

BLOCK 10 (KYPARISSIAKOS GULF) LEASE AREA ENVIRONMENTAL REPORT 2023 - 2024

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BLOCK 10 LEASE AGREEMENT AREA

ENVIRONMENTAL REPORT 2023 - 2024

HSE Policies & System, Environmental Studies and Implementation

1. Introduction

HELLENIQ UPSTREAM Kyparissiakos Gulf Single Member S.A. (HELLENIQ UPSTREAM Kyparissiakos Gulf), 100% subsidiary of HELLENiQ UPSTREAM S.A., owns all the rights to explore and produce hydrocarbons deriving from the Lease Agreement with the Greek State in the offshore area of Kyparissiakos Gulf (Block 10), total area 3.420,6 sq. km. HELLENiQ Upstream Kyparissiakos Gulf SA (100%, Operator) officially signed the Lease Agreement with the Minister of Environment & Energy on April 9, 2019 and on October 10, 2019, the Greek Parliament ratified (Law 4630/10.10.2019). HELLENIQ UPSTREAM Kyparissiakos Gulf, acting as Operator, is fulfilling its commitments and planning of the first phase of the exploration work program by implementing the most up-to-date, safe and environmentally friendly technological methods and practices with the outmost respect to local societies and socioeconomic activities. According to the Provisions of Article 12 for «Environmental Protection» «The Lessee shall include in each Annual Work Program and Budget to be submitted to the Lessor, an environmental report on the work to be undertaken as provided in that document, as well as on the work undertaken in accordance with the preceding Annual Work Program and Budget».

At the end of fourth quarter of 2022, also at the beginning of first quarter of 2023 HELLENiQ UPSTREAM Kyparissiakos Gulf S.A. and HELLENiQ UPSTREAM Ionian S.A., fulfilled their acquisition of 3D seismic data in the two offshore blocks, Kyparissiakos Gulf (Block 10) and Ionian. For Block 10 (Kyparissiakos Gulf) Lease Area, project produced high quality data, in a record time and in a safe manner. Seismic acquisition constitutes one of the main obligations when owning exploration rights in an area and it is the most efficient way to detect any potential hydrocarbons' target.



Figure 1 Ramform Hyperion (PGS) 3D Geophysical Survey Vessel in Block 10

The survey company Petroleum Geo-Services (PGS) carried out this seismic survey on behalf of HELLENiQ UPSTREAM Kyparissiakos Gulf on board the M/V Ramform Hyperion from 14 December 2022 to 6 January 2023. HELLENiQ UPSTREAM Kyparissiakos Gulf completed with full success the marine three-dimensional (3D) geophysical recordings of a total area of 2.430km2 providing the highest level of protection for the marine environment and the Biodiversity of the Ionian Sea, following the best practices according to ACCOBAMS and JNCC, highlighting the importance of the Hellenic Trench for the cetaceans.

The survey was completed following the conditions outlined in the approval from the regulator with reference ID: $Y\Pi EN/\Delta I\Pi A/103294/6963$, issued on 1st of December 2022 by the Greek Republic, Ministry of Environment & Energy, and using the mitigation procedures outlined in the Environmental Action Plan (EAP) for the geophysical exploration program in the sea area of Kyparissiakos Gulf Block 10, based on the ACCOBAMS-MOP7/2019/Doc31Rev1 and JNCC Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area.

2. Applying Best HSE Practices while conducting the 3D Marine Seismic Acquisition

2.1. MMO/PAM effort and final results

2.1.1. Executive Summary

Marine Mammal Observer (MMO) and Passive Acoustic Monitoring (PAM) mitigation measures undertaken during the 3D Marine Seismic Survey on the M/V Ramform Hyperion from 14 December 2022 to 6 January 2023 (last shooting at 5:24 am). There were 24 soft-starts during daylight, 22 at night and four (4) during dusk or dawn. Seismic operations were conducted over 24 days, during which 46 primary acquisition lines were completed, three (3) lines reshot/infilled, and 10 source tests were performed. Weather conditions recorded during the survey consisted of northeast winds Beaufort 2 to 3 with sea states Beaufort 1 to 2 predominating, along with low swell heights. The survey applied the approved Environmental Action Plan, based on ACCOBAMS Guidelines to address the impact of anthropogenic noise on cetaceans in the ACCOBAMS area. A team of six (6) dedicated Marine Mammal Observers (MMOs) and Passive Acoustic Monitoring (PAM) Operators were present on board to implement mitigation measures as required. Combined acoustic and visual pre-watches were implemented before the start of all operations.

2.1.2. Project Summary / Mitigations Measures and Results

The marine seismic survey area covered Block 10 (Kyparissiakos Gulf) off the coast of Western Peloponnese, offshore Greece (Figure 1). The Lease Area has a total surface of 3,225 km2 without its part that is within the protected areas of NATURA 2000 network. The minimum distance between the boundaries of the Lease Area and the coasts of Peloponnese and Zakynthos Island is approximately 6 km and 17 km, while the average

distance is estimated at 12 km and 21 km respectively. The survey area was located within Greek territorial waters in Western Greece, with water depths ranging from 200 m to approximately 3,400 m. (Figure 1).



Figure 2 Map of the Block 10 (Kyparissiakos Gulf) lease area covered by the 3D seismic survey lines.

The survey followed the Environmental Action Plan (EAP) recommendations approved by the Directorate of Environmental Licensing in the Greek Ministry of Environment and Energy, under approval with reference ID: $Y\Pi EN/\Delta I\Pi A/103294/6963$, the competent national regulator body, the Ministry of Environment and Energy, the General Directorate of Environmental Policy, and the Environmental Licensing Department. The aforementioned recommendations were designed to minimize the risk of injury and disturbance to marine mammals and sea turtles from anthropogenic noise. The EAP measures for the project were based on the Guidelines from the Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and Contiguous Atlantic Area (ACCOBAMS).

Table 1 Mitigation procedures approved and followed in Block-10

MITIGATION PROCEDURES SUMMARY				
	At least two dedicated Visual Observers should be on continuous watch at the same time during all seismic operations (24h visual monitoring).			
Mitigation Team	24 hours PAM. At least one operator should be on watch and shifts should be organized to allow 24/24h monitoring, unless automatic detection/alerting systems with proven effectiveness are available.			

