAV is responsible for reporting to the department and works with the Master of the vessel, the crew and the stockperson to manage the health and welfare of the livestock on board. There was also one accredited stockperson on board.

The Master and AAV reported that sea conditions were slight to moderate for the first 5 days of the voyage, however rough seas were experienced from day 6 onwards. The AAV reported that the rough seas 'had minimal effect on the cargo', however also noted that the rough seas were 'not conducive to eating' on day 9. The cattle and buffalo combined consumed an average of 8.8kg of fodder and 30.5L of water per head per day, less than the rationed amount provided to the livestock.

The temperature ranged from 25 to 31°C and humidity between 76 and 79%. The wet bulb temperature did not rise above 28°C. The AAV reported that there were no maintenance issues with the vessel that affected the buffalo’s health. The ventilation system was effective and no evidence of heat stress was noted. The AAV reported that the respiratory character and faeces were normal throughout the voyage.

**Mortalities and treatments**

There was a total of 23 buffalo mortalities in the consignment of 1,012, leading to a final mortality rate of 2.27%. The first mortality was recorded on day 2 of the voyage. The reportable level for mortalities (1%) on voyages of 10 days or more was reached on day 8. The final mortality occurred on day eleven during discharge.

Of the mortalities, 18 were bulls and 5 were heifers. The mortalities occurred on all 5 decks and across 21 different pens of the vessel. The load plan, or stocking density, was compliant with ASEL and did not appear to be a contributing factor to the mortalities.

Post-mortem examinations were carried out on 8 buffalo that died during the voyage. Based on the post-mortem examinations and ante-mortem observations, the AAV attributed 8 of the mortalities to ketosis (ketotic induced inanition) and starvation. During the post mortem examinations, the AAV noted that the buffalo presented with enlarged gall bladders (holding approximately 1 litre of bile), shrunken rumens, and no signs of fatty liver – all of which are consistent with starvation over an extended period of time. The AAV reported that palpation of the lungs did not reveal any consolidation (hepatisation), excluding pneumonia as the possible cause of death.

No definitive cause of death was determined for 7 of the mortalities, however the AAV noted these buffalo had a body score of 0 to 1 (severely emaciated) and suggested starvation. Based on cursory post-mortem examinations, the AAV described the buffalo as having deeply sunken eyes, prominent spines and ribs due to atrophy of the surrounding muscles, and ‘tucked up’ abdomens (due to a shrunken rumens mainly filled with water and very little solid materials) and no omental, peri-renal or subcutaneous fat reserves. The AAV provided photographs of live buffalo during the voyage to the department to support his observations. The photographs show buffalo with prominent backbones, hip bones and shoulder bones, clearly visible ribs, recessed tail and head areas and a skeletal body outline consistent with a body condition score of 0 or 1.

Of the six mortalities that occurred in port; 2 were found dead, and the remaining 4 were unfit for discharge as they had a low body condition score and were unable to rise.

Two mortalities were not attributed to starvation/low body condition - one heifer found dead was diagnosed with peritonitis on post-mortem examination, and one moribund bull was euthanased. The AAV advised that the heifer mortality attributed to peritonitis was around 5 months pregnant, however did not provide any further evidence to support this. SEALS provided a pregnancy declaration that 196 female buffalo in the consignment were pregnancy tested on 19 October 2019 and determined to be not detectably pregnant using manual palpation. Two other female buffalo in the consignment were not listed on the pregnancy declaration as they were re-tagged during load out from the RP after being pregnancy tested.

No treatments were administered to the buffalo during the voyage.

[**Exporter’s Actions**](https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/investigations-mortalities/buffalo-vietnam-report-82)

The department required SEALS to provide details of how they will mitigate the risk of another mortality event on any future voyages of buffalo.

SEALS advised they would cease any further purchasing of buffalo until the investigation into the mortality event has been completed.

SEALS developed a comprehensive Buffalo Management Plan for the preparation and management of future buffalo shipments. This plan includes additional actions for selection, management at the RP, loading and voyage management.

In addition to SEALS’ plan, the department will require SEALS to provide additional reporting upon completion of each voyage of buffalo. The department will require an independent observer (IO) to accompany SEALS’ next voyage of buffalo.

[**Department Actions Taken to Date**](https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/investigations-mortalities/buffalo-vietnam-report-82)

The department required SEALS to develop and implement a comprehensive buffalo management plan and will require additional monitoring, oversight and reporting on subsequent buffalo voyages.

[**Australian Maritime and Safety Authority Evaluation of the Vessel**](https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/investigations-mortalities/buffalo-vietnam-report-82)

AMSA conducted an investigation into the vessel when it returned to Australia in November 2019. AMSA concluded that all livestock services were operating satisfactorily during the voyage. There was no evidence noted to indicate the high mortalities were due to the vessel's non-compliance with [Marine Order 43 (MO43)](https://www.amsa.gov.au/vessels/standards-regulations/marine-orders/).

[**Conclusions**](https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/regulatory-framework/compliance-investigations/investigations-mortalities/buffalo-vietnam-report-82)

After review and analysis of the reports from the on-board AAV and exporter which detailed the clinical signs of the buffalo on board, the department determined that the suspected causes of the mortalities raised by the AAV were plausible. The AAV provided photographs and reported observations that many of the buffalo in the consignment were in poor body condition (body condition score 0 or 1) during the voyage. These observations and findings made by the AAV suggest that SEALS’s sourcing and preparation of the buffalo for this consignment was not of a standard to ensure that all buffalo loaded onto the vessel were sufficiently fit to travel.

In failing to hold 81 buffalo in the RP for less than two clear days prior to export, not rejecting inappropriate buffalo, and not adequately assessing the buffalos’ fitness to load, SEALS have not complied with standards 3.8A, 3.1.1 of appendix 3.1, and 4.8 of ASEL.