

VOLUME II: MEASURED AND DERIVED GEOTECHNICAL PARAMETERS AND FINAL RESULTS

AO5 Bretagne Offshore Geotechnical Investigation

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EXECUTIVE SUMMARY

Geoquip Marine Operations AG (Geoquip) has been contracted by DGEC (COMPANY) for the provision of the AO5 Bretagne Offshore Geotechnical Site Investigation for the Offshore Wind Farms (OWF's). The AO5 Bretagne-Sud site is located off the south coast of the administrative department of Morbihan area within Bretagne, north-west France, approximately 50 km south of Lorient, located in an Exclusive Economic Zone (EEZ) and in the Territorial Waters. Water depths ranged from 27 to 98m (ZH), this is inclusive of all designated sites (EC, OSS and OWF).

The scope of the fieldwork operations for this project were conducted from the GEOQUIP owned and operated vessel MV Geoquip Seehorn, utilising the permanently installed drill rig GMR602, also GEOQUIP owned and operated.

The purpose of the preliminary site investigation is to allow for a basic understanding of the soil/rock characteristics at designated locations across the proposed development sites.

The scope of work for the OWF survey area is detailed below.

A05 OWF Scope of Work

Borehole Qty	Borehole Type (-)	Target depth (m bsl)			
Phase 1					
4	PCPT	20.0			
7	Sampling	20.0			
2	Composite	20.0			
	Phase 2				
2	РСРТ	20.0			
11	Sampling	20.0			

Phase 1 mobilisation commenced on 20th June 2022, in Port of Lorient, Brittany region, north western France. However, due to a problem with the vessel engine, the project was demobilised on 1st July. After rectification of vessel engine completed on 13th July 2022, the vessel was remobilised on 14th July 2022 at the Port of Lorient. Phase 1 scope for OWF was completed on 18th September 2022. An extended scope of work was added to OWF area as Phase 2 work commenced on 3rd November 2022 with the vessel starting preparations to resume project activity. Phase 2 fieldwork for OWF was completed on 27th December 2022.

A suite of classification, rock strength and soil strength testing have been completed at the Geoquip Marine laboratory, Bristol, United Kingdom. The summary of completed laboratory for the locations covered in this factual report is as follows:

- Total Classification tests completed 506
- Total Strength test complete 38
- Total Consolidation tests completed 0
- Rock Tests completed 284
- Total Chemical and other tests completed 158

OVERVIEW MAP

AO5 Bretagne Offshore Geotechnical Investigation

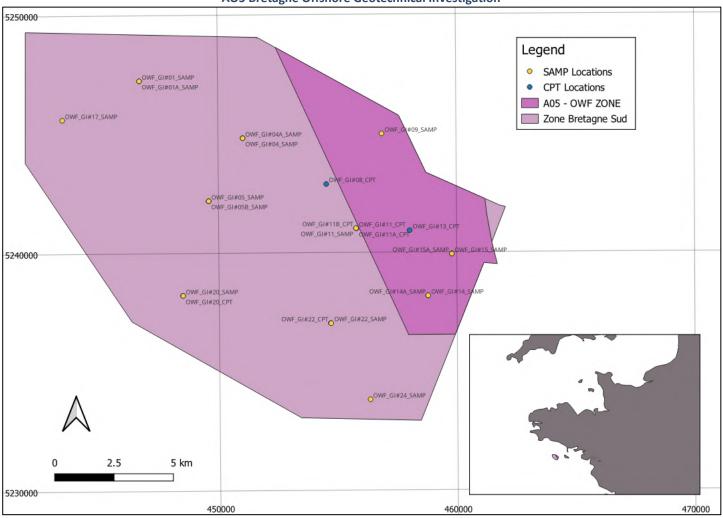


Figure 1 – OWF Investigated locations.

Geoquip Marine Operations AG

REPORTING STRUCTURE

Volume I – Field Report	Volume II – Factual
ield operations and preliminary	Measured and deriv
results	geotechnical param
	final results
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procedures and preliminary results	including discussion on
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LIST OF ABBREVIATIONS AND DEFINITIONS

English

 $\begin{array}{ll} B_q & \quad \text{pore pressure ratio} \\ D_r & \quad \text{relative density} \\ f_s & \quad \text{sleeve friction} \end{array}$

m metre

qc measured cone resistance

q_{net} net cone resistance

qt corrected cone resistance

R_f friction ratio

 $egin{array}{lll} s_u & & & & & & \\ undrained shear strength \\ u_2 & & & & \\ measured pore pressure \\ \end{array}$

z test depth below bottom of the borehole

Ic Soil behaviour type index

Greek

 α net area ratio of cone γ' submerged unit weight

 γ_w unit weight of water, assumed to be 9.81kN/m³

 Δu excess pore pressure σ_{v0} in-situ vertical total stress

Abbreviations

ATNS Abortive Test Notice

BHA Bottom Hole Assembly

bsf Below Seafloor

COMPANY DGEC

CID Consolidated Isotropically drained

CIUc Consolidated Isotropically undrained (Compression)

EC Export Cable

EEZ Exclusive Economic Zone

PCPT Piezocone Penetration Test with pore pressure measurement

GEOQUIP Geoquip Marine Operations AG

GMR Geoquip Marine Single Derrick Rig
HSE Health Safety and Environment

LAT Lowest Astronomical Tide

OSS Offshore Sub Station

PSD Particle Size Distribution

SoW Scope of Work

UU Unconsolidated Undrained Triaxial

1. SCOPE OF FIELD OPERATIONS

1.1 Overview

Geoquip Marine Operations AG (Geoquip) has been contracted by DGEC (COMPANY) for the provision of the AO5 Bretagne Offshore Geotechnical Site Investigation for Offshore Wind Farms (OWF). The AO5 Bretagne-Sud site is located off the south coast of the administrative department of Morbihan area within Bretagne, north-west France, approximately 50 km south of Lorient, located in an Exclusive Economic Zone (EEZ) and in the Territorial Waters. Water depths ranged from 27 to 98m (ZH), this is inclusive of all designated sites (EC, OSS and OWF). Within the AO5 site there were three designated survey areas; the Export Cable (EC), the offshore sub-station (OSS) and the offshore wind farm (OWF). Geoquip has undertaken geotechnical investigation work in all the areas, however this report will only detail the Scope of Work (SoW) for the OWF area conducted by Geoquip.

Drilling operations were commenced within the work site on 20th June 2022 with the GEOQUIP rig GMR602 installed on the GEOQUIP owned MV Geoquip Seehorn. The completed Scope of Works is outlined in Table 1-2.

Mobilisation for phase one took place in June and then again in November for the second phase. The OWF scope of work was completed for the second phase on 27th December 2022, where the vessel demobilised from COMPANY scope of work.

1.2 Related Documents

Further documents that apply to this project, and which may be referenced herein, include:

- Contract between COMPANY and GEOQUIP
- GEOQUIP Project Safety Plan (GMOP21-G-019-PSP-01) including Emergency Response plan and COMPANY HSE Bridging Document
- GEOQUIP Project Execution Plan (GMOP21-G-019-PEP-01)
- GEOQUIP Laboratory Testing Strategy (GMOP21-G-019-LTS-01)
- GEOQUIP Field Report (GMOP21-G-019-01)
- ERS-01-A Protocol for thermal resistivity measurement
- SVY-ERS-03 Employer's Requirements Marine Operations

1.3 Summary of Fieldworks

The following table, Table 1-1, presents the completed nominal scope of work. The detailed completed scope of work including coordinates and measured water depth is presented in Table 1-2:

Table 1-1 Scope of Work

Site	Borehole Qty	Borehole Type (-)	Target depth (m bsl)	Comments (-)				
	Phase 1							
OWF	4	РСРТ	20.0	Changes to the scope: it should be noted that OWF_GI#08_CPT and OWF_GI#13_CPT have been changed to composite boreholes.				
OWF	5	Sampling	20.0					
OWF	13	РСРТ	20.0	Option to undertake extended scope				
OWF	7	Sampling	20.0	Option to undertake extended scope				
		P	Phase 2					
OWF	1	РСРТ	20.0	9 PCPT cancelled and GI#05 abandoned at 5.70m				
OWF	11	Sampling (including bump-over locations)	20.0	2 locations cancelled.				
OWF	1	Composite	20.0	GI#22_CPT changed to composite.				

Changes in the scope were agreed on 7th September 2022, where 2 No. PCPT locations in the OWF area were changed to Composite regime.

Changes in the phase 2 scope were agreed on 2nd December 2022, where 6 No. PCPT locations and 2No. Sampling locations were cancelled. Additionally, on 22nd December 2022 3 No. PCPT locations were cancelled with the location GI#05 abandoned at 5.70m. The scope for GI#22_CPT was changed from PCPT to composite location due to time constraints.

Table 1-2	Completed Sco	pe of Work
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Table 1-2 Completed Scope of Work								
Borehole ID	Target Location (ETRS89 – UTM30N)		Actual Borehole Location (ETRS89 – UTM30N)		Date	Measured Drill String Water	Measured Echosounder	Water depth in
	Easting	Northing	Easting	Northing	Commenced	depth in MSL (m)	Water depth in MSL (m)	bathyelli V2 LAT (m)
				Phase 1				
OWF_GI#11_ CPT	455783.49	5241008.70	455783.39	5241007.95	17/07/2022	91.47	91.41	89.66
OWF_GI#15_ SAMP	459794.19	5239923.03	459794.32	5239923.33	27/07/2022	87.84	87.70	85.45
OWF_GI#15A _SAMP	459794.19	5239923.03	459791.15	5239926.25	18/08/2022	88.97	88.80	85.47
OWF_GI#09_ SAMP	456871.44	5244987.59	456875.32	5244986.35	21/08/2022	87.44	87.20	83.52
OWF_GI#11_ SAMP	455774.44	5241013.73	455775.40	5241016.78	02/09/2022	91.87	91.61	89.63
OWF_GI#11A _CPT	455783.49	5241008.70	455783.46	5241012.53	03/09/2022	92.42	92.27	89.63
OWF_GI#12_ SAMP	456756.53	5242756.94	456756.34	5242757.06	11/09/2022	87.97	88.03	86.77
OWF_GI#12_ CPT	456767.85	5242749.86	456768.12	5242750.08	12/09/2022	91.97	91.89	86.79
OWF_GI#08_ CPT	454537.72	5242876.41	454537.39	5242876.75	13/09/2022	93.67	93.51	87.50
OWF_GI#11B _CPT	455783.49	5241008.70	455778.89	5241009.80	14/09/2022	94.57	94.48	89.68
OWF_GI#13_ CPT	458026.62	5240916.14	458026.80	5240916.20	15/09/2022	93.28	93.34	89.65
OWF_GI#14_ SAMP	458791.12	5238171.61	458791.15	5238171.69	17/09/2022	90.68	90.63	87.74
OWF_GI#14A _SAMP	458791.12	5238171.61	458787.03	5238170.15	17/09/2022	90.48	90.67	87.81
				Phase 2				
OWF_GI#05_ SAMP	449588.25	5242194.27	449591.42	5242196.67	13/11/2022	99.14	98.95	95.68
OWF_GI#04_ SAMP	451039.48	5244829.61	451040.42	5244828.54	02/12/2022	91.00	90.53	87.53
OWF_GI#04A _SAMP	451039.48	5244829.61	451036.53	5244832.06	04/12/2022	91.20	91.01	87.50
OWF_GI#22_ SAMP	454702.49	5237025.81	454703.24	5237026.70	06/12/2022	97.36	97.10	93.65
OWF_GI#22_ CPT ²	454688.31	5237033.20	454688.01	5237034.58	07/12/2022	97.26	97.06	93.65
OWF_GI#24_ SAMP	456332.06	5233814.93	456333.24	5233817.19	08/12/2022	101.26	100.63	97.40
OWF_GI#20_ SAMP	448486.55	5238225.12	448486.96	5238226.41	09/12/2022	100.56	100.37	96.78
OWF_GI#20_ CPT	448481.87	5238225.58	448480.58	5238230.19	09/12/2022	100.36	100.20	96.78
OWF_GI#17_ SAMP	443468.55	5245633.16	443469.12	5245633.12	10/12/2022	98.56	98.36	95.12
OWF_GI#01_ SAMP	446709.18	5247255.49	446710.82	5247256.22	11/12/2022	91.80	91.65	88.36
OWF_GI#01A _SAMP	446709.18	5247255.49	446708.98	5247253.75	17/12/2022	91.80	91.66	88.23
OWF_GI#05A _SAMP	449588.25	5242194.27	449589.57	5242193.54	18/12/2022	99.26	99.08	95.70
OWF_GI#05B _SAMP	449588.25	5242194.27	449585.38	5242198.33	27/12/2022	99.16	98.88	95.67

1.4 Water Depth

The water depth at each borehole location was measured at the start of operations using the drill string and by a survey-standard echosounder fitted into the vessel's moonpool.

In addition, COMPANY requested that water depths be provided in Bathyelli V2 LAT. To conduct this, GEOQUIP provided the water depths by drill string in MSL to Tecnoambiente who were able to convert these depths in to the Bathyelli V2 "zéro hydrographique". Then based on the values outlined in SHOM "Références Altimétriques Maritimes" GEOQUIP were able to use a vertical offset of +0.1m taken from the port of Lorient to convert the water depths to Bathyelli V2 LAT. These are the water depths shown in the report and on the logs presented in the appendices.

1.5 Geotechnical Drill Rig

All boreholes were completed using the geotechnical drill rig, the GMR602 installed on MV Geoquip Seehorn. The GMR602 is a heave-compensated marine drill rig and is located over a central moonpool. The main details of the rig are summarised in the following table:

Table 1-3 GMR602 Drilling Rig Details

Туре	Rotary marine drill
Top Drive/Power Swivel	Fraste R41D150
	6,900N.m-1 160rpm and 13,800N.m-1 90rpm
	Load capacity 30t.
	Max torque: 13,800Nm
	Max speed: 160rpm
	• 30 Mt Derrick
Drill String	6%" API drill string
Seabed Frame	12t, with hydraulic clamps and compensation up to 4.0m
Heave Compensation	Effective drill string compensation 0m to 4m. Seabed frame and seabed CPT unit
	heave compensation with an effective stroke from 0m to 4m
Mud	4,000l mix tank, 8,000l storage tank guar gum seawater miscible
Downhole Sampling	Wireline piston / push sampler, percussion / heavy duty percussion sampler
Downhole in situ Testing Tools	APB Wison: sampling and penetration testing with pore water pressure and seismic velocity measurements
Coring	100mm SQ triple tube core barrels
Pipe Handling	Range two drill pipe handling using a proprietary mechanical handling system. Handles pipe with minimum manual intervention and hence improved safety
Drill Control Cabin	Control cabin for remote control via hydraulic / electric interface of all drilling and
	sampling operations. Allows driller, assistant driller and PCPT operator coordinated control of all drilling / sampling operations. Rig specific DMS recording
Drill Rig Workshop	Fully equipped workshop, tools, and equipment. 220V supply
Equipment Winches	Draw-works winch

Туре	Rotary marine drill
	Seabed frame winch
	AH Winch (BSL 300wx / Sl30 wx Hydraulic)
	Tow works Winch (BSL 300wx / Sl30 wx Hydraulic)

1.6 Vessel Specification

Brief details of the vessel are given in Table 1-4 below.

Table 1-4 MV Geoquip Seehorn

Table 1-4 IVIV Geo	daib Section
Length Overall	83.45 m
Beam	18.00 m
Maximum Loaded Draft	5.55 m
Main Engines	4 x MTU-16V 4000, 18,000 BHP
Four Point Mooring	Kongsberg Simrad SPD 21 (DP II+) 2x Seatex MRU-
	М
Accommodation (Berths)	43 No.

1.7 Project Organization

A summary of the various parties involved in the offshore aspects of this site investigation are summarised in Table 1-5.

Table 1-5 Project Organisation

	Table 2.5 Troject organisation					
Party	Role	Asset Provision/Responsibility				
DGEC (COMPANY)	Client	Offshore Client Representative Project Management Decisions regarding scope of work				
DNV	Contractor	Client geotechnical Consultants				
Geoquip Marine Operations AG (GEOQUIP)	Main Contractor	Vessel owner and operator Provision of geotechnical drill rig, drilling personnel and geotechnical personnel, positioning equipment and positioning personnel Production of geotechnical reporting Project Management Onshore Laboratory				

2. FINAL BOREHOLE LOGS

2.1 Overview

All PCPT data and sampling data is presented on the borehole logs presented in Appendix A.

Data is presented separately with Borehole, Processed and Derived in-situ Logs for each completed borehole.

The water depths shown on the logs are as measured by the drill string at commencement of the borehole, corrected to Bathyelli V2 LAT, as described in Section 1.4.

The following are presented on respective logs:

- 1. Borehole Log
 - a. PCPT and sampling key
 - b. Fracture state
 - c. Soil Layering
 - d. Raw Results
 - i. Depth
 - ii. Sleeve Friction
 - e. Derived Results
 - i. Net Cone Resistance
 - ii. Pore Pressure Ratio
 - iii. Undrained Shear Strengths from qnet
 - iv. Relative Density derived from qt
 - f. Offshore and Onshore laboratory test results
 - i. Water Content and Bulk and Dry Densities
 - ii. Undrained Shear Strength from UU, Pocket Penetrometer,
 - iii. Rock Strength from Unconfined Compression Strength (UCS)
- 2. Logs of Raw in-situ Test Results
 - a. PCPT key
 - b. Raw Results
 - i. Depth
 - ii. Cone Resistance
 - iii. Sleeve Friction
 - iv. Excess Pore Pressure
- 3. Logs of Derived in-situ Test Results
 - a. PCPT key
 - b. Raw Results

- i. Depth
- ii. Sleeve Friction
- c. Derived Results
 - i. Net Cone Resistance
 - ii. Pore Pressure Ratio
 - iii. Friction Ratio

Raw and derived Logs are presented in Appendix A. A summary of the calculations used are presented in Appendix C.

2.2 Sample Descriptions and Layering

The layer descriptions presented on the borehole logs are based on the field descriptions of recovered samples updated using the onshore laboratory results and interpretations of the PCPT data. The sample description methodology is presented in Appendix C, which is based on the recommendations in BS5930, ISO 14688-1, ISO14688-2 and ISO 14689.

When assigning characteristic strength values to soil layers, the precedence will be given to test performed on samples with larger size of undisturbed samples. Therefore, if an Unconsolidated Undrained Triaxial or a Consolidated Isotropically Undrained were conducted in the layer, this has taken precedence over the index strength testing (Pocket Penetrometer).

Rock strength description has been based on UCS results (BS 5930 and BS EN ISO 14689). Where there are no results available the description has been based on the field tests.

Borehole schematization is presented in Appendix A.

2.2.1 Undrained Shear Strength

Undrained Shear Strength (s_u) has been empirically derived from PCPT data using N_{kt} factors, using the following relationship (Lunne et al., 1997).

$$s_u = \frac{q_{net}}{N_{kt}}$$

where:

s_u = Undrained shear strength

q_{net} = net cone resistance

 N_{kt} = cone factor

Due to limited data sets of PCPT and undrained shear strength results, a N_{kt} range of 15 to 20 has been used for the entire site.

2.2.2 Relative Density

The relative density shown on the logs is calculated using the Jamiolkowski et al. (2003) equation which is based on the vertical effective stress.

$$D_R = \frac{1}{3.10} \cdot ln \left(\frac{q_t/pa}{17.68 \cdot (\sigma'_{v0}/pa)^{0.50}} \right) \cdot 100$$

where:

 D_R = relative density

qt = corrected cone resistance

 σ_{vo}' = in-situ vertical effective stress

pa = atmospheric pressure – taken as 100kPa

A graphical representation of the relative density is presented on the borehole logs presented in Appendix A.

2.3 Site Overview

The site is located in the bay of Biscay, some 20km from the coast of Lorient. The area of interest is approximately 25 x 13km and is presented in Figure 1. Water depths at the site vary from 85 to 97m (ZH).

2.4 Regional Geology

The surveyed area has a geological history ranging from the late Cretaceous period through to the Plio-Quaternary. The Cretaceous is expressed by alternating layers of nummulitic limestone, chalks, and dolomites. Locally within these units marls may be present and have been observed in the south eastern portion of the site. Stratigraphically above these Cretaceous units are Eocene sandstones, which can also include large foraminifera and a notable glauconitic component, representing a deep marine environment of deposition. These units are overlain by a Plio-Quaternary "veneer" of fine sands and gravelly sands. In some areas the Cretaceous units will cut through the overlying units and outcrop at seabed, creating a rocky seabed in places (Tecnoambiente, 2021).

3. IN-SITU TEST RESULTS AND PROFILES

3.1 Overview

A total of six PCPT boreholes with an additional two composite boreholes have been completed. A total number of 82 PCPT pushes were completed across site, totalling 166.97m. Coring was also undertaken within the PCPT locations in-order to progress the boreholes quickly, rather than destructively drill the rock out.

3.2 Equipment Calibrations and Verifications

All PCPT cones were calibrated and verified prior to the project and are presented in Volume I - Field Operations and Preliminary Results Report Reference No. GMOP21-G-019-FLD-01.

3.3 Equipment and Results Overview

All downhole CPTU testing was completed using the GEOQUIP downhole PCPT tool. Several PCPT cones were made available during the project which included a choice of 10cm² (both subtraction and compression). Two tool stroke lengths were available: 1.5m and 3.0m, with the 1.5m tool being the most frequently used due to ground conditions.

During testing, all data was observed topside in real time. The following channels were recorded during testing:

The following were recorded during testing:

- Penetration depth
- Cone resistance
- Local friction/Sleeve friction
- Pore water pressure

The initial test depth is referenced using the measured drill string depth below seafloor.

Presentation of PCPT results is discussed in Section 2.

3.4 PCPT Testing Procedure

All CPTU testing was conducted by the Tool Operators with direction from the Geotechnical Engineers. CPTU testing is conducted with a rate of penetration of approximately 2cm/s. During a test it may be necessary for the tool operator terminate the test before the full stroke. This refusal of a test may occur for a variety of reason including but not limited to avoidance of equipment damage and to ensure data integrity.

The testing was completed in accordance with ISO 19901-8 (2014) and with GEOQUIP procedures. Cones were serviced or replaced if consecutive tests were out of class, further detailed in Section 3.5.

3.5 Commentary on PCPT Performance

Due to the regional geology of the site, rock was encountered from mudline. This caused issues for being able to obtain full pushes with numerous instant refusals are seen. During the fieldworks the pure sampling hole was conducted first. This allowed the engineers, in conjunction with the client representative, to predetermine layers where PCPT could be conducted to gather data without instant refusal. However, where this was not possible, PCPT pushes were determined when the driller identified that the drill string had entered a possible weaker layer.

In order for Geoquip to efficiently progress the borehole, the rock was cored in the PCPT locations rather than destructively drilled. All of the rock recovered was logged and shipped back to the laboratory for storage.

PCPT within the Limestone in OWF area was possible but proved to be challenging with some immediate refusals and recoveries of less than 0.3m penetration. This was due to the highly interbedded nature of the softer limestone/soils and competent rocks. These immediate refusals resulted in the cone offsets drifting out of class, and in some cases physically damaging the cones and the equipment where the hard ground was encountered.

Out of the 114 PCPT pushes 86 of those refused either on the tip or sleeve, with most of them being stopped inorder to not damage any equipment due to sudden increases on those channels.

The class of each test was assessed after each test analysing the deck-to-deck baseline readings against ISO 19901-8 (2014), Table 2. The table below outlines the quantity of classes on each channel for the scope of work.

Table 3-3 PCPT Application Class

Class	Tip	Sleeve	Pore Pressure
1	113	104	111
2	0	1	2
3	0	1	0
4	1	8	1

4. SAMPLING OPERATIONS

4.1 Overview

A total of 18 sampling boreholes and 2 composite boreholes were completed to a target depth. A total number of 167 push/piston/hammer samples and 297 core runs were conducted across site.

The composite borehole regime was determined by identifying sections of the stratigraphy already investigated in the pure sampling locations. These are then the sections within the composite boreholes where PCPT has been carried out.

4.2 Equipment Overview

The equipment combinations available offshore are detailed in Table 4-1.

Table 4-1 Sampling Equipment Overview

Table 4-1 Sampling Equipment Overview							
Sampling Tool	Shelby	Do (mm)	D _i (mm)	Stroke Length (m)	Catcher	General soil conditions	
Push	Thick-wall	76.2 76.2	66.2 63.6	0.45 1	Rigid/plastic	Very dense sands/gravels	
Push	Medium-wall	76.2	70.4	1	Rigid/plastic	Medium to extremely high strength clays/sands	
	Thin-wall	76.2	72.2	1	No	Very soft to soft clays	
Piston	Medium-wall	76.2	70.4	1	No	Medium strength clays/sands	
Hammor	N/A	76.2	66.2	0.3	Rigid/plastic	Very dense sands/gravel,	
Hammer	N/A	50.8	40.8	0.3	Rigid/plastic	weathered rock	
Triple Tube Core Barrel	N/A	N/A	80.0	1-3	Steel	Rock / Extremely high strength clay	

Notes:

D_O = Outer diameter

D_i = Inner diameter

Further details on wireline sampling and wireline coring are present in Appendix C

4.3 Sample and Rock Handling Procedure

Sample handling was performed by the laboratory technicians and geotechnical engineers on board the vessel with the use of the dedicated soils laboratory on board in accordance with BS5930, ISO 14688-1 and 14688-2 and the guidelines presented in Appendix C. Soil sample handling, logging and testing was conducted in accordance with relevant standards and with the GEOQUIP procedure GM-MSP-OI-5-3-3. The rock was described in accordance with ISO 14689 and with GEOQUIP procedure GM-MSP-OI-5-3-4. The procedure is summarised in Table 4-2.

Table 4-2 Sampling Handling Procedure

Item	Procedure
General	Sampling conducted in general to BS5930, ISO 14688-1 and 14688-2 and in accordance with GEOQUIP procedures
	Recover Shelby tube from drill team
	Proceed to laboratory
Cohesive material	Inspection of sample to determine if laboratory vane is suitable
	Samples were extruded offshore
	All samples were photographed prior to further processing
	Undisturbed samples were preserved in wax and quart tubes
	Disturbed samples were stored in bags
Granular material	Samples were extruded offshore
	All samples were photographed prior to further processing
	Disturbed samples were stored in bags
Rock	Core liner split, rock logged, photographed, and tested
	Selected Rock core preserved in wax and quart tubes
	Sealed back up and shipped back to the onshore laboratory

4.4 Commentary on Sampling Operations

Sampling operations were completed successfully, generally yielding good quality samples. All boreholes were commenced with the use of the push or piston sample tool with a medium wall Shelby tube. The push was also utilised for Shelby tubes with a catcher. Thin wall Shelby tubes were not used due to the risk of encountering gravel or rock at any depth throughout the borehole. The thin wall Shelby tubes are more easily damaged by gravel which can lead to sample disturbance and can also result in the sample tool becoming stuck downhole.

5. LABORATORY TEST RESULTS

5.1 Laboratory Testing Overview

Both offshore and onshore testing were conducted on recovered samples. Upon completion of boreholes, the samples have been offloaded during downtime windows. The samples have been delivered to GEOQUIP Laboratory, Bristol, United Kingdom. For each offload of samples, a chain of Custody was signed by the OPM, Captain and Courier. The onshore laboratory testing schedules were drafted by GEOQUIP and COMPANY have approved prior to testing.

Table 5-1 shows an overview of the laboratory testing conducted both offshore and onshore. The methodology for the offshore testing is outlined in Appendix C.3.