Species covered	Marine mammals and turtles.					
Exclusion zone	750 m for dolphin species and sea turtles.					
	1500 m extended exclusion zone for sperm whales and beaked whales.					
	30 minutes in shallow waters (< 200 m).					
Pre-watch period	120 minutes in deep waters (> 200 m) due to the presence of deep diving species.					
Soft-start length	Minimum 20 min.					
Solt-startiength	Maximum 40 min from soft-start to start acquisition line.					
Soft-start	At least one soft-start should be recorded.					
	30 minutes after last sighting.					
Soft-start delays	Extended to 120 minutes after last sighting of Cuvier 's beaked whales and Sperm whales.					
	Immediate shutdown is required if marine mammals or turtles are detected in the EZ.					
Shutdown during production	Distress behaviour is observed anywhere in the monitoring area.					
	Aggregations of of vulnerable species (Cuvier ´s beaked whales or Sperm whales) anywhere in the monitoring area.					
	Pre-watch must be carried out before any gun testing.					
	If testing a single gun, no soft-start required.					
Airgun Testing	If testing multiple guns, a soft-start (20 min) is required. Guns should be tested in order of volume, smallest first.					
	40 minutes maximum from soft-start beginning to start of line.					
Operation suspended	Less than 10 min, ask MFO/PAM for clearance.					
operation suspended	More than 10 min, a new pre-watch must be undertaken.					
Line Turns	Longer than 40 minutes, firing is to be terminated at the end of the survey line.					
	TWO VISUAL OBSERVERS . At least two dedicated Visual Observers should be on continuous watch at the same time during all seismic operations.					
Additional requirements	24 hours PAM OPERATOR . At least one operator should be on watch and shifts should be organized to allow 24/24h operation, unless automatic detection/alerting systems with proven effectiveness are available					
	SEISMIC ACQUISITION IN PROTECTED AREAS . The seismic vessel could enter Natura areas to perform turning manoeuvres, however no seismic survey activities will take place within the NATURA 2000 protected areas and a buffer of 1000 m around them.					

TURTLE GUARD. Due to presence of sea turtles in the survey area, a turtle protection system (Turtle Guard) should be installed on the towed equipment to prevent any accidents.

SEABIRDS. To mitigate the impact on the seabirds, the external lighting should be limited. Furthermore, all injure seabirds must be assisted with regaining consciousness and released back into the environment following the appropriate instructions.

The survey was conducted in the Kyparissiakos Gulf where depths varied between 200m and over 3,400m, allowing for the possibility of encountering both deep-water and shallow-water species. During the survey, 24 hours of combined visual and acoustical monitoring was maintained. All of the survey operations were in deep water and preceded by an MMO and PAM pre-shooting search period of 120 minutes.



Figure 3 MMO and Passive (Acoustic) Monitoring during 3D MSS in Block 10

Visual monitoring (MMO) for marine mammals resulted in 551:45 hours of observers' effort during the survey period. Where 243:25 hours corresponded to day visual and 308:20 hours corresponded to night visual monitoring. Acoustic monitoring (PAM) for marine mammals resulted in 548:19 hours of monitoring effort during the course of the survey. Overall, 65.9% of monitoring effort took place while the acoustic source was active, and 30.5% of monitoring effort took place while the acoustic source was not active.

MMO EQUIPMENT					
	Olympus SP-1000EE Dot Frame				
	Nikon D300s 80-200 f.20.8				
CAMERA	Canon SX50 HS 35mm equv.				
	Olympus E-510 (Lens 40-150 mm 1:4-5.6)				
	Panasonic LUMIX DMC80 (lens 100-300mm)				
	Bernard Optic 8x32				
	Nikon Sporter 10x50				
BINOCULARS	Bushnell Marine 7x50 with compass and Reticles				
	Bushnell Marine 7x50 with compass and Reticles				
	Fujinon 7x50 with compass and reticles				
LONG DISTANCE BINOCULARS	Fujinon Binoculars LR-150 25x150 MT				
THERMAL CAMERA	Pulsar Axion LRF XQ35 35mmx2-8				
NIGHT VISION	Falcon Digital NV 007 32mmx5				
MONOCULAR					

Table 2 Marine Mammal Observes Equipment during 3D MSS in Block 10

There were five (5) visual sightings and five (5) acoustic detections of marine mammals. In total, 55 pre-shooting searches were conducted and all of them combined visual and acoustic monitoring. Three (3) shut-downs occurred on acquisition lines and one (1) delay occurred on commencement of a soft-start were implemented due to the presence of protected species. There were no instances of non-compliance with the Environmental Action Plan (EAP) and ACCOBAMS guidelines during operations. The communication with the Seismic Operators and the mitigation team was professional, efficient, and effective.

EFFORT MONITORING SUMMARY (14 December 2022 to 6 January						
2023)						
	Total visual observation (hrs/min)	551:45				
MONITORING	Day visual Observation (hrs/min)	243:25				
EFFORT	Night visual observation (hrs/min)	308:2				
	Total acoustic monitoring (hrs/min)	1100:0 4				
	Total monitoring (hrs/min)	516:12				
MONITORING	Total effort whilst source was inactive	335:55				
EFFORT & SOURCE	Total effort whilst source was active	764:09				
PRE- SHOOTING	Total Nº of Pre-shooting searches	55				
SEARCH EFFORT	N ^o of Pre-shooting searches in shallow waters	0				
	N ^o of Pre-shooting searches in deep	55				
SIGHTINGS &	Nº of cetaceans sightings	3				
DETECTIONS	Nº of seals sightings	0				
	Nº of turtle sightings	2				
	Nº of acoustic detections	5				
MITIGATION	Nº of mitigation actions initiated	4				
NON-	Nº of incidences of non-compliance	0				
COMPLIANCE						

Table 3 Marine fauna monitoring effort summary

Regarding the five (5) sightings of protected species, one of them positively identified as sperm whales (Physeter macrocephalus), two unidentified dolphins' species (Delphinidae) sightings, one loggerhead sea turtle (Caretta Caretta), and one unidentified sea turtle species (Cheloniidae sp.). A selection of the data collected during each sighting, including species, range to source, and source status at the time of the sightings provided in the Table below.

