A.I.S., Inc.

Protected Species Monitoring Final Report

PROTECTED SPECIES MONITORING SERVICES DURING GEOPHYSICAL SURVEY CAMPAIGN IN BAY MARCHAND SHALLOW RESERVES AREA

FINAL REPORT




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Confidentiality The information summarized in this Final Report was collected by A.I.S., Inc. for Cantium LLC to be distributed to their clients and the National Marine Fisheries Service as required by the Letter of Authorization granted to Cantium, LLC on October 02, 2023.

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List of Abbreviations

AIS	A.I.S., Inc.
BMP	Best Management Practices
BOEM	Bureau of Ocean Energy Management
BSS	Beaufort Sea State
ESA	Endangered Species Act
HRG	High Resolution Geophysical
IHA	Incidental Harassment Authorization
LOA	Letter of Authorization
MMPA	Marine Mammal Protection Act
NARW	North Atlantic Right Whale
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NVD	Night Vision Device
PSO	Protected Species Observer
SRAPDC	Shallow Reserve Area Project Design Criteria
TI	Thermal Imaging
TIPSO	Thermal Imaging Protected Species Observer
USFWS	United States Fish & Wildlife Service

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1. EXECUTIVE SUMMARY

This report summarizes protected species monitoring and observations during Cantium LLC's Bay Marchand shallow reserve area survey operations completed in December of 2024 and January of 2025 off the coast of Louisiana. This geophysical survey campaign was completed in support of mapping the shallow section above the Bay Marchand crest to identify new drilling targets. Existing production in the Shallow Reserves Area (SRA) indicates that there is potential for drilling in some of the poorly imaged areas where fault closures have produced substantial volumes of oil. The campaign took place in the BOEM OCS lease blocks OCS 00369 and OCS 00370, Bay Marchand SRA in blocks BM1, BM2, BM3, BM4, and Grand Isle area 26. The Letter of Authorization (LOA) (LOA; 88 FR 69623) issued by National Marine Fisheries Service (NMFS) on October 2, 2023 with effective dates of February 1, 2024 – January 31, 2025, and the regulations set out by the Louisiana Department of Fish and Wildlife contain stipulations requiring monitoring and mitigation for marine mammals and sea turtles during geophysical survey operations. To comply with these requirements, Cantium LLC contracted A.I.S., Inc. (AIS) to provide Protected Species Observers (PSO) to monitor for marine mammals and sea turtles during on-water survey operations.

The PSO team was mobilized and on site and maintained watch for a period of forty two (42) days, between December 10, 2024 and January 20, 2025. Geophysical survey operations were conducted for twenty (20) of those days. Due to the potential for harassment of listed or otherwise protected marine species as a result of the sound generated by geophysical survey operations, a team of three (3) PSOs were deployed to Port Fourchon, LA to monitor sound producing operations. The Louisiana Department of Fish and Wildlife regulations required PSOs to be stationed on a separate vessel following the source vessel Sea Dragon, therefore PSOs were stationed on the support vessel GO Justice which followed behind the Sea Dragon. The PSO team was able to view the entirety of the exclusion zone surrounding the sound source and source vessel at all times when monitoring efforts were underway. The PSOs monitored in accordance with regulations set forth within the LOA and the LDFW requirements.

There were one hundred and seven (107) protected species detections during this campaign. There were zero (0) shutdowns of operations due to protected species detections and there was one (1) detection of a bottlenose dolphin where a delay to the pre-clearance was enacted resulting in a delay of twenty-six (26) minutes. The request for the delay to the pre-clearance was given by the PSO and met by the vessel crew with compliance. Throughout the survey campaign there were four (4) detections which would have the potential for a level B take totaling seven (7) individual animals. More information on these potential takes can be found in Section 5.1 contained within this report.

Table 1 Geophysical Survey Campaign Overview

Client	Cantium LLC
Lease Area Blocks	Bay Marchand BM1, BM2, BM3, BM4, and Grand Isle area 26
Survey Area	Bay Marchand Shallow Reserves Area
BOEM Lease References	OCS 00369 and OCS 00370
Dates	December 10, 2024 through January 20, 2025
Geophysical Survey Contractor	Walker Marine
Protected Species Observer Contractor	A.I.S., Inc.
Protected Species Observers	Graham Humpheries, Ryan Mahoney, Megan Frady, Brittian Francisco, Jacob Gentle, Keith Pawlowski, Jeremy Jowers

2. INTRODUCTION

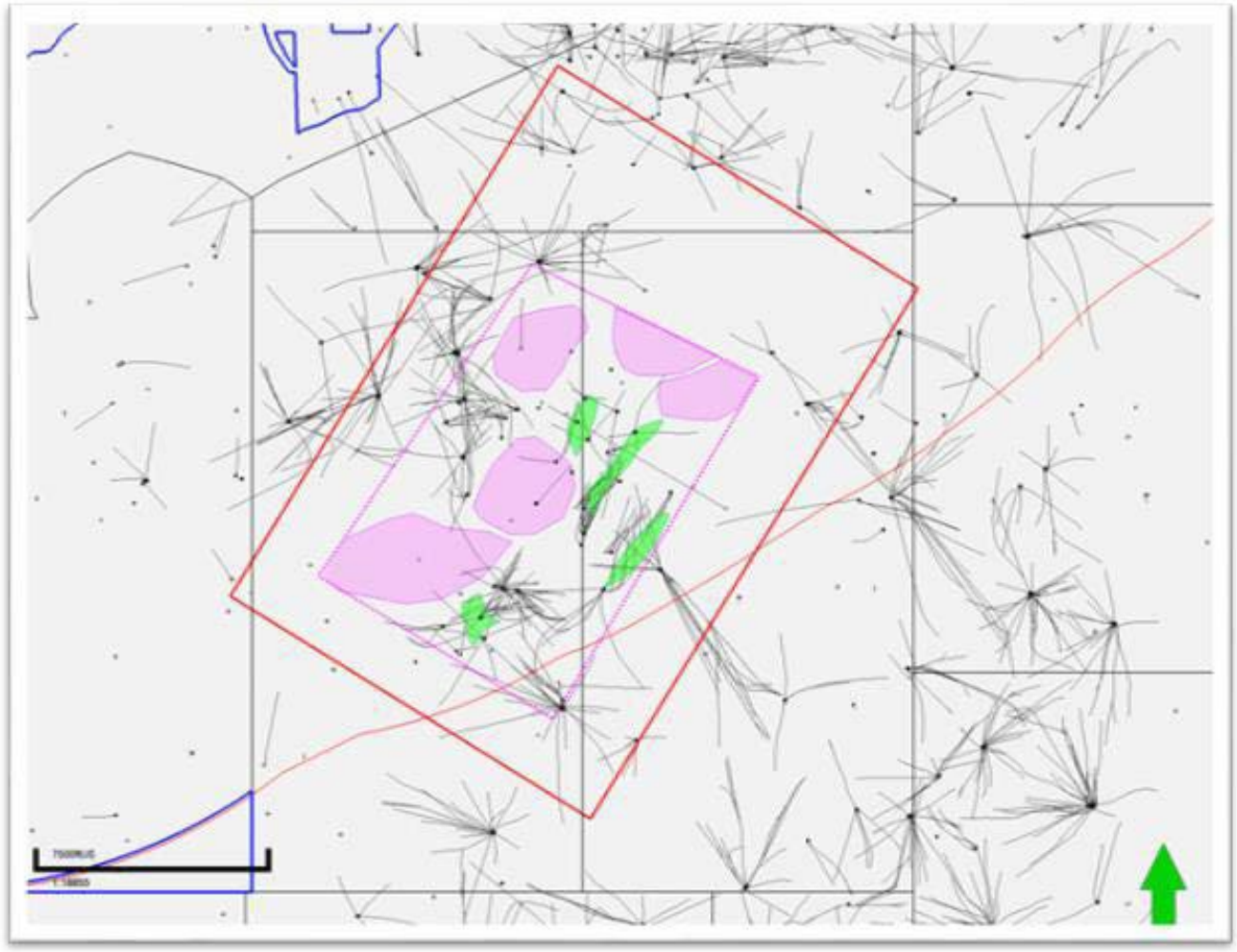

Figure 1 Overview of the Shallow Reserve Area in Bay Marchand blocks BM1, BM2, BM3, BM4, and Grand Isle area 26 (Cantium LLC)

The Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) were enacted to protect endangered species and marine mammals respectively, and both prohibit the "taking" of these animals. They are administered by the National Oceanic and Atmospheric Administration (NOAA), NMFS and United States Fish & Wildlife Service (USFWS) which issue authorizations for activities that have the potential to incidentally "take" by harassment members of an endangered species. Under section 7 of the ESA, federal agencies are required to consult with NOAA and USFWS if the authorized activities that are being undertaken may adversely affect or result in an incidental take of endangered species (NOAA Fisheries, 2023). On October 2, 2023, Cantium LLC was issued an LOA (LOA; 88 FR 69623) for activities related to geophysical surveys within the Bay Marchand lease blocks BM1, BM2, BM3, BM4, and Grand Isle area 26). The project specific LOA outlined the monitoring, mitigation, and reporting requirements for three specific marine protected species, with additional requirements laid out for reporting sightings injured, stranded, or entangled protected species. These were species specific to the area with the highest potential to be affected by acoustic disturbance from planned in-water operations. This report reviews the complete results from the December 2024 and January 2025 geophysical survey efforts in waters of the Bay Marchand Shallow Reserves Area blocks BM1, BM2, BM3, BM4, and Grand Isle area 26.