Table 5-1 Overview of laboratory testing

				Onshore		
Test Category	Test Type	Offshore	Ordered	Aborted	Received	Total
	Water Content	118	0	0	0	118
	Bulk density	243	0	0	0	243
	Particle Density	0	0	0	0	0
Classification	Sieve	0	65	2	63	63
	Hydrometer	0	0	0	28	28
	Min & Max Density	0	7	1	6	6
	Atterberg Limits	0	54	6	49	49
	Pocket Penetrometer	17	0	0	0	17
	Torvane	0	0	0	0	0
Strength Index	Miniature Laboratory Vane - Undisturbed	0	0	0	0	0
	Miniature Laboratory Vane - Remoulded	0	0	0	0	0
	UU - Undisturbed	0	7	6	1	1
	UU - Remoulded	0	7	6	1	1
Strength	CID Triaxial	0	12	1	11	11
	CIUc Triaxial	0	13	10	3	3
	Bender Element	0	17	12	5	5
	Petrographic Analysis	0	68	2	66	66
	ISRM water content porosity and density	0	86	6	80	80
Rock Testing	Unconfined Compression Test (UCS)	0	47	25	22	22
	Point Load (PLT)	101	111	12	99	200
	Rock Shear Test	0	28	11	17	17
Consolidation	Constant Rate of Strain (CRS)	0	5	5	0	0
	Carbonate Content	0	65	0	65	65
Chemical &	Chloride Content	0	65	0	65	65
Conductivity	Sulphate Reducing Bacteria (SRB)	23	0	0	0	23
	Thermal Resistivity	20	0	0	0	20
	Total	522	657	105	581	1103

The laboratory that was used for each test, and the procedure or standard used for each test type is described in the table below.

Table 5-2 Laboratory Testing Standards

Description	Testing Standard	Laboratory
Water Content	BS EN ISO 17892-1	GQM Laboratory
Bulk & Dry Density	BS EN ISO 17892-2	GQM Laboratory
Particle Density	BS EN ISO 17892-3	GQM Laboratory
Sieve	ISO 17892-4	GQM Laboratory
Hydrometer	ISO 17892-4	GQM Laboratory
Atterberg Limits	BS EN ISO 17892-12	GQM Laboratory
UU Triaxial	BS EN ISO 17892-8	GQM Laboratory
Remoulded UU Triaxial	BS EN ISO 17892-8	GQM Laboratory
CID Triaxial (set of 3)	BS EN ISO 17892-9	GQM Laboratory
CIUc Triaxial	BS EN ISO 17892-9	GQM Laboratory
Bender Element	ASTM D8295	GQM Laboratory
Constant Rate of Strain Consolidation (CRS)	BS EN ISO 17892-5	GQM Laboratory
Chloride Content	BS1377-3	DETS
Carbonate Content	BS1377-3	DETS
Thermal Conductivity (Soil)	ASTM D5334	GQM Laboratory
Unconfined Compression Test	ISRM Suggested Method	GQM Laboratory
Point Load Index	ISRM Suggested Method	GQM Laboratory
Unit Weight (Rock)	ISRM Suggested Method	GQM Laboratory
Water Content (Rock)	ISRM Suggested Method	GQM Laboratory
Direct Shear Test (Rock)	ISRM Suggested Method	GQM Laboratory
Porosity (Rock)	ISRM Suggested Method	GQM Laboratory
Petrographic Analysis	In-House method based on ISRM Suggested Methods	Geolabs, UK

5.2 Non-Conformance Reports

Non-Conformance Reports (NCR) were generated by the laboratory and submitted to GEOQUIP. These were reviewed and suggested actions passed to COMPANY for approval. They are presented in Appendix B.

5.3 Soil Classification Tests

This group of tests are used to classify the principal soil type including the material plasticity and particle characteristics as appropriate.

5.3.1 Water Content

Moisture content tests were carried out shortly after extrusion on samples recovered in the field and will be provided as part of the results received for triaxial tests. The results are plotted against depth on the borehole logs presented in Appendix A and in tabular form in Appendix B.

5.3.2 Density

Bulk (or wet) and dry density was determined on appropriate extruded samples in the field in accordance with ISO 17892-2, measuring bulk density by mass of soil per unit volume and dry density by measuring mass of oven dried soil per unit volume of material. These will be provided as part of the results received for triaxial tests. The results are plotted against depth on the borehole logs presented in Appendix A and in tabular form in Appendix B.

5.3.3 Particle Size Distribution

Particle size distribution tests have been carried out in the onshore laboratory. The mechanical analysis of soil using sieves (as recommended in EN ISO 17892-4) is to determine the size distribution of non-cohesive (sand and gravel) materials and the total of fines content (silt and clay combined). The grading of finer materials has been determined using a hydrometer. For soils containing both coarse and fine particles, greater than 15%, composite tests using both sieving and hydrometer have been performed where appropriate. PSD results are presented in the form of curves and in tabular form in Appendix B. Fines content results are plotted against depth on the borehole logs presented in Appendix A.

The results received have been used to update the specimen and layer descriptions in the borehole logs.

5.3.4 Atterberg Limits

Atterberg Limits have been completed in the onshore laboratory on fine grain samples in accordance with EN ISO 17892-12, which uses the fall cone for determination of the liquid limit. Plasticity indices are plotted against depth on the borehole logs presented in Appendix A. Liquid and plastic limits are presented in tabular form in Appendix B along with plots of plasticity index versus liquid limit.

The results received have been used to update the specimen and layer descriptions in the borehole logs.

Plasticity index and liquidity index have been calculated according to the following relationships:

$$\begin{array}{lll} I_L = \frac{W - W_P}{I_P} & & & I_P = W_L - W_P \\ & & & & & \\ where: & & & \\ I_L & = & liquidity index & & & \\ W_L & = & liquid limit \\ & & & & \\ W_P & = & plastic limit \\ \end{array}$$

5.4 Soil Strength Tests

5.4.1 Pocket Penetrometer

Pocket penetrometer tests were performed in the field on cohesive soil samples to estimate the undrained shear strength. The results are plotted against depth on the borehole logs presented in Appendix A and in tabular form in Appendix B.

5.4.2 Unconsolidated Undrained Triaxial

Unconsolidated Undrained triaxial (UU) tests were conducted on cohesive soil samples in the offshore laboratory and were scheduled to be completed onshore laboratory in accordance with BS EN ISO 17892-8 to determine the undrained shear strength.

UU tests ran to 20% axial strain and were conducted with confining pressures equal to the total in situ vertical stress.

The results are plotted against depth on the borehole logs presented in Appendix A and in tabular form in Appendix B.

5.4.3 Unconsolidated Undrained Remoulded Triaxial

Unconsolidated Undrained remoulded (UUr) triaxial tests have been performed in the onshore laboratory. In order to calculate the sensitivity of the cohesive material, the tests were conducted on samples where UU tests had already been conducted, either offshore or onshore. The samples were remoulded to bulk density measured on the undisturbed UU tests, and tested at a confining pressure equal to the undisturbed UU test. All triaxial tests have been completed in line with BS EN ISO 17892-8. Individual test reports and summary tables are presented in Appendix B.

5.4.4 Consolidated Isotropically Undrained (Compression) Triaxial

Consolidated Isotropically Undrained compression triaxial (CIUc) tests have been completed in the onshore laboratory in accordance with BS EN ISO 17892-9.

Prior to shearing, all samples will be saturated to at least a B-value of 0.95 and consolidated to calculated in situ effective vertical stress. The results are plotted against depth on the borehole logs presented in Appendix A, and individual test reports and summary tables are presented in Appendix B.

5.4.5 Consolidated Isotropically Drained Triaxial

Consolidated Isotopically Drained (CID) Triaxial tests have been completed in the onshore laboratory on granular materials in accordance with EN ISO 17892-9. The samples have been recompacted following the Ladd undercompaction method (Ladd, R, S., 1978) to a representative dry density obtained from the dry density readings measured offshore.

Three tests at different confining pressures have been completed, equal to $0.5\sigma'_{vc}$, σ'_{vc} and $2\sigma'_{vc}$.

Individual test reports and summary tables are presented in Appendix B.

5.4.6 Bender Element Tests

Measurements of shear wave velocity using Bender Elements (BE) were completed at the onshore laboratory on undisturbed cohesive samples scheduled for CIUc and on non-cohesive samples scheduled for CID tests. The measurements were taken after saturation and consolidation stage prior to shearing, for the CID tests BE tests were

only scheduled on the stage equal to the estimated vertical stress. Shear wave velocity measurements from Bender Elements were conducted using an agreed in-house method, based upon ASTM D8295. All BE measurements were taken in vertical orientation, denoted as Svh. The tests were run using a range of frequencies in order to determine which produced the more reliable results. Shear modulus (Gmax) is also calculated using the post consolidation bulk density of the specimen. For the summary table, GEOQUIP has assessed which frequency is believed to be the most reliable and presented that result. However, within the test result sheets from the onshore laboratory all frequencies are shown along with the resulting shear wave velocity (Vs) and Gmax values.

BH ID	Sample ID	Depth (m)	S-Wave velocity (m/s)	Consolidated Bulk Density (Mg/m³)	Shear Modulus (MPa)
OWF_GI#11_SAMP	PU03-B1	2.00	150	1.79	40
OWF_GI#12_SAMP	PU05-B1	2.30	142	1.81	36
OWF_GI#15A_SAMP	PU08-Q1	11.30	269	2.18	158
OWF_GI#20_SAMP	PU02-B1	0.80	161	1.95	51
OWF_GI#22_SAMP	PU06-B1	2.70	160	1.99	51

With all Bender Element tests there has been interpretation to pick the first arrivals. Therefore, it is recommended that the results above be used with caution and that further shear wave or Gmax values should be measured to support the values before considering for design.

Individual test reports and summary table are presented in Appendix B.

5.5 Consolidation

One dimensional consolidation tests would have been conducted on undisturbed cohesive samples to provide stress history and stiffness parameters for engineering purposes.

5.5.1 Constant Rate of Strain Tests

Constant Rate of Strain (CRS) tests would have been completed in the onshore laboratory on undisturbed cohesive samples, each test would have comprised of one loading stage, one unloading stage and then a final loading stage, however due to the presence of rock where the CRS tests were scheduled, no tests were able to be run.

The NCRs for the scheduled CRS tests are presented in Appendix B.

5.6 Rock Classification Tests

5.6.1 Petrographic Examination

Petrographic Examinations have been conducted on rock core samples to provide a detailed visual examination. A representative area of the rock core is selected for the preparation of thin sections depending on the size and homogeneity of the core. The thin sections are then used to carry out a detailed examination using a high-powered optical microscope.

The results are reported in a factual certificate which will include sample photographs, cross-section scans and photomicrographs.

This examination has carried out in accordance to ISRM standards.

The results have been used to update the stratigraphy descriptions on the Borehole logs presented in Appendix A. Results of the Petrographic Analysis are presented in Appendix B.

5.6.2 ISRM Water Content, Porosity and Density of Rock

A suite of tests (water content, Porosity and Density) have been carried out on the rock samples collected on the campaign. The results are present graphically on the borehole log in Appendix A and tabulated in Appendix B.

5.7 Rock Strength Tests

5.7.1 Point Load

Point load testing (PLT) is used to determine rock strength indexes. PLTs have been conducted in the offshore laboratory and were scheduled in the onshore laboratory on competent rock in accordance with ISRM Suggested Method for Determining Point Load Strength (1985).

The results are presented in Appendix B.

5.7.2 Unconfined Compression Test

Unconfined Compression Strength tests have been conducted to derive the Compressive Strength of rock samples. The sample were prepared so that they have a length/diameter Ratio between 2.00 - 3.00.

The results are plotted against depth on the borehole logs presented in Appendix A. Individual test reports are summarised in in tabular form in Appendix B.

5.7.3 Rock Direct Shear Testing (Constant Normal Load)

Rock Shear testing have been completed in the onshore laboratory, COMPANY requested that these tests are being used to determine the tensile strength of the rock and not to be used to test the shearing along discontinuities. The tests are to be performed on intact specimens, single stage. The orientation is taken from the ground.

Results are presented in Appendix B.

5.8 Chemical & Resistivity

5.8.1 Sulphate Reducing Bacteria (SRB)

Sulphate Reducing Bacteria tests were scheduled to be completed during fieldworks on soil samples, however as rock was present from mudline in the majority of location very limited SRB tests were conducted.

5.8.2 Chloride Content

Chloride content tests were conducted on both the soil and rock samples collected offshore. The results are presented in Appendix B.

5.8.3 Carbonate Content

Carbonate Content tests were conducted on both the soil and rock samples collected offshore. The results are presented in Appendix B.

Results received from the laboratory are provided in CO2, however as per ISO standard these have been converted to CaCO₃ for use in the sample descriptions. The equation for this conversion is provided below.

$$CaC0_3 = C0_2 * 2.2727$$

Conversion to CaCO₃ can sometimes give results above 100% due to the measurement uncertainty and associated experimental error margins in the methodology used for this analysis. In these cases the results have been reported as 100% in the Summary Tables in Appendix B, and presented on the borehole log in Appendix A.

5.8.4 Thermal Resistivity

Thermal Resistivity tests were scheduled to be completed during fieldworks in accordance with ASTM D5334 on soil samples, however as rock was present from mudline in the majority of location very limited thermal conductivity tests were conducted.

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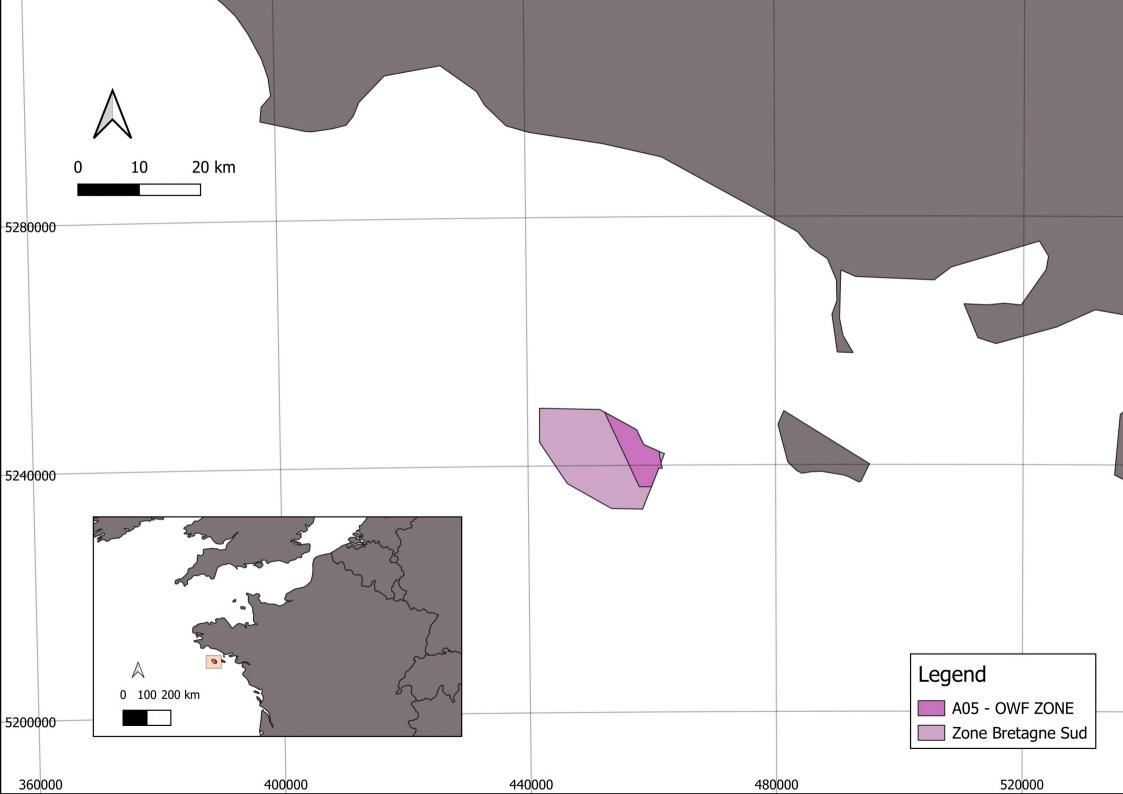
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FIGURES

Figure 1 General Location Map



TABLES

Table 1 Borehole Location Summary

ble 1 Bo	orehole Location :	Summary						
Borehole ID		Target Location (ETRS89 – UTM30N)		Actual Borehole Location (ETRS89 – UTM30N)		Measured Drill String	Measured Echosounder	Water depth in
	Easting	Northing	Easting	Northing	Date Commenced	Water depth in MSL (m)	Water depth in MSL (m)	bathyelli V2 LAT (m)
			Phase 1					
OWF_GI#11_CPT	455783.49	5241008.70	455783.39	5241007.95	17/07/2022	91.47	91.41	89.66
OWF_GI#15_SAMP	459794.19	5239923.03	459794.32	5239923.33	27/07/2022	87.84	87.70	85.45
OWF_GI#15A_SAMP	459794.19	5239923.03	459791.15	5239926.25	18/08/2022	88.97	88.80	85.47
OWF_GI#09_SAMP	456871.44	5244987.59	456875.32	5244986.35	21/08/2022	87.44	87.20	83.52
OWF_GI#11_SAMP	455774.44	5241013.73	455775.40	5241016.78	02/09/2022	91.87	91.61	89.63
OWF_GI#11A_CPT	455783.49	5241008.70	455783.46	5241012.53	03/09/2022	92.42	92.27	89.63
OWF_GI#12_SAMP	456756.53	5242756.94	456756.34	5242757.06	11/09/2022	87.97	88.03	86.77
OWF_GI#12_CPT	456767.85	5242749.86	456768.12	5242750.08	12/09/2022	91.97	91.89	86.79
OWF_GI#08_CPT	454537.72	5242876.41	454537.39	5242876.75	13/09/2022	93.67	93.51	87.50
OWF_GI#11B_CPT	455783.49	5241008.70	455778.89	5241009.80	14/09/2022	94.57	94.48	89.68
OWF_GI#13_CPT	458026.62	5240916.14	458026.80	5240916.20	15/09/2022	93.28	93.34	89.65
OWF_GI#14_SAMP	458791.12	5238171.61	458791.15	5238171.69	17/09/2022	90.68	90.63	87.74
OWF_GI#14A_SAMP	458791.12	5238171.61	458787.03	5238170.15	17/09/2022	90.48	90.67	87.81
			Phase 2					
OWF_GI#05_SAMP	449588.25	5242194.27	449591.42	5242196.67	13/11/2022	99.14	98.95	95.68
OWF_GI#04_SAMP	451039.48	5244829.61	451040.42	5244828.54	02/12/2022	91.00	90.53	87.53
OWF_GI#04A_SAMP	451039.48	5244829.61	451036.53	5244832.06	04/12/2022	91.20	91.01	87.50
OWF_GI#22_SAMP	454702.49	5237025.81	454703.24	5237026.70	06/12/2022	97.36	97.10	93.65
OWF_GI#22_CPT ²	454688.31	5237033.20	454688.01	5237034.58	07/12/2022	97.26	97.06	93.65
OWF_GI#24_SAMP	456332.06	5233814.93	456333.24	5233817.19	08/12/2022	101.26	100.63	97.40
OWF_GI#20_SAMP	448486.55	5238225.12	448486.96	5238226.41	09/12/2022	100.56	100.37	96.78
OWF_GI#20_CPT	448481.87	5238225.58	448480.58	5238230.19	09/12/2022	100.36	100.20	96.78
OWF_GI#17_SAMP	443468.55	5245633.16	443469.12	5245633.12	10/12/2022	98.56	98.36	95.12
OWF_GI#01_SAMP	446709.18	5247255.49	446710.82	5247256.22	11/12/2022	91.80	91.65	88.36
OWF_GI#01A_SAMP	446709.18	5247255.49	446708.98	5247253.75	17/12/2022	91.80	91.66	88.23
OWF_GI#05A_SAMP	449588.25	5242194.27	449589.57	5242193.54	18/12/2022	99.26	99.08	95.70
OWF_GI#05B_SAMP	449588.25	5242194.27	449585.38	5242198.33	27/12/2022	99.16	98.88	95.67

Table 2

Cone Summary

Cone No.	Cone Type ¹	Tip Area (cm²)	Sleeve Area (cm²)	Cone Ratio	Total Meterage (m)
120927	Subtraction	10	150	0.74	13.3
160107	Subtraction	10	150	0.74	3.34
180602	Subtraction	10	150	0.80	2.68
180702	Subtraction	10	150	0.80	1.52
180807	Subtraction	10	150	0.85	8.20
190409	Subtraction	10	150	0.72	5.42
190410	Subtraction	10	150	0.80	2.66
190720	Subtraction	10	150	0.72	4.3
220605	Subtraction	10	150	0.80	0.10

APPENDIX A BOREHOLE LOGS AND PARAMETERS

Appendix A.1 Borehole Log Legend

A05 Bretagne Offshore GI

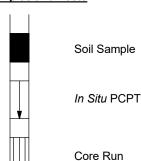
RTE_DGEC Client: Project GMOP21-G-019 Number:

Reference: GMOP21-G-019-FAC



Samples and Tests

GMOP_AGSLIB_REV01-09.GLBGrfcTextINS01-BHLOG LEGEND (BSI)



Sampling/Testing Method

PU/P Push/piston with Shelby Tube

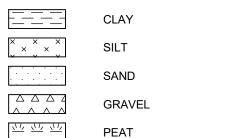
Н Hammer

CR Core Run

С **PCPT**

All lengths of sample or test represent actual recovery or tested depth range

Legend of Soil Types



SCHIST



SILTSTONE

SANDSTONE



DOLOMITE

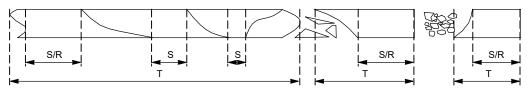


LIMESTONE / CALCAREOUS / CARBONATE ROCKS **IGNEOUS ROCKS**

CALCARENITE

Rock Core Recovery

(based on BS EN ISO 14689-1)



Term	Definition	Strength	UCS(MPa)
TOD	Core Recovered (ΣT)	Extremely Weak	< 1.0
TCR	Length Drilled	Very Weak	1.0 - 5.0
	Ours Danson dat Full Diens (70)	Weak	5.0 - 12.5
SCR	Core Recovered at Full Diam. (ΣS)	Moderately Weak	12.5 - 25.0
	Length Drilled	Medium Strong	25.0 - 50.0
DOD	Core Recovered at Full Diam., >0.1m in length (ΣR)	Strong	50.0 - 100.0
RQD	Length Drilled	Very Strong	100.0 - 250.0
		Extremely Strong	> 250.0

Strength of Fine Grained Soils (based on BS EN ISO 14688-2)

Strength	Su(kPa)
Extremely Low	< 10
Very Low	10 - 20
Low	20 - 40
Medium	40 - 75
High	75 - 150
Very High	150 - 300
Extremely High	300 - 600

Relative Density of Coarse Grained Soils (based on Lunne and Chrstoffersen, 1983)

Density	Relative Density (%
Very Loose	< 15
Loose	15 - 35
Medium Dense	35 - 65
Dense	65 - 85
Very Dense	> 85
•	

Borehole Log Legend

Appendix A.2 Borehole Logs

Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#01_SAMP OWF_GI#01A_SAMP

Date Commenced: 11/12/2022 17/12/2022 Coordinates¹: 446711mE 5247256mN 446709mE 5247254mN

Water Depth²: 88.36m 88.23m



Second Process Proce			. 1	STRATA DESCRIPTION	FRACTURE		CONE	DENETRO	METER TE	· CT			ROCK	LIN	DDAINED	CLICAD CT	DENOTH (kDa)	<u> </u>	- FNOIT	V (Ma/m)	3,	CL A	CCIFICATION	1 (0/)
2	PTH (m)	PLE	EST	O STRATA DESCRIPTION			CONE	PENETRU	WEIERIE	:51			COMPRESSIVE	ı			, ,		ENSII	Y (IVIG/M)	Wate		` '
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2 9 9 9 120 500 100 100 100 100 100 100 100 100 10			S		RQD / SCR / TCR		Sleeve	Friction f _s (MPa)		P	ore					values please see				sults	Fines	Content	Density ³
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4 Consideration of the control of th		CR03		20mm) and white staining on core surface.																	∞ (
4 Consideration of the control of th	<u> </u>	CR03		subhorizontal to vertical planar to undulating								+		\vdash						♦	0	0		+
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Construction Control C		PU01		03.20m Moderately weak greyish orange (10YR 7/4)																		0		
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2 CR11 CR12 CR12 CR13 CR13 CR13 CR13 CR14 CR14 CR15 CR15 CR15 CR16 CR16 CR17 CR17 CR18 CR16 CR17 CR18 CR16 CR17 CR18 CR17 CR18 CR18 CR18 CR18 CR18 CR18 CR18 CR18		UKU6		to closely spaced subhorizontal undulating																				
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2 CR11 CR12 CR12 CR13 CR13 CR13 CR13 CR14 CR14 CR15 CR15 CR15 CR16 CR16 CR17 CR17 CR18 CR16 CR17 CR18 CR16 CR17 CR18 CR17 CR18 CR18 CR18 CR18 CR18 CR18 CR18 CR18	6 -	CROS		4																				
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Tough open clean and white staining on core surface. 17.00m Medium strong medium to high density very pale orange (10 VR 8/2) very highly calcareous slightly weathered silty slightly sandy SHELLY LIMESTONE with frequent fossils (1mm-30mm). 1 Local Geodetic Datum: ETRS89 / UTMN30 3 Relative densities derived from Jamiolkowski et al. (2001) Ref: GMOP21-G-019-FAC		5.110		(2mm-10mm). Discontinuities are closely	<u> </u>						$-\bot$	$+\!\!\!+$		ऻ										
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				End of borehole at 20.10m	$ \ \ \ \ $																			
² Water Depth: LAT			¹ Loca		3	Relative densities	derived fro	m Jamiolkow	ski et al. (200)1)					1		1 1			<u> </u>	Ref: GMC	P21-G-01	9-FAC	
			² Wat	er Depth: LAT																	Page 1 of	1		

Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#04_SAMP OWF_GI#04A_SAMP

Date Commenced: 02/12/2022 04/12/2022

Coordinates¹: 451040mE 5244829mN 451037mE 5244832mN

Water Depth²: 87.53m 87.5m



SINIE Not Cream Not Cr						_																	_		<u> </u>		
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and with frequent fossils (thmm-30mm). 12 PULT 13 CR11 14 PULS 15 SUM: Weak to medium strong (based on field tests) medium to high density poly pale cannege (10YR 80) pility calcurates of SHELLY 15 SUM: Sum Meak to medium strong (based on field tests) medium to high density poly pale cannege (10YR 80) pility calcurates of SHELLY 16 SUM: Sum Meak to medium strong (based on field tests) medium to high density poly pale cannege (10YR 80) pility because the shall be the sum of the s		PU04		(10YR	8/6) highly calcareous SHELLY																					0	
12 PUB	—10 —	PU05			th frequent fossils (1mm-30mm).																			◇ C		▲ ○	
12 PUB		CR09		#																							
13 30m Weak to medium strong (based on field tests) modium to high density pale yellowish orange (1074 85) highly acknessors SHELLY (100m). 15 90m Shrong (based on field tests) high to very liety or selection or strong (based on field tests) modium to high density pale yellowish orange (1074 85) highly acknessors SHELLY (100m). 18 90m Shrong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or strong (based on field tests) high to very liety or selection or sele	-11-																	1								A 0	
14 PUSS 15 PUTS 16 PUT	40	PU06				$\parallel . \parallel \parallel$												1								-	
13 PUND 15 PUND 16 PUN	F12-	CR10																						0	9	9	
15.30m Weak to medium strong (based on field tests) medium to high density paie yellowish medium strong (based on field tests) medium to high density paie yellowish medium strong (based on field tests) medium to high density paie yellowish medium strong (based on field tests) medium to high density paie yellowish medium strong (based on field tests) high to very high density very paie orange (10/18 8/2) highly calcarences (FSSILFEROUS DOLOMITE with numerous feesies (amm.30mm). CR14 19 CR15 CR15 CR16 CR16 CR16 CR16 CR16 CR16 CR16 CR17 CR17 CR17 CR17 CR17 CR19	_13_	CR11																1									
15.30m Weak to medium strong (based on field tests) implications of the strong (based on field t																											
15.30m Weak to medium strong (based on field tests) medium to high density pale yellowish orange (10YR 8(6) highly calcareous SHELLY LIMESTONE with frequent fossis (1mm 30mm). 16.90m Strong (based on field tests) high to very high density very pale orange (10YR 8(2) highly calcareous SHELLY LIMESTONE SOSILIFEROUS DOLOMITE with numerous fossis (3mm 30mm). 16.90m Strong (based on field tests) high to very high density very pale orange (10YR 8(2) highly calcareous sosis (3mm 30mm). 16.90m Medium strong to strong (based on field tests) high to very high density very pale orange (10YR 8(2) highly calcareous sightly washered SHELLY LIMESTONE storing (based on field tests) high to very high density very pale orange (10YR 8(2) highly calcareous sightly washered SHELLY LIMESTONE TONE with Discontinuities are very closely to closely spaced subhorizontal undulating rough oper clean with occasional orange staining. End of borehole at 19.85m 1 Local Geodelic Datum: ETRS89 / UTMN30 3 Relative densities derived from Jamiotkowski et al. (2001) Ref. GMOP21-G-019-FAC	— 14 —	PU08																1								C	
1 Local Geodetic Datum: ETRS89 / UTNN30 1 Som Weak to medium storog (based on field tests) mighty pale yellowish orange (10YR 8/6) highly calcareous SHELLY LIMESTONE with frequent fossils (1mm - 10 - 10 - 10 - 10 - 10 - 10 - 10 -		PU09																1						<	, 0	- 0	
tests) medium to high density pale yellowish orange (10YR 8/0) highly calcareous SHELLY LIMESTONE with frequent fossils (1mm-30mm). 16.90m Strong (based on field tests) high to very high density yery pale orange (10YR 8/2) highly calcareous FOSSILIFEROUS DOLOMITE with numerous fossils (3mm-30mm). Discontinuities are very closely to medium spaced subhorizontal undulating rough open clean with occasional orange staining. 18.00m Medium to high density very pale orange (10YR 8/2) highly calcareous sightly weathered SHELLY LIMESTONE with numerous fossils (3mm-36mm). Discontinuities are very closely to medium spaced subhorizontal undulating rough open clean with occasional orange staining. 18.00m Medium to high density very pale orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-36mm). Discontinuities are very closely to closely spaced subhorizontal undulating rough open clean with occasional orange staining. 1 Local Geodetic Datum: ETRS89 / UTMN30 3 Relative densities derived from Jamiolkowski et al. (2001)	— 15 —	PU10		<u> </u>		1																				0	-
orange (10YR 8/8) highly calcareous SHELLY LIMESTONE with frequeous SHELLY John Strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous FOSSILE(FEROUS DO). DMITE with numerous FOSSILS (FEROUS DO).		PU11 PU12		15.30m Weal	k to medium strong (based on field medium to high density pale vellowish			 		_		+ +			+++			1				+		♦ C	+	0	+ + -
LINES! ONE with frequent rossis (1mm- 30mm). 16.90m Strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous FOSSIL/FEROUS DOLOMITE with numerous fossils (3mm- 19	L- 16 -	PU13		orange	e (10YR 8/6) highly calcareous SHELLY	$[\]$	$ \cdot \cdot $																	\Diamond	0		_
18 CR13 18 CR14 19 CR15 19 CR15 10 CR1	L 17-	CR12				╆╫╗	\ 	\vdash		-		+						+			+	+			+		+
numerous fossils (3mm-30mm). Discontinuities are very closely to medium spaced subhorizontal undulating rough open clean with occasional orange staining. 18.00m Medium strong to strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-35mm). Discontinuities are very closely to closely spaced subhorizontal undulating rough open clean with occasional orange staining. 1					,																						
numerous fossils (3mm-30mm). Discontinuities are very closely to medium spaced subhorizontal undulating rough open clean with occasional orange staining. 18.00m Medium strong to strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-35mm). Discontinuities are very closely to closely spaced subhorizontal undulating rough open clean with occasional orange staining. 1	— 18 —			density	y very pale orange (10YR 8/2) highly eous FOSSILIFEROUS DOLOMITF with	∦┤ ╢		\vdash		+		+			+++			+	 		-	+			+		+ + -
spaced subhorizontal undulating rough open clean with occasional orange staining. 18.00m Medium strong to strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-35mm). 22-				— \ numer	ous fossils (3mm-30mm). /	Ί																		♦	0	0	
clean with occasional orange staining. 18.00m Medium strong to strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-35mm). 22- 23-	 19−			── \ spaced	d subhorizontal undulating rough open/			-		_		+			+++			1			_	+-			+		+
tests) high to very high density very pale orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-35mm). Discontinuities are very closely to closely spaced subhorizontal undulating rough open clean with occasional orange staining. End of borehole at 19.85m 1 Local Geodetic Datum: ETRS89 / UTMN30 3 Relative densities derived from Jamiolkowski et al. (2001) Ref: GMOP21-G-019-FAC	_ 20 _			\ clean v	with occasional orange staining.	,																			♦ Þ	0	
orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-35mm). Discontinuities are very closely to closely spaced subhorizontal undulating rough open clean with occasional orange staining. End of borehole at 19.85m 1 Local Geodetic Datum: ETRS89 / UTMN30 3 Relative densities derived from Jamiolkowski et al. (2001) Ref: GMOP21-G-019-FAC	20_			tests) l	high to very high density very pale	/												-									+
Page of borehole at 19.85m The color of borehole at 19.85m The c	—21 —			\ orange	e (10YR 8/2) highly calcareous slightly /																						
Discontinuities are very closely to closely spaced subhorizontal undulating rough open clean with occasional orange staining. End of borehole at 19.85m 1 Local Geodetic Datum: ETRS89 / UTMN30 3 Relative densities derived from Jamiolkowski et al. (2001) Ref: GMOP21-G-019-FAC				\ numer	ous fossils (2mm-35mm).				_			\perp															
clean with occasional orange staining. End of borehole at 19.85m 1 Local Geodetic Datum: ETRS89 / UTMN30 Ref: GMOP21-G-019-FAC	-22-			Discon	tinuities are very closely to closely																						
End of borehole at 19.85m Local Geodetic Datum: ETRS89 / UTMN30 Ref: GMOP21-G-019-FAC				clean	with occasional orange staining.										ШШ												
¹ Local Geodetic Datum: ETRS89 / UTMN30 ³ Relative densities derived from Jamiolkowski et al. (2001) Ref: GMOP21-G-019-FAC	-23			Food of house to	le et 10 05m																						
				End of borehol	ne at 19.85M																						
² Water Depth: LAT			¹ Lo	al Geodetic Datum: E	TRS89 / UTMN30		3	³ Relative of	densities der	ved fron	n Jamiolkows	ki et al. (20	01)												Ref: GM	OP21-G-019-FA	o
			² Wa	ter Depth: LAT																					Page 1 r	of 1	

Client: RTE_DGEC

A05 Bretagne Offshore GI Project Name:

Project No.: GMOP21-G-019

A05 OWF Location:

Borehole No.: OWF_GI#05_SAMP OWF_GI#05A_SAMP OWF_GI#05B_SAMP

Date Commenced: 13/11/2022 18/12/2022 26/12/2022

449591mE 449590mE 449585mE

Coordinates¹:

5242197mN 5242194mN 5242198mN

Water Depth²: 95.68m 95.7m 95.67m



DЕРТН (m)	SAMPLE	IN SITU TEST	LEGEND	STRATA DESCRIPTION	FRACTURE STATE RQD/SCR/TCR	— N	et Cone Re	sistance	q _{net} (MPa)		Pore Pressure	COMP	OCK RESSIVE GTH (MPa) ⁴	▲ Torv	Laborato CIU Tria: Su from o	ry Vane kial		● Bulk D	•		CLASSII Water Content Carbonate Content Fines Cont	←→ P	` ′
		=			30 60 90	12.5 25.0 0.625	37.5 50 1.2	.0 62.	5 75.0 87 1.875	7.5	Ratio, Bo	25	50	1	the repor			1.5 2			25	50	75
- 1 -	PU01 PU01A CR01			00.00m Dark olive grey (5Y 3/2) highly calcareous gravelly silty fine to medium SAND (grsi(f-m)Sa) with frequent shell fragments (1mm-30mm). Gravel is fine to medium 00.35m to 00.40m - with subrounded to subangular		3.020												♦		0			
2 —	CR02		Ħ	coarse gravel with voids (2mm-15mm) 00.50m Medium strong to strong (based on field tests) pale yellowish brown (10YR 6/2) very																	0		
3 -	CR03			highly calcareous, slightly weathered fine grained SHELLY LIMESTONE with rare voids (2mm-10mm). Discontinuities are closely spaced subhorizontal undulating rough open clean with frequent white and orange surface															♦ 0		0	72	
5	CR05			staining 02.50m Medium strong to strong (based on field tests) pale yellowish brown (10YR 6/2) highly														\rightarrow (3		2	8	^
	PU02 CR01			calcareous, slightly weathered fine grained FOSSILIFEROUS GLAUCONITE LIMESTONE with rare voids (2mm-10mm). Discontinuities are closely spaced	<u> </u>							•					_		♦ 0	\perp	0 0		<u> </u>
7 -	CR02			subhorizontal undulating rough open clean. 03.90m Very high strength very dark greenish grey (GLEY 1 5GY 3/1) slightly sandy silty high plasticity CLAY (sasi(CIH)). Sand is fine													<u> </u>	♦	0	_	0	8	
8 -	CR03		 	04,50m to 05.10m - high to very high strength clay 05.60m Moderately weak dark greenish grey (5GY 4/1) very highly calcareous slightly weathered GLAUCONITE DOLOMITE. Discontinuities are													<u> </u>	> > >	> 0	+	0	30	
9 —	CR04			very closely to closely spaced subhorizontal undulating rough open with frequent very dark grey clay infill																	→ 2 ²	•	•
-10 -11	CR05		=	d6.60m Dark greenish grey (5GY 4/1) non- calcareous slightly gravelly slightly sandy silty high plasticity CLAY (grsaCIV). Gravel is subrounded to subangular														♦	0		0		
-12-				08.00m Dark greenish grey (5GY 4/1) non- calcareous slightly sandy clayey high plasticity SILT (Sacl(SiH))																			
-13-				08.75m Greenish grey (5GY 6/1) calcareous slightly sandy very silty high plasticity CLAY (Sasi(CIH)) 10.40m to 10.50m - with frequent fossils (1mm-5mm)																			
—14 <i>—</i>				End of borehole at 10.50m													-			_			
—15 <i>—</i>																				+			
-16-																	-			+			
-17-																	1						
-18-																							
—19 <i>—</i>																							

Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#08_CPT

Date Commenced: 13/09/2022

Coordinates¹: 454537mE 5242877mN

Water Depth²: 87.5m



프 a	Щ	F		STRATA DESCRIPTION	FRA	CTURE			CON	NE PEN	ETROM	ETER T	EST				ROCI	K	UNI	DRAINE	D SHEA	AR STRE	ENGTH (kPa)		DENSI	TY (Mg/	/m³)	CL	ASSIFICATIO	ON (%)
DEPTH (m)	SAMPLE	SITU TEST	FGFND		51	ΓΑΤΕ										STRE	ENGTH	I (MPa) ⁴	▲ Tor	vane		0 L	aboratory Vane		■ Dull	k Density		● Wa	ntent	Plasticity Index
	SA	รเรษ	4						Net (Cone Re	sistance	e q _{net} (MI	Pa)		-] ● ∪	JCS		1	cket Penetr			CIU Triaxial Su from q _{net} , For N _{kt}		◆ Dry	,		Ca Co	rbonate ntent es Content	Relative Density ³
		Š			RQD/	SCR / TCR		 2.5 25	Sleev .0 37	ve Friction	on f _s (MF).0 62	Pa)	5.0 8	7.5	Pore Pressure Ratio, Bo						resent offshore re	esults V	alues please see he report.	* Ho	lollow symbols re	epresent offsho	re results	_	is contone	Density
					30	60 90		0.6	25	1.2	250		875	7.5	0.0 0.5 1.0	2	25	50	2	00 4	00 6		00 1000		1.3	1.8	2.3	2	25 50	75
		CO	01	00.00m Dense to very dense SAND			>																							3
— 1 —		C0 1904	410	:																										
_ 2 _	CR01	▼ C0	02 1410	01.50m Extremely strong dark yellowish orange (10Y	1		· <u>· · · · ·</u>	-																		♦	О	0		
_			Z	R6/6) slightly weathered fine grained DOLOMITE with frequent voids (10mm-20mm) and fossils (10m-20mm). Discontinuities are			<u> </u>	+							+++				-					-		 	⋄ 	-		
— 3 —	CR02			sub-horizontal to diagonal (5-45°) closely																					♦) (0		
_ 4 _	CR03		Ź	spaced rough undulating moderately wide to wide clean.			+								+++	1			1			1					0			
	CR04		Z	03.50m Extremely strong pale vellowish brown (10YR	$\sqcup \sqcup$	IJ																								
— 5 —			Z	6/2) slightly calcareous slightly weathered DOLOMITE with occasional voids (2mm-5mm)			1							+	$\dagger \dagger \dagger \dagger$	1			1			+			+		+	1		
_ 6 _	CR05		É	and occasional shell fragments (2mm-3mm). / Discontinuities are very closely to closely	1 [
	CR06	¥ _{C0}	03 1410	spaced support and (5-10°) undulating rough			-								$\dagger \dagger \dagger \dagger$	1			1									-		
− 7 −		1904	410	\ Stairing /																										
— 8 —	CR07		片	0\$.85m - subvertical discontinuity (45°), likely drilling induced																										
	PU01	Н	Ħ	05.50m Weak to medium strong pale yellowish orange (10YR 8/6) highly calcareous			- 77												<u> </u>											
— 9 —	CB00	C0 1904		orange (10YR 8/6) highly calcareous LIMESTONE with frequent fossils (2mm- 25mm) Discontinuities are very closely spaced							-	_																		
—10 —	CR08	1904	05 ¹⁴¹⁰	horizontal to subhorizontal (0-15°) undulating rough open with silt infill and frequent orange			-								+++	-			1			-					_	<u> </u>		
	CR09	C0	06 1409	staining.																						\Q	0	0		
—11 —		1904	1409	10.50m - becoming very strong high density with occasional fossils (2mm-10mm)	 		1																					6		
—12 —	CR10		П	1											$\ \cdot\ $														1	
—13 <i>—</i>	CR11						1								HHH	1			1							→		0		
_ 13					Щ	4									$\ \cdot\ $												Ψ .		1	
— 14 —	CR12		H																								O	0		
— 15 —	CR13														Ш												O	0		
	DIJOO		H	15.50m Yellow (2.5Y 8/6) slightly gravelly sandy silty	1																									
— 16 —	PU02		Ė	LIMESTONE with frequent fossils (2mm-			_	-						_	\coprod	_			ऻ—			_		\$	0				8	
— 17 —	CR14	C0	07	20mm). Gravel is subrounded fine to coarse 16.50m Strong yellow (2.5Y 8/6) highly calcareous	1		177							-	1										♦	0		0		_
	CR15		7	16.50m Strong yellow (2.5Y 8/6) highly calcareous LIMESTONE with frequent fossils (2mm-20mm). Discontinuities are closely spaced	╂┼┼	++								1	+++	+			-			-			+		♦	0		
— 18 —			Z	sub-horizontal (0-15°) undulating rough moderately wide with silt infill.		_																								
— 19 —	CR16		Z	16.75m - thin bed of limestone with frequent voids										1	$\dagger \dagger \dagger \dagger$	1			1						+	-	D	þ		
			Z	(2mm-15mm) 17.50m Extremely strong yellowish grey (5Y 7/2)		+																					♦ ○	0		
—20 —	CR17		Z	17.50m Extremely strong yellowish grey (5Y 7/2) slightly calcareous slightly weathered DOLOMITE with frequent voids (10mm-20mm)											$\dagger \dagger \dagger \dagger$				1						1	♦ C		0		
-21-	CR18			and fossils (10mm-20mm). Discontinuities are very closely to closely spaced subhorizontal to	/		<u>L</u> _									<u>L</u>						<u> </u>							0	
	4			\ subvertical (5-45°) rough undulating /																										
—22 <i>—</i>				moderately wide clean with orange staining 20.50m - medium bed of mudstone			1								\coprod	_			<u> </u>											
—23 —				End of borehole at 20.80m																										
— 24 —				2.12 3. 25.51.616 4. 25.50111										1	+++	1			ऻ—						-			1		
24																														
		1	Local	L Geodetic Datum: ETRS89 / UTMN30			3 Relativ	e densities	derived	from Jam	iolkowski	i et al. (20	001)														Ref: GM	I IOP21-G-()19-FAC	
		2	Water	Depth: LAT								•															Page 1			

Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#09_SAMP Date Commenced: 21/08/2022

Coordinates¹: 456875mE 5244986mN

Water Depth²: 83.52m



DEPTH (m)	SAMPLE	SITU TEST	LEGEND	STRATA DESCRIPTION	FRA S	CTURE TATE			COI	NE PEN	ETROM	ETER TI	EST			COM	ROCK PRESS NGTH (SIVE MPa) ⁴	▲ Ton	/ane		O La	NGTH (kf	<i>'</i>		SITY (I	Mg/m³)		Wate Conte	SSIFICATION	
	SA	IN SITL	"		1	SCR / TCR		 2.5 25	Slee 5.0 37	ve Fricti	on f _s (MF).0 62	e q _{net} (MF Pa) 2.5 75	Pa) .0 87	'.5	Pore Pressure Ratio, Bo	● UCS			● Und		xial Test esent offshore res	Sults Va	U Triaxial , from q _{net} , Fo alues please s e report.	or N _{kt} see		Ory Densi	ity offshore result	es	Carbo Conte	Content [Relative Density ³
	PU01	<u> </u>		00.00m Medium strong dark yellowish orange (10YR		60 90	+	0.6	525	1.2	250	1.8	75		0.0 0.5 1.0	25	5	0	20	00 40	00 60	00 80	00 100	0	1.3	1.8		0	25 C	50	75
- 1 -	CR01		Z'	6/6) very highly calcareous fine to medium grained DOLOMITE with white staining on core surface. Discontinuities are medium spaced undulating smooth wide clean													•										\	0	0		-
— 2 —				spaced undulating smooth wide dean																											+
— 3 —	PU02 CR04		/ /																					\dashv				\dashv	0		+
- 4 - 	CR05		7																										0		
− 5 	CR06		7/			1																							0		
− 6 −	CR07		<i>Z</i> Z	06.00m - becoming medium strong to strong																									0		
7 -	CR08		Z / Z /																												
- 8 -	CR09		7																						<	· O			0		
- 9 -	CR10		7																								◇ ¢		0		+
-10- -11-	CR11																								→	0	0		0		+
—12 —	CR12		<i>Z</i> <i>Z</i>				+																	+		Ť		\dashv	0		+
13			Z /			++											•								♦		-		0		
— 14 —	CR14		7														•											∞:)		
— 15 —	CR15		Ź	14.35m Medium strong dark yellowish orange (10YR													•														
—16 —	CR16		Z / Z /	DOLOMITE with white staining on core surface. Discontinuities are medium spaced undulating smooth wide clean																											
—17 —	CR17			16.00m Medium strong (from field tests) dark yellowish orange (10YR 6/6) very highly calcareous fine to medium grained SHELLY LIMESTONE with numerous fossils (1mm-																									0		
—18 —	CR19			20mm). Discontinuities are very close to closely spaced horizontal (0-5°) planar rough open clean.																									0		
—19 —	CR20			17.00m to 20.70m - moderately weak															<u> </u>						♦	<u></u>			0		
-20-	CR21		H																						(> (О		0 0		
—21 —				End of borehole at 20.70m																											
-22-																								\dashv				\dashv			+
				Seodetic Datum: ETRS89 / UTMN30 Depth: LAT			³ Relative	densities	s derived	from Jan	niolkowski	et al. (20	01)														R	Ref: GMO	P21-G-01	9-FAC	

Client: RTE DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#11_CPT OWF_GI#11_SAMP OWF_GI#11A_CPT

OWF GI#11B CPT

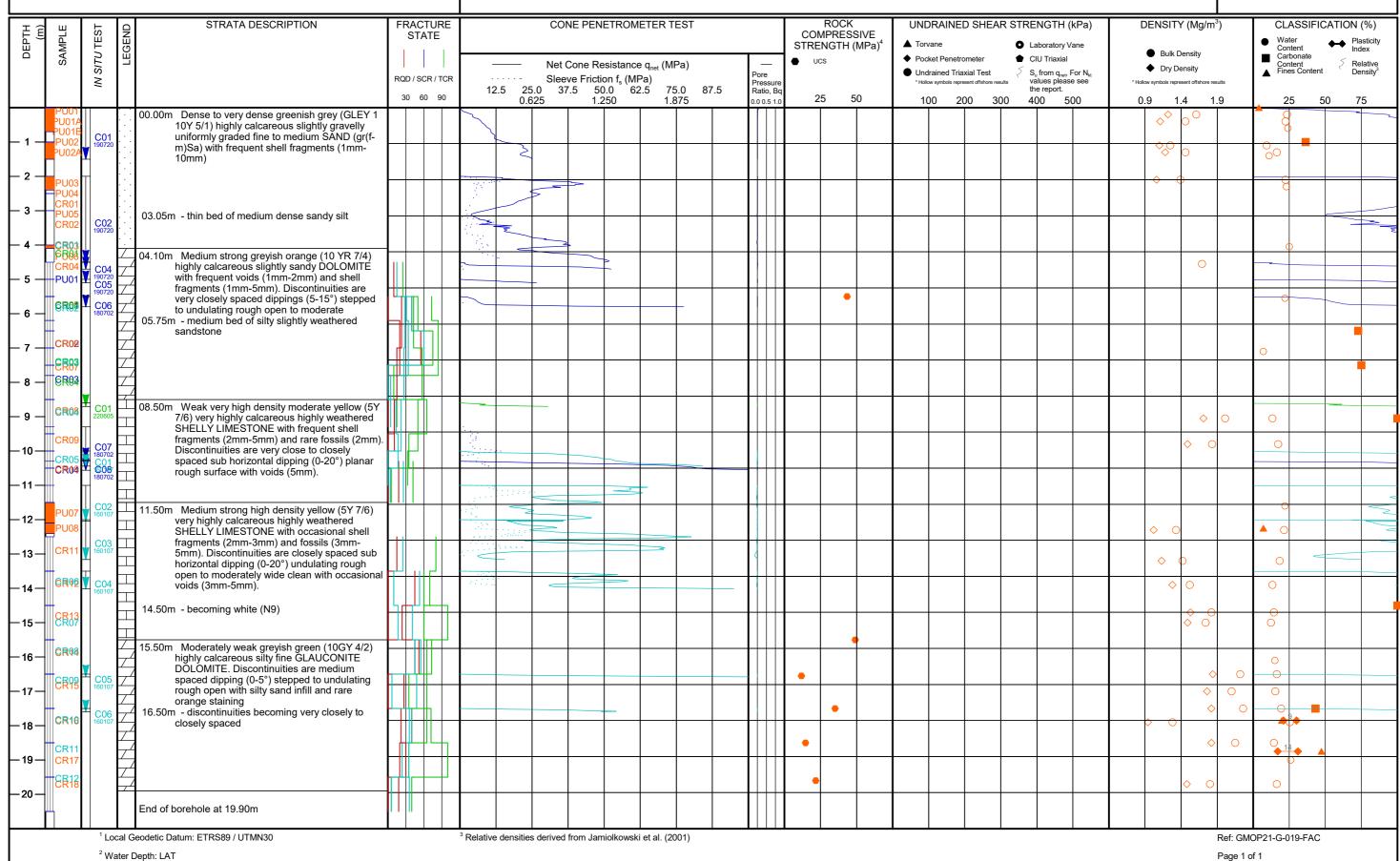
Date Commenced: 17/07/2022 02/09/2022 03/09/2022 14/09/2022

455783mE 455775mE 455783mE 455779mE 5241008mN 5241017mN 5241013mN 5241010mN

Coordinates¹:

