1. **APPENDIX D: MARINE MAMMAL OBSERVER REPORT**

**SEISMIC DAILY REVIEW AND GENERAL OBSERVATIONS**

The following describe general observations from each seismic line and can be used in addition to the CSA seismic reports. All dates are in UTC time.

### 1.1.1.1.1 21/01/2017

**Seismic survey line 1**

The first official marine mammal observations and seismic line ran from 2130-0329 (0800-1429 non-UTC time). The morning period experienced a power down due to whales within the low power zone. There was a shut down in the afternoon due to a pod of two-three humpback whales, which approached the vessel during full power. The whales swam under the vessel and appeared adjacent to the end buoy on the seismic streamer. The whales soon moved out of the area. End of the survey period (end of line) was directed by the chief scientist. Overall, weather was overcast with fog at times. Generally good visibility morning and afternoon.

### 1.1.1.1.2 24/01/2017

**Seismic survey line 2**

A successful day of seismic activity. Only one shut down due to a single humpback whale, which moved into the area lunge feeding multiple times. Due to the interruption, the ship turned around back around on line again. The whale was observed moving outside the shut down and low power zone. Soft start resumed and the line was completed. Seismic activity ended at 0442 UTC time.

### 1.1.1.1.3 25/01/2017

**Seismic line 3**

Seismic line three was south of yesterday’s survey line position, which saw fewer whales in the area. The four-hour observation period was a cut short due to stray ice bits in the water. This made conditions difficult and dangerous to operate. Only two whales were seen at distances of 3 km or greater. The MMO was assisted by three additional members of staff. Post survey observations were conducted in a 2-3 hour period after end of line with zero individuals spotted in the area. The ship remained stationary to conduct a CTD cast.

### 1.1.1.1.4 27/01/2017

**Seismic line 6**

Seismic line six saw perfect conditions, with extremely flat seas and good visibility throughout the survey. The survey started in the afternoon and finished after 10 p.m. at night. Light conditions made it possible to continue into the evening. Only one power down and one shut down (involving the same whales) occurred at the start of the survey. A mother and calf swim towards the vessel during soft start. After the shutdown, the pair swam towards the guns and streamer. They then swim around the buoy at the end of the line and later swim off in a southward direction (see Appendix B).

### 1.1.1.1.5 29/01/2017

**Seismic line 7**

Large numbers of whales were seen during seismic line seven. As a result, less than two hours of full power data was collected before a final shut down due to two whales, which approached the vessel. In total, there was three cetacean related shut downs. Pre-observation search started at 0330 (UTC) and the first full power commenced at 0723 (UTC). In two instances, two pods (both with two individuals) approached the vessel on the portside and swim next to the buoy at the end of the streamer. Weather conditions were favourable, with flat sea conditions and good visibility.

### 1.1.1.1.6 4/02/2017

**Seismic line 8**

Line eight was our most successful yet. No shut downs occurred. We only had two power-downs due to whales moving in and out of the low power zone. Official observations ran from 2030-0700 (UTC). Few whales were observed in the area. Good weather conditions were present all day.
1.1.1.7  7/02/2017
Seismic line 9

A single sperm whale was observed in the distance (3-4 km) from the ship during the pre-shooting search observation (see appendix figures 4 and 5). The individual had a downtime of 39-40 mins. The surface time post dive was 12 minutes before the individual dove again. We had a number of humpback whales swim within the low power and shut down zones. Again, we saw humpback whales take interest in the seismic streamer and buoy. Two individuals swam alongside the ship, under the streamer and around to the buoy. Like others, the whales appeared to investigate the float and then swim off. A single adolescent sized humpback whale interrupted seismic activity, which resulted in a shut down. The individual spent a while around the portside of the ship swimming in multiple directions. The individual didn’t appear to be feeding at the surface but may have possible be doing so beyond the surface. Overall, seismic line nine was interrupted a number of times, which meant seismic operations were limited.

1.1.1.8  14/2/2017
Seismic line 10

A successful seismic line with only one shut down and two power downs. Observations commenced at 2314 and ended at 0830 (UTC time). Overall, we saw few whales along the seismic line, in comparison with early seismic activity in Area A. There were periods during the line where not a single was seen, which made it possible to collect high quality data without any interruptions. Humpback whales were the only species observed. Lunge feeding was also observed in the distance (>3 km from the vessel). Good weather conditions provided >5 km visibility throughout the survey.

