

#### **FINAL**

# Flemish Pass Exploration Drilling Project Marine Mammal and Sea Turtle Monitoring and Mitigation Report Document No. ME2183401-1

Submitted to:

#### **CNOOC Petroleum North America ULC**

701A 215 Water Street St. John's, NL A1C 6C9

Submitted by:

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited

133 Crosbie Road PO Box 13216 St. John's, NL A1B 4A5

14 December 2021 Wood Project #: ME2183401



#### **IMPORTANT NOTICE**

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#### 1.0 INTRODUCTION

CNOOC Petroleum North America ULC (CNOOC) (formerly Nexen) contracted Wood Environment & Infrastructure Solutions, a division of Wood Canada Limited (Wood), to conduct marine mammal and sea turtle monitoring and mitigation as part of the 2021 EL1144 Vertical Seismic Profile (VSP) Program. The project area is in the Flemish Pass approximately 400 km east of St. John's, Newfoundland and Labrador (Figure 1-1). As detailed in the "Flemish Pass Exploration Drilling Project (2018-2028) Environmental Impact Statement" (EIS) (Nexen 2018), the waters off Eastern Newfoundland support a diverse assemblage of marine megafauna. Several marine mammal and sea turtle species have been reported in or near the Project Area. As stated in the EIS, some of these species are considered to be at risk or of special conservation concern.

Monitoring activities were conducted to fulfill requirements issued under Section 54 Conditions 3.8 and 3.9 of the *Canadian Environmental Assessment Act* (ECCC 2019), and protocols outlined in the "Geophysical, Geological, Environmental and Geotechnical Program Guidelines" and "Statement of Canadian Practice with Respect to the Mitigation of Seismic Sound in the Marine Environment" (SoCP). In consultation with the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) and Fisheries and Oceans Canada (DFO), a marine mammal and sea turtle mitigation plan for VSP (the Plan) was approved for this program (Wood 2021).

The scope of work included monitoring for marine mammals and sea turtles inside the 500-metre radius safety zone around the seismic source during VSP activities by visual observation and passive acoustic monitoring. Mitigation protocols were implemented by qualified marine mammal observers (MMO) and passive acoustic monitors (PAM). VSP was conducted from the *Stena Forth* at the Pelles A-71 well site between June 23, 2021 and June 24, 2021. All marine mammal and sea turtle mitigation was conducted aboard the supply vessel, *MV Siem Pilot*. The VSP program lasted 8.5 hours, during which time three marine mammals were detected by the PAM operator outside of the 500m safety zone (See Section 6.1). No delays or shutdowns were required during the program. The following summarizes events and sightings during the Flemish Pass Marine Mammal and Sea Turtle (MMST) Monitoring and Mitigation Program.



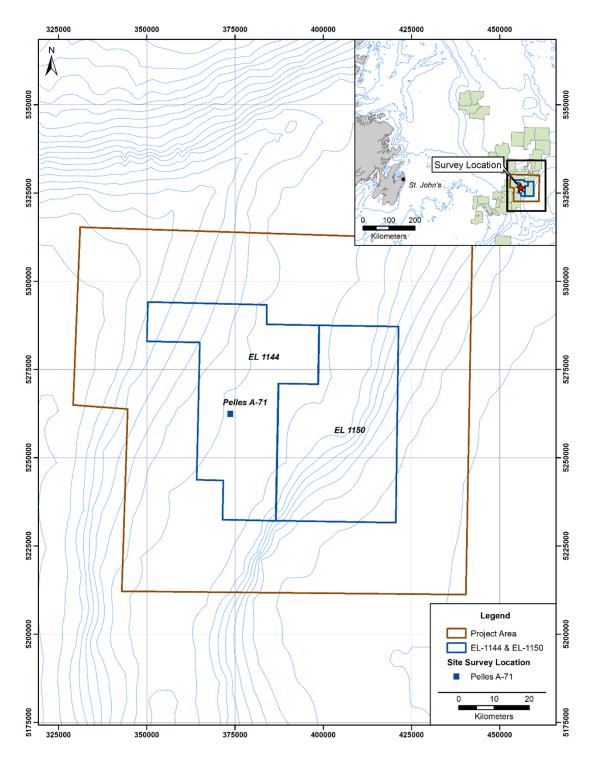


Figure 1-1 Area map of the 2021 VSP program in EL1144



#### 2.0 PERSONNEL

The mitigation team comprised Wood biologists, Edgewise MMOs, and a JASCO PAM technician. Personnel aboard the MV Siem Pilot for the Flemish Pass MMST Mitigation Program are presented below.