3. PROTECTED SPECIES OBSERVATION METHODS

Monitoring and mitigation measures were designed to minimize potential impacts of sound produced by Geophysical survey operations on protected species and were implemented in accordance with the NMFS LOA and specific client requirements. The mitigation and monitoring measures associated with these operations were as follows:

- **PSO Monitoring Schedule and Time of Day Restrictions:** During regulated survey operations utilizing geophysical equipment, or when other acoustic sources will be in the water, a minimum of two PSO must be on duty and conducting visual observations during all daylight hours. Daylight hours are defined by the regulator as the time from 30 minutes prior to sunrise through 30 minutes following sunset. PSOs are scheduled to work in shifts to ensure that each individual does not exceed two consecutive hours of watch followed by a minimum of a one-hour break.

- **Pre-Survey Activity Observation (Pre-Start Clearance):** PSOs will implement a 30-minute pre-start clearance of the shutdown zone, monitoring around the area prior to the startup of any in water sound producing equipment for the day, after pauses of 30-minutes or more (without continuous PSO monitoring) and after periods of inclement weather or other factors that cause the shutdown zone and adjacent waters to be non-observable. During this period, the zone will be monitored by two (2) PSOs equipped with the appropriate visual monitoring technology. Regulated sound sources will not be activated if any protected species are observed within the exclusion zone and buffer zone. If protected species are observed entering or within the established mitigation zones within the 30 minutes prior to activation of equipment, regulated survey activities will be delayed and may not commence until either the animal(s) has voluntarily left and been visually confirmed beyond the shutdown zone or 15 minutes for small delphinids and 30 minutes for all other species have elapsed without subsequent detection.

- **Ramp-up/Soft Start Procedure:** There was no ramp up for this campaign as there was no requirement for ramp up in the provided NMFS LOA.

- **Shutdown zones:** PSOs will establish shutdown and monitoring zones prior to the start of operations, as follows:
  - Standard exclusion zone of 0-100 meters during survey operations
  - Buffer zone of 100-200 meters during preclearance

- **Shutdowns:** In the event that a listed or otherwise protected marine species that authorization for takes has not been granted is sighted entering or observed within the relevant shutdown zone during active survey operations, an immediate shutdown of regulated sound source equipment (airgun array) will be required. Regulated geophysical survey activities will not resume until the animal(s) has been confirmed to have left the relevant shutdown zone or 30 minutes have elapsed without subsequent detection.

- **Post-Survey Activity Observation (Post-Watch Clearance):** Following the completion of survey activities using acoustic sound sources PSOs will implement a 60-minute post-watch of the shutdown zones. During this period, the zone will be monitored by at least two (2) PSO equipped with the

appropriate visual monitoring technology. Any protected species that are observed entering or within the established zones during these 60-minutes will be noted in the data.

- **Vessel Strike Avoidance:** Vigilant watch will be maintained during transits to ensure vessel operators may reach their destination safely and without causing harm to any protected species. PSOs are trained to distinguish and identify marine mammals, especially in the detection of NARW.

- **Harassment, Harm, Injury and Disturbance Reporting:** PSOs will immediately report instances of harassment, harm, or injury to protected species as well as instances of NARW detections or any entangled or dead protected species.

3.1. Protected Species Observer Training and Compliance

A team of three (3) NMFS-approved PSOs were provided by AIS for monitoring aboard the GO Justice during geophysical survey operations in the Bay Marchand Shallow Reserves Area block BM1, BM2, BM3, BM4, and Grand Isle area 26. All PSOs attended a dedicated pre-project training course prior to deployment. PSO training involved a detailed review of the following:

- Permits relevant to the project
- Environmental compliance requirements
- Health and safety requirements
- PSO requirements and scheduling
- Listed and Protected species mitigation methods
- Communication
- Data forms
- Use and maintenance of PSO equipment
- Protected species identification.

3.2. Monitoring Methods and Equipment

To fulfill protected species monitoring and mitigation requirements, three (3) PSOs deployed offshore and rotated monitoring shifts to ensure that each individual did not exceed two consecutive hours of watch followed by a minimum of a one-hour break. Watches occasionally overlapped but never exceeded the regulatory requirements. In accordance with the regulatory documents provided by the client, at least two (2) visual observer maintained a 360° visual watch of the shutdown zone surrounding the operational area during survey operations. PSO duties included:

- Maintaining vigilant watch for marine protected species and communicating any sightings in the strike zone to vessel operators during all vessel transits, ensuring strike avoidance measures were met;
- Visually monitoring the shutdown and monitoring zones 360° around the sound source during survey operations for the presence of marine protected species (marine mammals, sea turtles and ESA listed fishes);
- Documenting all marine protected species sightings, observer effort, and environmental conditions on standard data forms and reporting all incidents to proper personnel;
- Recording operational activities during monitoring effort;
- Informing vessel and survey operators if a protected species is heading towards the shutdown zone;
- Calling for a shutdown if a marine protected species is observed entering or surfaces within the shutdown zone;

- Advising operators on mitigation requirements in the event of marine protected species detections;
- Ensuring all mitigations actions (pre-start clearance, delay ramp-up, ramp-up and shutdown) are enacted;
- Summarizing daily monitoring effort and submitting data forms to the appropriate staff.

PSOs were equipped with a range of visual monitoring equipment, including the following:

- Hooway/Bushnell 7X50 Marine Reticle Binoculars;
- AN PVS-14 Mono-Goggle, Gen 3 AGM-HS Hand Select Night Vision Device (NVD);
- Canon Rebel T6 with 300mm Image Stabilized lens.

4. OPERATIONAL & PSO EFFORT SUMMARY

A brief overview of operational activities including vessel deployments, operations utilizing regulated geophysical sound sources and PSO effort is included in the below sub-section. A detailed timeline of all PSO effort and survey activities can be found in the Microsoft Excel file accompanying this report (AIS_CAN_PSO_BayMarchandSRA_GP_GOJustice_FinalData).

4.1. Operational Activity Summary

Three (3) PSOs deployed onboard the support vessel GO Justice in order to comply with the two (2) PSOs on watch at all times monitoring requirements set forth in the aforementioned LOA. All monitoring occurred from onboard the support vessel (GO Justice) pictured in **Figure 2** below. PSOs were stationed at the bridge level of the vessel while monitoring, resulting in a base height of eighteen (18) feet above water surface.

Figure 2 PSO Support Vessel GO Justice

The Sea Dragon conducted geophysical survey operations over twenty (20) days between December 10th 2024 and January 20th 2025. PSOs were on station and maintained watch for forty-two (42) of those days when seismic data acquisition was not able to be conducted but was planned. **Figure 3** details the amount of time spent offshore per operational activity.

The only piece of regulated geophysical survey equipment in use for this survey was the *Walker interdependent 2-gun array* which housed two *Bolt 2800 LLXs* totaling 240 in^3 in size. Sample rate was set at 4kHz for this survey campaign and the airguns were using a power output of 1700 PSI. Before any activation of the sound source PSOs conducted pre-watch clearance for a minimum of 30 minutes. Throughout the survey campaign pre watch clearance totaled eleven (11) hours and forty-eight (48) minutes (**Figure 3**). There was one delay of pre watch clearance due to a bottlenose dolphin being sighted with the buffer zone and resulted in a delay of an additional twenty six (26) minutes. Regulated full power acquisition for the airgun array consisted of periods of full power acquisition and totaled one hundred and ten (110) hours and twenty-four (24) minutes. No other geophysical survey activities requiring PSOs occurred.