1.1.1.9  18/2/2017
Seismic line 11

Seismic operations began early morning from 7:47 (2047 UTC) to 1:08 (0208 UTC). Wind and ocean conditions gradually increased throughout the survey. Visibility reduced to 1km towards the end of the seismic line. A total of two shut downs occurred mid-way through the line as a result of a single southern right whale. This was the first official observation of a southern right whale on this voyage. The whale approached close to the vessel on the starboard side and appeared to leave. Soon after, another southern right whale (most likely the same individual) was spotted on the port side of the vessel. A single unidentified cetacean was also spotted during the survey. Based on the fluke colouration, size and fluke up dive, this individual was most likely a large baleen whale, possibly a blue whale.

1.1.1.10  24/2/2017
Seismic line 12

Problems with the seismic streamer occurred during pre-start observations. This meant that the seismic team were not ready to start operations until one hour after the pre-shooting search commenced. Few whales were observed in the area during this period. Six minutes after soft start, a whale appeared within the shut-down zone, despite the clear visibility in the area. Soon after, another single whale, which separated from a pod of two swam directly towards the vessel causing another shut down. The single humpback whale appeared interested in the vessel and swim alongside the streamer, up to the buoy and then back around the vessel multiple times (see Fig. B-2). The whale frequently turned on its side and spy-hopped twice. The whale remained with the vessel from 0550-0723 and then swim away into the observation zone. A soft start was then able to continue until the same whale swim back directly towards the vessel. This resulted in another shut down. Due to the position of the vessel and length remaining on the seismic line, the chief scientist decided to call end of line. All seismic operations ended at 9:23 and the whale remained in the area for some time after circling the vessel.

Summary of wildlife observed during the voyage (both during seismic activity and non-seismic activity e.g. transit periods). Due opportunistic sightings of many individuals outside of seismic operations, not all wildlife has been officially recorded in the Cetacean Sightings Application.

<table>
<thead>
<tr>
<th>Cetacean</th>
<th>Scientific name</th>
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<tr>
<td>Humpback whale</td>
<td><em>Megaptera novaeangliae</em></td>
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</table>
Dwarf minke whale \textit{Balaenoptera [acutorostrata] subspecies/allospecies}
Southern right whale \textit{Eubalaena australis}
Sperm whale \textit{Physeter macrocephalus}
Long-finned pilot whales \textit{Globicephala melas}

Other marine mammals
Leopard seal

Birds: examples of species observed
Wandering albatross
Black-browed albatross
Shy-albatross
Northern (Hall’s) Giant Petrel
Southern Giant Petrel
Light-mantled sooty albatross
Cape petrel
Adelie penguins

\textbf{Figure D-1.} Supportive evidence of curious humpback whales. Both mother and calf approached seismic buoy during seismic line 6. A) Calf visible near buoy. B) Calf visible moving towards buoy. C) Mother and calf visible moving away from buoy.
Figure D-2. Curious humpback whale during seismic line 12. The adolescent humpback whale left two other whales and approached the vessel. The whale swam upside down along the streamer and then mugged (circled) the vessel. This resulted in a shut-down of seismic activity.

Figure D-3. Pictures showing the individual looking up at the vessel and swimming upside down. It would often roll at the surface before diving under the ship and then repeat the behaviour.
**CETACEAN SIGHTINGS DURING VOYAGE SUPPORTED BY PHOTOGRAPHIC EVIDENCE**

*Figure D-4.* Humpback whales (note the light colour variations in the third/bottom picture).
Figure D-5. Sperm whale observed during pre-shooting search during seismic line 9.

Figure D-6. Sperm whale fluke-up dive.
Figure D-7. Dwarf minke whale observed near ice edge.

Figure D-8. Southern right whale observed during seismic line 11.
Figure D-9. Southern right whale observed during transit.

Figure D-10. Long-finned pilot whales observed during transit (pod of over 20 individuals observed swimming and spy hopping.)