Water Depth²: 89.66m 89.63m 89.63m 89.68m





Client: RTE DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

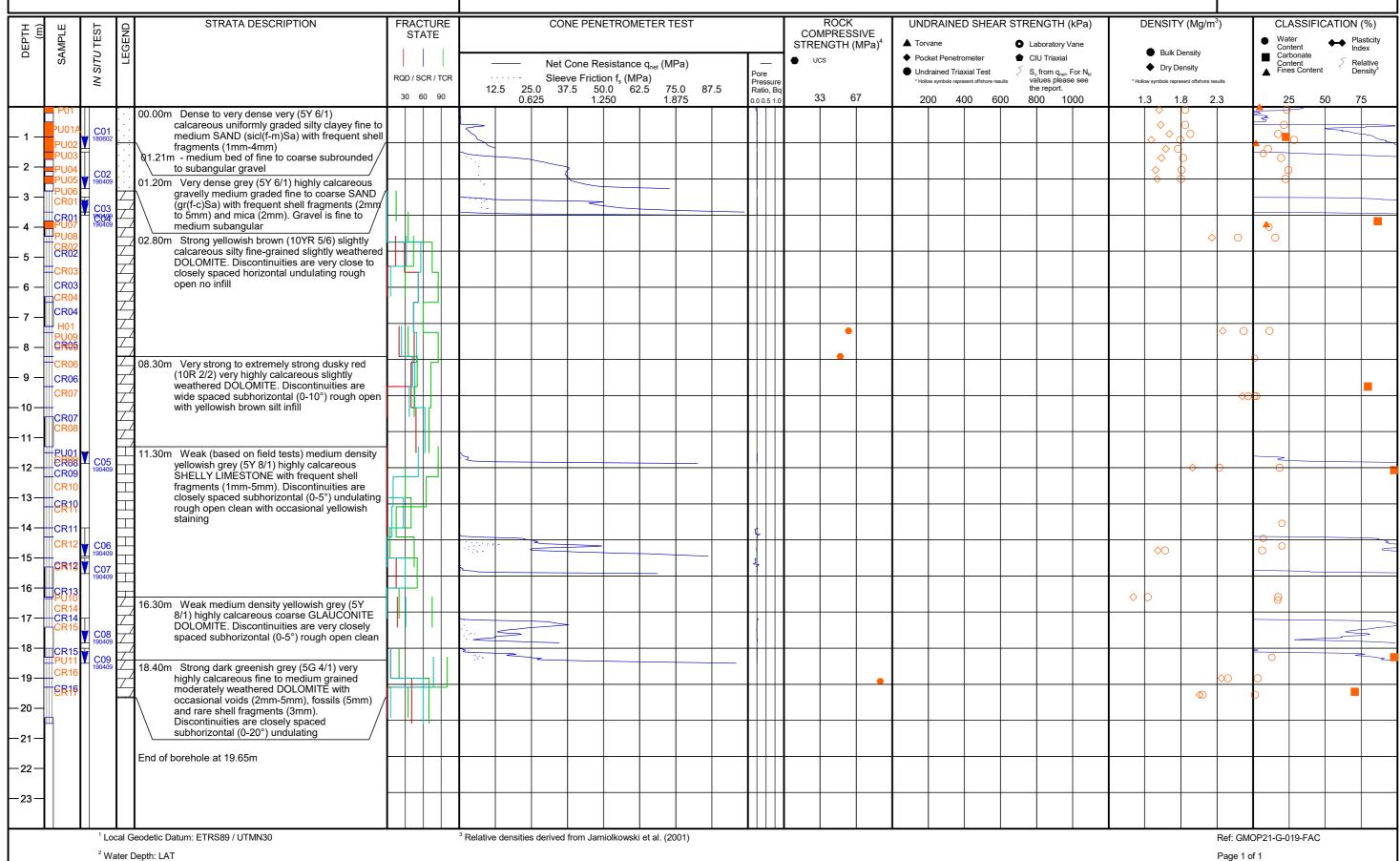
Location: A05 OWF

Borehole No.: OWF_GI#12_CPT OWF_GI#12_SAMP Date Commenced: 12/09/2022 11/09/2022

Coordinates¹: 456768mE 5242750mN 456756mE 5242757mN

Water Depth²: 86.79m 86.77m





Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#13_CPT

Date Commenced: 15/09/2022

Coordinates¹: 458027mE 5240916mN

Water Depth²: 89.65m



	Journo		7,00 0771															
Ξæ	щ	ST	STRATA DESCRIPTION	FRACTURE STATE		ONE PENETRON	METER TEST			ROCK COMPRESSIVE	UNI	DRAINED SH	EAR STRE	NGTH (kPa)	DENS	ITY (Mg/m³)		SIFICATION (%)
DEPTH (m)	SAMPLE	TEST	O STRATA DESCRIPTION	STATE						STRENGTH (MPa) ⁴	▲ Tor	vane	0 L	aboratory Vane	▲ p	II. Donoite	 Water Content 	it Indev
٥	SA	SITU	الله		N	et Cone Resistano	ce q _{net} (MPa)		_	● ucs	1	cket Penetrometer		CIU Triaxial	1	lk Density / Density	Carbon Conten	nate .
		8		RQD/SCR/TCR	· · · · · · · · · · · · · · · · · · ·	leeve Friction f _s (M	1Pa)		Pore Pressure			drained Triaxial Te llow symbols represent offsh	ore results V	gu from q _{net} , For N _{kt} alues please see	1	represent offshore results	▲ Fines C	Content Density ³
				30 60 90	12.5 25.0 0.625	37.5 50.0 6 1.250	32.5 75.0 87 1.875	7.5	Ratio, Bo	25 50	2	00 400		ne report. .00 1000	1.3	1.8 2.3	25	50 75
	PU01	C01	00.00m Loose to medium dense brown (7.5YR 5/4)															
L 1 -	H	180602	fine to medium SAND 7 Q0.20m - becoming dense to very dense	1, ,							1							
	PU02A CR01		01.00m Very strong greyish orange (10YR 7/4)								1					♦0	0	
— 2 —	CR02		slightly calcareous slightly weathered fine grained DOLOMITE with rare voids (2mm-								1							
	01102		3mm). Discontinuities are closely to medium						+++		1					> 0	0	
— 3 —	CR03		spaced horizontal (0-5°) undulating rough open with silt infill.								1				\Diamond			
_ 4 _			03.25m - becoming extremely strong. Discontinuities becoming subhorizontal to diagonal (5-75°)						+++		+				1		0	
	CR04		Q4.00m - becoming moderate brown (5YR 4/4)]							1							
— 5 —	CR05		04.55m Strong moderate brown (5YR 4/4) slightly	 		 	+ +		+++	 	1				1	+ +		
			calcareous slightly weathered DOLOMITE with frequent voids (2mm-5mm). Discontinuities													♦ €		
— 6 —	CR06		are closely to medium spaced subhorizontal (0-20°) undulating rough open with silt infill						+++		+							
— 7 —	PU03		06.00m Recovered as non-intact subrounded							l								
	CR07		fragments (10mm-30mm) of yellowish grey						+++		-						0	
— 8 —	CR08	CO2	LIMESTONE with frequent fossils (2mm-5mm)	\vdash \mid \mid \mid							1							
		180602	ゴ						+++									
— 9 —	CR09		09.00m Very strong white (N9) highly calcareous							l						♦ ○	0	
—10 <i>—</i>			highlý weathered LÌMESTŎNÉ with frequent voids (2mm-15mm) and fossils (2mm-6mm).						\coprod									
	CR10		Discontinuities are very closely to closely spaced sub-horizontal (0-20°), open with silty								1					♦ 0		
—11—	CR11		clay infill and occasional orange staining /						Ш		_				1			
— 12 —	DLIOS		10.00m - discontinuities becoming close to medium spaced. (CIRIA Grade C2/3)							l								
_ 12_	CR12		10.00m Very strong very high density white (N9)						Ш								0	
— 13 —	CR13		highly calcareous highly weathered LIMESTONE with frequent voids (2mm-15mm)							l					♦			0
			and fossils (2mm-6mm). Discontinuities are						Ш							, ,		
— 14 —	CR14	C03	closely to medium spaced sub-horizontal (0-/20°), open with silty clay infill and occasional	 						l						0	0	
—15 <i>—</i>		180602	orange staining															
13	CR15		2.00m Strong dusky yellow green (5G Y5/2) highly calcareous slightly weathered DOLOMITE with							l						♦ •	0	
— 16 —	4		occasional shell fragments (2mm-5mm).	⋏						l								
	CR16		fossils (2mm-5mm) and rare closely to medium spaced thin beds of silty fine sand.													♦ 0	0	
— 17 —	CR17		Discontinuities are very closely spaced sub- horizontal (5-10°) rough undulating open with															
—18 <i>—</i>			fine sandy silt infill									\ \ \						
	CR18		14.35m Strong dusky yellowish green (10G Y3/2) slightly calcareous clayey SILTSTONE with															
— 19 —		<u> </u>	frequent shell fragments (2mm-5mm) and															
2-	CR19		fossils (2mm-5mm). Discontinuities are medium to widely spaced horizontal (0-5°)														0	
—20 —	"		undulating rough open with silt infill (15,00m - becoming light brownish grey (5YR 6/1)															
-21-			16.05m Medium strong dusky vellowish green (10GY)															
-			3/2) MUDSTONE with rare thin beds of limestone and frequent shell fragment (5mm-						+ + +						1			
-22-			10mm). Discontinuities are very closely															
			spaced horizontal undulating rough open with silt infill						+++		1				1			
-23-			18.00m - medium spaced thin beds of clay															
—24 —			19.60m - medium bed of very strong slightly calcareous slightly weathered limestone						+++	 	1							
		1 Loca	Find of borehole at 20 00m al Geodetic Datum: ETRS89 / UTMN30		³ Relative densities deri	/ed from Jamiolkows	ki et al. (2001)				1					Ref [.]	GMOP21-G-019	-FAC
			er Depth: LAT		don		(e 1 of 1	
		vval	л Борин Б (1													ı ayı	, , 0, ,	

Client: RTE DGEC

Project Name: A05 Bretagne Offshore GI

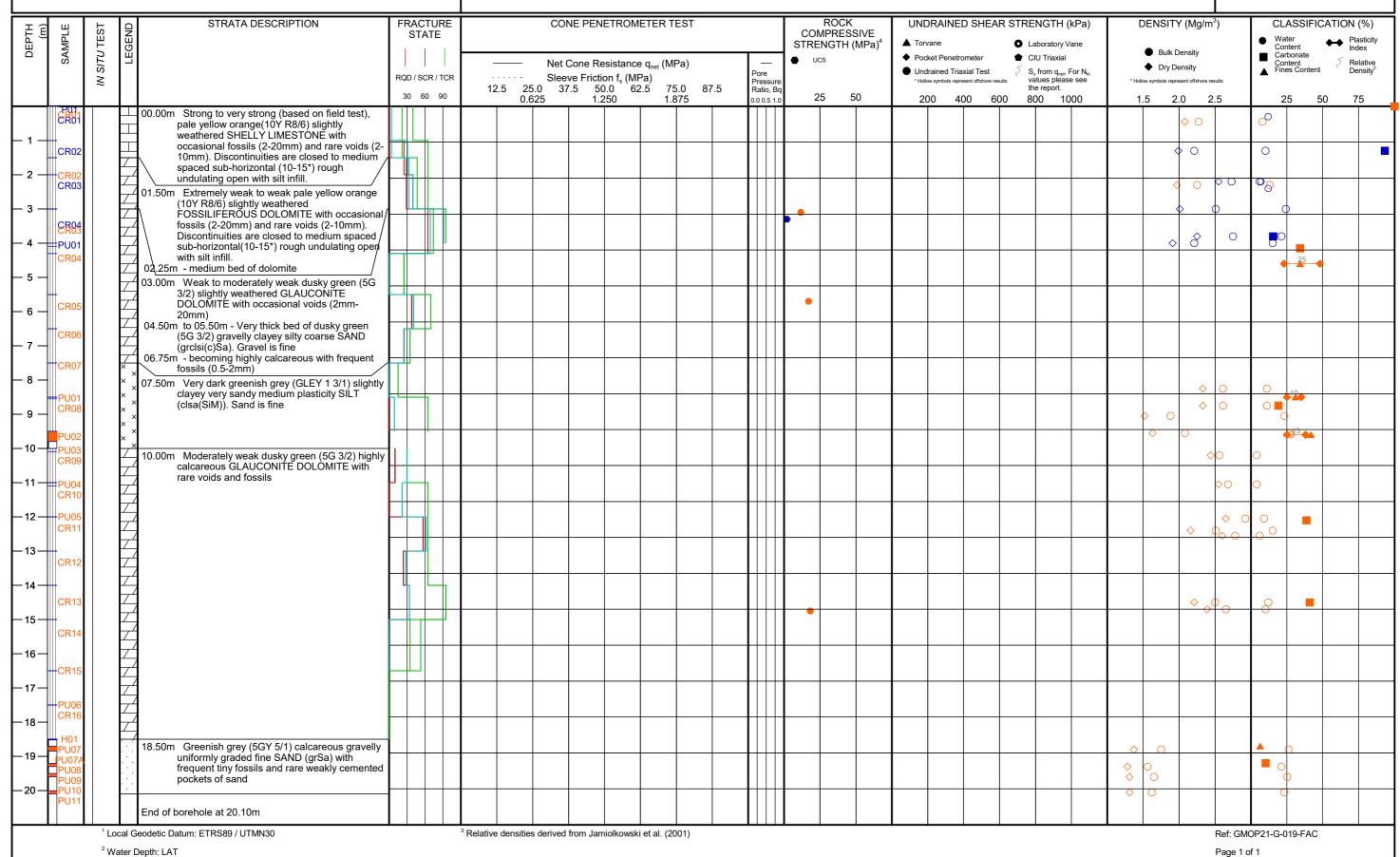
Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#14_SAMP OWF_GI#14A_SAMP Date Commenced: 17/09/2022 17/09/2022 Coordinates¹: 458791mE 5238172mN 458787mE 5238170mN

Water Depth²: 87.74m 87.81m





Client: RTE DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

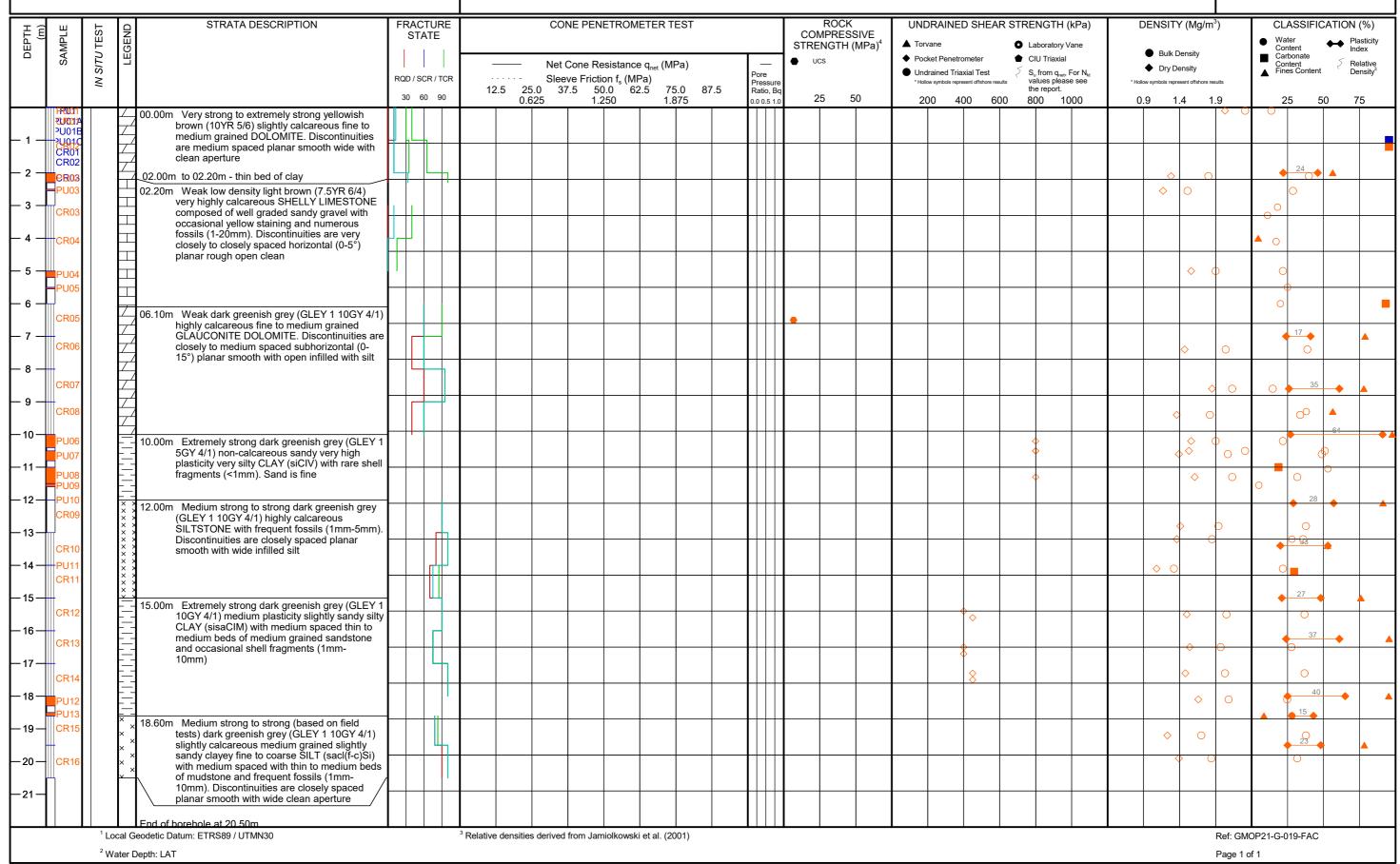
Location: A05 OWF

Borehole No.: OWF_GI#15_SAMP OWF_GI#15A_SAMP Date Commenced: 26/07/2022 18/08/2022

Coordinates¹: 459794mE 5239923mN 459791mE 5239926mN

Water Depth²: 85.45m 85.47m





Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#17_SAMP

Date Commenced: 10/12/2022

Coordinates¹: 443469mE 5245633mN

Water Depth²: 95.12m



<u> </u>			T _a T	STRATA DESCRIPTION	ERAC	TURE		C	NE PENETRON	AETED TES	T T			ROCK		LIND	PAINED	SHEAR S	TRENG	TH (kPa)	In	ENSITY	Y (Mg/m³)	CI ASSIEI	CATION (%)
DEPTH (m)	SAMPLE	<i>SITU</i> TEST	GEND	STRATA DESCRIPTION	STA	ATE		C	DINE PENETRON	METER TES) i			COMPRESSI\	VE	▲ Torva		SHEAR		, ,		LINGIT	i (ivig/iii)	▲ Water	Plasticity Index
DE	AM	77	EG.										┛	TRENGTH (MI	Pa)		et Penetror	neter	LaboraCIU Tri	-	1 .	Bulk D	Density	Content Carbonate	
	"	ISI	-		ROD / S	CR / TCR	_		Cone Resistand)	Pore	-	000		Undr	ained Triax	ial Test	S _u from	q _{net} , For N _{kt}	1	♦ Dry De		Content Fines Content	Relative Density ³
		₹				60 90	12	.5 25.0	37.5 50.0 6	2.5 75.0	87.5	Pressu Ratio, I	Bq	25 50				ent offshore results	the rep		1		esent offshore results	0.5	F0 7F
	DI IO4		00 00m	Dark greenish grey (10Y 4/1) highly	00 0			0.625	1.250	1.875		0.0 0.5 1	1.0	23 30	-	20	0 40	0 600	800	1000	1	5 2	.0 2.5	25	50 75
	PU01			Dark greenish grey (10Y 4/1) highly calcareous slightly silty uniformly graded fine to medium SAND (si(f-m)Sa) with rare shell																	\diamond	00		9	
<u> </u>	PU02		1 · 1 · 1	fragments (1mm-5mm)									+									φ <u>0</u>			
	-PU03 CR01		00.80m	- becoming greenish grey (5GY 5/1) fine																		• 0			
<u> </u>			[· ·]									-HH	H		\dashv										
	PU04																					O		•	
- 3 -	PU05 PU06												H									♦ •			
_ 4 _	PU06A																				♦	0			
-	F 007		04.50	hannain maana silka aanad									H								1	\rightarrow		1 +	
— 5 —	PU08 PU09		04.50m	- becoming very silty sand																	♦	0		Ψ	
	CR02								+ + +	+ +		-	$\parallel \parallel -$		\neg							△	0		
— 6 —	<u> </u>		05.60m	Strong to very strong pale yellowish brown	╽╙╀																	,		•	
	CR03		H §	(10YR 6/2) highly calcareous silty slightly sandy SHELLY LIMESTONE with frequent fossils (3mm-50mm). Discontinuities are									+		$\neg \uparrow$						1	\(\)	 		
- 7 -	CR04			closely spaced subhorizontal planar to /		-																		0	
	 CR05		1 1 1	undulating rough partly open to open clean (possibly drilling induced?). Core potentially									\sqcap									<	0	0	
— 8 —			\vdash	breaks in more silty beds.																					
	CR06		07.00m	Medium strong high density very pale orange (10YR 8/2) slightly weathered highly																				0	
— 9 —				calcareous slightly silty slightly sandy FOSSILIFEROUS GLAUCONITE																					
	CR07		H	LIMESTONE with frequent fossils (1mm-																					
-10-			\mathbb{H}	3mm).																		_			
11	PU10																					♦ (7	
	PU11																								
12	PU12 CR08		11.70m	Moderately weak medium density very pale																			þ	0	
12	CRUO		H :	orange (10YR 8/2) highly calcareous FOSSILIFEROUS GLAUCONITE																					
—13 <i>—</i>	CR09			LIMESTONE with abundant fossils (1mm-										•								♦	0	0	
			12.70m	3mm) to 13.00m - medium strong to strong																		~			
- 14 -	CR10		H	- -																		0			
			団																		♦	U			
—15 —	CR11		H																			· 0		0	
			III										\coprod												
—16 <i>—</i>	CR12		口																					0	
			10.70	Various alclassification desired to								$\perp \downarrow \downarrow \downarrow$	\coprod) 			
17-	PU13		16.70m	Very weak low to medium density very pale orange (10YR 8/2) highly weathered highly																		. 0			
	PU14			orange (10YR 8/2) highly weathered highly calcareous sandy silty FOSSILIFEROUS GLAUCONITE LIMESTONE with numerous								$\perp \downarrow \downarrow \downarrow$	\coprod									♦	 		
— 18 —	PU15		Ħ	fossils (1mm-3mm)																					
— 19 —	PU16		Ħ		\sqcup							$\perp \downarrow \downarrow \downarrow$	\coprod											1	
L 19-	CR13		Ħ																					0	
20	CR14		Ħ		\square	<u> </u>						$\perp \downarrow \downarrow \downarrow$	\coprod												
	UK 14																								
				orehole at 20.30m																					
				atum: ETRS89 / UTMN30			° Relative	densities derive	d from Jamiolkows	ki et al. (2001)													MOP21-G-019-FAC	
		² W	ater Depth: LAT																				Page 1	of 1	

Client: RTE DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

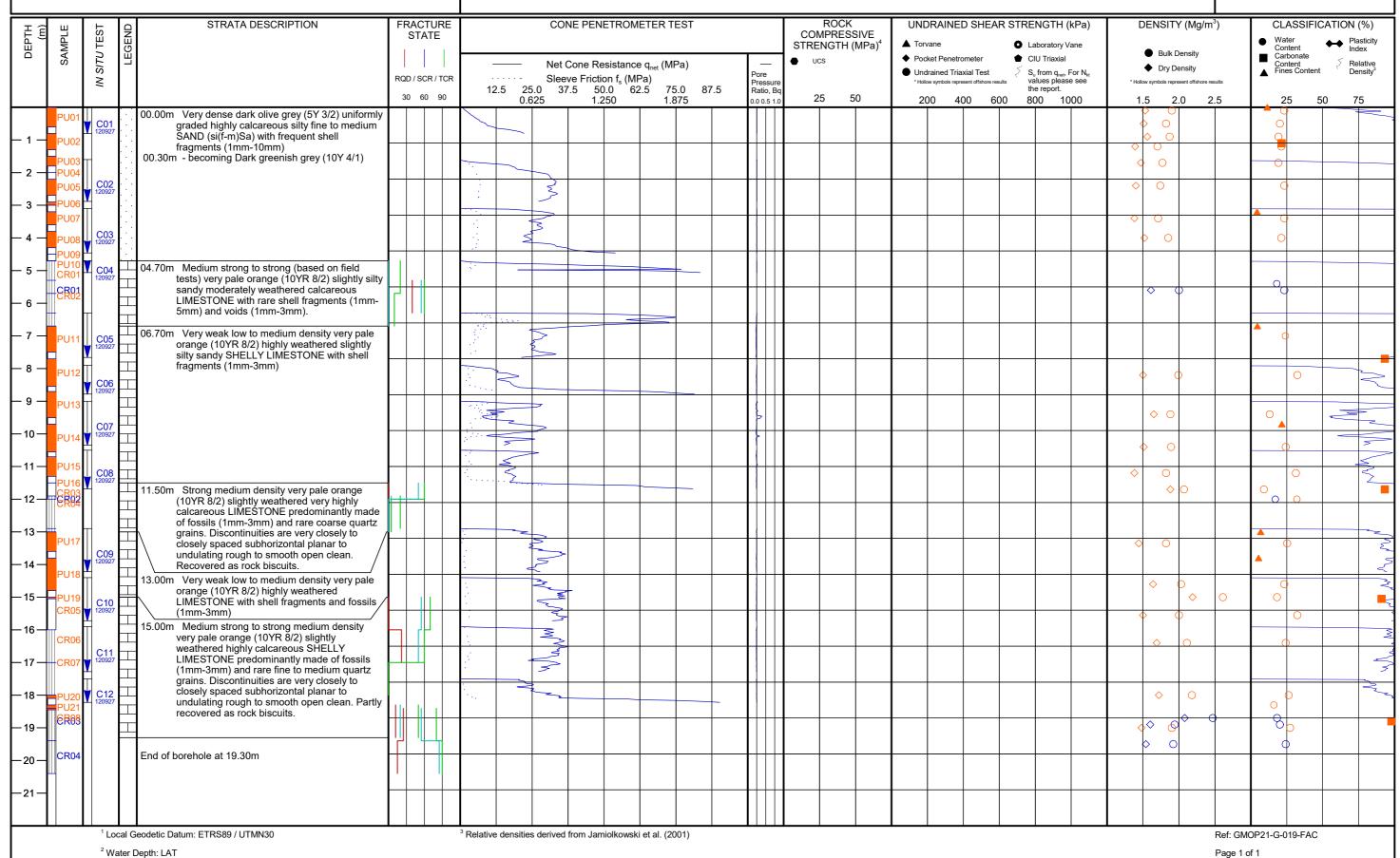
Location: A05 OWF

Borehole No.: OWF_GI#20_CPT OWF_GI#20_SAMP Date Commenced: 09/12/2022 09/12/2022

Coordinates¹: 448481mE 5238230mN 448487mE 5238226mN

Water Depth²: 96.78m 96.78m





Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#22_CPT OWF_GI#22_SAMP Date Commenced: 07/12/2022 06/12/2022 Coordinates¹: 454688mE 5237035mN 454703mE 5237027mN

Water Depth²: 93.65m 93.65m



Т 2	ш	-	□ STRATA DESCRIPTION	FRACTURE	 	CO	NE PENE	TROME	TER TES	T		T	ROCK		UND	RAINED	SHEAR S	TRENGTH (kPa)	DENSIT	Y (Mg/m ³	3)	CL/	ASSIFICATIO	N (%)
DEPTH (m)	SAMPLE	SITU TEST	STRATA DESCRIPTION	STATE								5	COMPRESSI STRENGTH (M	VE lPa)⁴	▲ Torva	ane		Laboratory Vane		• 5 " 5			Wate Cont	tent	Plasticity Index
	SA	SITU	Ů				Cone Res)		٦•	UCS			et Penetror		CIU Triaxial S _u from q _{net} , For N	.	● Bulk [,		Carb	oonate tent	Relative Density ³
		× ×		RQD / SCR / TCR		Slee 25.0 3	eve Friction 7.5 50.	on f _s (MPa	a) 5 75.0	87.5	Pore Pressu Ratio, I	ire Ba					ent offshore results	values please see the report.	kt *H	Hollow symbols repr	esent offshore res	ults		, contont	Density
	DUIDA		100 00 14 15 14 15 14 15 15 15 15 15 15 15 15 15 15 15 15 15	30 60 90	.=.0	0.625	1.2	50	1.875		0.0 0.5 1		25 50		20	0 40	0 600	800 1000		1.5 2	.0 2.	.5	25	5 50	75
	PU01 PU02	.	00.00m Medium to high density dark olive grey (5Y 3/2) calcareous silty poorly graded fine to medium SAND (si(f-m)Sa) with frequent shell																	, ⇔C					~
<u> </u>	PU03	C01 180807	fragments (1mm - 10mm)	1		>	+	+			+++	╫								♦ 0				,	
	PI I04		00.80m Very high density dark olive grey (5Y 3/2) highly calcareous coarse slightly silty gravelly poorly graded fine to coarse SAND (sigr(f-]															ı F			
<u> </u>	 	C02	poorly graded fine to coarse SAND (sigr(f-		1,						$\dashv \vdash$	+													
_ 3 <i>_</i>	PU06	180807	c)Sa) with frequent shell fragments (1mm - 10mm). Gravel is fine.																	♦	8		↑		
	PI INT				7.															&	8		▲ ⊗		
<u> </u>	PU08	C03 180807 C04	03.80m to 03.90m - thin bed of clay									Ш								♦	0		0		
	PU09	180807 C05	04.50m Very strong (based on field tests) high to very	1	11/11/11		\vdash																		
- 5 -	GR04	180807	04.50m Very strong (based on field tests) high to very high density very pale orange (10YR 8/2) slightly weathered highly calcareous silty		+		+				++	+									♡	.—— {			
L 6 -	CR03		slightly weathered highly calcareous silty DOLOMITE with frequent fossils (3mm- 20mm). Discontinuities are closely to medium spaced subhorizontal planar to undulating rough open clean with occasional orange																			, I	0		
		₹ C06 180807	spaced subhorizontal planar to undulating rough open clean with occasional orange						_		+++	╫											0		
- 7 -		[staining 7 07.00m - medium bed of weak dolomite	h 4																			, ,	o	
	CINOO		7									\sqcap													1
8 -	ER83		08.00m Very strong (based on field tests) very pale orange (10YR 8/2) to medium dark grey (N4)									Ш									♦ 0		∞		
_ 9 _	CR08		slightly weathered very highly calcareous																		$ \diamond $		0		
	CR06		slightly silty SHELLY LIMESTONE with occasional fossils (1mm-10mm), rare voids				1				-H	\vdash										> 0	0		
-10-	CRU9		and white staining on the core surface. Discontinuities are very closely to closely																						
	CR10	╫	spaced subhorizontal planar to undulating rough open clean with occasional orange		41111	5	+ +	+			+	\vdash													
11-	DUIAG	C07	staining 10.50m to 11.30m - thick bed of highly weathered		₹						-												b	_	-
12	ERPT		weak limestone																			∞ :	P		-
	CR08		耳									Ш										♦ ○	0		
-13-					:7							Н									\		8		
	6899	180807	13.50m to 13.80m - medium bed of silty clay									1								8	8			8	
14-	₩ 6 818	C09 180807	 						_												\$ 0		9		
—15—	UR13										+	+													+
	#ER14																				O		0		
—16 —	 CR12	[\Box		1															O)	
	CR15 		T									\coprod											0		
17-	CR13 CR16	╽ ┆	17.00m Dense very pale brown (10YR 8/2) highly				+ 1								T	Ţ						ı F	$\overline{}$		+
—18 <i>—</i>		C10 180807	calcareous slightly to moderately cemented slightly clayey silty well graded fine to coarse		10,200	-	+				-	\coprod										——			
	CR14 PU15		17.00m Dense very pale brown (10YR 8/2) highly calcareous slightly to moderately cemented slightly clayey silty well graded fine to coarse SAND (casi(f-c)Sa) with frequent shell fragments (1-3 mm)			—														♦	0 0	, F		}	-
—19 —	DI 146	C11					+ +	+				+	++							♦	0_				
	CR15	C12				_														♦	0		8		=
-20-	PU17	180807 C13 180807	· 		+ +		+ -					+								→	0	 	9		+
		100007	End of borehole at 20.10m				<u> </u>					\coprod										I	<u>. </u>		
			al Geodetic Datum: ETRS89 / UTMN30		³ Relative dens	sities derived	d from Jami	iolkowski e	et al. (2001)						•						Ref: GMO)P21-G-0	19-FAC	
1		² Wat	er Depth: LAT																			Page 1 of	/ 1		

Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#24_SAMP

Date Commenced: 08/12/2022

Coordinates¹: 456333mE 5233817mN

Water Depth²: 97.4m



				STRATA DESCRIPTION	FRAC	CTURE			CONE	PENETROME	ETER TES	ST			RC	OCK	LUN	IDRAINE	D SHFA	R STRF	NGTH (kPa)		DENSIT	Y (Ma/r	n ³)	CLAS	SIFICATION	ON (%)
DEPTH (m)	SAMPLE	<i>SITU</i> TEST	GEND	61141171 B2561111 11611		ATE			00.112	LIVETICONI					COMPF	RESSIVE TH (MPa) ⁴	1	orvane			aboratory Vane		BENON	. (1119/11	٠,	Water Content		Plasticity Index
DE	SAN	DT	LEG				<u> </u>		Net Con	ne Resistance	a (MPa	1)			● UCS	TTT (IVII U)		ocket Penetr	rometer	♠ CI	U Triaxial		● Bulk [•		Carbor	nate	Relative
		IS NI			RQD/S	SCR/TCR			Sleeve F	Friction f _s (MF	Pa)	,		Pore Pressure				ndrained Tria	axial Test resent offshore res	ults Va	from q _{net} , For N _{kt} lues please see	*н	Dry D Hollow symbols representation		results	Content Fines C	ontent	Density ³
		_			30	60 90	1.3	25 2.50 0.625	3.75	5.00 6.2 1.250	25 7.50 1.87) 8.75 5	5	Ratio, Bq	25	50	1		00 60	the	e report. 00 1000		1.5 2		2.5	. 25	50	75
	PU01		00.	00m Dark olive grey (5Y 3/2) highly calcareous													1					→	9 0					
<u> </u>	PU02			slightly slightly clayey well graded fine to coarse SAND (sicl(f-c)Sa) with frequent shell																		Ů				7		
	PU03 CR01		₩	fragments (1mm-10mm) / .20m to 00.40m - with abundant shell fragments																							_	-
— 2 —	CR02		\sqcup	(1mm-30mm) .80m - subangular cobble of limestone										Ш			\perp							<u> </u>		0		
— 3 —	Ortoz			10m Very strong (based on field tests) very pale																								
	CR03		Ħ	orange (10YR 8/2) to greyish orange (10YR 7/4) moderately weathered very highly										$\perp \downarrow \downarrow$										<u> </u>	O	0		
_ 4 _			Ħ	calcareous SHELLY LIMESTONE with occasional fossils. Discontinuities are very	Щ]																						
	CR04		Ħ	closely to closely spaced subhorizontal										+++			+						<u> </u>)		0		
— 5 —	CR05			occasionally subvertical planar to undulating rough open to moderately wide clean partly soil infill with frequent orange staining.		4																		\$ 0		0		
— 6 —				soil infill with frequent orange staining.										+++			+-	+				-	+	 		_		
- 0 -	CR06			10m Very strong (based on field tests) very pale orange (10YR 8/2) to greyish orange (10YR 7/4) moderately weathered very highly																			♦	O		0		-
- 7 -				calcareous Shelly Limes I One with		 								+++			+	+				-	+					A
	CR07			occasional fossils. Discontinuities are very closely to closely spaced subhorizontal																			♦	\Q		00		
— 8 —	CR08		\mathbb{H}^{\setminus}	occasionally subvertical planar to undulating / rough open to moderately wide clean partly										+++			+	+					+	+		0		
<u> </u>	CR09		$oxdotu_{\setminus}$	soil infill with frequent orange staining.	Ш																							
	Ortos		07.	50m Medium strong medium to high density very pale orange (10YR 8/2) slightly weathered													1	1					+	 				
— 10 —	CR10			highly calcareous SHELLY LIMESTONE with occasional fossils. Discontinuities are closely	Щ																		<	0		0		
			П	spaced subhorizontal undulating rough to																								
-11-	CR11			smooth open clean.																						0		
—12 <i>—</i>			H) (
'-	CR12																						♦					
—13 —	CR13																								\$ 0	0		
			Н																									
— 14 —	PU04 CR14		Ш																							9		
— 15 —	CR15		H		Щ																	_						
	CRIS		Ħ																									
—16 —	CR16		Ħ											+++			_							_	>>			
			Ħ																									
⊢ 17−	PU05 CR17		Ħ		F									+++			+	+					+	+		0	+	
— 18 —	DI IOG																									<u> </u>		
	PU07		H 18.0	00m Strong to very strong medium density very pale orange (10YR 8/2) slightly weathered highly calcareous SHELLY LIMESTONE with		++								+++			+	+				+	+-	+		8	_	+-
— 19 —	CR18		Ħ	highly calcareous SHELLY LIMESTONE with occasional fossils and shell fragments (1mm-																								
22	CR19		Ħ	10mm)								_		+++			+	+					♦ 0	+		0		+
-20-																												
-21-			Enc	d of borehole at 20.05m										+++			1	1					 				+	
-22-														$\top \!\!\!\! \top$														
		¹ Loc	cal Geode	etic Datum: ETRS89 / UTMN30			³ Relative	densities de	rived fron	m Jamiolkowski	et al. (200	1)													Ref: GM0	DP21-G-019	FAC	
1		² Wa	ter Depth	: LAT																					Page 1 c	f 1		

Appendix A.3 Borehole Stratigraphic Tables

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#01_SAMP

Local Co-ordinates: Easting - 446710.82

Northing - 5247256.22



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	3.2	14-DOLOMITE	Very strong to extremely strong (based on field tests) yellowish brown (10YR 5/4) very highly calcareous slightly weathered fine-grained DOLOMITE with rare voids (5mm-20mm) and white staining on core surface. Discontinuities are closely spaced subhorizontal to vertical planar to undulating rough open to moderately wide with brown silt infill and rare orange staining.
3.2	9.25	14-DOLOMITE	Moderately weak greyish orange (10YR 7/4) very highly calcareous slightly weathered fine-grained DOLOMITE with white staining on core surface. Discontinuities are very closely to closely spaced subhorizontal undulating rough to smooth open to moderately wide clean.
9.25	12.5	14-DOLOMITE	Very strong (based on field tests) yellowish brown (10YR 5/4) very highly calcareous slightly weathered fine-grained DOLOMITE with rare voids (2mm-30mm) and white staining on core surface. Discontinuities are closely spaced subhorizontal to vertical planar to undulating rough open to moderately wide clean with rare brown silt infill and rare orange staining.
12.5	15.6	08-LIMESTONE	Very pale orange (10YR 8/2) weathered slightly silty sandy very highly calcareous LIMESTONE with frequent fossils (1mm-30mm)
15.6	17	14-DOLOMITE	Very strong yellowish brown (10YR 5/4) very highly calcareous slightly weathered fine-grained DOLOMITE with numerous fossils (2mm-10mm). Discontinuities are closely spaced subhorizontal planar to undulating rough open clean and white staining on core surface.
17	20.1	08-LIMESTONE	Medium strong medium to high density very pale orange (10YR 8/2) very highly calcareous slightly weathered silty slightly sandy SHELLY LIMESTONE with frequent fossils (1mm-30mm).

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#01A_SAMP

Local Co-ordinates: Easting - 446708.98 Northing - 5247253.75



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	3.2	14-DOLOMITE	Very strong to extremely strong (based on field tests) yellowish brown (10YR 5/4) very highly calcareous slightly weathered fine-grained DOLOMITE with rare voids (5mm-20mm) and white staining on core surface. Discontinuities are closely spaced subhorizontal to vertical planar to undulating rough open to moderately wide with brown silt infill and rare orange staining.
3.2	9.25	14-DOLOMITE	Moderately weak greyish orange (10YR 7/4) very highly calcareous slightly weathered fine-grained DOLOMITE with white staining on core surface. Discontinuities are very closely to closely spaced subhorizontal undulating rough to smooth open to moderately wide clean.
9.25	12.5	14-DOLOMITE	Very strong (based on field tests) yellowish brown (10YR 5/4) very highly calcareous slightly weathered fine-grained DOLOMITE with rare voids (2mm-30mm) and white staining on core surface. Discontinuities are closely spaced subhorizontal to vertical planar to undulating rough open to moderately wide clean with rare brown silt infill and rare orange staining.
12.5	15.6	08-LIMESTONE	Very pale orange (10YR 8/2) weathered slightly silty sandy very highly calcareous LIMESTONE with frequent fossils (1mm-30mm)
15.6	17	14-DOLOMITE	Very strong yellowish brown (10YR 5/4) very highly calcareous slightly weathered fine-grained DOLOMITE with numerous fossils (2mm-10mm). Discontinuities are closely spaced subhorizontal planar to undulating rough open clean and white staining on core surface.
17	20.1	08-LIMESTONE	Medium strong medium to high density very pale orange (10YR 8/2) very highly calcareous slightly weathered silty slightly sandy SHELLY LIMESTONE with frequent fossils (1mm-30mm).

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#04_SAMP

Local Co-ordinates: Easting - 451040.42

Northing - 5244828.54



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	1.3	03-SAND	Yellowish brown (10YR 5/4) calcareous very gravelly medium to coarse SAND with frequent shell fragments (1mm-10mm). Gravel is subangular to subrounded.
1.3	8.3	14-DOLOMITE	Very strong to extremely strong (based on field tests) greyish orange (10YR 7/4) slightly calcareous slightly weathered fine-grained DOLOMITE with white staining on core surface. Discontinuities are closely spaced subhorizontal undulating rough open clean with frequent orange surface staining.
8.3	15.3	08-LIMESTONE	Very weak to weak (based on field tests) medium to high density pale yellowish orange (10YR 8/6) highly calcareous SHELLY LIMESTONE composed of sand and gravel and with frequent fossils (1mm-30mm).
15.3	16.9	08-LIMESTONE	Weak to medium strong (based on field tests) medium to high density pale yellowish orange (10YR 8/6) highly calcareous SHELLY LIMESTONE with frequent fossils (1mm-30mm).
16.9	18	14-DOLOMITE	Strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous FOSSILIFEROUS DOLOMITE with numerous fossils (3mm-30mm). Discontinuities are very closely to medium spaced subhorizontal undulating rough open clean with occasional orange staining.
18	19.85	08-LIMESTONE	Medium strong to strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-35mm). Discontinuities are very closely to closely spaced subhorizontal undulating rough open clean with occasional orange staining.

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#04A_SAMP

Local Co-ordinates: Easting - 451036.53 Northing - 5244832.06



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	1.3	03-SAND	Yellowish brown (10YR 5/4) calcareous very gravelly medium to coarse SAND with frequent shell fragments (1mm-10mm). Gravel is subangular to subrounded.
1.3	8.3	14-DOLOMITE	Very strong to extremely strong (based on field tests) greyish orange (10YR 7/4) slightly calcareous slightly weathered fine-grained DOLOMITE with white staining on core surface. Discontinuities are closely spaced subhorizontal undulating rough open clean with frequent orange surface staining.
8.3	15.3	08-LIMESTONE	Very weak to weak (based on field tests) medium to high density pale yellowish orange (10YR 8/6) highly calcareous SHELLY LIMESTONE composed of sand and gravel and with frequent fossils (1mm-30mm).
15.3	16.9	08-LIMESTONE	Weak to medium strong (based on field tests) medium to high density pale yellowish orange (10YR 8/6) highly calcareous SHELLY LIMESTONE with frequent fossils (1mm-30mm).
16.9	18	14-DOLOMITE	Strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous FOSSILIFEROUS DOLOMITE with numerous fossils (3mm-30mm). Discontinuities are very closely to medium spaced subhorizontal undulating rough open clean with occasional orange staining.
18	19.85	08-LIMESTONE	Medium strong to strong (based on field tests) high to very high density very pale orange (10YR 8/2) highly calcareous slightly weathered SHELLY LIMESTONE with numerous fossils (2mm-35mm). Discontinuities are very closely to closely spaced subhorizontal undulating rough open clean with occasional orange staining.

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#05_SAMP

Local Co-ordinates: Easting - 449591.42

Northing - 5242196.67



,		WO1 21-0-015	· ·
Top Depth (m)	Base Depth (m)	Material	Layer Description
0	0.5	03-SAND	Dark olive grey (5Y 3/2) highly calcareous gravelly silty fine to medium SAND (grsi(f-m)Sa) with frequent shell fragments (1mm-30mm). Gravel is fine to medium
0.5	2.5	08-LIMESTONE	Medium strong to strong (based on field tests) pale yellowish brown (10YR 6/2) very highly calcareous, slightly weathered fine grained SHELLY LIMESTONE with rare voids (2mm-10mm). Discontinuities are closely spaced subhorizontal undulating rough open clean with frequent white and orange surface staining
2.5	3.9	08-LIMESTONE	Medium strong to strong (based on field tests) pale yellowish brown (10YR 6/2) highly calcareous, slightly weathered fine grained FOSSILIFEROUS GLAUCONITE LIMESTONE with rare voids (2mm-10mm). Discontinuities are closely spaced subhorizontal undulating rough open clean.
3.9	5.6	01-CLAY	Very high strength very dark greenish grey (GLEY 1 5GY 3/1) slightly sandy silty high plasticity CLAY (sasi(CIH)). Sand is fine
5.6	6.6	14-DOLOMITE	Moderately weak dark greenish grey (5GY 4/1) very highly calcareous slightly weathered GLAUCONITE DOLOMITE. Discontinuities are very closely to closely spaced subhorizontal undulating rough open with frequent very dark grey clay infill
6.6	8	01-CLAY	Dark greenish grey (5GY 4/1) non-calcareous slightly gravelly slightly sandy silty high plasticity CLAY (grsaCIV). Gravel is subrounded to subangular
8	8.75	02-SILT	Dark greenish grey (5GY 4/1) non-calcareous slightly sandy clayey high plasticity SILT (Sacl(SiH))
8.75	10.5	01-CLAY	Greenish grey (5GY 6/1) calcareous slightly sandy very silty high plasticity CLAY (Sasi(CIH))

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#05A_SAMP

Local Co-ordinates: Easting - 449589.57

Northing - 5242193.54



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	0.5	03-SAND	Dark olive grey (5Y 3/2) highly calcareous gravelly silty fine to medium SAND (grsi(f-m)Sa) with frequent shell fragments (1mm-30mm). Gravel is fine to medium
0.5	2.5	08-LIMESTONE	Medium strong to strong (based on field tests) pale yellowish brown (10YR 6/2) very highly calcareous, slightly weathered fine grained SHELLY LIMESTONE with rare voids (2mm-10mm). Discontinuities are closely spaced subhorizontal undulating rough open clean with frequent white and orange surface staining
2.5	3.9	08-LIMESTONE	Medium strong to strong (based on field tests) pale yellowish brown (10YR 6/2) highly calcareous, slightly weathered fine grained FOSSILIFEROUS GLAUCONITE LIMESTONE with rare voids (2mm-10mm). Discontinuities are closely spaced subhorizontal undulating rough open clean.
3.9	5.6	01-CLAY	Very high strength very dark greenish grey (GLEY 1 5GY 3/1) slightly sandy silty high plasticity CLAY (sasi(CIH)). Sand is fine
5.6	6.6	14-DOLOMITE	Moderately weak dark greenish grey (5GY 4/1) very highly calcareous slightly weathered GLAUCONITE DOLOMITE. Discontinuities are very closely to closely spaced subhorizontal undulating rough open with frequent very dark grey clay infill
6.6	8	01-CLAY	Dark greenish grey (5GY 4/1) non-calcareous slightly gravelly slightly sandy silty high plasticity CLAY (grsaCIV). Gravel is subrounded to subangular
8	8.75	02-SILT	Dark greenish grey (5GY 4/1) non-calcareous slightly sandy clayey high plasticity SILT (Sacl(SiH))
8.75	10.5	01-CLAY	Greenish grey (5GY 6/1) calcareous slightly sandy very silty high plasticity CLAY (Sasi(CIH))

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#05B_SAMP

Local Co-ordinates: Easting - 449585.38

Northing - 5242198.33



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	0.5	03-SAND	Dark olive grey (5Y 3/2) highly calcareous gravelly silty fine to medium SAND (grsi(f-m)Sa) with frequent shell fragments (1mm-30mm). Gravel is fine to medium
0.5	2.5	08-LIMESTONE	Medium strong to strong (based on field tests) pale yellowish brown (10YR 6/2) very highly calcareous, slightly weathered fine grained SHELLY LIMESTONE with rare voids (2mm-10mm). Discontinuities are closely spaced subhorizontal undulating rough open clean with frequent white and orange surface staining
2.5	3.9	08-LIMESTONE	Medium strong to strong (based on field tests) pale yellowish brown (10YR 6/2) highly calcareous, slightly weathered fine grained FOSSILIFEROUS GLAUCONITE LIMESTONE with rare voids (2mm-10mm). Discontinuities are closely spaced subhorizontal undulating rough open clean.
3.9	5.6	01-CLAY	Very high strength very dark greenish grey (GLEY 1 5GY 3/1) slightly sandy silty high plasticity CLAY (sasi(CIH)). Sand is fine
5.6	6.6	14-DOLOMITE	Moderately weak dark greenish grey (5GY 4/1) very highly calcareous slightly weathered GLAUCONITE DOLOMITE. Discontinuities are very closely to closely spaced subhorizontal undulating rough open with frequent very dark grey clay infill
6.6	8	01-CLAY	Dark greenish grey (5GY 4/1) non-calcareous slightly gravelly slightly sandy silty high plasticity CLAY (grsaCIV). Gravel is subrounded to subangular
8	8.75	02-SILT	Dark greenish grey (5GY 4/1) non-calcareous slightly sandy clayey high plasticity SILT (Sacl(SiH))
8.75	10.5	01-CLAY	Greenish grey (5GY 6/1) calcareous slightly sandy very silty high plasticity CLAY (Sasi(CIH))

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#08_CPT

Local Co-ordinates: Easting - 454537.39

Northing - 5242876.75



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	1.5	03-SAND	Dense to very dense SAND
1.5	3.5	14-DOLOMITE	Extremely strong dark yellowish orange (10Y R6/6) slightly weathered fine grained DOLOMITE with frequent voids (10mm-20mm) and fossils (10m-20mm). Discontinuities are sub-horizontal to diagonal (5-45°) closely spaced rough undulating moderately wide to wide clean.
3.5	5.5	14-DOLOMITE	Extremely strong pale yellowish brown (10YR 6/2) slightly calcareous slightly weathered DOLOMITE with occasional voids (2mm-5mm) and occasional shell fragments (2mm-3mm). Discontinuities are very closely to closely spaced subhorizontal (5-10°) undulating rough open with silt infill and occasional orange staining
5.5	15.5	08-LIMESTONE	Weak to medium strong pale yellowish orange (10YR 8/6) highly calcareous LIMESTONE with frequent fossils (2mm-25mm) Discontinuities are very closely spaced horizontal to subhorizontal (0-15°) undulating rough open with silt infill and frequent orange staining.
15.5	16.5	02-SILT	Yellow (2.5Y 8/6) slightly gravelly sandy silty LIMESTONE with frequent fossils (2mm-20mm). Gravel is subrounded fine to coarse
16.5	17.5	08-LIMESTONE	Strong yellow (2.5Y 8/6) highly calcareous LIMESTONE with frequent fossils (2mm-20mm). Discontinuities are closely spaced sub-horizontal (0-15°) undulating rough moderately wide with silt infill.
17.5	20.8	14-DOLOMITE	Extremely strong yellowish grey (5Y 7/2) slightly calcareous slightly weathered DOLOMITE with frequent voids (10mm-20mm) and fossils (10mm-20mm). Discontinuities are very closely to closely spaced subhorizontal to subvertical (5-45°) rough undulating moderately wide clean with orange staining

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A05 Bretagne Offshore GI Project Name:

Project Number: GMOP21-G-019

Location: OWF_GI#09_SAMP

Local Co-ordinates: Easting - 456875.32 Northing - 5244986.35



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	14.35	14-DOLOMITE	Medium strong dark yellowish orange (10YR 6/6) very highly calcareous fine to medium grained DOLOMITE with white staining on core surface. Discontinuities are medium spaced undulating smooth wide clean
14.35	16	14-DOLOMITE	Medium strong dark yellowish orange (10YR 6/6) slightly calcareous fine to medium grained DOLOMITE with white staining on core surface. Discontinuities are medium spaced undulating smooth wide clean
16	20.7	08-LIMESTONE	Medium strong (from field tests) dark yellowish orange (10YR 6/6) very highly calcareous fine to medium grained SHELLY LIMESTONE with numerous fossils (1mm-20mm). Discontinuities are very close to closely spaced horizontal (0-5°) planar rough open clean.

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#11_CPT

Local Co-ordinates: Easting - 455783.39 Northing - 5241007.95



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	4.1	03-SAND	Dense to very dense greenish grey (GLEY 1 10Y 5/1) highly calcareous slightly gravelly uniformly graded fine to medium SAND (gr(f-m)Sa) with frequent shell fragments (1mm-10mm)
4.1	8.5	14-DOLOMITE	Medium strong greyish orange (10 YR 7/4) highly calcareous slightly sandy DOLOMITE with frequent voids (1mm-2mm) and shell fragments (1mm-5mm). Discontinuities are very closely spaced dippings (5-15°) stepped to undulating rough open to moderate
8.5	11.5	08-LIMESTONE	Weak very high density moderate yellow (5Y 7/6) very highly calcareous highly weathered SHELLY LIMESTONE with frequent shell fragments (2mm-5mm) and rare fossils (2mm). Discontinuities are very close to closely spaced sub horizontal dipping (0-20°) planar rough surface with voids (5mm).
11.5	15.5	08-LIMESTONE	Medium strong high density yellow (5Y 7/6) very highly calcareous highly weathered SHELLY LIMESTONE with occasional shell fragments (2mm-3mm) and fossils (3mm-5mm). Discontinuities are closely spaced sub horizontal dipping (0-20°) undulating rough open to moderately wide clean with occasional voids (3mm-5mm).
15.5	19.9	14-DOLOMITE	Moderately weak greyish green (10GY 4/2) highly calcareous silty fine GLAUCONITE DOLOMITE. Discontinuities are medium spaced dipping (0-5°) stepped to undulating rough open with silty sand infill and rare orange staining

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#11_SAMP

Local Co-ordinates: Easting - 455775.4 Northing - 5241016.78



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	4.1	03-SAND	Dense to very dense greenish grey (GLEY 1 10Y 5/1) highly calcareous slightly gravelly uniformly graded fine to medium SAND (gr(f-m)Sa) with frequent shell fragments (1mm-10mm)
4.1	8.5	14-DOLOMITE	Medium strong greyish orange (10 YR 7/4) highly calcareous slightly sandy DOLOMITE with frequent voids (1mm-2mm) and shell fragments (1mm-5mm). Discontinuities are very closely spaced dippings (5-15°) stepped to undulating rough open to moderate
8.5	11.5	08-LIMESTONE	Weak very high density moderate yellow (5Y 7/6) very highly calcareous highly weathered SHELLY LIMESTONE with frequent shell fragments (2mm-5mm) and rare fossils (2mm). Discontinuities are very close to closely spaced sub horizontal dipping (0-20°) planar rough surface with voids (5mm).
11.5	15.5	08-LIMESTONE	Medium strong high density yellow (5Y 7/6) very highly calcareous highly weathered SHELLY LIMESTONE with occasional shell fragments (2mm-3mm) and fossils (3mm-5mm). Discontinuities are closely spaced sub horizontal dipping (0-20°) undulating rough open to moderately wide clean with occasional voids (3mm-5mm).
15.5	19.9	14-DOLOMITE	Moderately weak greyish green (10GY 4/2) highly calcareous silty fine GLAUCONITE DOLOMITE. Discontinuities are medium spaced dipping (0-5°) stepped to undulating rough open with silty sand infill and rare orange staining

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#11A_CPT

Local Co-ordinates: Easting - 455783.46

Northing - 5241012.53



Top Depth (m)	Base Depth (m)	Material	Layer Description
0	4.1	03-SAND	Dense to very dense greenish grey (GLEY 1 10Y 5/1) highly calcareous slightly gravelly uniformly graded fine to medium SAND (gr(f-m)Sa) with frequent shell fragments (1mm-10mm)
4.1	8.5	14-DOLOMITE	Medium strong greyish orange (10 YR 7/4) highly calcareous slightly sandy DOLOMITE with frequent voids (1mm-2mm) and shell fragments (1mm-5mm). Discontinuities are very closely spaced dippings (5-15°) stepped to undulating rough open to moderate
8.5	11.5	08-LIMESTONE	Weak very high density moderate yellow (5Y 7/6) very highly calcareous highly weathered SHELLY LIMESTONE with frequent shell fragments (2mm-5mm) and rare fossils (2mm). Discontinuities are very close to closely spaced sub horizontal dipping (0-20°) planar rough surface with voids (5mm).
11.5	15.5	08-LIMESTONE	Medium strong high density yellow (5Y 7/6) very highly calcareous highly weathered SHELLY LIMESTONE with occasional shell fragments (2mm-3mm) and fossils (3mm-5mm). Discontinuities are closely spaced sub horizontal dipping (0-20°) undulating rough open to moderately wide clean with occasional voids (3mm-5mm).
15.5	19.9	14-DOLOMITE	Moderately weak greyish green (10GY 4/2) highly calcareous silty fine GLAUCONITE DOLOMITE. Discontinuities are medium spaced dipping (0-5°) stepped to undulating rough open with silty sand infill and rare orange staining