Pre-start clearance mitigation was implemented prior to all activations of regulated sound source equipment for the day, or prior to the restart of specified equipment after inactivity exceeding 30 minutes. A one (1) hour post survey watch was completed after geophysical survey activities were completed for the survey day totaling eighteen (18) hours and thirteen (13) minutes. Over the course of this campaign equipment was deployed and retrieved for five (5) hours and six (6) minutes and two (2) hours and fifty-five (55) minutes, respectively. PSOs remained on watch through fifty-one (51) hours and fifty-eight (58) minutes of vessel transit. The majority of the time spent by the PSOs monitoring efforts was conducted during anchoring/station keeping while the vessel was on site and waiting for the survey vessel to begin geophysical operations or during increased sea state events where monitoring could take place but geophysical survey operations could not. This totaled two hundred and thirty-five hours (235) and twenty-six (26) minutes. Full power geophysical survey operations were conducted for a total of one hundred and ten (110) hours and twenty-four (24) minutes, with silent source line changes totaling seventeen (17) hours and forty-eight (48) minutes. There were zero (0) shutdowns of survey operations as no protected species were observed within the exclusion zone while the sound source was active.

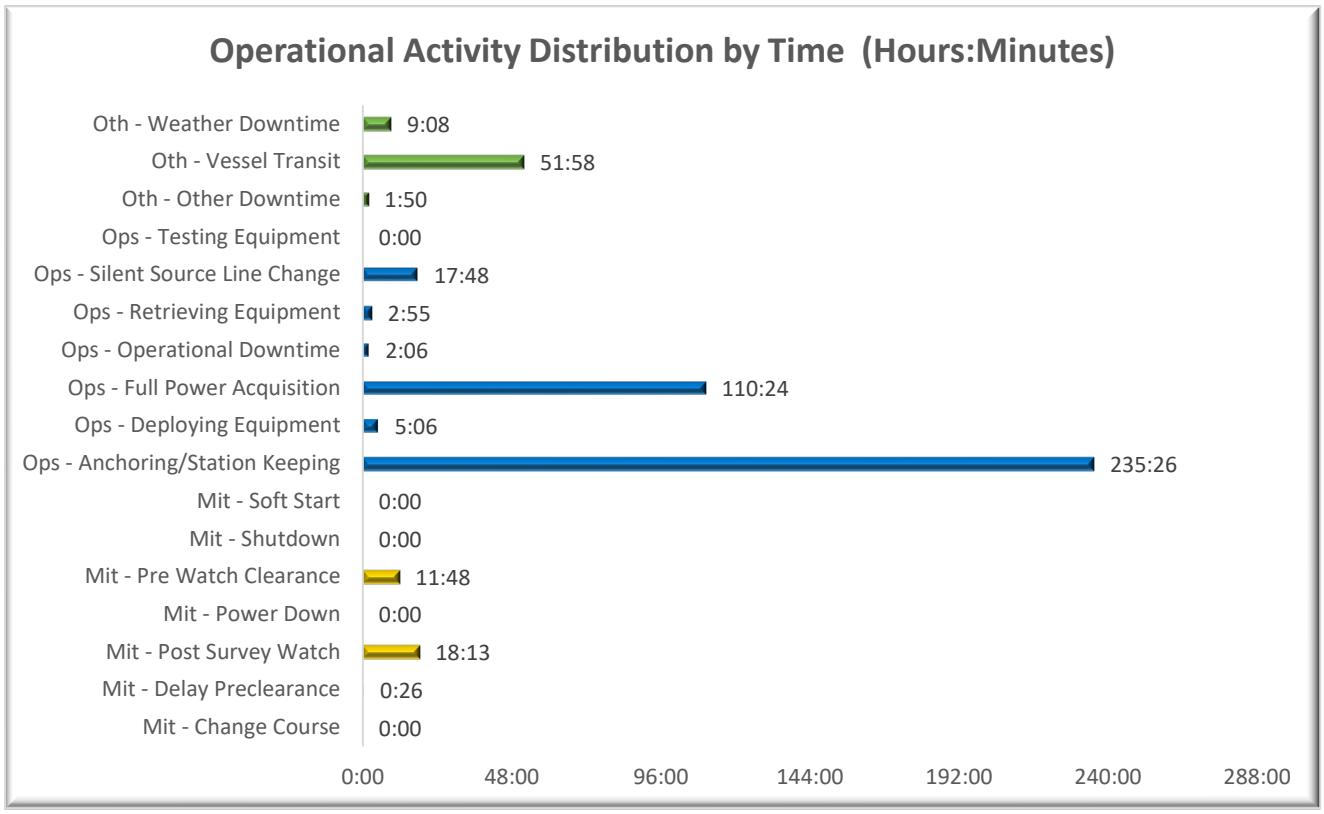

Figure 3 Operational Activity Distribution by Time (hh:mm)

A GIS georeferenced, time-stamped support vessel track line file is provided in a zipped file accompanying this report (AIS_Cantium_BayMarchandSRA_PSO_Tracklines_GOJustice).

4.2. Protected Species Observer Effort Summary

All PSOs working on this project were submitted for review and approved by NMFS prior to deployment on the campaign. During the course of the survey PSOs visually monitored the area around the source vessel and the support vessel for a total of four hundred and fifty-nine (459) hours and forty-seven (47) minutes. During this survey campaign there was always two (2) PSOS on watch. Further, each PSO maintained a break schedule which allowed the PSOs to maintain no more than two (2) hours of watch followed by a one (1) hour break. No PSOs maintained watch for greater than twelve (12) hours in an observation day at any point during the campaign. All operations during this project occurred during daylight hours, therefore PSOs maintained watch using the unaided eye and reticuled binoculars. There were a few instances where post watch ran into twilight hours and PSOs used night vision devices (NVD) monitoring methods to monitor the end of the post survey watch. This time accounted for less than one (1) percent of the total observational effort as noted in **Figure 4**.

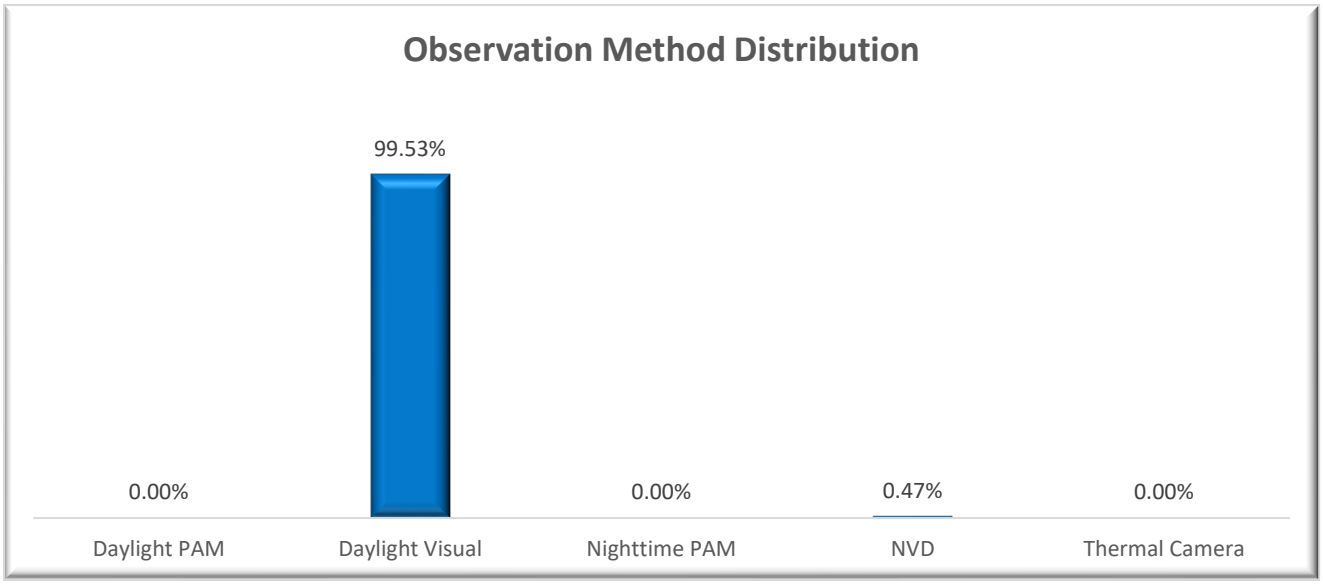

Figure 4 Active Monitoring Effort by Number of PSOs on Duty (hh:mm)

The PSO team conducted monitoring efforts for a total of four hundred and fifty-nine (459) hours and forty-seven (47) minutes. Of this time the PSO team was monitoring while the sound source was deployed and active for a total of one hundred and ten (110) hours and seventeen (17) minutes. PSOs also continued watch while the sound source was not deployed or while the sound source was deployed but not active for a total of three hundred and forty nine (349) hours and thirty (30) minutes as referenced in **Figure 5**. The majority of the time spent monitoring while the sound source was inactive was spent while the support vessel that the PSOs were stationed on was anchored or station keeping waiting for the source vessel to arrive on site and begin operations. This time also accounts for deployment and retrieval of equipment, any operational downtime, and any pre-watch clearance and post-watch times.