#### Wood

- Lara Miles –Team Lead- Biologist (Lead MMO)
- Daniel Windeler Biologist (PAM)

#### **Edgewise**

- Holly Hogan MMO
- Jackie McCormack MMO

#### **JASCO Applied Sciences**

Katie Kowarski – Lead PAM

#### Schlumberger Oilfield Services (onboard the Stena Forth)

- Joshua Ross Wireline Professional Field Engineer
- Frank Hinchey Wireline Engineer

The following shore personnel were involved in support, mobilization, and demobilization of the 2021 Marine Mammal and Sea Turtle Mitigation Program:

#### **CNOOC**

- Derek Sullivan
- Mark White
- Sean Hemeon
- Eddie Frampton
- Neil Osmond
- Ryan Miller

#### Wood

- Kevin Baldwin Project Manager
- Justin So Project Manager
- Andrew Peddle HSE Support

The crew of the *MV Siem Pilot* were responsible for vessel operations and the deployment and retrieval of the PAM equipment, including hydrophones. The Captain had authority in matters of safety and the duty officer ensured the vessel was travelling within the mitigation team's specifications. Wood personnel were responsible for the overall implementation of the Plan under direction of Field Lead, Lara Miles. Ms. Miles also acted as the Health and Safety Lead and provided CNOOC with daily updates on the progress of the monitoring and mitigation program.



## 3.0 MOBILIZATION

The MV Maersk Mobilizer mobilized on June 14, 2021 to provide visual and acoustic monitoring during VSP operations on the Stena Forth. Mobilization involved the transport and secure installation of all equipment and supplies needed for monitoring onto the vessel. Due to operational requirements, all personnel and equipment identified earlier subsequently transferred to and conducted MMO and PAM activities onboard the MV Siem Pilot.



## 4.0 HEALTH AND SAFETY

A hazard assessment and Health and Safety Plan were developed for the Flemish Pass MMST Monitoring and Mitigation Program. These documents identified potential hazards associated with project activities, mitigation measures, and any residual risk. The Health and Safety Plan, which included all work instructions and safe operating procedures, was reviewed by all personnel from Wood (including subcontractors). Deck safety meetings, during which potential safety issues were discussed, were also conducted by Wood and JASCO personnel and the crews of the MV Siem Pilot and MV Maersk Mobilizer.

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## 5.0 COMMUNICATIONS

The MV Siem Pilot maintained scheduled communications with onshore personnel via e-mail. Daily status updates were sent outlining departure and return dates, cruise progress, projected timelines, and sea state conditions. Updates were sent to the following personnel:

## **CNOOC**

- Derek Sullivan
- Mark White
- Sean Hemeon
- Eddie Frampton
- Neil Osmond
- Ryan Miller

#### Wood

- Kevin Baldwin Project Manager
- Justin So Project Manager

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#### 6.0 VERTICAL SEISMIC PROFILE MITIGATION PROGRAM

The mitigation program consisted of both visual and acoustic monitoring for marine mammals and sea turtles during VSP operations. Wood and JASCO personnel directed the ship's crew on the installation and retrieval of the PAM equipment and hydrophones. VSP operations took place from June 23, 2021 to June 24, 2021 and lasted approximately 8.5 hours. The weather during VSP operations consisted of calm seas and thick fog with limited visibility (<100m from the *MV Siem Pilot*).

Following is a summarization of activities onboard the vessel as they pertain to the mitigation program.