∖ID #.	Common Name	Species or Lowest individuals	Individuals #	Latitude (DDM)	Longitude (DDM)	Time (UTC)	Source Activity at Initial Detection	Closest Approach to Source (m)	Mitigation Action
001	Unidentified dolphin	Delphinidae	3	36o 57.57'N	21o 05.64' E	15:58	Full Volume	1536	None required
002	Unidentified dolphin	Delphinidae	4	36o 57.18'N	21o 17.26E	09:34	Full Volume	711	Shut down
003	Sperm whale	Physeter macrocephalus	6	37 o 12.11 ´ N	21o 17.91 ′	07:24	Full Volume	1252	Shut down
004	Loggerhead sea turtle	Caretta caretta	1	37o 03.92'N	21o 19.66'E	13:20	Full Volume	20	Shut down
005	Unidentified sea turtle	Cheloniidae sp.	1	37o 32.70' N	21o 26.15' E	07:24	Not Active	648	Soft-start delay

Table 4 Marine mammals and sea turtle mitigation effort summary



Figure 4 Sighting of Sperm whales (Physeter macrocephalus) during 3D MSS

2.1.3 Compliance

For the entire duration of the 3D Marine Seismic (geophysical) Survey in Block 10, the geophysical vessel's crew were diligently performing with all mitigation requirements, and the procedures were in full compliance with the Environmental Action Plan (EAP) approved by the regulator (Ministry of Environment and Energy). Some of the main mitigation requirements were the following

- No source was active, including soft-starts, within the Natura 2000 protected areas.
- Good communication was maintained between the Marine Mammals/Fauna Observers (MMO/MFO) and PAM team with the HELLENiQ UPSTREAM's Senior Environmental Coordinator onboard and the geophysical vessel crew

under the coordination of the HSE Manager, throughout the survey to ensure that all guidelines concerning the protection of marine mammals and sea turtles within the exclusion zones (EZ) were implemented effectively.

- Turtle guards, a structure welded to the underside of tail buoy designs, aims to exclude sea turtles from becoming fatally entrapped in gaps at the front of the tail buoy undercarriage. In the event of turtle entrapment in seismic equipment, the Contractor's appropriately trained staff must intervene immediately to remove the trapped animal, weather permitting.
- There was 24-hour acoustic monitoring as required.
- The 3D Marine Seismic Survey was carried out during winter season to minimize impacts on marine mammal breeding season as per the approved Environmental Action Plan (EAP).
- The average speed of the Ramform Hyperion vessel was 4.3 knots, which complied with the recommendation of the working group IWC-IUCN-ACCOBAMS to reduce speed to 10 knots maximum in order to minimize the strike risk with marine fauna.
- A total of 50 soft-starts were carried out before starting an acquisition line or gun-array test in accordance with procedures described.
- Exclusion Zones (EZ) with a radius of 750 m, and additional a 1500 m EZ for sperm whales and beaked whales, were established from the center of the noise source.
- Shutdown in seismic operations due to aggregations of vulnerable species (such as Cuvier's beaked whales and sperm whales) anywhere in the monitoring area was established.
- 120 min of visual and acoustic pre-watches were performed before any firing of guns, including soft-starts, acquisition lines, air-gun tests, and resuming operations after unexpected breaks.
- Soft-start duration was a minimum of 20 minutes.
- Soft-start duration and time from soft-start to SOL was less than 40 minutes as required.
- As a matter of good practice, the Operator introduced shut-down in operations when a sea turtle entered within the Exclusion Zone (EZ) as a mitigation action.
- As per approved Environmental Action Plan (EAP) Mitigation Measures and in compliance with the ACCOBAMS Guidelines, in order to avoid any inconsistency with measures addressed and prior to the commencement of the survey, the following point regarding mitigation procedures was confirmed.
- The mitigation team was informed that the number of dedicated visual observers on continuous watch during the nighttime, concurrently, during seismic operations could be one (1).
- Before starting operations, Operator confirmed this amendment taking into consideration results obtain from the previous campaign in Kyparissiakos Gulf and overall MMO/PAM effort. In any case, there was no inconsistency with guidelines and mitigation measures applied while conducting the survey.
- Throughout the project, during nighttime hours in every shift, one (1) Marine Mammals Observer (MMO) at the time was conducting visual monitoring

during nighttime hours throughout the project alongside the passive acoustic monitoring performed by the PAM operator and one Passive Acoustic Monitoring (PAM) operator.

2.2. Acoustic Monitoring (Background Noise Measurements and Verification of Exclusion Zone)

2.2.1.Executive Summary

Underwater monitoring was carried out by means of survey, allowing for:

- verify the actual presence of marine mammals;
- define the background noise level and verify the anticipated Exclusion Zone (EZ)

The research vessel "Sea Master" was used to carry out the acoustic survey and separate portable systems provided to monitor the ambient noise on predefined locations and close to critical environmental components such as the Protected Areas of the Natura 2000 Network either/or the shores of Kyparissiakos Gulf. The objectives of this acoustic study were to measure ambient sound levels as a function of sound frequency components, time and position as well as correlate acoustic anomalies to major acoustic sources within the survey areas:

- Prestart: In general, exhibit high ambient sound levels concentrated on the top (or above) limit of the bibliographic prevailing ambient noise.
- Post Completion: To identify significant differences in the ambient noise between the pre-start and the post completion stages of the 3D seismic survey.
- Seismic noise monitoring & Verification of Exclusion Zone: The aim of the acoustic survey at that stage was to assess the sound pressure level of the noise induced by the air-gun seismic source to the predefined sampling locations. Additionally, field measurement of noise levels around the seismic source (air-guns) taken place and carried out during the acquisition activities in order to record and study the seismic noise attenuation levels and validate the specified mitigation zone.
- Coastal Zone Inspection as well as Aerial Surveys and Control for marine mammals stranding.