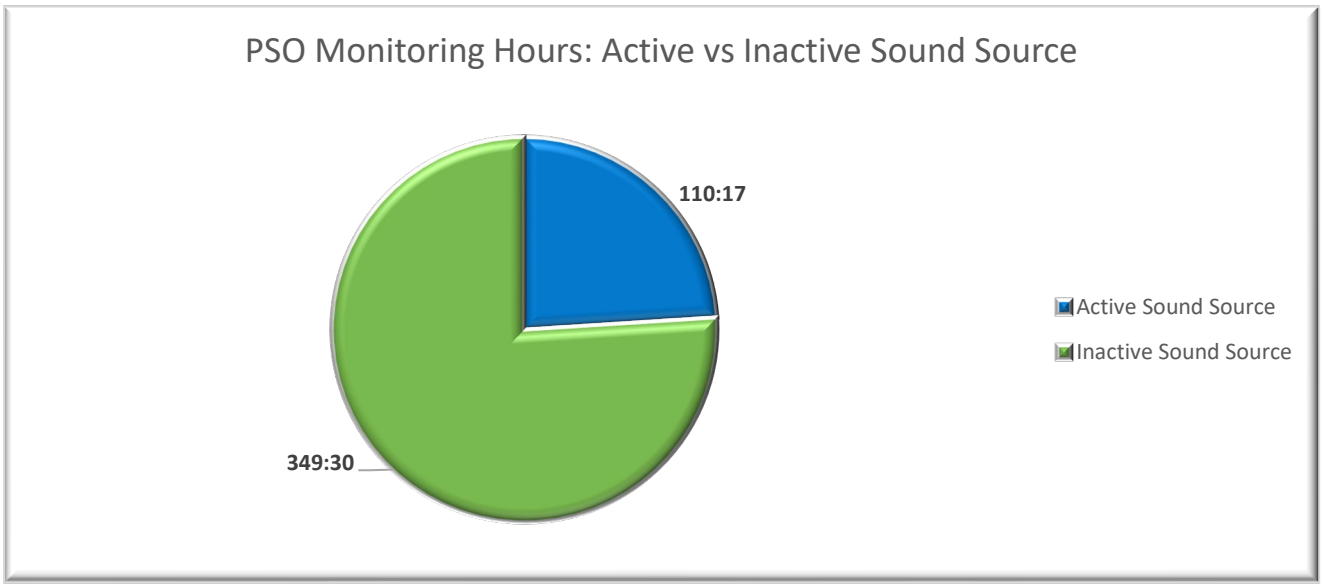

Figure 5 PSO Monitoring Hours: Active vs Inactive Sound Source

5. PROTECTED SPECIES DETECTION SUMMARY

During the course of the survey campaign PSOs recorded one hundred and seven (107) detections of protected species totaling three hundred and thirteen (313) individual animals and the breakdown of these detections per species can be found in **Figure 6**. PSOs conducted monitoring efforts for four hundred and fifty-nine (459) hours and recorded a total of one hundred and seven detections of protected species giving a visual monitoring detection rate of 0.23. The vast majority of these detections were of bottlenose dolphins, accounting for ninety-seven (97) of the detections and totaling three hundred and one (301) of the individual animals sighted during this survey campaign. More detailed information for each sighting can be found in the "Detections" tab of the attached file (AIS_CAN_PSO_BayMarchandSRA_GP_GOJustice_FinalData). No dead, injured, or stranded protected species or animals were observed by PSOs during monitoring efforts during this survey campaign.

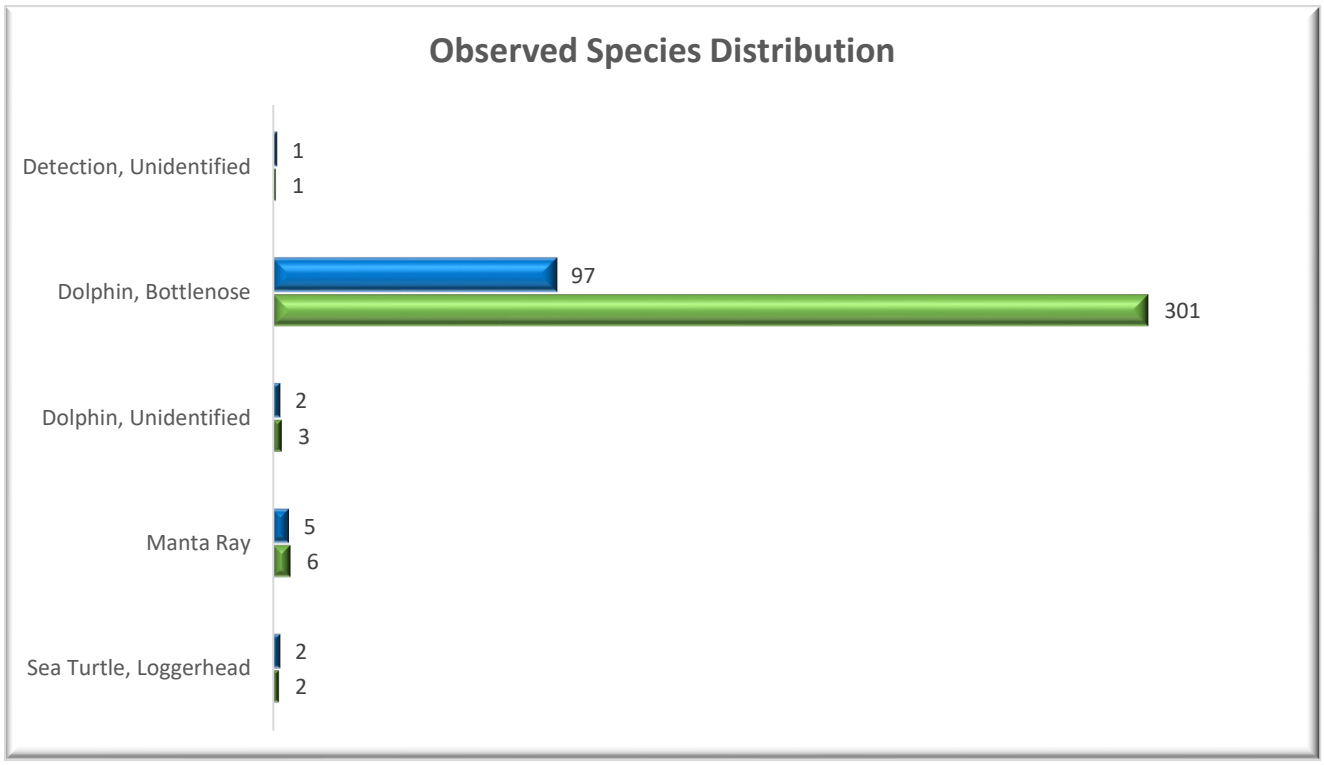

Figure 6 Distribution of Protected Species Observed

There were two (2) detections of a loggerhead sea turtle which occurred during full power acquisition. However, both turtles were outside of the exclusion zone and had a CPA of three hundred and ninety-five (395) and four hundred and seventy-nine (479) meters respectively. Neither of the loggerhead sea turtles observed were in the forward path of the vessels and the vessels were moving slowly at approximately four (4) knots at the time of these observations.