Table 6.1 Timeline of activities related to the mitigation program onboard MV Siem Pilot

Date	Description
1 June 2021	JASCO PAM equipment dry-tested in Wood warehouse;
14 June 2021	MV Maersk Mobilizer mobilization and departure from St. John's, NL
15 June 2021	Arrive at Stena Forth
18 June 2021	JASCO PAM equipment wet-tested
20 June 2021	Communications set up with the Schlumberger wireline engineers for VSP operations
20 June 2021	VSP array testing and marine mammal and sea turtle monitoring (<1 hr of testing)
20 June 2021	Transfer from the MV Maersk Mobilizer to MV Siem Pilot
23 June 2021	JASCO Personnel transfer from the MV Maersk Clipper to MV Siem Pilot
23 June 2021	VSP commences and marine mammal and sea turtle monitoring begins
24 June 2021	VSP and marine mammal and sea turtle monitoring concludes
25 June 2021	Vessel departs for St. John's, NL
26 June 2021	Vessel arrives in St. John's Harbour; Demobilization

The PAM equipment wet test included:

- 1) Crew introduction to and familiarization with the gear;
- 2) Gathering a baseline understanding of the soundscape in the VSP area; and
- 3) Optimization of the equipment setup including deployment, towing, and retrieval.

During the wet test, PAM operators detected static that masked audio detections. Detections were visible in the spectrogram. The issue was narrowed down to interference from the shipboard power source. The PAM deck box and laptop computer were switched to battery power and headphones replaced. The cable connections were inspected, strengthened, and raised on the vessel to eliminate any cable-to-vessel contact. PAMLab software (JASCO's PAM software) settings were revised to highlight marine mammal sounds in the area. All adjustments contributed to a successful monitoring program during VSP array testing.

# 6.1 Monitoring and Mitigation Program Results

Prior to VSP operations, the PAM operators conducted a wet test of the PAM hydrophones (June 18<sup>th</sup>, 2021) and the seismic operators conducted a seismic array wet test (aka bubble test) on June 20<sup>th</sup>, 2021. During these tests the mitigation team was stationed on the *MV Maersk Mobilizer*. The PAM gear wet test was conducted to ensure



all equipment was working properly and the vessel could test the planned track designed for during VSP operations. Four marine mammals were visually observed during the PAM gear wet test by the MMOs stationed on the bridge. A seismic array test was conducted on June 20<sup>th</sup> for less than 30 mins of firing time. PAM and MMOs monitored the area for 30 minutes (pre-watch) prior to the array testing. There were no marine mammals detected during the array testing. Upon the completion of this testing, the mitigation team transferred to the *MV Siem Pilot* for the remainder of the VSP program.

All monitoring and mitigation during VSP were conducted from the *MV Siem Pilot*. The vessel track was modified to enhance the ability of the observers to detect a marine mammal or sea turtle. During VSP/monitoring activities the *MV Siem Pilot* travelled at less than 3 knots in a "figure-8" pattern along the starboard-side (relative to *Stena Forth*) half of the 500m safety zone radius. VSP was deployed from the port-side of the *Stena Forth*. The *MV Siem Pilot* did not travel on the port-side of the *Stena Forth* due to the presence of a long-term monitoring buoy moored within 750 m. Both visual and acoustic monitoring were conducted on the bridge of the vessel. Monitors had a direct line of communications with the VSP wireline operators and gunners during VSP operations through vessel's very high frequency (VHF) radio.

There were no detections (acoustically or visually) of any marine mammals or sea turtles during the 30-minute pre-watch or during ramp-up within the 500m safety zone, so VSP was not delayed. There were no marine mammals or sea turtles detected within the 500m safety zone during VSP operations. No shut-down, delays, or mitigations were necessary during the 8.5 hours of sound source being active.

Sperm whale clicks and an unidentified dolphin were acoustically detected outside of the 500-m safety zone during VSP operations. The marine mammals were determined to be more than 1000 m from the area and the detections did not require a delay, shutdown, or modification of VSP operations.

Visual and acoustic observations are detailed below (Figure 6.1).