The "Sea Master" vessel stood in positions agreed with the "Ramform Hyperion" navigation team at distances no less than 1000 m from the seismic source (air-guns) and while "Ramform Hyperion" executed its prearranged survey lines. Surveyors on board the survey vessel deployed a hydrophone suspended by an anti-heave buoy 20 m below the water's surface. Pictures from the fieldwork survey are presented in Fig. 5. Attention has been paid so that sound measurements were obtained from both the forward and broadside directions relative to the fore-aft axis of the seismic source. Each recording station lasted for about 30-40 minutes intended to acquire sound

pressure levels regarding more than 3km distance both fore and aft sides of the seismic vessel. The vessel's engines were set on for retaining the desired position as well as for safety reasons. Fig. 6 shows the positions where sound level recordings took place with respect to the seismic lines. The navigational data of "Ramform Hyperion" were sent to the data processing team on a daily basis, after a valid exchange data format had been agreed. Those included time-stamped coordinates of the pulse emitting air-guns from time intervals where air-gun shots occurred.



Figure 5 Pictures from the fieldwork survey, in the background the geophysical (seismic) vessel Ramform Hyperion



Figure 6 The "Sea Master" stations and the relative seismic line of "Ramform Hyperion" that have been monitored for seismic impulse noise on 21, 22 and 27 December 2022. Here SPLrms is illustrated and georeferenced in regard to both the seismic survey line and t

For more information regarding final reports please follow link below.

https://www.helpe-kyparissiakos.gr/en/environment/programmad.html

2.2.2. Monitoring of the 5 predefined locations with spot measurements – "prestart phase – during seismic – post phase" of the Kyparissiakos Gulf Acoustic Monitoring Project.

The Kyparissiakos Gulf Acoustic Monitoring Project planned and carried out by the Oceanus-Lab (Laboratory of Marine Geology and Physical Oceanography) of the Geology Department of the University of Patras. The prestart phase (ITEM 1-A) lasted two (2) days, from December 13th to 14th 2022. A portable recording system was used for the monitoring of the ambient noise on the five predefined stations. It includes a four-channel digital recorder, three hydrophones (high -170dB and low sensitivity - 220dB ones) and a laptop carrying the interfaces for recording and visualizing the data. Using multi-sensitivity hydrophones assures that all dynamic ranges and amplitudes are successfully recorded without any signal clipping. The underwater recording system was the compact autonomous recorder model EA-SDA14 provided by RTsys system. The latter are thoroughly calibrated to be compatible with all international regulations. A second recorder was onboard at all times, serving as a backup system in case of failure. The positioning of the vessel during the survey was acquired using a Global Positioning System (GPS). The navigation of the vessel was carried out using the navigation software package HYPACK 2014 for:

- Storing and displaying route navigation data.
- Continuous graphic presentation of the vessel movement (tracklines).
- Logging time and corresponding geographical coordinates.

Surveyors, on board the survey vessel, deployed the recording unit with the hydrophones attached, suspended by an anti-heave buoy, 20 m below the sea surface. The buoy was attached to the research vessel via a floating rope. ITEM 1 stage includes: (i) Ambient noise measurements (prestart and post completion of seismic activities) and (ii) Seismic noise monitoring, at the proximity of the five (5) predefined locations (Fig. 7). The five locations proposed by HELPE are:

- Location 1 (S1) refers to SW of the Strofades Island.
- Location 2 (S2) refers to the Gulf of Laganas, in Zakinthos island.
- Location 3 (S3) refers to the Western area of Katakolo promontory.
- Location 4 (S4) refers to the area of Marathoupoli, at the Northern part of Proti island.
- Location 5 (S5) refers to the Southern part of the survey area outside the area of Methoni.



Figure 7 Map locating the seismic survey area (seismic vessel planned track lines) and the five (5) locations where spot acoustic measurements took place in the Prestart phase.

During the ambient noise measurements (prestart phase), a total of 5 deployments have been realized (Fig. 7). For the realization of the measurements, the research vessel was approaching the station, stopped the engines to avoid any mechanical acoustic noise and deployed the underwater recording unit at 20 m water depth to uninterruptedly acquire sound data for two hours. In each deployment the vessel was left drifting by the winds and the sea currents, hardly stabilized by using a floating anchor. Whenever the vessel has drifted far from the intending position, correction movements were realized, the time and duration of which were noted in the logbook to be excluded from the post-survey analysis. A total of 11 hours of raw data recordings have been acquired.

In general, high ambient sound levels due to induced high levels of anthropogenic noise (marine traffic) and other commercial and touristic activities (fisheries) has been recorded in the project area. This fact presents potential risks as it happens on a continuous basis throughout the year and not for a period of a few days or weeks as happens with every research or exploration activities.

2.2.3. Verification of Exclusion Zone

The following describe the data collection, data processing methods, and the results of ITEM 2 "Verification of exclusion zone". The ITEM2 project survey aims to monitor the propagation and attenuation rate of the impulse sounds around the seismic source (Airgun arrays) to validate the geometry of the predefined exclusion zone. The Kyparissiakos Gulf Acoustic Monitoring Project has been planned and carried out by the Oceanus-Lab (Laboratory of Marine Geology and Physical Oceanography) of the Geology Department of the University of Patras. Results presented in this report refer

to acoustic data collected during December 21st, 22nd and 27th, 2022. The objective of ITEM 2 was to measure impulse sound pressure levels around the seismic source (Airguns) to record and study the seismic noise attenuation levels and validate specified mitigation zones.

During Marine 3D Seismic Survey,

- Sound Pressure Levels never exceed and well below marine mammals' threshold values for temporary acoustic trauma
- b) Real time monitoring verified the Simulated Exclusion Zone of 1000 meters.

Following fig. 8, shows the comparison of these limits to the average and maximum expected SPL at the limits of the exclusion zone, making clear that they are well below the specified risk levels.



Figure 8 The average and maximum expected SPL at the limits of the exclusion zone is compared to the minimum SPL threshold for temporary auditory effects on dolphins and Physeter.