There was one unidentified detection where the PSO reported a gray body jumping out of the water twice during full power acquisition. No other identifying characteristics could be determined due to the relatively short sighting time and the CPA for this sighting was outside of the exclusion zone at one hundred and fifty (150) meters from the sound source.

Two unidentified dolphins were observed during this survey campaign. Both sightings occurred at with a large sighting distance at five hundred (500) meters and eight hundred and two (802) meters from the source vessel. Both of these sightings occurred while the vessel was station keeping on standby and there was no active sound source. Due to the relatively large sighting distance PSOs could only determine the body shape to be delphinid but could not gather more evidence to identify the species further.

There were five (5) detections of manta rays during this survey campaign and four of these detections occurred outside of the exclusion zone with a sighting distance of two hundred and seventy-six (276), four hundred and forty-one (441), four hundred and twelve (412), three hundred and fifty-seven (357) meters respectively. The one manta ray detection that occurred within the exclusion zone was sighting as close as five (5) meters to the sound source however, this detection occurred while the vessel was station keeping and on standby.

It is important to differentiate between sightings that occurred while the sound source was active and those that occurred while the sound source was inactive. A mitigation zone is considered *active* when the sound source is deployed and generating sound levels that require mitigation. Conversely, the zone is considered *inactive* when the sound source is either not deployed or not producing sound levels that warrant mitigation. In total the PSO team recorded twenty-three (23) detections of protected species while the mitigation zone was active, and eighty-four (84) detections of protected species while the mitigation zone was inactive. During this survey campaign there were zero (0) detections of unidentified dolphins while the sound source was active and zero (0) sightings of loggerhead sea turtles or unidentified detections while the mitigation zone was inactive as illustrated in **Figure 7 and Figure 8** respectively.

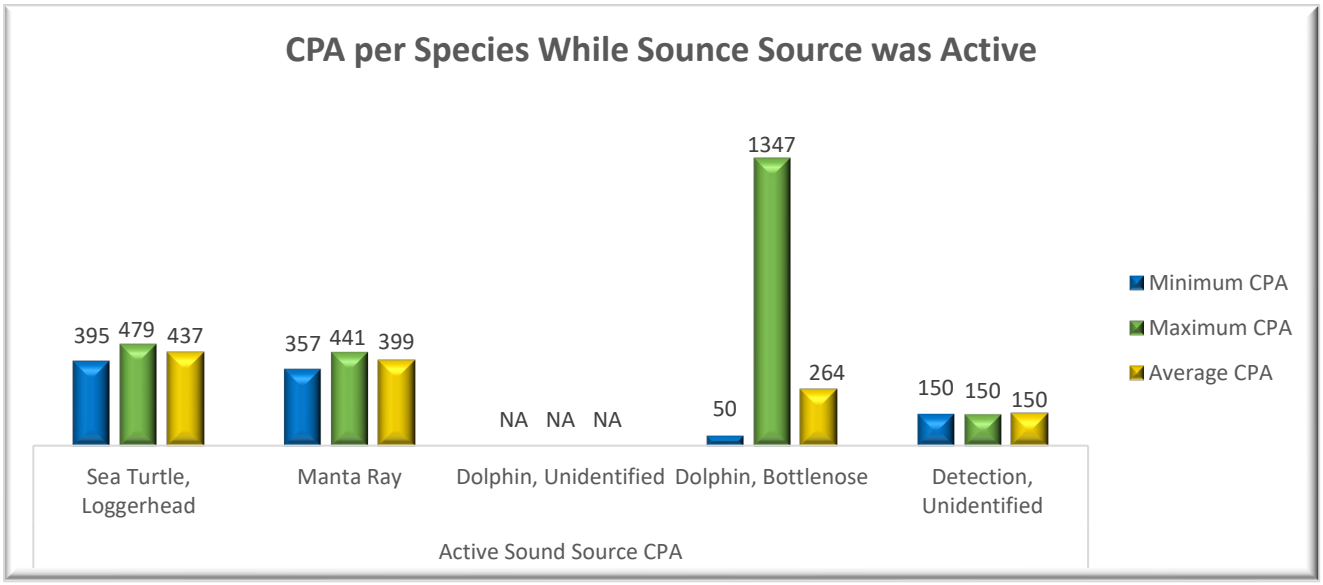

Figure 7 CPA per Species Observed While Sound Source was Active

The average CPA for each species while the mitigation zone was active is detailed in **Figure 7**. While the sound source and respective mitigation zone was active loggerhead sea turtles had an average CPA of four hundred and thirty-seven (437) meters, manta rays had an average CPA of three hundred and ninety-nine (399) meters, bottlenose dolphins had an average CPA of two hundred and sixty-four (264) meters, and the single unidentified detection had a CPA of one hundred and fifty (150) meters.

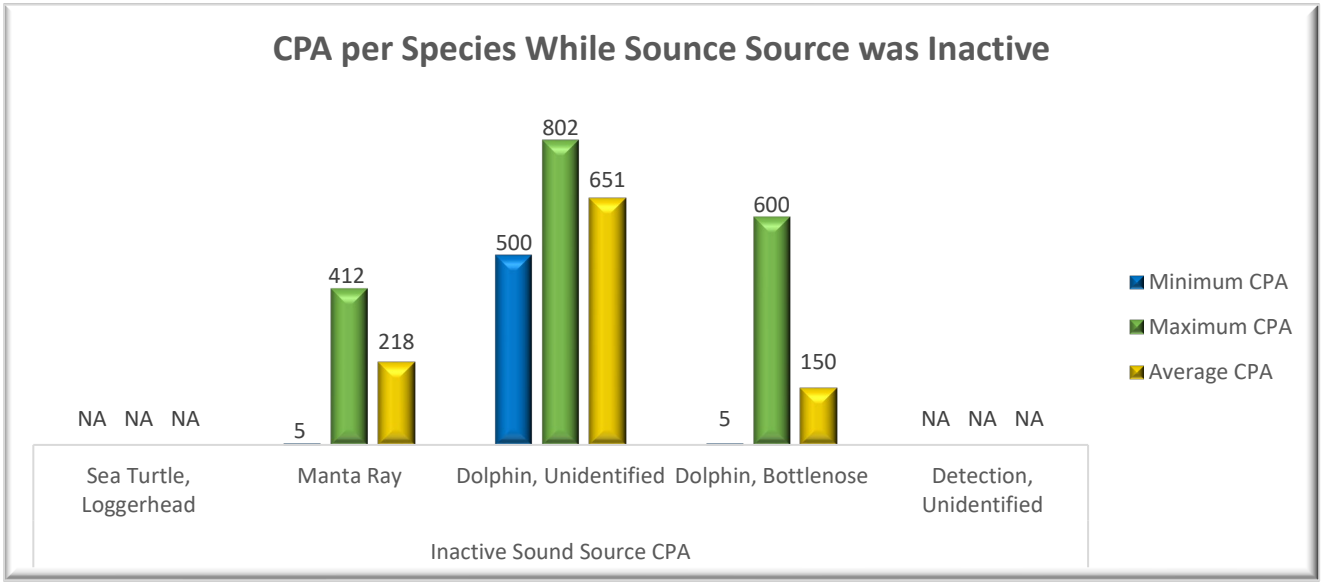

Figure 8 CPA per Species Observed While Sound Source was Inactive

The average CPA for each species while the sound source, and therefore the mitigation zone, was inactive is detailed in F**igure 8**. Manta rays had an average CPA of two hundred and eighteen (218) meters, unidentified dolphins had an average CPA of six hundred and fifty-one (651) meters, and bottlenose dolphins had an average CPA of one hundred and fifty (150) meters while the sound source was inactive.

5.1 Potential Takes

During the course of this survey campaign there were four (4) detections which may qualify as potential level B take. Each of these four detections were of bottlenose dolphins which the LOA has granted one thousand three hundred and eighty-nine (1,389) level B takes. Of these four (4) detections within the exclusion zone while the sound source was active two (2) of these were of a single bottlenose dolphin, one (1) detection contained two (2) bottlenose dolphins, and one (1) detection contained three (3) bottlenose dolphins. This would give a total of seven (7) individual bottlenose dolphins within the level B exclusion zone while full power acquisition was taking place. This information is summarized below in **Table 2**.

During these sightings no negative behavioral changes or reactions were recorded by the PSOs. PSOs observed diving behavior for two (2) of these detections as a behavioral reaction, one (1) detection was reported to have no reaction, and one (1) detection was reported to exhibit a splash as a reaction.