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#11B_CPT

Local Co-ordinates: Easting - 455778.89

Northing - 5241009.8



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	4.1	03-SAND	Dense to very dense greenish grey (GLEY 1 10Y 5/1) highly calcareous slightly gravelly uniformly graded fine to medium SAND (gr(f-m)Sa) with frequent shell fragments (1mm-10mm)
4.1	8.5	14-DOLOMITE	Medium strong greyish orange (10 YR 7/4) highly calcareous slightly sandy DOLOMITE with frequent voids (1mm-2mm) and shell fragments (1mm-5mm). Discontinuities are very closely spaced dippings (5-15°) stepped to undulating rough open to moderate
8.5	11.5	08-LIMESTONE	Weak very high density moderate yellow (5Y 7/6) very highly calcareous highly weathered SHELLY LIMESTONE with frequent shell fragments (2mm-5mm) and rare fossils (2mm). Discontinuities are very close to closely spaced sub horizontal dipping (0-20°) planar rough surface with voids (5mm).
11.5	15.5	08-LIMESTONE	Medium strong high density yellow (5Y 7/6) very highly calcareous highly weathered SHELLY LIMESTONE with occasional shell fragments (2mm-3mm) and fossils (3mm-5mm). Discontinuities are closely spaced sub horizontal dipping (0-20°) undulating rough open to moderately wide clean with occasional voids (3mm-5mm).
15.5	19.9	14-DOLOMITE	Moderately weak greyish green (10GY 4/2) highly calcareous silty fine GLAUCONITE DOLOMITE. Discontinuities are medium spaced dipping (0-5°) stepped to undulating rough open with silty sand infill and rare orange staining

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#12_CPT

Local Co-ordinates: Easting - 456768.12 Northing - 5242750.08



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	1.2	03-SAND	Dense to very dense very (5Y 6/1) calcareous uniformly graded silty clayey fine to medium SAND (sicl(f-m)Sa) with frequent shell fragments (1mm-4mm)
1.2	2.8	03-SAND	Very dense grey (5Y 6/1) highly calcareous gravelly medium graded fine to coarse SAND (gr(f-c)Sa) with frequent shell fragments (2mm to 5mm) and mica (2mm). Gravel is fine to medium subangular
2.8	8.3	14-DOLOMITE	Strong yellowish brown (10YR 5/6) slightly calcareous silty fine-grained slightly weathered DOLOMITE. Discontinuities are very close to closely spaced horizontal undulating rough open no infill
8.3	11.3	14-DOLOMITE	Very strong to extremely strong dusky red (10R 2/2) very highly calcareous slightly weathered DOLOMITE. Discontinuities are wide spaced subhorizontal (0-10°) rough open with yellowish brown silt infill
11.3	16.3	08-LIMESTONE	Weak (based on field tests) medium density yellowish grey (5Y 8/1) highly calcareous SHELLY LIMESTONE with frequent shell fragments (1mm-5mm). Discontinuities are closely spaced subhorizontal (0-5°) undulating rough open clean with occasional yellowish staining
16.3	18.4	14-DOLOMITE	Weak medium density yellowish grey (5Y 8/1) highly calcareous coarse GLAUCONITE DOLOMITE. Discontinuities are very closely spaced subhorizontal (0-5°) rough open clean
18.4	19.65	14-DOLOMITE	Strong dark greenish grey (5G 4/1) very highly calcareous fine to medium grained moderately weathered DOLOMITE with occasional voids (2mm-5mm), fossils (5mm) and rare shell fragments (3mm). Discontinuities are closely spaced subhorizontal (0-20°) undulating

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#12_SAMP

Local Co-ordinates: Easting - 456756.34

Northing - 5242757.06



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	1.2	03-SAND	Dense to very dense very (5Y 6/1) calcareous uniformly graded silty clayey fine to medium SAND (sicl(f-m)Sa) with frequent shell fragments (1mm-4mm)
1.2	2.8	03-SAND	Very dense grey (5Y 6/1) highly calcareous gravelly medium graded fine to coarse SAND (gr(f-c)Sa) with frequent shell fragments (2mm to 5mm) and mica (2mm). Gravel is fine to medium subangular
2.8	8.3	14-DOLOMITE	Strong yellowish brown (10YR 5/6) slightly calcareous silty fine-grained slightly weathered DOLOMITE. Discontinuities are very close to closely spaced horizontal undulating rough open no infill
8.3	11.3	14-DOLOMITE	Very strong to extremely strong dusky red (10R 2/2) very highly calcareous slightly weathered DOLOMITE. Discontinuities are wide spaced subhorizontal (0-10°) rough open with yellowish brown silt infill
11.3	16.3	08-LIMESTONE	Weak (based on field tests) medium density yellowish grey (5Y 8/1) highly calcareous SHELLY LIMESTONE with frequent shell fragments (1mm-5mm). Discontinuities are closely spaced subhorizontal (0-5°) undulating rough open clean with occasional yellowish staining
16.3	18.4	14-DOLOMITE	Weak medium density yellowish grey (5Y 8/1) highly calcareous coarse GLAUCONITE DOLOMITE. Discontinuities are very closely spaced subhorizontal (0-5°) rough open clean
18.4	19.65	14-DOLOMITE	Strong dark greenish grey (5G 4/1) very highly calcareous fine to medium grained moderately weathered DOLOMITE with occasional voids (2mm-5mm), fossils (5mm) and rare shell fragments (3mm). Discontinuities are closely spaced subhorizontal (0-20°) undulating

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#13_CPT

Local Co-ordinates: Easting - 458026.8

Northing - 5240916.2



1	03-SAND	
		Loose to medium dense brown (7.5YR 5/4) fine to medium SAND
4.55	14-DOLOMITE	Very strong greyish orange (10YR 7/4) slightly calcareous slightly weathered fine grained DOLOMITE with rare voids (2mm-3mm). Discontinuities are closely to medium spaced horizontal (0-5°) undulating rough open with silt infill.
6	14-DOLOMITE	Strong moderate brown (5YR 4/4) slightly calcareous slightly weathered DOLOMITE with frequent voids (2mm-5mm). Discontinuities are closely to medium spaced subhorizontal (0-20°) undulating rough open with silt infill
9	08-LIMESTONE	Recovered as non-intact subrounded fragments (10mm-30mm) of yellowish grey (5YR 8/1) highly calcareous highly weathered LIMESTONE with frequent fossils (2mm-5mm)
10	08-LIMESTONE	Very strong white (N9) highly calcareous highly weathered LIMESTONE with frequent voids (2mm-15mm) and fossils (2mm-6mm). Discontinuities are very closely to closely spaced sub-horizontal (0-20°), open with silty clay infill and occasional orange staining
12	08-LIMESTONE	Very strong very high density white (N9) highly calcareous highly weathered LIMESTONE with frequent voids (2mm-15mm) and fossils (2mm-6mm). Discontinuities are closely to medium spaced sub-horizontal (0-20°), open with silty clay infill and occasional orange staining
14.35	14-DOLOMITE	Strong dusky yellow green (5G Y5/2) highly calcareous slightly weathered DOLOMITE with occasional shell fragments (2mm-5mm), fossils (2mm-5mm) and rare closely to medium spaced thir beds of silty fine sand. Discontinuities are very closely spaced sub-horizontal (5-10°) rough undulating open with fine sandy silt infill
16.05	06-SILTSTONE	Strong dusky yellowish green (10G Y3/2) slightly calcareous clayey SILTSTONE with frequent shell fragments (2mm-5mm) and fossils (2mm-5mm). Discontinuities are medium to widely spaced horizontal (0-5°) undulating rough open with silt infill
20	07-MUDSTONE	Medium strong dusky yellowish green (10GY 3/2) MUDSTONE with rare thin beds of limestone and frequent shell fragment (5mm-10mm). Discontinuities are very closely spaced horizontal undulating rough open with silt infill
	9 10 12 14.35	9 08-LIMESTONE 10 08-LIMESTONE 12 08-LIMESTONE 14.35 14-DOLOMITE 16.05 06-SILTSTONE

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#14_SAMP

Local Co-ordinates: Easting - 458791.15

Northing - 5238171.69



,			
Top Depth (m)	Base Depth (m)	Material	Layer Description
0	1.5	08-LIMESTONE	Strong to very strong (based on field test), pale yellow orange(10Y R8/6) slightly weathered SHELLY LIMESTONE with occasional fossils (2-20mm) and rare voids (2-10mm). Discontinuities are closed to medium spaced sub-horizontal (10-15*) rough undulating open with silt infill.
1.5	3	14-DOLOMITE	Extremely weak to weak pale yellow orange (10Y R8/6) slightly weathered FOSSILIFEROUS DOLOMITE with occasional fossils (2-20mm) and rare voids (2-10mm). Discontinuities are closed to medium spaced sub-horizontal(10-15*) rough undulating open with silt infill.
3	7.5	14-DOLOMITE	Weak to moderately weak dusky green (5G 3/2) slightly weathered GLAUCONITE DOLOMITE with occasional voids (2mm-20mm)
7.5	10	02-SILT	Very dark greenish grey (GLEY 1 3/1) slightly clayey very sandy medium plasticity SILT (clsa(SiM)). Sand is fine
10	18.5	14-DOLOMITE	Moderately weak dusky green (5G 3/2) highly calcareous GLAUCONITE DOLOMITE with rare voids and fossils
18.5	20.1	03-SAND	Greenish grey (5GY 5/1) calcareous gravelly uniformly graded fine SAND (grSa) with frequent tiny fossils and rare weakly cemented pockets of sand

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A05 Bretagne Offshore GI Project Name:

Project Number: GMOP21-G-019

Location: OWF_GI#14A_SAMP

Local Co-ordinates: Easting - 458787.03 Northing - 5238170.15



Project	Number: G	MOP21-G-019			1401tilling - 3230170.13	
Top Depth (m)	Base Depth (m)	Material	Layer Des	cription		
0	1.5	08-LIMESTONE	LIMESTONE	with occasional fossils (2	est), pale yellow orange(10Y R 2-20mm) and rare voids (2-10n 15*) rough undulating open wi	8/6) slightly weathered SHELLY nm). Discontinuities are closed th silt infill.
1.5	3	14-DOLOMITE	DOLOMITE	vith occasional fossils (2-	range (10Y R8/6) slightly weatl 20mm) and rare voids (2-10mi) rough undulating open with s	m). Discontinuities are closed to
3	7.5	14-DOLOMITE	Weak to mode occasional v	erately weak dusky greer oids (2mm-20mm)	n (5G 3/2) slightly weathered G	SLAUCONITE DOLOMITE with
7.5	10	02-SILT	Very dark gre Sand is fine	enish grey (GLEY 1 3/1)	slightly clayey very sandy med	ium plasticity SILT (clsa(SiM)).
10	18.5	14-DOLOMITE	Moderately v and fossils	eak dusky green (5G 3/2) highly calcareous GLAUCON	IITE DOLOMITE with rare voids
18.5	20.1	03-SAND	Greenish gre fossils and ra	y (5GY 5/1) calcareous g re weakly cemented pocl	ravelly uniformly graded fine S kets of sand	AND (grSa) with frequent tiny

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#15_SAMP

Local Co-ordinates: Easting - 459794.19

Northing - 5239923.025



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	2.2	14-DOLOMITE	Very strong to extremely strong yellowish brown (10YR 5/6) slightly calcareous fine to medium grained DOLOMITE. Discontinuities are medium spaced planar smooth wide with clean aperture
2.2	6.1	08-LIMESTONE	Weak low density light brown (7.5YR 6/4) very highly calcareous SHELLY LIMESTONE composed of well graded sandy gravel with occasional yellow staining and numerous fossils (1-20mm). Discontinuities are very closely to closely spaced horizontal (0-5°) planar rough open clean
6.1	10	14-DOLOMITE	Weak dark greenish grey (GLEY 1 10GY 4/1) highly calcareous fine to medium grained GLAUCONITE DOLOMITE. Discontinuities are closely to medium spaced subhorizontal (0-15°) planar smooth with open infilled with silt
10	12	01-CLAY	Extremely strong dark greenish grey (GLEY 1 5GY 4/1) non-calcareous sandy very high plasticity very silty CLAY (siCIV) with rare shell fragments (<1mm). Sand is fine
12	15	06-SILTSTONE	Medium strong to strong dark greenish grey (GLEY 1 10GY 4/1) highly calcareous SILTSTONE with frequent fossils (1mm-5mm). Discontinuities are closely spaced planar smooth with wide infilled silt
15	18.6	01-CLAY	Extremely strong dark greenish grey (GLEY 1 10GY 4/1) medium plasticity slightly sandy silty CLAY (sisaCIM) with medium spaced thin to medium beds of medium grained sandstone and occasional shell fragments (1mm-10mm)
18.6	20.5	02-SILT	Medium strong to strong (based on field tests) dark greenish grey (GLEY 1 10GY 4/1) slightly calcareous medium grained slightly sandy clayey fine to coarse SILT (sacl(f-c)Si) with medium spaced with thin to medium beds of mudstone and frequent fossils (1mm-10mm). Discontinuities are closely spaced planar smooth with wide clean aperture

Ref: GMOP21-G-019-FAC

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#15A_SAMP

Local Co-ordinates: Easting - 459791.15 Northing - 5239926.25



Base Depth (m)	Material	Layer Description
2.2	14-DOLOMITE	Very strong to extremely strong yellowish brown (10YR 5/6) slightly calcareous fine to medium grained DOLOMITE. Discontinuities are medium spaced planar smooth wide with clean aperture
6.1	08-LIMESTONE	Weak low density light brown (7.5YR 6/4) very highly calcareous SHELLY LIMESTONE composed of well graded sandy gravel with occasional yellow staining and numerous fossils (1-20mm). Discontinuities are very closely to closely spaced horizontal (0-5°) planar rough open clean
10	14-DOLOMITE	Weak dark greenish grey (GLEY 1 10GY 4/1) highly calcareous fine to medium grained GLAUCONITE DOLOMITE. Discontinuities are closely to medium spaced subhorizontal (0-15°) planar smooth with open infilled with silt
12	01-CLAY	Extremely strong dark greenish grey (GLEY 1 5GY 4/1) non-calcareous sandy very high plasticity very silty CLAY (siCIV) with rare shell fragments (<1mm). Sand is fine
15	06-SILTSTONE	Medium strong to strong dark greenish grey (GLEY 1 10GY 4/1) highly calcareous SILTSTONE with frequent fossils (1mm-5mm). Discontinuities are closely spaced planar smooth with wide infilled silt
18.6	01-CLAY	Extremely strong dark greenish grey (GLEY 1 10GY 4/1) medium plasticity slightly sandy silty CLAY (sisaCIM) with medium spaced thin to medium beds of medium grained sandstone and occasional shell fragments (1mm-10mm)
20.5	02-SILT	Medium strong to strong (based on field tests) dark greenish grey (GLEY 1 10GY 4/1) slightly calcareous medium grained slightly sandy clayey fine to coarse SILT (sacl(f-c)Si) with medium spaced with thin to medium beds of mudstone and frequent fossils (1mm-10mm). Discontinuities are closely spaced planar smooth with wide clean aperture
	(m) 2.2 6.1 10 12 15 18.6	(m) 2.2 14-DOLOMITE 6.1 08-LIMESTONE 10 14-DOLOMITE 12 01-CLAY 15 06-SILTSTONE 18.6 01-CLAY

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#17_SAMP

Local Co-ordinates: Easting - 443469.12

Northing - 5245633.12



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	5.6	03-SAND	Dark greenish grey (10Y 4/1) highly calcareous slightly silty uniformly graded fine to medium SAND (si(f-m)Sa) with rare shell fragments (1mm-5mm)
5.6	7	08-LIMESTONE	Strong to very strong pale yellowish brown (10YR 6/2) highly calcareous silty slightly sandy SHELLY LIMESTONE with frequent fossils (3mm-50mm). Discontinuities are closely spaced subhorizontal planar to undulating rough partly open to open clean (possibly drilling induced?). Core potentially breaks in more silty beds.
7	11.7	08-LIMESTONE	Medium strong high density very pale orange (10YR 8/2) slightly weathered highly calcareous slightly silty slightly sandy FOSSILIFEROUS GLAUCONITE LIMESTONE with frequent fossils (1mm-3mm).
11.7	16.7	08-LIMESTONE	Moderately weak medium density very pale orange (10YR 8/2) highly calcareous FOSSILIFEROUS GLAUCONITE LIMESTONE with abundant fossils (1mm-3mm)
16.7	20.3	08-LIMESTONE	Very weak low to medium density very pale orange (10YR 8/2) highly weathered highly calcareous sandy silty FOSSILIFEROUS GLAUCONITE LIMESTONE with numerous fossils (1mm-3mm)

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#20_CPT

Local Co-ordinates: Easting - 448480.58

Northing - 5238230.19



1 10,000		1001 21-0-010	
Top Depth (m)	Base Depth (m)	Material	Layer Description
0	4.7	03-SAND	Very dense dark olive grey (5Y 3/2) uniformly graded highly calcareous silty fine to medium SAND (si(f-m)Sa) with frequent shell fragments (1mm-10mm)
4.7	6.7	08-LIMESTONE	Medium strong to strong (based on field tests) very pale orange (10YR 8/2) slightly silty sandy moderately weathered calcareous LIMESTONE with rare shell fragments (1mm-5mm) and voids (1mm-3mm).
6.7	11.5	08-LIMESTONE	Very weak low to medium density very pale orange (10YR 8/2) highly weathered slightly silty sandy SHELLY LIMESTONE with shell fragments (1mm-3mm)
11.5	13	08-LIMESTONE	Strong medium density very pale orange (10YR 8/2) slightly weathered very highly calcareous LIMESTONE predominantly made of fossils (1mm-3mm) and rare coarse quartz grains. Discontinuities are very closely to closely spaced subhorizontal planar to undulating rough to smooth open clean. Recovered as rock biscuits.
13	15	08-LIMESTONE	Very weak low to medium density very pale orange (10YR 8/2) highly weathered LIMESTONE with shell fragments and fossils (1mm-3mm)
15	19.3	08-LIMESTONE	Medium strong to strong medium density very pale orange (10YR 8/2) slightly weathered highly calcareous SHELLY LIMESTONE predominantly made of fossils (1mm-3mm) and rare fine to medium quartz grains. Discontinuities are very closely to closely spaced subhorizontal planar to undulating rough to smooth open clean. Partly recovered as rock biscuits.

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#20_SAMP

Local Co-ordinates: Easting - 448486.96

Northing - 5238226.41



Top Depth (m)	Base Depth (m)	Material	Layer Description				
0	4.7	03-SAND	Very dense dark olive grey (5Y 3/2) uniformly graded highly calcareous silty fine to medium SAND (si(f-m)Sa) with frequent shell fragments (1mm-10mm)				
4.7	6.7	08-LIMESTONE	Medium strong to strong (based on field tests) very pale orange (10YR 8/2) slightly silty sandy moderately weathered calcareous LIMESTONE with rare shell fragments (1mm-5mm) and voids (1mm-3mm).				
6.7	11.5	08-LIMESTONE	Very weak low to medium density very pale orange (10YR 8/2) highly weathered slightly silty sandy SHELLY LIMESTONE with shell fragments (1mm-3mm)				
11.5	13	08-LIMESTONE	Strong medium density very pale orange (10YR 8/2) slightly weathered very highly calcareous LIMESTONE predominantly made of fossils (1mm-3mm) and rare coarse quartz grains. Discontinuities are very closely to closely spaced subhorizontal planar to undulating rough to smooth open clean. Recovered as rock biscuits.				
13	15	08-LIMESTONE	Very weak low to medium density very pale orange (10YR 8/2) highly weathered LIMESTONE with shell fragments and fossils (1mm-3mm)				
15	19.3	08-LIMESTONE	Medium strong to strong medium density very pale orange (10YR 8/2) slightly weathered highly calcareous SHELLY LIMESTONE predominantly made of fossils (1mm-3mm) and rare fine to medium quartz grains. Discontinuities are very closely to closely spaced subhorizontal planar to undulating rough to smooth open clean. Partly recovered as rock biscuits.				

Ref: GMOP21-G-019-FAC

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A05 Bretagne Offshore GI Project Name:

Project Number: GMOP21-G-019

Location: OWF_GI#22_CPT

Local Co-ordinates: Easting - 454688.01 Northing - 5237034.58



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	0.8	03-SAND	Medium to high density dark olive grey (5Y 3/2) calcareous silty poorly graded fine to medium SAND (si(f-m)Sa) with frequent shell fragments (1mm - 10mm)
0.8	4.5	03-SAND	Very high density dark olive grey (5Y 3/2) highly calcareous coarse slightly silty gravelly poorly graded fine to coarse SAND (sigr(f-c)Sa) with frequent shell fragments (1mm - 10mm). Gravel is fine.
4.5	8	14-DOLOMITE	Very strong (based on field tests) high to very high density very pale orange (10YR 8/2) slightly weathered highly calcareous silty DOLOMITE with frequent fossils (3mm-20mm). Discontinuities are closely to medium spaced subhorizontal planar to undulating rough open clean with occasional orange staining
8	17	08-LIMESTONE	Very strong (based on field tests) very pale orange (10YR 8/2) to medium dark grey (N4) slightly weathered very highly calcareous slightly silty SHELLY LIMESTONE with occasional fossils (1mm-10mm), rare voids and white staining on the core surface. Discontinuities are very closely to closely spaced subhorizontal planar to undulating rough open clean with occasional orange staining
17	20.1	03-SAND	Dense very pale brown (10YR 8/2) highly calcareous slightly to moderately cemented slightly clayey silty well graded fine to coarse SAND (casi(f-c)Sa) with frequent shell fragments (1-3 mm)

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: OWF_GI#22_SAMP

Local Co-ordinates: Easting - 454703.24

Northing - 5237026.7



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Top Depth (m)	Base Depth (m)	Material	Layer Description
0	0.8	03-SAND	Medium to high density dark olive grey (5Y 3/2) calcareous silty poorly graded fine to medium SAND (si(f-m)Sa) with frequent shell fragments (1mm - 10mm)
0.8	4.5	03-SAND	Very high density dark olive grey (5Y 3/2) highly calcareous coarse slightly silty gravelly poorly graded fine to coarse SAND (sigr(f-c)Sa) with frequent shell fragments (1mm - 10mm). Gravel is fine.
4.5	8	14-DOLOMITE	Very strong (based on field tests) high to very high density very pale orange (10YR 8/2) slightly weathered highly calcareous silty DOLOMITE with frequent fossils (3mm-20mm). Discontinuities are closely to medium spaced subhorizontal planar to undulating rough open clean with occasional orange staining
8	17	08-LIMESTONE	Very strong (based on field tests) very pale orange (10YR 8/2) to medium dark grey (N4) slightly weathered very highly calcareous slightly silty SHELLY LIMESTONE with occasional fossils (1mm-10mm), rare voids and white staining on the core surface. Discontinuities are very closely to closely spaced subhorizontal planar to undulating rough open clean with occasional orange staining
17	20.1	03-SAND	Dense very pale brown (10YR 8/2) highly calcareous slightly to moderately cemented slightly clayey silty well graded fine to coarse SAND (casi(f-c)Sa) with frequent shell fragments (1-3 mm)

A05 Bretagne Offshore GI Project Name:

Project Number: GMOP21-G-019

Location: OWF_GI#24_SAMP

Local Co-ordinates: Easting - 456333.24 Northing - 5233817.19



,			
Top Depth (m)	Base Depth (m)	Material	Layer Description
0	1.1	03-SAND	Dark olive grey (5Y 3/2) highly calcareous slightly silty slightly clayey well graded fine to coarse SAND (sicl(f-c)Sa) with frequent shell fragments (1mm-10mm)
1.1	5.1	08-LIMESTONE	Very strong (based on field tests) very pale orange (10YR 8/2) to greyish orange (10YR 7/4) moderately weathered very highly calcareous SHELLY LIMESTONE with occasional fossils. Discontinuities are very closely to closely spaced subhorizontal occasionally subvertical planar to undulating rough open to moderately wide clean partly soil infill with frequent orange staining.
5.1	7.5	08-LIMESTONE	Very strong (based on field tests) very pale orange (10YR 8/2) to greyish orange (10YR 7/4) moderately weathered very highly calcareous SHELLY LIMESTONE with occasional fossils. Discontinuities are very closely to closely spaced subhorizontal occasionally subvertical planar to undulating rough open to moderately wide clean partly soil infill with frequent orange staining.
7.5	18	08-LIMESTONE	Medium strong medium to high density very pale orange (10YR 8/2) slightly weathered highly calcareous SHELLY LIMESTONE with occasional fossils. Discontinuities are closely spaced subhorizontal undulating rough to smooth open clean.
18	20.5	08-LIMESTONE	Strong to very strong medium density very pale orange (10YR 8/2) slightly weathered highly calcareous SHELLY LIMESTONE with occasional fossils and shell fragments (1mm-10mm)

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF

Application Class: ISO 19901-8 (2014)



Borehole /	Test	Test	Stroke	Cone		Zero Drift Appication Class						Remarks
Location	No.	Depth (m)	(m)	No.	Tip (MPa)	Sleeve (MPa)	Pore (kPa)	Tip (-)	Sleeve (-)	Pore (-)	Overall (-)	·
OWF_GI#08_CPT	C01	0.00	1.10	190410	-0.005	-70.795	-7	1	4	1	4	Tip refusal
OWF_GI#08_CPT	C02	1.50	0.30	190410	-0.010	-0.001	-6	1	1	1	1	Tip refusal > 90MPa
OWF_GI#08_CPT	C03	6.50	0.18	190410	-0.030	-0.001	0	1	1	1	1	Tip refusal >80MPa
OWF_GI#08_CPT	C04	8.50	1.00	190410	0.031	-0.001	1	1	1	1	1	Tip refusal >80MPa
OWF_GI#08_CPT	C05	9.50	0.08	190410	0.098	-0.487	2	1	4	1	4	Tip refusal > 90 Mpa
OWF_GI#08_CPT	C06	10.50	0.14	190409	0.040	0.001	1	1	1	1	1	Tip refusal > 80 MPa. Cone changed due to damage of sleeve and out of application class
OWF_GI#08_CPT	C07	16.50	0.32	190409	-0.003	0.000	0	1	1	1	1	Tip refusal > 100 MPa
OWF_GI#11_CPT	C01	0.00	1.50	190720	0.005	0.000	-5	1	1	1	1	Danger of buckling
OWF_GI#11_CPT	C02	2.00	2.50	190720	0.046	0.000	1	1	1	1	1	Max system thrust
OWF_GI#11_CPT	C04	4.50	0.20	190720	0.010	0.001	8	1	1	1	1	Tip refusal
OWF_GI#11_CPT	C05	5.00	0.10	190720	0.100	0.206	7	1	4	1	4	Sleeve refusal cone damage
OWF_GI#11_CPT	C06	5.50	0.30	180702	0.080	0.000	6	1	1	1	1	
OWF_GI#11_CPT	C07	9.30	0.96	180702	0.018	0.003	0	1	1	1	1	
OWF_GI#11_CPT	C08	10.30	0.26	180702	0.029	0.019	2	1	1	1	1	Tip refusal
OWF_GI#11A_CPT	C01	8.60	0.10	220605	0.140	0.226	-7	1	3	1	3	Sleeve refusal. Cone damaged.
OWF_GI#11B_CPT	C01	10.00	0.44	160107	0.006	-0.001	-6	1	1	1	1	Tip refusal >80MPa
OWF_GI#11B_CPT	C02	11.00	1.04	160107	-0.280	0.001	-3	1	1	1	1	
OWF_GI#11B_CPT	C03	12.00	1.16	160107	0.024	-0.001	5	1	1	1	1	
OWF_GI#11B_CPT	C04	13.50	0.52	160107	0.011	-0.001	-2	1	1	1	1	Tip refusal >90 Mpa
OWF_GI#11B_CPT	C05	16.50	0.08	160107	-0.020	-0.002	1	1	1	1	1	Tip refusal>90MPa
OWF_GI#11B_CPT	C06	17.50	0.10	160107	-0.012	-0.363	27	1	4	2	4	Sleeve refusal > 1 Mpa
OWF_GI#12_CPT	C01	0.00	1.38	180602	0.021	-0.001	-7	1	1	1	1	