2.2.4. Coastal and Aerial Surveys

An aerial inspection of the Kyparissiakos Gulf entire coastline was conducted on the 8th of January 2023, following seismic surveys conducted in the Gulf's wider marine area. The aim of the inspection was to record the existence of any stranded animal/s and especially cetaceans along the coastline of western Peloponnese.



Figure 9 Map of the survey area with the track of the survey

The aerial investigation was conducted on the 8th of January 2023, between 11:00 (take-off time) and 15:30 (landing time) local time. A total of 296 km of coastline were inspected twice, covering a zone of about 2 nautical miles from the shoreline to the open sea, while the total length of the track of the aircraft was 372 km. During the survey no cetaceans were recorded (swimming/floating in the marine zone or stranded ashore) as well as no other species of marine megafauna (monk seals, sea turtles) were detected along the entire coastline inspected.



Figure 10 Coastal and Aerial Coastal Survey for any spills in the Ionian Block and Block 10 (Κυπαρισσιακός Gulf)



Figure 11 Geographical distribution of photographs taken during the survey and example of metadata stored

2.2.5. Final Conclusions

After the successful completion of the 3D Marine Seismic Surveys records in the Lease Areas in Block 10 and the Ionian Block, the following conclusions are drawn:

- Throughout the work, the requirements of the "ACCOBAMS" Agreement as well as the guidelines of the Joint Nature Conservation Commission (JNCC) for the protection of cetaceans were fully implemented.
- The geophysical work was carried out with complete success and with the highest level of protection that such a process could have for the marine environment and the Biodiversity of the Ionian Sea.
- There was excellent cooperation with the Local Authorities and with full respect for the existing socio-economic activities of the areas under exploration.
- High baseline noise levels were recorded due to the existing anthropogenic activities such as the maritime traffic of commercial and passenger ships as well as fishing vessels.
- The noise levels during produced by the exploration equipment during the 3D surveys never exceeded the levels that could cause the slightest disturbance and stressful situation for marine mammals.
- The desired time window for the execution of geophysical works, is November
 March, is the ideal period for carrying out marine seismic (geophysical) surveys without the slightest impact on marine mammals.

3. Environmental Monitoring and Recording of Critical Biodiversity Indicators 2022 final results – 2024 onwards

In the context of Environmental Monitoring and Recording of Critical Environmental Indicators of Biodiversity, such as marine mammals (cetaceans and monk seals), sea turtles and seabirds, the HELLENiQ UPSTREAM Kyparissiakos Gulf Single Member S.A. company has assigned to Nature Conservation Consultants (NCC) Ltd a contract for conducting the present Project, namely the "Survey of the Status of Important Fauna Species in the Kyparissiakos Lease area" (Block 10). The activities described herein are a continuation of the ongoing project "Survey of the Status of Important Fauna Species in the Kyparissiakos Lease area", implemented during the last three years (2020, 2021 and 2022) by HELLENiQ Upstream and more specifically by its affiliate company, HELLENiQ Upstream Kyparissiakos Gulf S.A.

During 2023, the project team implemented field surveys in the Lease Area Block 10 but also at the wider area of Kyparissiakos Gulf (marine and coastal areas of adjacent Natura sites), using appropriate field sampling techniques, in order to provide sufficient and documented data on the status of marine mammals, seabirds and sea turtles in the project area, as well as other sensitive elements and locations that should be prioritized by a future monitoring program.

The Project consists of 4 Work Packages (WP):

WP I. Pelagic Surveys for marine mammals, seabirds, sea turtles, nearshore and in the open sea using an open water RIB vessel, a single engine aircraft, in combination with drone surveys.

- A total of 650 nautical miles of boat-based visual surveys and cetacean surveys were carried out in spring and autumn (24-26/3/2023, 01/04/2023, 12-13/05/2023, 16-18/05/2023 and 01-05/10/2023).
- The first aerial survey was conducted on the 7th of May 2023. A total of 531 km of coastline were inspected, covering the project area, as well as the western coast of Zakynthos Island and the northwestern coast of Peloponnese. During the surveys no cetaceans were recorded, however floating marine debris and trawlers were recorded in the northern part of the Project Area. The second aerial expedition conducted on the 13th of October 2023 with ideal weather conditions.
- A drone transect survey took place on the 14th of May at the coastal zone of Kyparissia, to record marine turtles (total transect length 6 km). Coastal drone surveys of Scopoli's shearwaters took place at the colony of Strofades islets on 12-13 May and 04-05 October 2023. Both drone surveys and thermal camera monitoring took place, as well as a visit to the colony on the islet of Stamfani to locate nests of the species.

WP II. Coastal surveys for monk seals, Scopoli's Shearwater and Mediterranean shag breeding sites in the coastal zones of the adjacent Natura 2000 sites using inflatable RIB boats.

• Coastal surveys of Scopoli's shearwaters took place at the colony of Strofades islets on 12-13 May and 04-05 October 2023. Coastal surveys for the Mediterranean Monk Seal. Similar carried out during the first trimester of 2023 did not reveal any individual animals.

WP III. Telemetry survey for the marine turtles by putting 3 transmitters including depth sensors for the first time in Greece, to record the adult turtle distribution in the lease area, during inter-nesting intervals, as well as their occurrence in the wider region.

 Three Argos satellite transmitters were deployed on male Loggerhead turtles in May 2023 and are operational as of 15 May 2023. A total of 8 working days was dedicated to the acquisition of nesting sea turtles for WP III, with a further 2 boat-days used in attempt to deploy transmitters on adult male turtles as per original plans. Turtles commenced their post-breeding migration between one and 11 days after tagging. The acquired sub-sampled depth and temperature data series were transmitted through the low-bandwidth Argos system.

WP IV. Telemetry for seabirds and marine mammals at Strofades islets SPA and the surrounding project area using a marine ornithological radar.