Table 2 LOA take list

LOA - Marine Mammals Take Authorization					
Name	**Level A** Occurrence (#)	**Level A** Authorized (#)	Name	**Level B** Occurrence (#)	**Level B** Authorized (#)
Rough-toothed dolphin	**0**	**0**	Rough-toothed dolphin	**0**	**23**
Bottlenose dolphin	**0**	**0**	Bottlenose dolphin	**7**	**1,389**
Atlantic spotted dolphin	**0**	**0**	Atlantic spotted dolphin	**0**	**301**

6. SUMMARY OF WEATHER & ENVIRONMENTAL CONDITIONS

Part of the data collection associated with PSO operations includes various weather and environmental conditions including cloud cover, wind speed, wind direction, precipitation, sun glare and visibility during observations. These factors can affect the PSOs ability to observe the required zones effectively, inhibiting shutdown and monitoring zone clearance and ultimately delaying operations. **Figures 9-13** illustrate the distribution of weather variables during PSO monitoring onboard the GO Justice over the course of the survey campaign.

Weather conditions were relatively productive for visual observations with eighty-nine (89) percent of visual observations occurring with no precipitation. Light rain was observed for only seven (7) percent of the time PSOs conducted watch. There were no instances of heavy fog or heavy rain which would have disrupted PSO monitoring efforts during this campaign.

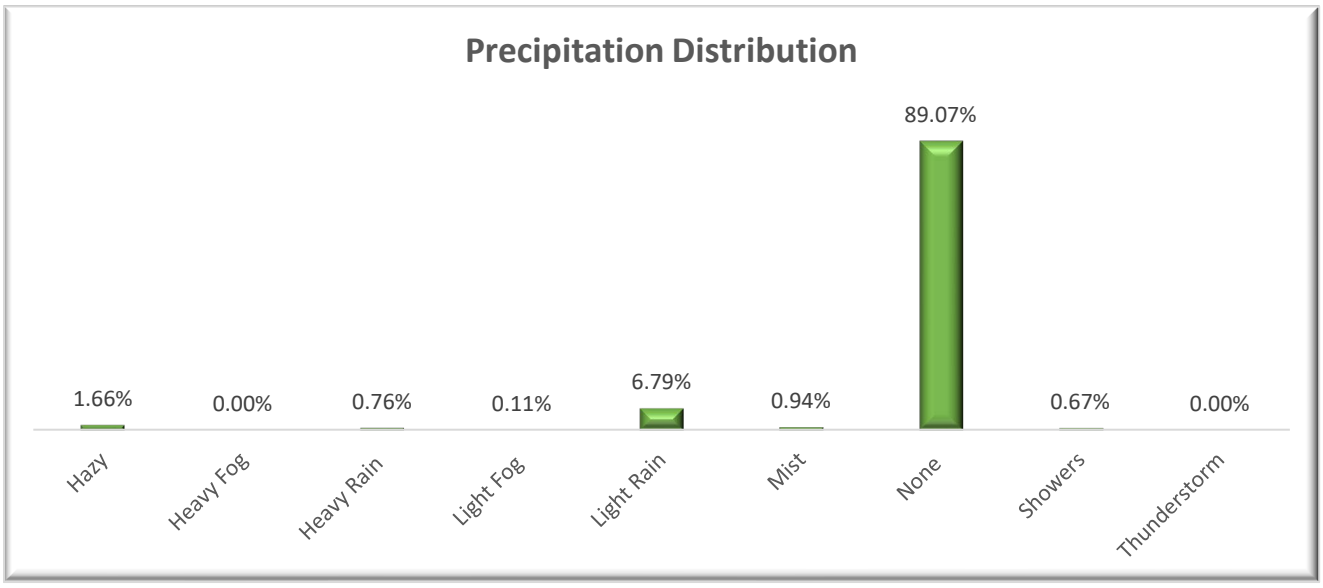

Figure 9 Precipitation Distribution

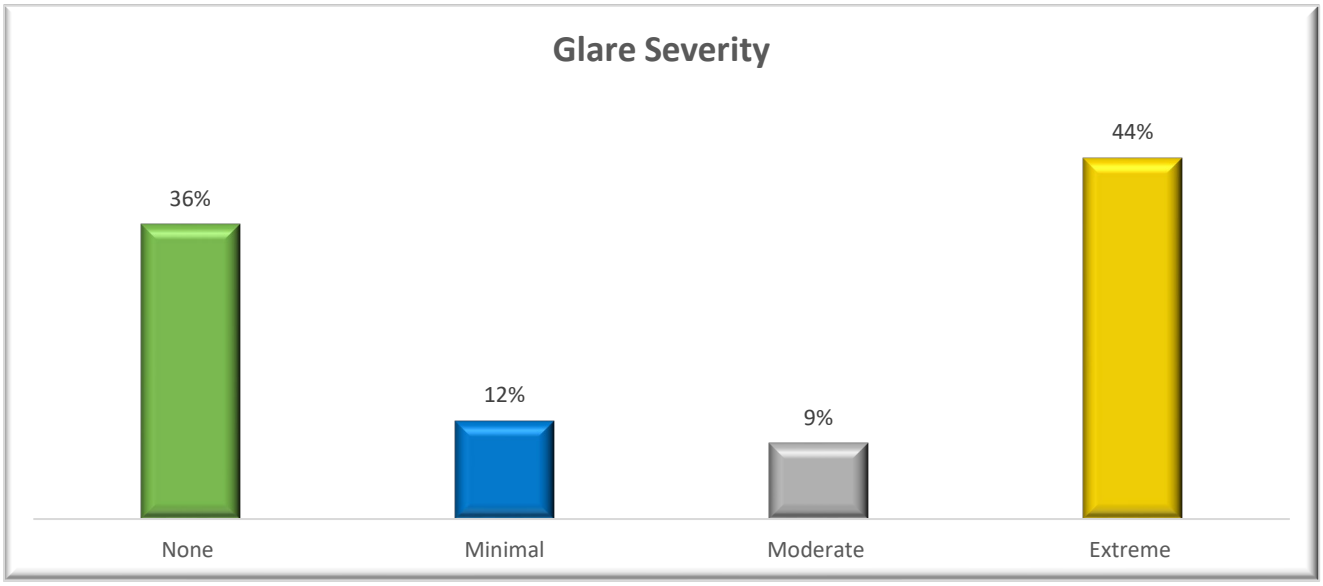

Figure 10 Glare Severity Distribution (None=0%, Minimal=<25% Moderate=25-50%, Extreme=>50%)

Figure 10 illustrates glare severity encountered throughout survey monitoring operations. Extreme glare occurred intermittently throughout various operations, totaling 44% of monitored hours. Despite the presence of extreme glare, there was not a significant negative impact on operations as PSOs reported visibilities of greater than 3,000 meters during these instances. Moderate, minimal, or no glare were recorded for the remaining 64% of the survey.

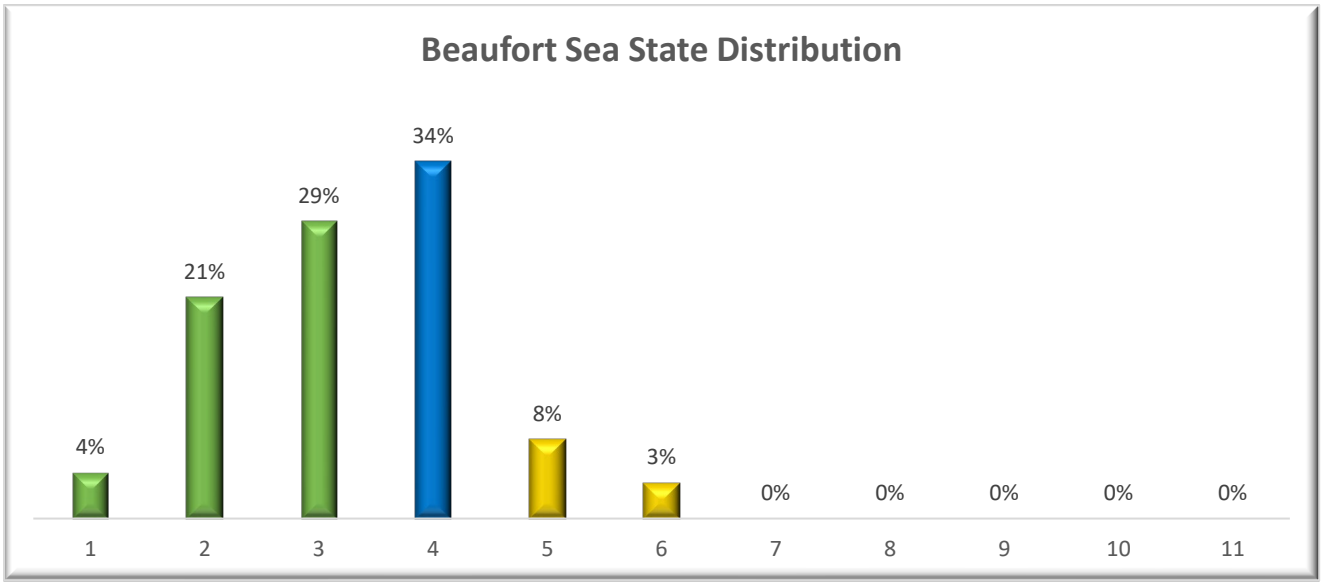

Figure 11 Beaufort Sea State Distribution

Beaufort Sea State (BSS) recorded during visual monitoring ranged from level one to level six over the course of the monitoring period (**Figure 11**). Forty-five (45) percent of visual observations were undertaken during