CPTU TEST CLASS SUMMARY

ef: GMOP21-G-019-FAC

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF

Application Class: ISO 19901-8 (2014)



Borehole /	Test	Test	Stroke	Cone		Zero Drift			Appicati	on Class		Remarks
Location	No.	Depth (m)	(m)	No.	Tip (MPa)	Sleeve (MPa)	Pore (kPa)	Tip (-)	Sleeve (-)	Pore (-)	Overall (-)	
OWF_GI#12_CPT	C02	1.50	1.22	190409	-0.011	-0.001	0	1	1	1	1	Cone changed due to weak sleeve response
OWF_GI#12_CPT	C03	3.00	0.50	190409	0.034	0.001	-2	1	1	1	1	Tip refusal >90MPa
OWF_GI#12_CPT	C04	3.50	0.10	190409	-0.040	-0.001	6	1	1	1	1	Tip refusal > 80MPa
OWF_GI#12_CPT	C05	11.50	0.36	190409	0.011	0.005	-1	1	1	1	1	Tip refusal > 80MPa
OWF_GI#12_CPT	C06	14.00	0.94	190409	-0.062	0.001	-1	1	1	1	1	Tip refusal >80MPa
OWF_GI#12_CPT	C07	15.00	0.52	190409	0.021	-0.001	-5	1	1	1	1	Tip refusal > 80MPa
OWF_GI#12_CPT	C08	17.00	0.82	190409	0.004	-0.001	1	1	1	1	1	
OWF_GI#12_CPT	C09	18.00	0.50	190409	0.010	0.000	-4	1	1	1	1	Tip refusal >90MPa
OWF_GI#13_CPT	C01	0.00	0.76	180602	-0.030	0.000	0	1	1	1	1	Tip refusal >80MPa
OWF_GI#13_CPT	C02	8.00	0.36	180602	0.085	0.030	4	1	1	1	1	Tip refusal > 75 Mpa. Tidal swell and cuttings cropped off
OWF_GI#13_CPT	C03	14.00	0.18	180602	0.000	0.007	-2	1	2	1	2	Tip refusal
OWF_GI#20_CPT	C01	0.00	0.80	120927	0.015	0.001	1	1	1	1	1	
OWF_GI#20_CPT	C02	1.60	1.28	120927	0.019	0.003	3	1	1	1	1	
OWF_GI#20_CPT	C03	3.10	1.36	120927	0.002	0.002	1	1	1	1	1	
OWF_GI#20_CPT	C04	4.70	0.36	120927	-0.017	0.000	1	1	1	1	1	Tip refusal
OWF_GI#20_CPT	C05	6.30	1.36	120927	0.014	0.000	5	1	1	1	1	
OWF_GI#20_CPT	C06	7.90	0.88	120927	-0.008	0.000	2	1	1	1	1	Tip refusal
OWF_GI#20_CPT	C07	9.00	1.34	120927	-0.008	0.002	5	1	1	1	1	
OWF_GI#20_CPT	C08	10.50	1.18	120927	-0.004	0.000	4	1	1	1	1	
OWF_GI#20_CPT	C09	12.90	1.32	120927	-0.010	0.003	1	1	1	1	1	
OWF_GI#20_CPT	C10	14.40	1.32	120927	0.011	0.001	4	1	1	1	1	
OWF_GI#20_CPT	C11	15.90	1.38	120927	0.000	0.001	4	1	1	1	1	

CPTU TEST CLASS SUMMARY

Ref: GMOP21-G-019-FAC

Page 2 of 3

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF

Application Class: ISO 19901-8 (2014)



Borehole /	Test	Test	Stroke	Cone	Zero Drift Appication Class				Appicati	on Class		Remarks
Location	No.	Depth (m)	(m)	No.	Tip (MPa)	Sleeve (MPa)	Pore (kPa)	Tip (-)	Sleeve (-)	Pore (-)	Overall (-)	
OWF_GI#20_CPT	C12	17.50	0.72	120927	0.003	0.001	2	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C01	0.00	1.40	180807	-0.012	0.001	3	1	1	1	1	
OWF_GI#22_CPT	C02	1.60	1.36	180807	0.012	0.001	3	1	1	1	1	
OWF_GI#22_CPT	C03	3.20	0.78	180807	-0.010	0.001	3	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C04	4.10	0.16	180807	-0.015	0.000	2	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C05	4.50	0.32	180807	0.002	0.000	3	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C06	6.00	0.14	180807	-0.002	0.000	3	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C07	10.50	0.80	180807	-0.001	0.000	5	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C08	13.00	0.58	180807	0.001	0.000	2	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C09	13.80	0.10	180807	-0.003	-0.001	1	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C10	17.00	1.02	180807	-0.002	0.000	5	1	1	1	1	
OWF_GI#22_CPT	C11	18.20	1.30	180807	0.002	0.000	3	1	1	1	1	
OWF_GI#22_CPT	C12	19.50	0.18	180807	0.002	0.000	-1	1	1	1	1	Tip refusal
OWF_GI#22_CPT	C13	20.00	0.06	180807	0.012	0.000	-1	1	1	1	1	Tip refusal

Ref: GMOP21-G-019-FAC

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Appendix A.5 Processed In-Situ Test Results

Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

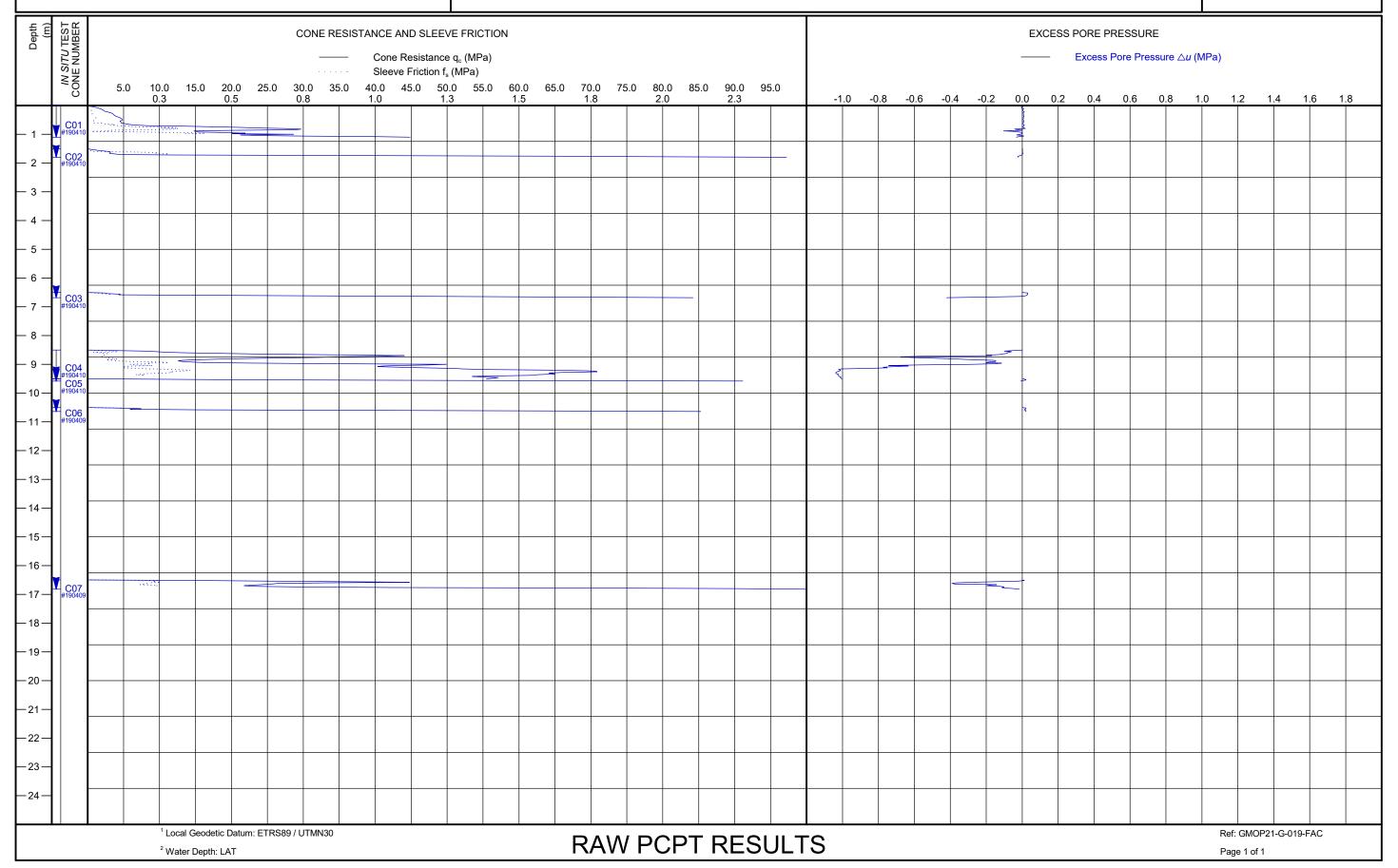
Borehole No.: OWF_GI#08_CPT

Date Commenced: 13/09/2022

Coordinates¹: 454537mE 5242877mN

Water Depth²: 87.5m

GEOQUIPMARINE



Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.:
OWF_GI#11_CPT
OWF_GI#11_SAMP
OWF_GI#11A_CPT
OWF_GI#11B_CPT

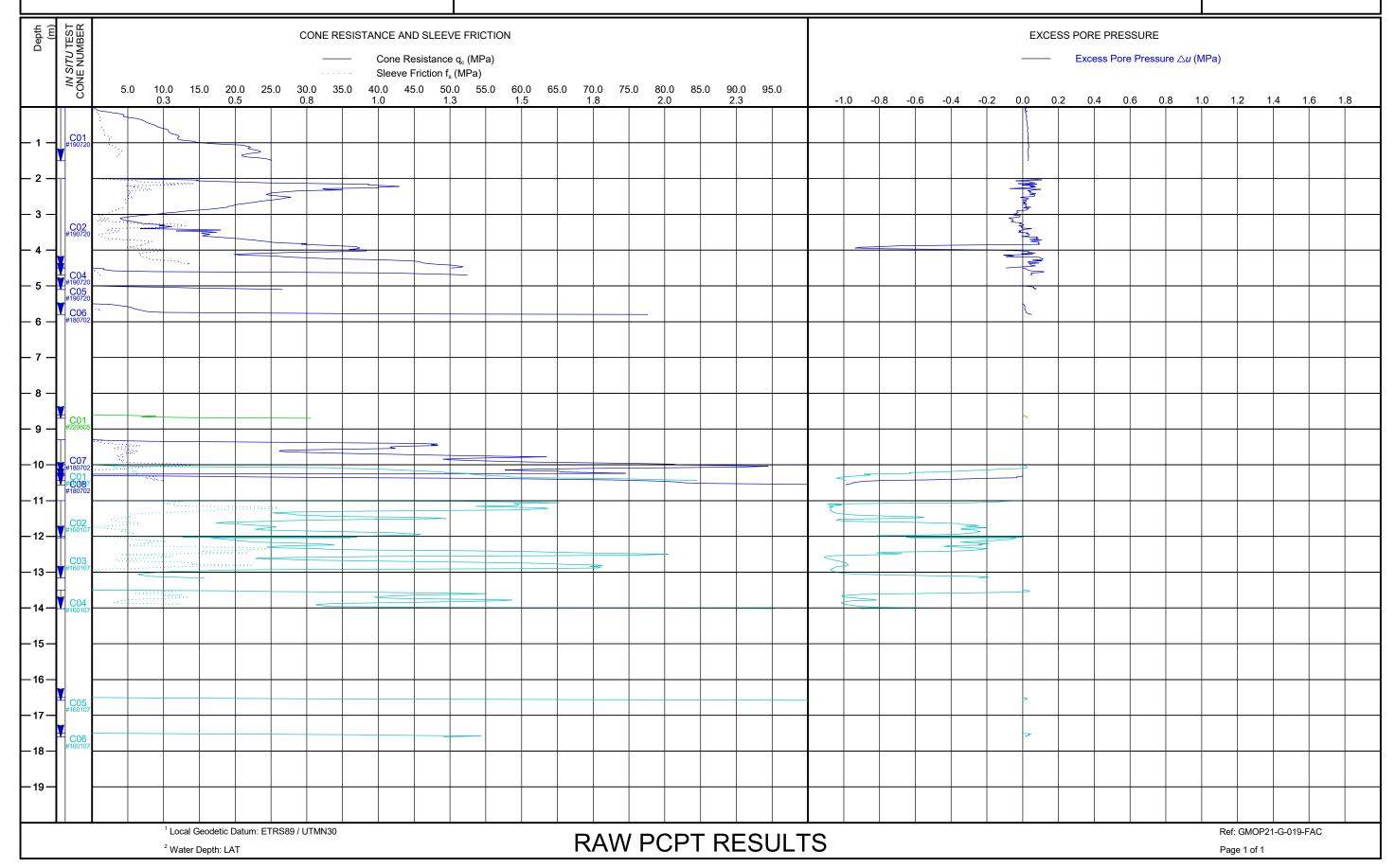
Date Commenced: 17/07/2022 02/09/2022 03/09/2022 14/09/2022 Coordinates¹: 455783mE 52 455775mE 52 455783mE 52 455779mE 52

5241008mN 5241017mN 5241013mN 5241010mN

89.66m 89.63m 89.63m 89.68m

Water Depth²:





Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

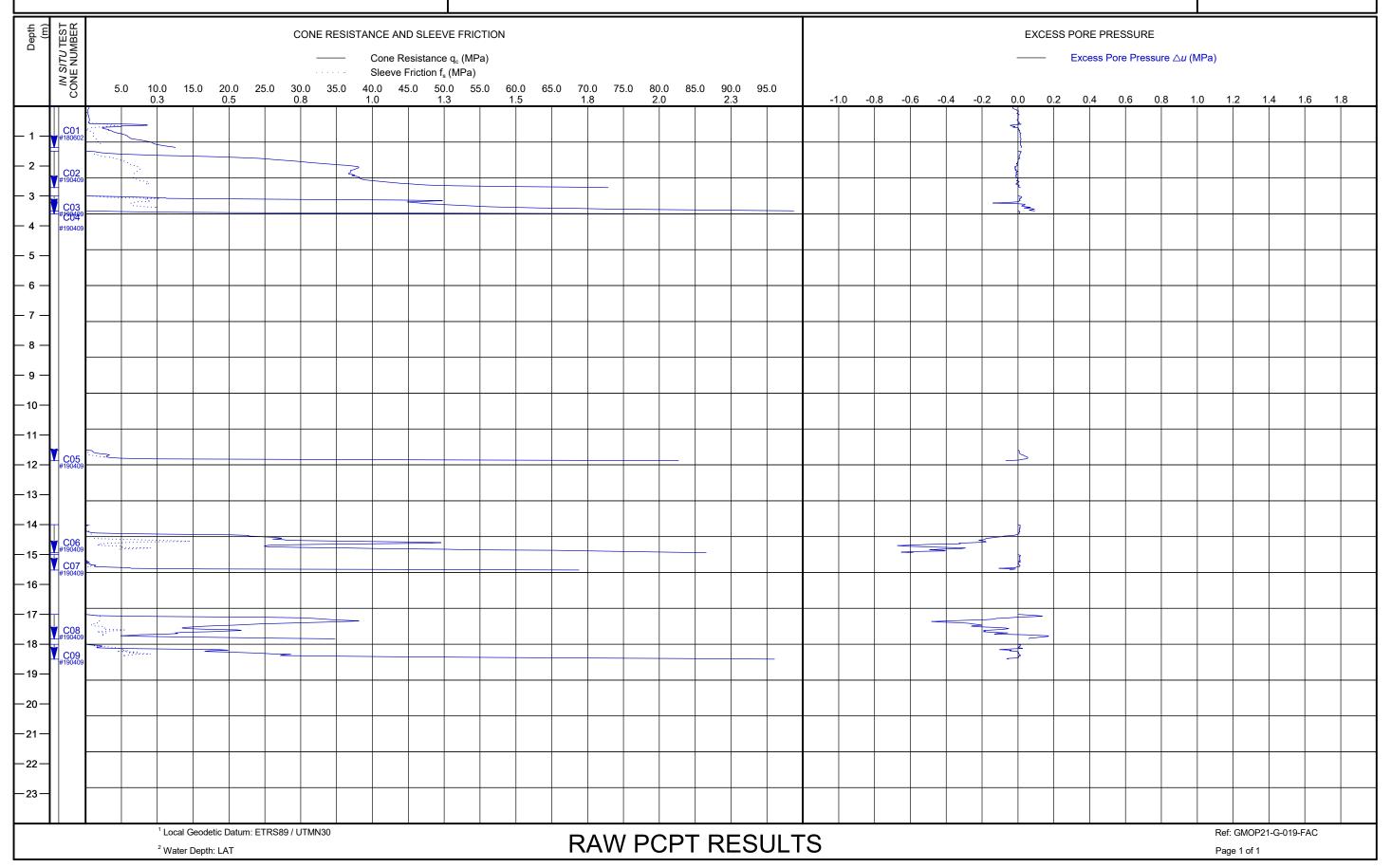
Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#12_CPT OWF_GI#12_SAMP Date Commenced: 12/09/2022 11/09/2022 Coordinates¹: 456768mE 52 456756mE 52

5242750mN 5242757mN Water Depth²: 86.79m 86.77m





Client: RTE_DGEC

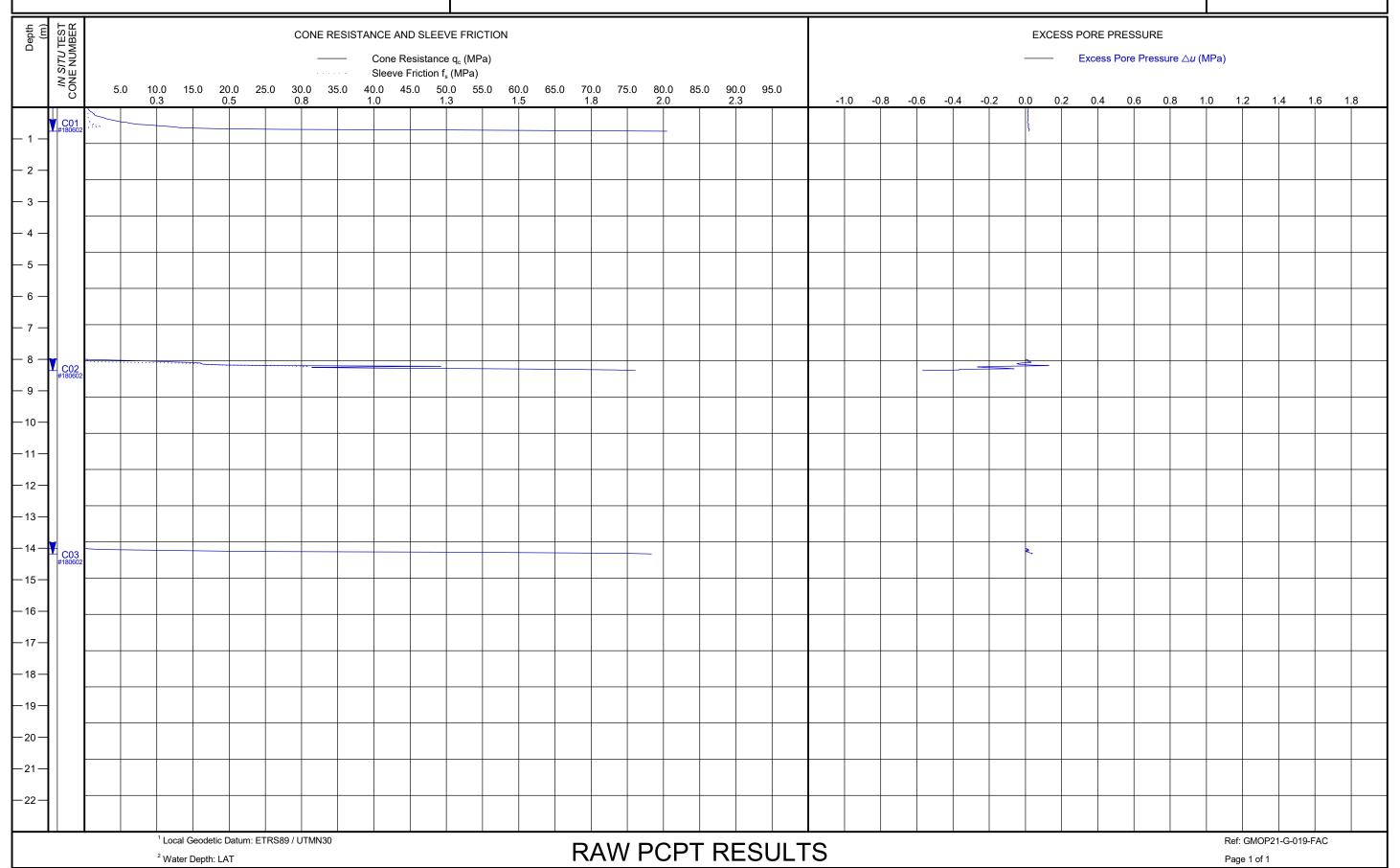
Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: Date Commenced: Coordinates¹: Water Depth²: OWF_GI#13_CPT 15/09/2022 458027mE 5240916mN 89.65m





Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

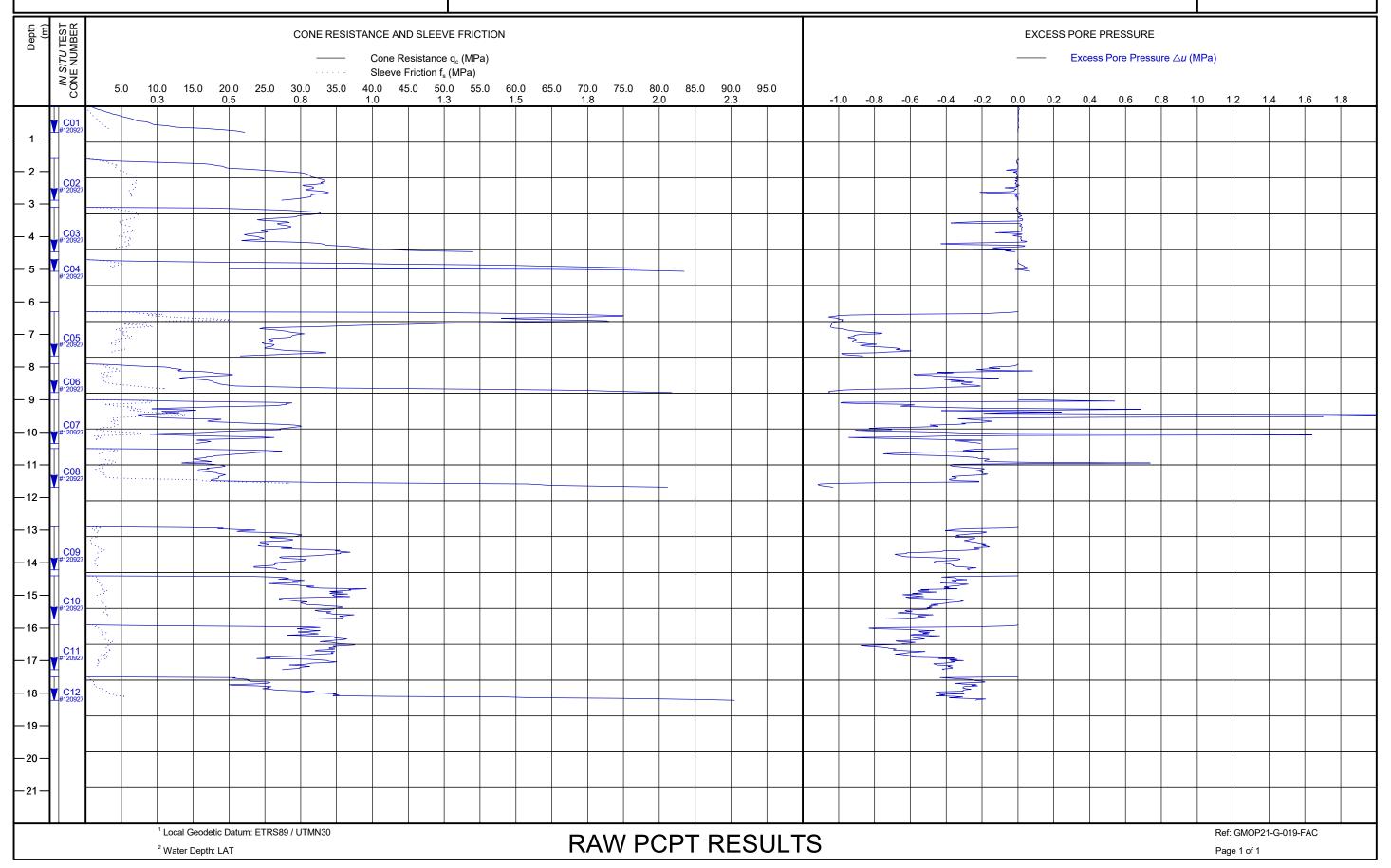
Location: A05 OWF

Borehole No.: OWF_GI#20_CPT OWF_GI#20_SAMP Date Commenced: 09/12/2022 09/12/2022

Coordinates¹: 448481mE 5238230mN 448487mE 5238226mN

Water Depth²: 96.78m 96.78m

GEOQUIPMARINE



Client: RTE_DGEC

Project Name: A05 Bretagne Offshore GI

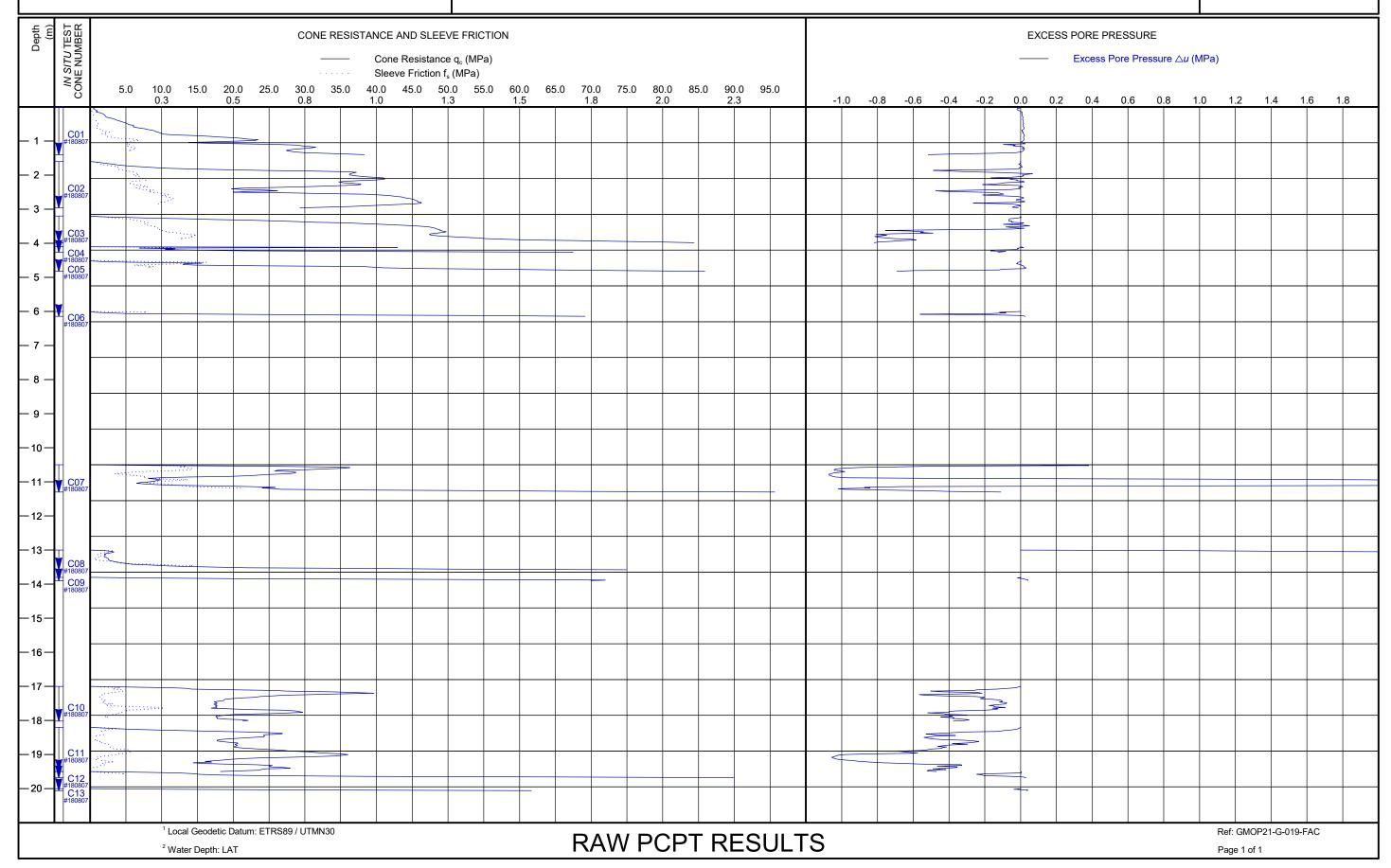
Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#22_CPT OWF_GI#22_SAMP Date Commenced: 07/12/2022 06/12/2022 Coordinates¹: 454688mE 5237035mN 454703mE 5237027mN