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Table 6.2 Marine mammal and sea turtle sightings during PAM/MMO Operations

Species	Date	Number of Sightings	Number of Individuals	Range of animal to VSP (metres)	Mitigation Required	Notes
PAM Ge	ar Wet Test					
FW	18-06-21	3	3	VSP not active	NONE	Observed during PAM Gear Wet Test
UW	18-06-21	1	1	VSP not active	NONE	Observed during PAM Gear Wet Test
VSP Ope	rations					
SP	24-06-21	2	1-3	>1000	NONE	Continuous clicks during VSP firing
UD	24-06-21	1	>1	>1000	NONE	Very faint
FW-Fin W Minke W		Jnknown Whal	e. SP- Sperm Wh	nale, UD- Unknown (	dolphin, HW-Hui	mpback Whale, MW-



## 7.0 **DEMOBILIZATION**

The MV Siem Pilot arrived back in St. John's on the evening of Friday, June 26, 2021. JASCO, Edgewise, and Wood personnel disembarked, and equipment was removed from the vessel.



## 8.0 CLOSURE

This report on the Flemish Pass MMST Monitoring and Mitigation Program has been prepared for the exclusive use of CNOOC. The project was conducted using standard practices by qualified Wood staff and in accordance with verbal and written requests from the client.

Luin Baldwir

Yours sincerely,

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited

San & Miles

Prepared by: Reviewed by:

Lara Miles Kevin Baldwin
Biologist Project Manager



#### 9.0 REFERENCES

- C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board). 2019. Geophysical, Geological, Environmental and Geotechnical Program Guidelines.
- CEA Agency (Canadian Environmental Assessment Agency). 2019. Decision statement issued under Section 5.4 of the Canadian Environmental Assessment Act, 2012
- DFO (Fisheries and Oceans Canada), Statement of Canadian Practice with Respect to the Mitigation of Seismic Sound n the Marine Environment. Accessed September 2020.
- Nexen (Nexen Energy ULC). 2018. Flemish Pass Exploration Drilling Project (2018-2028) Environmental Impact Statement (Canadian Environmental Registry Reference Number 80117, document Number 17).
- Wood. 2021. Flemish Pass Exploration Drilling Project: Marine Mammal and Sea Turtle Monitoring and Mitigation during Vertical Seismic Profiling Plan. Submitted to CNOOC Petroleum North America ULC. Wood Project # TA2083404



**APPENDIX A: OBSERVATION DECK SHEETS** 



# **Table A 1 VSP Operations Deck Sheet**

Regul refere num	ence	Ship / platform name	Date	Reason for firing	Time soft start / ramp-up began (UTC)	Time of full power (UTC)	Time of start of line (UTC)	Time of end of line (UTC)	Time of reduced output (UTC) (if relevant)	Time airguns / source stopped (UTC)	Time pre- shooting search began (UTC)	Time search ended (UTC)	Time PAM began (UTC)	Time PAM ended (UTC)	Depth	Was it day or night in the period prior to firing?	Was any mitigating action required?
ME218	.83401	Siem Pilot	2021-06-24	VSP	3:20	3:35	3:35	11:33	-	11:41	1:41	2:15	1:41	11:33	1100	n	none