- Marine surveillance radar in association with SPx Target Tracker Server Software was used to detect and record seabirds and marine mammals in pelagic areas, as well as seabirds in the vicinity of seabird colonies where other long-range detection methods at night are not available. The initial stage involved testing and setting up of the SPx Target Tracker Server Software.
- Marine surveillance radar supported by a thermal camera was used at Strodafes Scopoli's Shearwater colony. The results of the abundance of shearwaters arriving to the colony at night during May revealed that lower than initially expected number of birds were present. The present results in association with nest monitoring suggest that in 2023 the breeding season might has been postponed, probably due to prevailing bad weather during spring 2023.

The Final Progress Report consists by the Work Packages WP I-IV. It presents the field surveys carried out during 2023 and the results in each Work Package of the project "Survey of the Status of Important Fauna Species in the Kyparissiakos Lease area".

3.1. Biodiversity and Critical Habitats Monitoring period – 2023 Results

The results of the pelagic and coastal surveys, that took place in 2023 within the wider area of Block 10 (South Ionian Sea) include:

- Modern, innovative field methods, such as the use of drones for aerial surveys and the use of thermal cameras to monitor the bird behavior at seabirds' colonies, were tested with very promising results. In combination with telemetry, aerial surveys, bioacoustics surveys and the more conventional boat surveys, the field work methods provide a solid basis to gather meaningful, biodiversity data for the project area.
- During the implementation of the project in 2023, new innovative field methods were tested. An Al software was developed in order to identify flying seabirds during night from videos taken with thermal cameras. The next stage of its development is the automatic count of each identified individual seabird-target. This innovative technique can be combined with the existing "traditional" field methods, providing more reliable and accurate data regarding the population and the distribution of the project's target species.
- Five boat surveys (both visual-based and acoustic) and two aerial surveys were carried out in the project area.
- In total 15 individuals of Striped dolphins and 3 individuals of Cuvier's beaked whale were recorded. It is worth mentioned that calves of both Striped dolphins and Cuvier's beaked whale were spotted, which is a strong indication that the wider project area is used by the species as a breeding ground. Although Sperm whales have been reported in the area in previous studies, the presence of these species was not detected during 2023.
- 5 species of seabirds and one species of sea turtle were recorded. The most abundant bird species was the Scopoli's Shearwater, as the species holds its largest colony in the Eastern Mediterranean within the Project Area, at Strofades islands.
- Sea turtle telemetry revealed that male Loggerhead turtles distribute widely to
 foraging sites spread around the eastern Mediterranean, with each tagged
 individual migrating to a different area. Additionally, these males use the
 Project Area during their breeding residency and neither did they pass through
 on their migrations away from the breeding site. The female turtles, which were
 tagged in the previous years, also migrated to widely dispersed areas, no two to
 the precise same location and none the same as the males. However, according
 to the tracks of both male and female tagged individuals, the Northern Ionian,
 the Northern Aegean and the Tunisian Shelf can be considered important
 feeding areas for the population breeding in Kyparissiakos Gulf. The tags
 deployed on the male Loggerhead turtles were able to record temperature and
 depth data. The transmitted data revealed that the turtles selected foraging
 habitats of different depths from a few tens to several hundred meters, with
 most dives to be in less than 100m depth.
- Regarding the Monk seal, the data collected during 2023 indicate that the Kyparissiakos Lease Area do not include important monk seal habitats and thus the presence of monk seal individuals is very scarce. However, the island of Zakynthos hosts a number of high-quality pupping caves and, according to observations collected through the RINT, the island hosts a regular and relatively large population of monk seals.

The surveys carried out during 2023 and the results in each Work Package of the project "Survey of the Status of Important Fauna Species in the Kyparissiakos Lease area" are being presented in detail in the Final Progress Report that could be found in the relevant website of the Environmental Unit of HELLENIQ UPSTREAM Kyparissiakos:

Environmental Monitoring Program for Critical Habitats - Biodiversity (helpekyparissiakos.gr)

<u>Πρόγραμμα Περιβαλλοντικής Παρακολούθησης Κρίσιμων Ενδιαιτημάτων -</u> <u>Βιοποικιλότητας (helpe-kyparissiakos.gr)</u>

4. Seismicity Monitoring - Results 2023

Given the high seismic activity in the broader area of Western Greece, and especially in the Kyparissiakos Gulf, and aim at the safety of the future planned research, HELLENiQ UPSTREAM KYPARISSIAKOS GULF SINGLE MEMBER S.A. cooperated with the Geodynamic Institute of the National Observatory of Athens (CONTRACT AGREEMENT 2022013/06.05.2022) regarding the monitoring of the existing seismic activity in the area of interest.

During 2nd Exploration Period in the Lease Area of Kyparissiakos Gulf (Block 10) considering the Strategic Environmental Assessment (SEA) for the said lease area, the Joint Ministerial Decision (JMA) approving the above SEA and the reference of Article 12 (Environmental Protection), HELLENIQ UPSTREAM Kyparissiakos Gulf S.A. in collaboration with the "National Observatory of Athens (NOA) and its Geodynamic Institute, put the seismicity of the Kyparissiakos Gulf under scientific monitoring and study. The installation of a local network, which was decided, ensures the accurate and detailed monitoring of all seismic events up to and including the local microseismicity. The resulting data is also useful for identifying any potential active seismic zones in the area

The monitoring of seismicity, even at the level of microseismicity, was decided to be carried out in "real time" conditions by installing a local network of seismographs. The data, which will result at the end of the project, will also be particularly useful for identifying the active faults in the exploration area. The National Observatory of Athens (NOA), headed by the President of the research center, Prof. Emm. Plionis, and the Principal Investigator Vassilis Karastathis (Research Director IG/NOA) undertook the installation of a local network consisting of twenty-two (22) portable seismographs, as well as the operation of a local seismic array in the area of Pylos, in order to make denser the already existing national seismograph network, used by the Institute of Geodynamics of NOA for the continuous monitoring of the daily seismic activity of the Greek area. The 22 new stations are in continuous operation with simultaneous (real-time) data transmission to the Institute of Geodynamics.