elevated weather conditions, considered as instances when the BSS was level four or above. The majority of these elevated weather conditions were undertaken in BSS four (4) and were related to elevated wind speed and minimal resulting whitecaps. PSOs did not report a loss of visual of the exclusion zone during these periods and reported a visibility distance of greater than three thousand (3000) meters during these weather events. Further, the majority of these elevated weather events occurred during station keeping when the vessel was on standby. PSOs maintained watch during these elevated weather events only as it was safe to do so in order to get a baseline understanding of marine protected species in the survey area.

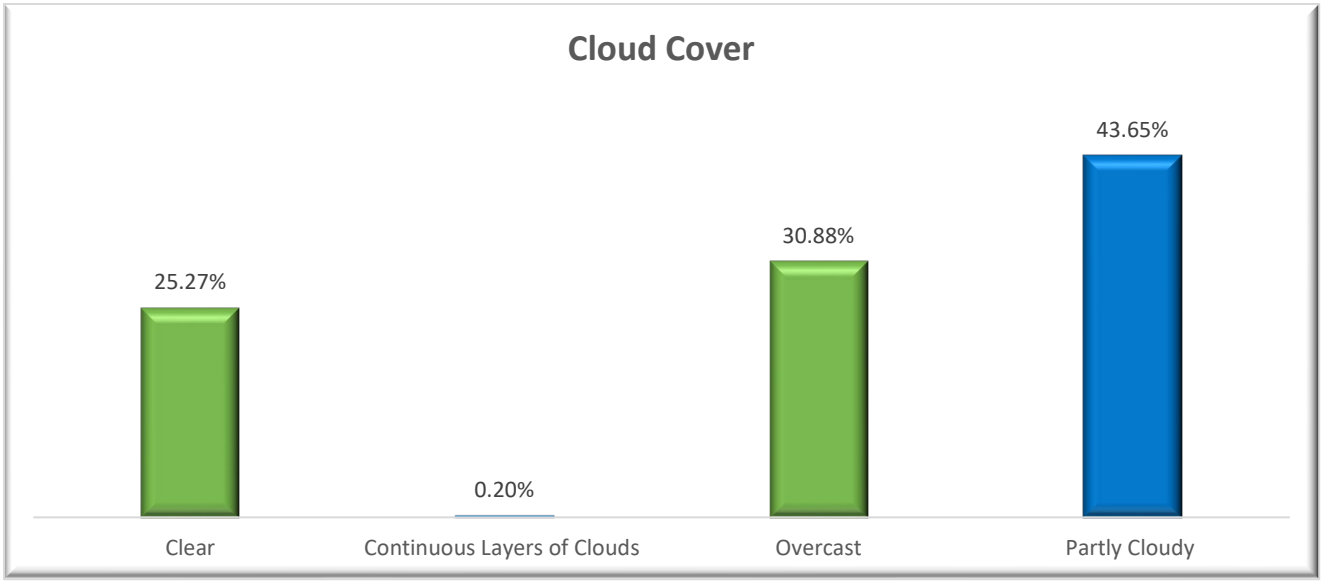

Figure 12 Cloud Cover Distribution

Cloud cover did not disrupt observation efforts as forty-three (43) percent of observational efforts occurred during partly cloudy conditions. Thirty-one (31) percent of observation efforts occurred during overcast conditions and twenty-five (25) percent occurred during clear conditions.

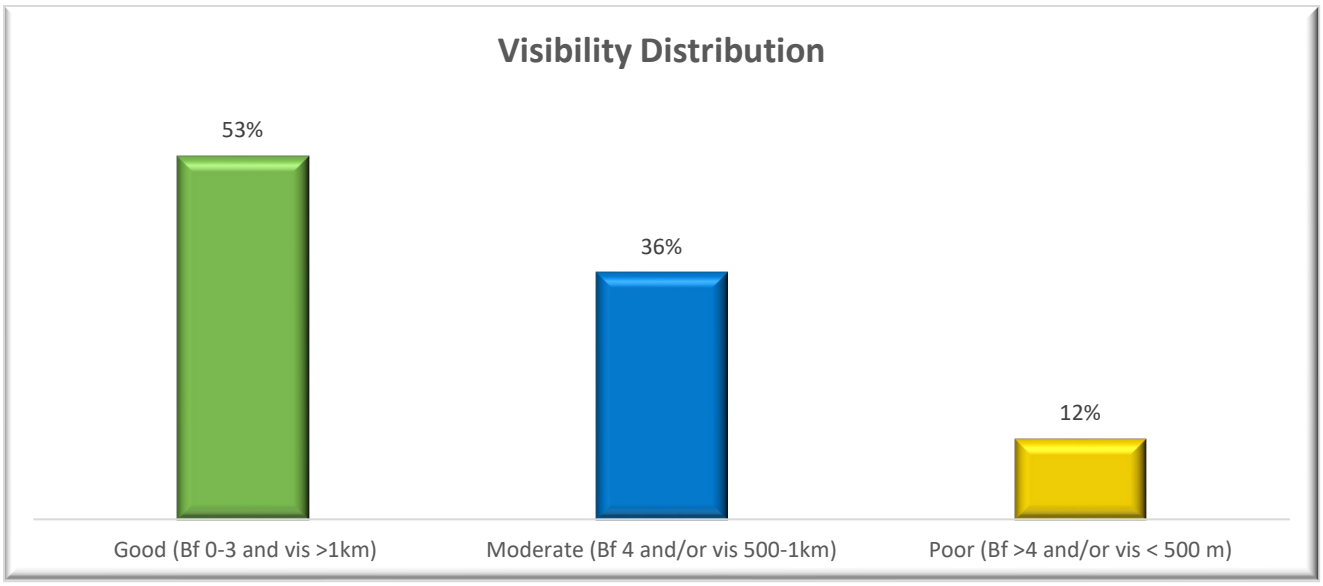

Figure 13 Visibility Distribution (Good = >1,000m, Moderate= 1,000 – 500m, Poor= <500m)
(Bf = Beaufort, vis=visibility)

Through most operations visibility was recorded as good overall, as illustrated in **Figure 13.** The good delineation was given during periods in which the BSS was 0-3, and the visibility was greater than 1000 meters. Although there were instances where factors such as extreme glare temporarily reduced visibility, these adverse conditions did not hinder the PSOs from fully visualizing the shutdown zones of up to 200 meters around the sound source. The lowest visibility recorded herein was 200 meters and occurred while the vessel was station keeping and on standby in the survey area. In conclusion, the PSO Team is confident that no marine protected species observations were disrupted by adverse weather conditions during these operations.

7. ASSESSMENT OF MONITORING METHODS

Survey operations were monitored by two (2) PSOs to effectively observe the shutdown and monitoring zones from the bridge level of the support vessel GO Justice. As indicated above in Section 3, to remain consistent with the permit stipulations the PSOs began monitoring periods each morning at sunrise and continued rotational watches until operations were complete for the day. Visual monitoring was completed to comply with the LOA monitoring and mitigation stipulations as well as vessel strike avoidance measures, pre-start clearances, and post survey watch requirements. There was never an instance in which a PSO monitored for longer than the required two (2) hours without at least a one (1) hour break in between.