## **Table A 2 PAM Effort Deck Sheet**

Regulatory reference number	Ship / platform name	Date	Visual watch or PAM?	Observer's / operator's name(s)	of section of	Time of end of section of watch (UTC)	Source	Start position - degrees latitude	Start position - minutes latitude	Start position - north / south	Start position - degrees longitude	Start position - minutes longitude	Start position - east / west	Depth of water at start postion (metres)		End position - minutes latitude	north /	End position - degrees longitude	End position - minutes longitude	End position - east / west	Depth of water at end position (metres)	Speed of vessel (knots)		Wind force (Beaufort)		well (vi	bility Sun glar sual (visual stch watch nly) only)	Precipitation	Comments
ME2183401	Maersk Mobilizer	2021-06-20	PAM	D. Windeler	11:59	13:30	n	47	31.181	N	46	40.506	w	1100	47	30.331	N	46	41.34	w	1100	2	,	-	с	0	p n	n	VSP Bubble Test
ME2183401	Maersk Mobilizer	2021-06-20	PAM	D. Windeler	13:30	13:57	v	47	30.331	N	46	41.34	w	1100	47	31.216	N	46	40.678	w	1100	2.6	-	-	с	0	p n	n	VSP Bubble Test
ME2183401	Maersk Mobilizer	2021-06-20	PAM	D. Windeler	13:57	-	n	47	31.216	N	46	40.678	w	1100	-	-	-	-	-	-	-		-	-	-	-		-	VSP Bubble Test
ME2183401	Siem Pilot	2021-06-24	PAM	K. Kowarski	1:41	3:20	n	47	30.631	N	46	40.825	W	1100	47	30.133	N	46	41.768	W	1100	2	-	-	s	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	K. Kowarski	3:20	3:35	S	47	30.133	N	46	41.768	W	1100	47	30.503	N	46	40.96	W	1100	2.5	-	-	s	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	K. Kowarski	3:35	4:35	f	47	30.503	N	46	40.96	W	1100	47	30.02	N	46	41.811	W	1100			-	S	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	D. Windeler	4:35	5:35	f	47	30.02	N	46	41.811	W	1100	47	30.271	N	46	41.225	W	1100				s	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	D. Windeler	5:35	6:35	f	47	30.271	N	46	41.225	W	1100	47	30.675	N	46	40.95	W	1100			-	s	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	D. Windeler	6:35	7:35	f	47	30.675	N	46	40.95	W	1100	47	30.701	N	46	40.438	W	1100		-	-	S	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	D. Windeler	7:35	8:05	f	47	30.701	N	46	40.438	W	1100	47	30.601	N	46	40.377	W	1100	2.5		-	S	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	K. Kowarski	8:05	10:05	f	47	30.601	N	46	40.377	W	1100	47	30.62	N	46	40.384	W	1100	2.5			s	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	K. Kowarski	10:05	11:05	f	47	30.62	N	46	40.384	W	1100	47	30.556	N	46	40.104	W	1100	2.5		-	s	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	D. Windeler	11:05	11L41	f	47	30.556	N	46	40.104	W	1100	47	30.381	N	46	41.037	W	1100			-	S	0	p n	n	VSP
ME2183401	Siem Pilot	2021-06-24	PAM	D. Windeler	11:41	-	n	47	30.381	N	46	41.037	W	1100	-	_ =			-					-	s	0	p n	n	VSP