The installation of the stations was performed in such a way as to achieve the maximum density of the network using, where possible, even the smallest islands of

the lonian (e.g. Strophades). Besides the geometry of the network, the selection of the station locations considered, both the soil conditions and the noise level of each location. He also considered the coverage of the mobile telephony, so that the direct transmission of the data is possible. For the completion of the installations, nine (9) visits by technical and scientific staff were made to the areas of interest, during the period June - September 2022. The objective was to ensure optimal azimuthal coverage of the area with the portable seismographs and to combine them with the array of seismographs installed in the Kynigos area of Pylos. It is expected that with the addition of the Microseismicity, which was identified after visual inspection of the waveforms, the magnitude of completeness will be greatly reduced. Since the microearthquakes have a limited number of recorded phases, they have not yet been implemented to the figures.

The coordinates of the local network positions are described in the fig. 12 shows how the stations complemented the existing network. The stations installed by the Institute of Geodynamics as part of the project are shown in yellow color. The portable stations will remain in operation throughout the duration of the project.



Figure 12 The locations of the new stations of the local network that were installed for the needs of the project (with a yellow symbol) and operate with the stations of the permanent network (with a red symbol)

4.1. Recorded seismicity from the local network

Although the installation and operation of the local network started in May 2022, it was completed at the end of July 2022 and therefore seismicity monitoring under the same conditions practically started from August 202Seismicity monitoring was continued

for the months of December 2022 - May 2023. In the report of the first year there is a detailed description of the structures that had been activated during the previous sixmonth period.

During this second recording period, a smaller number of events was recorded in the area south of Katakolo, within Kyparissiakos Gulf, compared to the previous period (May – December 2022). From the start of the recording period up to the end of May 2023, a total number of more than 5300 earthquakes were recorded, with the majority of them being concentrated in the Hellenic arc region in the offshore area SW of Zakynthos. Especially during the second recording period (January – May 2023), more than two thousand events were recorded.

In the onshore coastal area of Kyparissiakos, while there was a state of constant natural seismicity until January 20, 2023, there was an increase in the number of epicenters, mainly in the broader area of Zacharo, which is observed up to the present day. In total from 20/1/23 until the end of May, 526 earthquakes have been recorded in the region.

However, there is intense microseismicity that extends throughout the zone defined by these faults. The number of earthquakes recorded during the monitoring period, within the narrow area of interest increased drastically with the installation of the local network, due to the detection of a large number of microearthquakes. <u>The additional</u> <u>earthquakes are very small events</u>, also known as microearthquakes, which nevertheless give valuable information about the active zones and the structure of the region. For the accurate spatial mapping of the microseismicity of the area, the precise knowledge of the seismic velocity model within the network area is important.

5. Environmental Studies and future actions - Geohazards, Environmental Sampling, EBS Stage II, ESIA, Oil Spill Response - 2023 - 2024 onwards

As part of our preparation for the upcoming drilling operations and in order to complete the necessary permitting process the prerequisites as per Lease Agreement are

- the Geohazards Study
- the Environmental Sampling
- the Environmental Baseline Survey (EBS Phase II)
- the ESIA Study (Environmental & Social Impact Assessment for exploratory drilling)

The aforementioned works are strongly linked and depended on the tasks that have been completed during the previous phases such as the marine seismic surveys and their results. Once the interpretation of the 3D Marine Seismic acquisition has been completed and the possible targets have been identified, we will begin the preparation of the Geohazards study in the area where the exploratory drilling of the next phase will be focused.

5.1. Geohazards

The Geohazards' Study that will focus on the Well site, should have the following objectives:

- Establish water depths and seabed conditions
- Identify any seabed obstructions that may impact anchoring or the well location
- Assist in the identification of all geo-hazards and geological conditions related to a Semi-sub drilling Rig or Drillship and subsequent drilling operations from the acquired data.

The main scope of the Geohazards' Study is to identify and assess any hazards due to local sea bottom conditions such as great depths, steep seabed morphology, sea bed pockmarks that could cause submarine landslides and/or release of gases. Also, cables and shipwrecks should be identified and mapped. The Geohazards' study will provide the necessary information for the design of the preliminary exploration well.

5.2. Environmental Sampling

The Environmental Baseline Sampling Survey and Habitat Assessment Study have the aim to establish the physico-chemical and macrofaunal conditions in the area of the target to be drilled ahead of drilling operations. The Environmental Sampling Survey Objectives are:

- 1. identify and delineate any internationally protected or sensitive habitats at the well site and across the coastal areas
- 2. identify any areas of environmental interest, which could be impacted by anchoring or drilling activities.

The Hellenic Centre for Marine Research (HCMR, Greece) is one of the most recognized scientific Research Center in Greece with vast experience in marine research and expertise in the field of geohazards and the marine environmental studies. To this aim, HELLENIQ UPSTREAM Kyparissiakos S.A. is planning to enter into an agreement with HCMR in the context of the 3rd Phase the exploration activities in Block 10.

5.3. Environmental Baseline Survey Stage II

The purpose of the Environmental Baseline Survey Stage 2 (EBS II) is the collection of data, the survey and evaluation of the environmental condition in the lease area under exploration in order to:

• Survey the condition of the environment within the research area before starting any drilling operations.

• Be part of an integrated system for monitoring the condition of the environment in the exploration area, to allow the monitoring of any impact of the individual stages of the research program

According to Article 12 «Environmental Protection» paragraph 14, HELLENiQ UPSTREAM Kyparissiakos S.A. shall not be liable for any environmental condition or damage existing in the Contract Area prior to the commencement of the operations therein and nothing in this Agreement shall be construed to hold HELLENiQ UPSTREAM Kyparissiakos Gulf S.A. liable in relation to any such pre-existing environmental condition or damage. For this purpose, a baseline report, covering the whole extent of the boundaries of the Lease Area Block 10 was already prepared by HELLENiQ UPSTREAM Kyparissiakos Gulf S.A., to detail the condition of the environmental parameters and resources at the time prior to operation commencement.