Throughout all operational hours the PSOs conducted observations encompassing 360˚ around the vessel. This allowed for the PSOs to appropriately visualize and clear the shutdown zone and allow for continuous operations meeting the standards outlined in the regulatory documents and consistent with client requirements. Further, having the PSOs on a separate vessel per LDFW stipulations created some challenges for communication between the PSO team and the survey team. However, a communication plan was implemented by the PSO team to ensure operational updates and shutdown requests could be communicated effectively in real time. PSOs were able to use VHF radios to communicate shutdown requirements and get updates on planned time of start of line and end of line, as well as other relevant operational updates. The monitoring and mitigation measures required proved to be an effective means of monitoring marine protected species, none of which were encountered during operations.

8. ACKNOWLEDGEMENTS

We would like to extend our sincere thanks to the operations crew and team members at Cantium LLC for their assistance and hospitality for the duration of these works.

We are especially grateful to the following individuals for their considerable contributions to the success of this deployment.

- Dean Landry and Damon Landry (Cantium LLC) for their dedicated support, including logistical coordination, planning, and preparation.
- The AIS PSOs for their continuous effort and unwavering commitment to accurate data collection

Finally, we extend our deepest gratitude to all of the individuals who helped support this project. It would not have been possible without the efforts and assistance of everyone involved.

Appendix A.
A.I.S. Inc., Final Activity Report Summary

REPORT SUMMARY

Client	Cantium	Report	FINAL
Project	Bay Marchand Shallow Geophysical Survey	Date	12/10/2024 to 01/20/2025
Vessel Name	Go Justice	Project Type	Geophysical

Total Active Sources Time	(hh:mm)	110:24	Total Vessel Transit	(hh:mm)	51:58
Total Operational Time	(hh:mm)	371:37	Total Visual Monitoring Time	(hh:mm)	459:47
Total Mitigation Time	(hh:mm)	0:26	Total Number of Detections	(#)	107
Total Downtime	(hh:mm)	13:04	Total Number of Individual(s) Detected	(#)	313

(Mitigation Downtime = Delay Preclearance + Shutdown + Power Down)

Operational Summary

Protected Species Detection Summary

Survey Activity - Monitoring - Detections

	Occurrence (%)	Duration (hh:mm)	Detection (#)	Individual (#)		Occurrence (%)	Duration (hh:mm)	Detection (#)	Individual (#)
Mit - Change Course					Ops - Full Power Line Change				
Mit - Pre Clearance Watch	3%	11:50	5	9	Ops - Partial Power Line Change				
Mit - Delay Preclearance	0%	0:26			Ops - Mitigation Source Line Change				
Mit - Soft Start					Ops - Silent Source Line Change	4%	17:48	4	8
Mit - Shutdown					Ops - Retrieving Equipment	1%	2:55	1	1
Mit - Power Down					Ops - Testing Equipment				
Mit - Post Survey Watch	4%	18:13			Ops - Operational Downtime	0%	2:06	2	7
Ops - Anchoring/Station keeping	50%	235:26	48	107	Oth - Weather Downtime	2%	9:08		
Ops - Deploying Equipment	1%	5:04	1	1	Oth - Other Downtime	0%	1:50		
Ops - Full Power Acquisition	24%	110:24	24	63	Oth - Vessel Transit	11%	51:58	22	117

Acoustic Source Activity Summary

Airgun Array	(# | hh:mm)		110:24	PanGeo (# | hh:mm)	
Chirp	(# | hh:mm)			Side-Scan Sonar (# | hh:mm)	
Gradiometer-Magnetometer	(# | hh:mm)			Sparker (# | hh:mm)	
Innomar	(# | hh:mm)			USBL (# | hh:mm)	
Multibeam Echosounder	(# | hh:mm)				

Acoustic Source Status

Source Active	(# | hh:mm)	110	110:24	Source Silent (# | hh:mm)	300	356:44
Sources Active not Requiring Mitigation	(# | hh:mm)			Source at Mitigation Power (# | hh:mm)		
Source at Partial Power	(# | hh:mm)			Sequential Power Increase of Source (# | hh:mm)		
Source at Full Volume	(# | hh:mm)	110	110:24			

REPORT SUMMARY

Client	Cantium	Report	FINAL
Project	Bay Marchand Shallow Geophysical Survey	Date	Multiple Items to Multiple Items)
Vessel Name	Go Justice	Project Type	Geophysical

Species Detections [Number of Individual(s) Detected]

Name	Visual (#)	Acoustic (#)	Thermal (#)	NVD (#)	Name	Visual (#)	Acoustic (#)	Thermal (#)	NVD (#)
Detection, Unidentified	1				Sturgeon, Shortnose				
Dolphin, Atlantic Spotted					Whale, Unidentified Beaked Spp				
Dolphin, Atlantic White-sided					Whale, Blainville's Beaked				
Dolphin, Bottlenose	301				Whale, Blue				
Dolphin, Clymene					Whale, Bryde's				
Dolphin, Common					Whale, Cuvier's Beaked				
Dolphin, Pantropical Spotted					Whale, Dwarf Sperm				
Dolphin, Risso					Whale, False Killer				
Dolphin, Rough-Toothed					Whale, Fin				
Dolphin, Spinner					Whale, Gervais' beaked				
Dolphin, Striped					Whale, Humpback				
Dolphin, Unidentified	3				Whale, Killer				
Dolphin, White-beaked					Whale, Long-finned Pilot				
Manatee					Whale, Melon-headed				
Manta Ray	6				Whale, Minke				
Porpoise, Harbor					Whale, North Atlantic Right				
Porpoise, Unidentified					Whale, Pilot species				
Sea Turtle, Green					Whale, Pygmy Killer				
Sea Turtle, Hawksbill					Whale, Pygmy Sperm				
Sea Turtle, Kemp's Ridley					Whale, Sei				
Sea Turtle, Leatherback					Whale, Short-finned Pilot				
Sea Turtle, Loggerhead	2				Whale, Sowerby's Beaked				
Sea Turtle, Unidentified					Whale, Sperm				
Seal, Gray					Whale, True's Beaked				
Seal, Harbor					Whale, Unidentified				
Seal, Unidentified					Whale, unidentified Large Whale				
Shark, Oceanic Whitetip					Whale, Unidentified - NON NARW				
Sturgeon, Gulf									

Detections Summary

Species	Detection Method	Enter SZ/EZ (hh:mm)	Exit SZ/EZ (hh:mm)	CPA	Vessel Activity	Individual (#)	Mitigation Type

Appendix B.
Detection Photographs

Detection 03 – Bottlenose dolphin 12/10/2024

Detection 11 – Bottlenose dolphin 12/14/2024

Detection 18 – Bottlenose dolphin 12/15/2024

Detection 25 – Bottlenose dolphin 12/16/2024

Detection 26 – Manta ray 12/17/2024

Detection 31 – Bottlenose dolphin 12/18/2024

Detection 41 – Bottlenose dolphin 12/19/2024

Detection 43 – Bottlenose dolphin 12/21/2024

Detection 53 – Bottlenose dolphin 12/25/2024

Detection 55 – Bottlenose dolphin 12/26/2024

Detection 64 – Bottlenose dolphin 12/28/2024

Detection 11 – Bottlenose dolphin 01/01/2025

Appendix C.
Lead PSO Statement of Certification

Jeremy Jowers
Lead PSO
A.I.S. Inc.
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Charleston, SC, 29412
JerJowers@gmail.com

5/7/2025

To Whom It May Concern:

Subject: **Certification of Report Accuracy – NMFS Report for PSO Monitoring Efforts [LOA; 88 FR 69623]**

I am writing to formally certify the accuracy and completeness for the draft PSO report Protected Species Monitoring Services during Geophysical Survey Campaign in Bay Marchand Shallow Reserves Area submitted to National Marine Fisheries Service (NMFS) on May 1st 2025.

The information presented in the report has been thoroughly reviewed and verified for consistency, factual correctness, and integrity of data. To the best of my knowledge and belief, all statements, figures, and conclusions contained within the document accurately reflect the findings, observations, and data collected during the course of the project or study.

This certification is provided in support of regulatory compliance, internal review processes, or external dissemination, as appropriate.

Please feel free to contact me at jerjowers@gmail.com additional information or clarification is required.

Sincerely,

Jeremy Jowers
Lead PSO
A.I.S. Inc.