## **Table A 3 MMO Effort Deck Sheet**

Regulatory reference number	Ship / platform name	Date	Visual watch or PAM?	Observer's / operator's name(s)	start of section			Start position degrees latitude	Start position - minutes latitude	north /	Start position - degrees longitud e	minutes	Start position east / west	Depth of water at start postion (metres)		minutes	End position north / south	degrees	End position - minutes longitud e	End position east / west	Depth of water at end position (metres)	Speed of vessel	Wind direction	Wind force (Beaufort)		Swell	Visibility (visual watch only)	Sun glare (visual watch only)	Precipitatio n	Comments
ME2183401	Maersk Mobilizer	2021-06-18	Visual	J. McCormack	15:40	16:40	n	47	38.956	N	46	27.035	w	1100	47	30.936	N	46	39.336	w	1100	0.1	w	5	s	М	g	SF	n	PAM Wet Test
ME2183401	Maersk Mobilizer	2021-06-18	Visual	H. Hogan	16:40	17:40	n	47	30.936	N	46	39.336	w	1100	47	30.936	N	46	39.336	w	1100	0.2	w	5	s	М	g	SF	n	PAM Wet Test
ME2183401	Maersk Mobilizer	2021-06-18	Visual	J. McCormack	17:40	18:03	n	47	30.936	N	46	39.336	w	1100	47	30.891	N	46	39.468	w	1100	0.2	w	5	s	М	g	Sf	n	PAM Wet Test
ME2183401	Maersk Mobilizer	2021-06-18	Visual	H. Hogan	18:03	-	n	47	30.891	N	46	39.468	w	1100	-	-	-	-	-	-	-	2	w	5	s	м	g	SF	n	PAM Wet Test
ME2183401	Maersk Mobilizer	2021-06-20	Visual	H. Hogan/J. McCormack	12:05	13:05	n	47	31.181	N	46	40.506	w	1100	47	29.417	N	46	42.02	w	1100		S	5	с	2	р	n	n	VSP Bubble Test
ME2183401	Maersk Mobilizer	2021-06-20	Visual	H. Hogan/J. McCormack	13:05	13:30	n	47	29.417	N	46	42.02	w	1100	47	30.331	N	46	41.34	w	1100	2.1	s	5	с	2	р	n	n	VSP Bubble Test
ME2183401	Maersk Mobilizer	2021-06-20	Visual	H. Hogan/J. McCormack	13:30	13:57	v	47	30.331	N	46	41.34	w	1100	47	31.216	N	46	40.678	w	1100	2.6	S	5	с	2	р	n	n	VSP Bubble Test
ME2183401	Maersk Mobilizer	2021-06-20	Visual	H. Hogan/J. McCormack	13:57	-	n	47	31.216	N	46	40.678	w	1100	-	-	-	-	-	-	-	2.5	s	5	с	2	р	n	n	VSP Bubble Test
ME2183401	Siem Pilot	2021-06-24	Visual	H. Hogan	6:45	8:00	f	47	30.572	N	46	40.965	W	1100	47	30.547	N	46	40.962	W	1100	2.6	S	5	С	0	р	n	n	VSP
ME2183401	Siem Pilot	2021-06-24	Visual	H. Hogan	8:00	9:00	f	47	30.547	N	46	40.962	W	1100	47	30.618	N	46	40.205	W	1100	2.5	S	5	с	0	р	n	n	VSP
ME2183401	Siem Pilot	2021-06-24	Visual	H. Hogan	9:00	10:00	f	47	30.618	N	46	40.205	W	1100	47	30.518	N	46	40.043	W	1100	2.5	S	5	С	0	р	n	n	VSP
ME2183401	Siem Pilot	2021-06-24	Visual	H. Hogan	10:00	10:00	f	47	30.518	N	46	40.043	W	1100	47	30.518	N	46	40.043	W	1100	2.4	S	5	С	0	р	n	n	VSP
ME2183401	Siem Pilot	2021-06-24	Visual	L. Miles	10:00	11:00	f	47	30.518	N	46	40.043	W	1100	47	30.481	N	46	40.002	W	1100	2.4	S	5	с	0	р	n	n	VSP
ME2183401	Siem Pilot	2021-06-24	Visual	L. Miles	11:00	11:41	f	47	30.481	N	46	40.002	W	1100	47	30.405	N	46	40.949	W	1100	2.5	S	5	s	0	р	n	n	VSP
ME2183401	Siem Pilot	2021-06-24	Visual	L. Miles	11:41	-	n	47	30.405	N	46	40.949	W	1100	-	-	-	-	-	-	-	2.5	S	5	s	0	р	n	n	VSP

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# **Table A 4 Marine Mammal or Sea Turtle Detections**