The Environmental Baseline Study (EBS) was submitted and approved by the Ministry of Environment and Energy (Environmental Licensing Directorate). Prior to entering the 3rd exploration phase and before the drilling of the exploration well, HELLENiQ UPSTREAM Kyparissiakos Gulf S.A. is committed to prepare and submit a baseline survey (Stage 2) which will study an area limited around drillable target. The Report shall address the existing physical, biological and socioeconomic environment and sensitivities of a limited area around the drillable target in Block 10 and provide any updated information or newly published data might not covered in the Environmental Baseline Study (Stage 1). The EBS Stage 2 will focus in the area around the drillable targets and will involve detailed sampling and evaluation for potential geohazards and environmental parameters.

An indicative Table of Contents (ToC) of EBS Stage II will include the following indicative chapters:

- Introduction Project description
- General Framework of the Elaboration of the Environmental Baseline
 Report
- Updated description of the Current Condition of the Environment
- Natural and Biological Environment
- Socioeconomic Environment
- Establishment of Environmental Quality Indicators
- Results of the Environmental Monitoring Program executed in 2023 (final report completed) and any more updated report in 2024.
- Results of the Geohazards Survey Environmental Sampling & Habitat Assessment (final report).

5.4. Environmental and Social Impact Assessment (ESIA)

All the results that will arise from the aforementioned studies will necessarily be part of the ESIA Study that will have to be submitted to the competent authorities in order to license the drilling works. According to the provisions of Article 12 of the Lease Agreement for the «Environmental Protection», HELLENiQ UPSTREAM Kyparissiakos Gulf S.A. shall conduct all O&G operations in a manner, which will assure the protection of environment in accordance with Good Oilfield Practices. Furthermore, HELLENiQ UPSTREAM Kyparissiakos Gulf S.A. shall prepare and submit to the competent licencing authorities, an Environmental and Social Impact Study (ESIA) for the relevant O&G operations in respect of which an Environmental and Social Impact Assessment (ESIA) procedure is required. The ESIA shall, as a minimum:

- fully comply with the requirements of the EIA legislation in force;
- meet the requirements and guidelines set out by the Strategic Environmental Assessment Study (SEA); and
- be prepared by a third party with adequate expertise in the field of environmental studies, which will be appointed by the Lessee to work on its behalf.

Each project, work, activity or any other part of the Oil & Gas Operations that is subject to an Environmental and Social Impact Assessment (ESIA), shall commence only after the issue of the Approval of the Terms of Environment (TOE). Regarding Environmental Licensing and more specific according to the provisions of Law 4014/2011 «on Environmental licensing of projects and activities, regulation of illegally constructed buildings, with the aim to promoting a better environmental stability», HELLENiQ UPSTREAM Kyparissiakos Gulf S.A. has the obligation to apply for Approval of Environmental Impact Assessment (category A projects subcategories: A1 and A2). Category A includes works and activities, which may cause severe environmental impact because of their nature, size or location. Category A is divided into groups 1 and 2. Exploration and Exploitation Projects are under Category A1.

For activities of both groups of Category A, an ESIA is needed in the form an overall scientific assessment. An Environmental and Social Impact Assessment (ESIA) shall include at least the following minimum matters, which are:

- a description of the proposed activities;
- a description of the potential affected environment, including specific information necessary to identify and assess the environmental effect of the proposed activities;
- an assessment of the likely or potential environmental impacts of the proposed activity and the alternatives, including the direct or indirect cumulative, short-term and long-term effects;
- an identification and description of measures available to mitigate adverse environmental impacts of proposed activity and assessment of those measures;
- an indication of gaps in knowledge and uncertainty which may be encountered in computing the required information;
- a brief and non-technical summary of the information provided under paragraphs (a) to (e) of this section.

Indicatively, the ESIA report will address the following areas:

- Project description
- Policy, legal and administrative framework
- Environmental and socio-economic background
- Impact assessment
- OI Spill Modelling
- Mitigation & Control Measures
- Environmental Management Plan and Monitoring Program

The potential impacts of the project activities were identified, with regard to abiotic, biotic and human environment. Particular attention was given to, the marine ecology and the socioeconomic environment. Main objectives of the Environmental Action Plan (ESIA) are the following:

- Detailed and documented compliance of the proposed activities with all the requirements of the applicable environmental legislation, including the provisions concerning the protection of marine species and sensitive habitats and the avoidance of any kind of pollution due to exploration activities.
- Avoiding any impact of the proposed activities on critical elements of marine ecology, such as marine mammals (cetaceans and monk seals), sea turtles (Caretta Caretta) and seabirds.
- Impact minimization of the drilling activities on critical elements of marine ecology, such as marine mammals (mainly cetaceans and seals) and sea turtles (mainly Caretta Caretta).
- Implement all necessary measures and methods related to the prevention of any incident of marine pollution, including solid and liquid waste management methods.
- Implementation of all necessary measures and methods related to the prevention of any marine pollution incident, including at least solid waste and wastewater treatment methods and accident and chemical use mitigation.
- Effective limitation of any potential disturbances on the existing maritime activities such as fisheries.
- Assess and evaluate the effects of the proposed activities on all individual environmental elements.
- Assess and evaluate the environmental risks for the proposed activities.
- Propose prevention and mitigation measures to minimize risks and impacts and execute an environmental monitoring program during project activities.

5.5. Oil Spill Response

In order to ensure the maximum safety of the drilling operations and the protection of the environment during the third phase, a very important collaboration is planned to take place with Oil Spill Response Limited (OSRL).

In case of an incident, an emergency plan and Tiered Preparedness and Response Plan will be prepared in order to set the highest standards in Emergency management.

The Tiered Preparedness and Response will:

- Define and structure the levels of oil spill response capabilities.
- Plan for appropriate resources to be rapidly mobilized and cascaded to an incident location.
- Enable response escalation for an oil spill of any magnitude and severity.

OSRL is a world-renowned and leading organization, whose members are the largest O&G Producers joining forces globally in the prevention, emergency response and remediation of marine pollution due to oil spill incidents.

HELLENIQ UPSTREAM and its affiliate Companies had a very good cooperation with OSRL, in the past as an Associated Member and is planned to do the same in the third exploration phase in Block 10.

This cooperation will concern our best possible preparation and readiness in taking the necessary measures of Prevention, Avoidance and Preparedness for any possible accident and pollution of the marine environment.