Regulatory reference number	Ship / plat name	atform Sigt e nun	hting det	countic dection umber	Date	Time at start of encounter of (UTC)	(UTC)	Were animals detected visually and / or acoustically?	How were the animals first detected?	Observer operato name		a minute	north /	degree	n - Position is minutes de l'ongitud	east/	depth	Species or species group	Description	Bearing to animal (deg)	Range i anima (metres	Total number	Numbe of adul (visus sightin only)		Number of calves (visual sightings	Photograp h taken	p Behaviour (visual sightings only)	Direction of travel (relative to ship)	Direction of travel (compass points)	source s activity a when v animals as first	rgun/ enters surce the thirty then / imals exclud releva	animal left the mitigat on exclusio on zone () relevan	Closest distance of animate from airguns	Time of closest approach	observed distance during h soft start (if relevant)	distance d	during a oft start to (if ta elevant)	What of position and was sken? do	Estimates ingth loss of power productio own (if d / or relevant) hut- due to wn (if mitigating evant) a ctions (km)	Comments
ME218340	Maersk Mol	obilizer	1	0 11	8-05-2021	15:40	15:41	v	visually detected by observer	Holly Hop	gan 47	38.956	N	46	27.035	w	1100	UW	unidentified large whale, one blow at a distance	60	2500	1	1			n	swimming/transiting	unknown	UNK	not firing no	firing -	-	-	-	-	-	- 1	one		observed during toolbox safety meeting, PAM Gear Wet Test
ME218340	Maersk Mol	obilizer	2	0 11	8-06-2021	16:15	16:24	v	visually detected by observer on watch	McCorms Holly Ho	uck/ 47	30.936	N	46	39.335	w	1100	rw	large blow, large curved backward dorsal fin	240	750	1	1			n	milling	away	s	not firing no	firing -	-	-	-	-	-		some		PAM Gear Wet Test
ME218340	Maersk Mol	obilizer :	3	0 11	8-05-2021	16:33	16:49	v	visually detected by observer on watch			30.941	N	46	39.321	w	1100	rw	small fin, dark in color, large blow seen before fin visible	246	800	1	1			n	transiting	away	UNK	not firing no	firing -	-	-	-	-	-	- 1	one		PAM Gear Wet Test
ME218340	Maersk Mol	obilizer -	4	0 1	8-05-2021	18:33	18:46	v	visually detected by observer	Holly Ho	gan 47	30.39	N	46	41.418	w	1100	rw	large blow before larger sickle dorsal fin, continous smooth dark grey	240	300	1	1			n	milling	parallel opposite	t	not firing no	firing -	-	-	-	-	-	- 1	one		moving toward the rig, PAM Gear Wet Test
ME218340	Siem Pil	Not :	5	0 2	4-05-2021	16:45	17:30	v	visually detected by observer	y H. Hogan Miles		30.764	N	46	40.825	w	1100	HW	bumpy dorsal fin		800	2	2			n	feeding, tail slap, blowing	variable	v	not firing no	firing -		-	-	-	-	- 1	ione		hours after VSP concluded
ME218340	Siem Pil	liot	6	0 2	4-05-2021	16:45	17:30	v	visually detected by observer	y H. Hogan Miles		30.764	N	46	40.825	w	1100	rw	chevron, lower right jaw white, sickle dorsal		<200	6	5	1			feeding, birds following whales, circling the yessel	variable	٧	not firing no	firing -	-	-	-	-	-	- 1	some		hours after VSP concluded
ME218340	Siem Pil	liot	7	0 2	05-2021	16:45	17:30	v	visually detected by observer	y H. Hogan Miles		30.764	N	46	40.825	w	1100	Minke	white patches on flippers, small		100	1	1				swimming around ship, sween with FW & HW, likely feeding	variable	v	not firing no	firing -	-	-	-	-	-	- 1	ione		hours after VSP concluded
ME218340	Siem Pil	Vot		500 2	4-05-2021	1:50	10:00	р	acoustically detecte by PAM	D. Winde	eler 47	30.095	N	46	41.628	w	1100	sw	faint sperm whale click trains		>1000	ď						unknown	LINK	not firing	ring did no	nt NA	>1000	-	>1000	>1000	>1000 r	one n	one none	west of rig
ME218340	Siem Pil	ilet		501 2	4-05-2021	2:30	10:00	р	acoustically detecte by PAM	d K. Kowan D. Winde		30.796	N	46	40.291	w	1100	sw	faint sperm whale click trains		>1000	d						unknown	UNK	not firing	ring did no	nt NA	>800	UNK	>1000	>1000	>1000 r	one n	one none	east/northeast of rig
ME218340	Siem Pil	liot	Т	502 2	4-05-2021	3:01	3:01	р	acoustically detecte by PAM	d K. Kowan D. Winde	ski/ eler 47	30.412	N	46	40.909	w	1000	up	very faint tonals suspected to be distant dolphin whistles		>1000	>1	Г	T				unknown	UNK	firing	ring did no	nt NA	>1000	NA	>1000	>1000	>1000 r	one n	one none	too faint to determine