Water Depth²: 93.65m

GEOQUIPMARINE



Appendix A.6 Derived In-Situ Test Results

Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

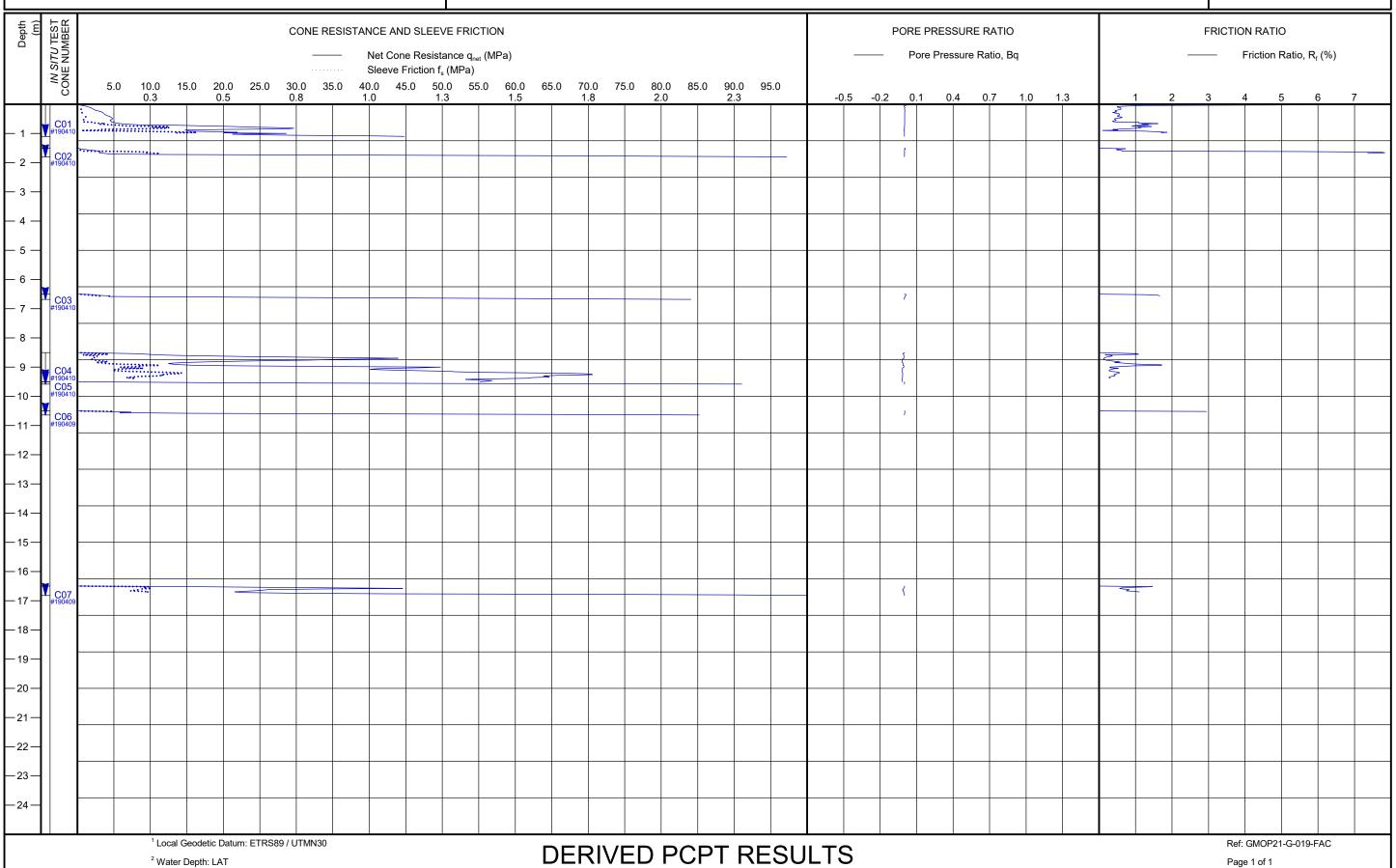
Borehole No.: OWF_GI#08_CPT

Date Commenced: 13/09/2022

Coordinates¹: 454537mE 5242877mN

Water Depth²: 87.5m





Project Name: A05 Bretagne Offshore GI

Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#11_CPT OWF_GI#11_SAMP OWF_GI#11A_CPT

OWF_GI#11B_CPT

Date Commenced: 17/07/2022 02/09/2022 03/09/2022

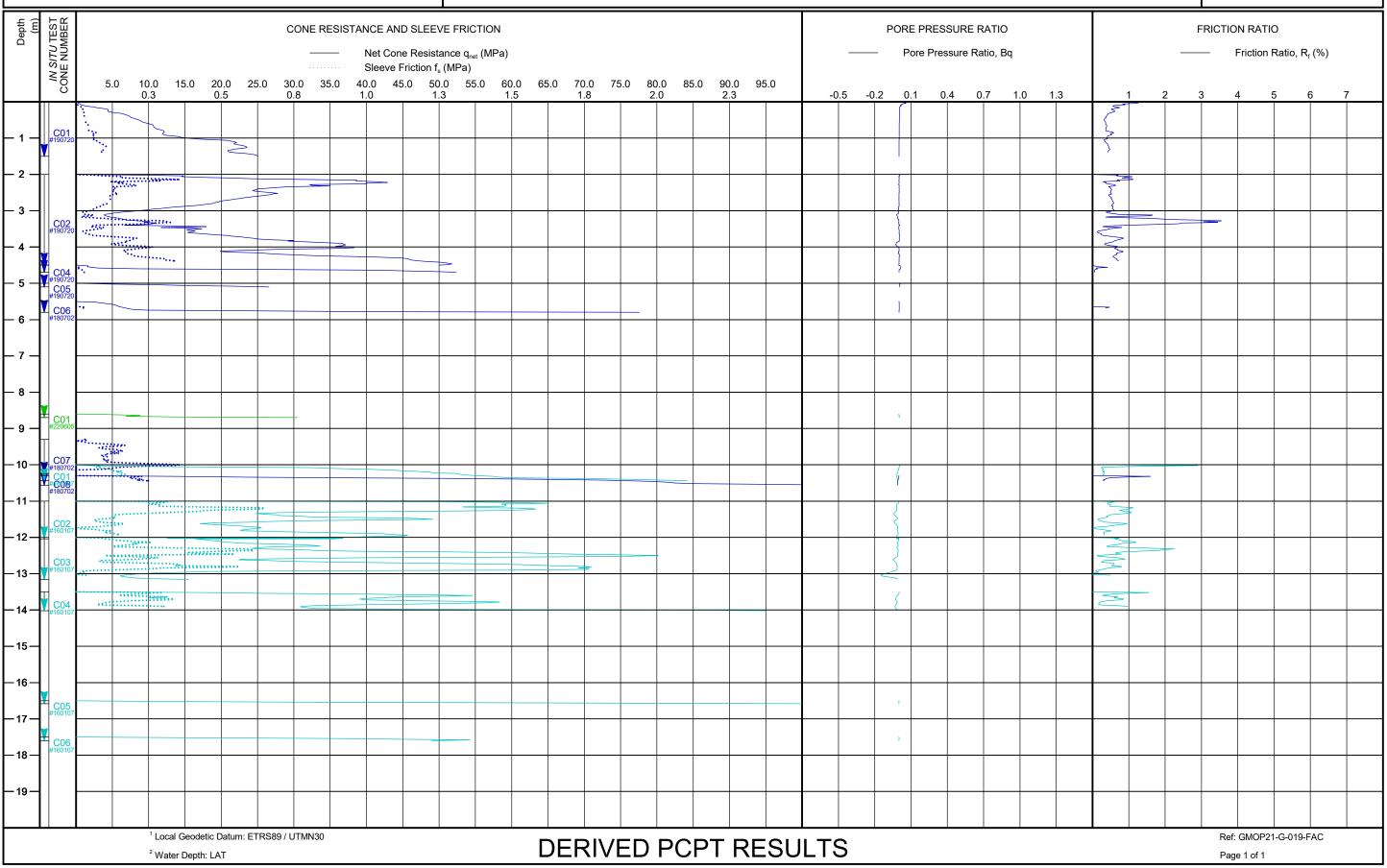
14/09/2022

455783mE 455775mE 455783mE 455779mE

Coordinates¹:

5241008mN 5241017mN 5241013mN 5241010mN

Water Depth²:
89.66m
89.63m
89.63m
89.68m



Project Name: A05 Bretagne Offshore GI

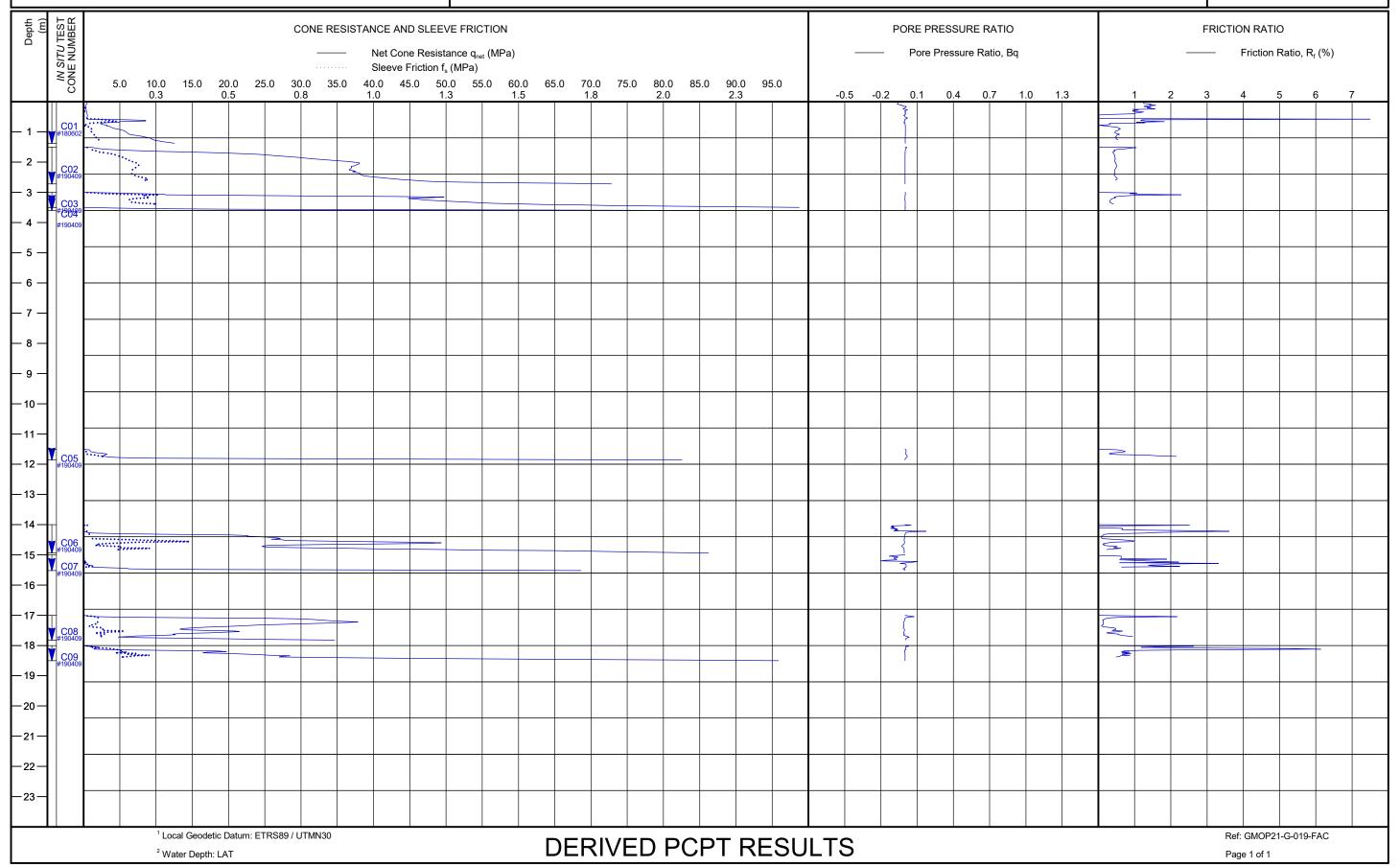
Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#12_CPT OWF_GI#12_SAMP Date Commenced: 12/09/2022 11/09/2022 Coordinates¹: 456768mE 52 456756mE 52

5242750mN 5242757mN Water Depth²: 86.79m 86.77m





Date Commenced: Borehole No.: RTE_DGEC Client: OWF_GI#13_CPT 458027mE 15/09/2022

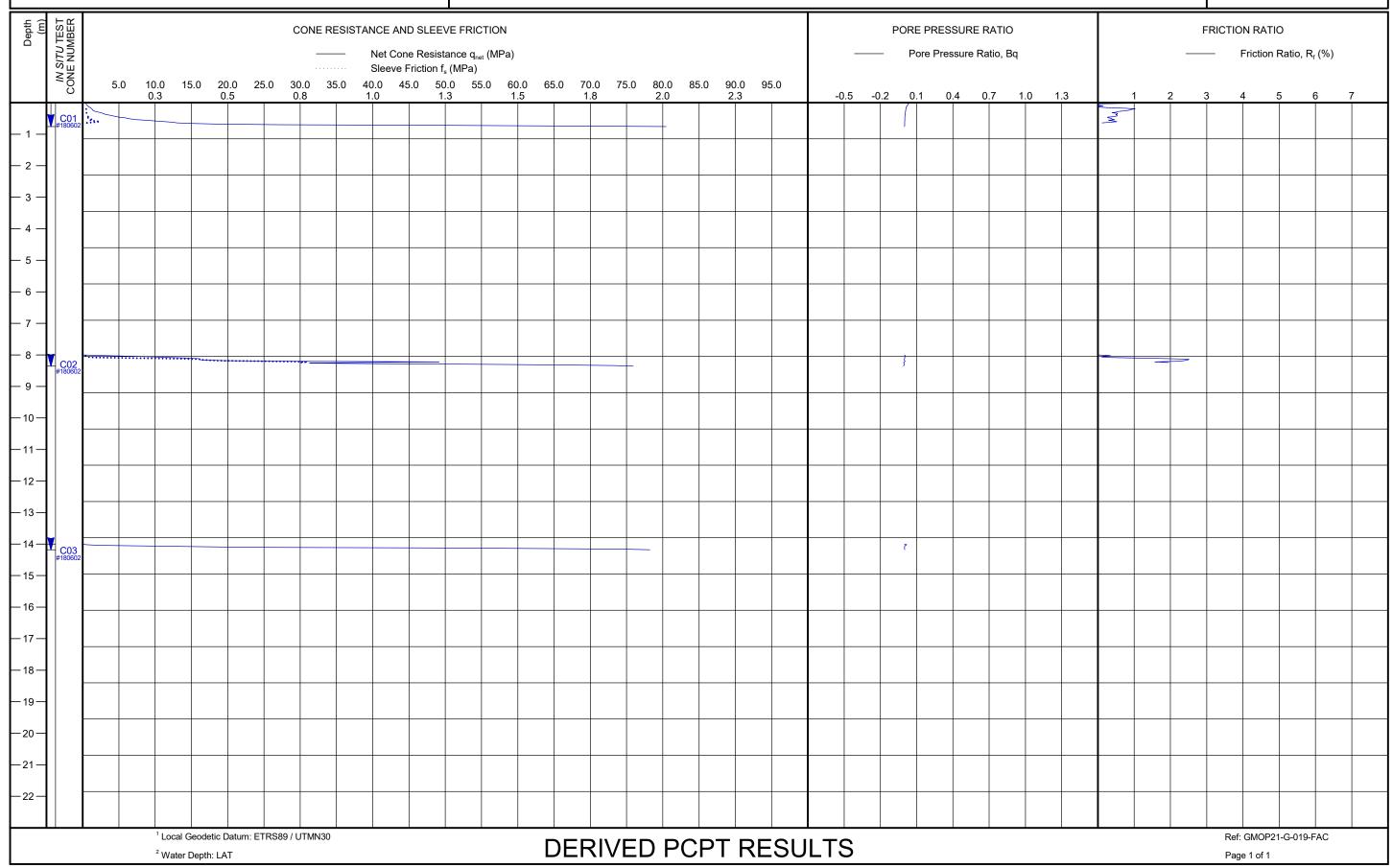
A05 Bretagne Offshore GI Project Name:

Project No.: GMOP21-G-019

A05 OWF Location:

Water Depth²: Coordinates¹: 89.65m 5240916mN





Project Name: A05 Bretagne Offshore GI

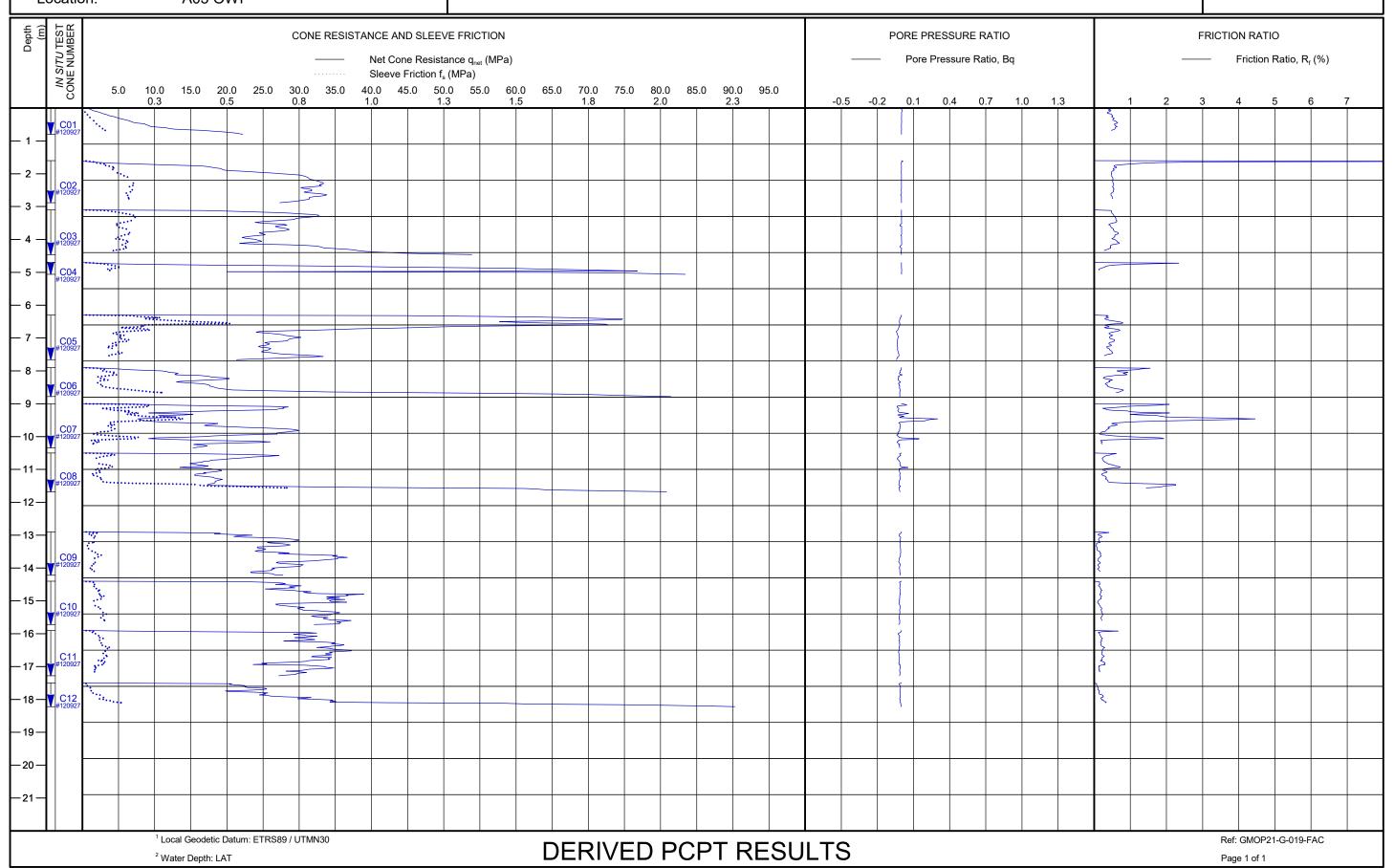
Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#20_CPT OWF_GI#20_SAMP Date Commenced: 09/12/2022 09/12/2022 Coordinates¹: 448481mE 52 448487mE 52

5238230mN 5238226mN Water Depth²: 96.78m 96.78m





Project Name: A05 Bretagne Offshore GI

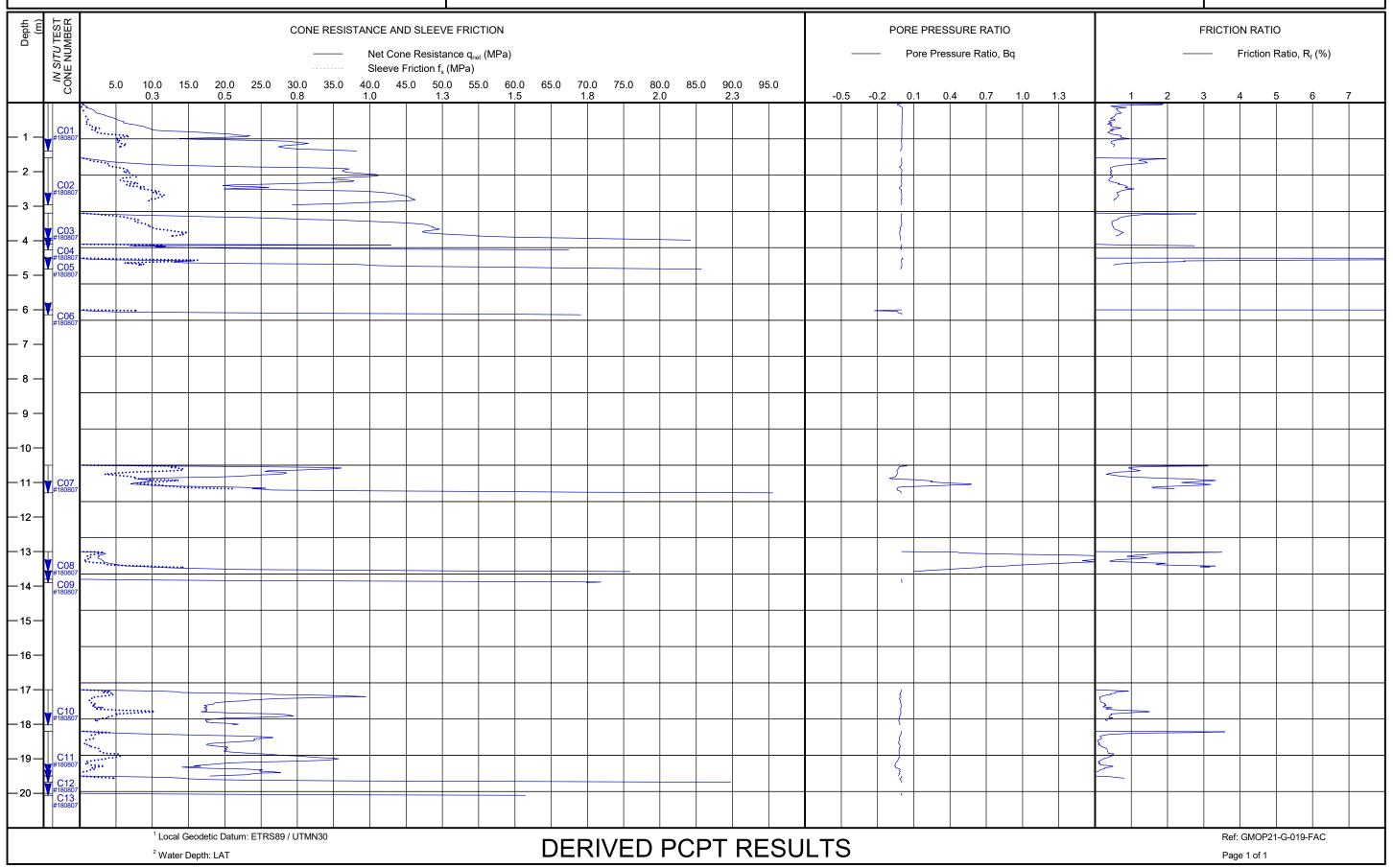
Project No.: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#22_CPT OWF_GI#22_SAMP Date Commenced: 07/12/2022 06/12/2022 Coordinates¹: 454688mE 52 454703mE 52

5237035mN 5237027mN Water Depth²: 93.65m 93.65m





APPENDIX B SAMPLING AND LABORATORY TESTING

Appendix B.1 Non-Conformance Reports

	Samp	le Non	-Conforman	ce Number: 10	4	
Technician Name: Arthur McLau	ıghlin			Date:	02/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offshor	·е			Location Name:	OWF_GI#17_S	AMP
Sample Description including mas	s of available material	:		Sample Number:	PU14 IS	
White cemented SAND				Depth (m):	17.5	
White temented SAND				Sample Type:	IS	
Reason	n for non-conformance	e		Test ab	orted	Test aborted
Sample not received				PSD		
Insufficient material for testing				АТТ		
Sample lost in the laboratory						
Sample is unsuitable for testing		x				
Other						
Signed:	Arthur McLau	ughlin		Position:	Stores Technic	ian
			Engineer requirer	ments		
	Alternative sample	х	Specify:	Add UCS to PU14-	Q1	
	Alternative test	х				
	Non standard test					
	Dismiss test					
			Engineer comme	ents:		
Sign	ed: Jordan Millman			Position:	Project Engine	er
Da	ate: 06/03/2023					
Lab actions complete sign	ed:			Date:		

	ple Non-Co	nformanc	e Number: 10	5	
Technician Name: Arthur McLaughlin			Date:	02/03/2023	
Project Name:			Project Number:	GMOP21-G-019)
GMOP21-G-019 -Bretagne offshore			Location Name:	OWF_GI#04A_S	SAMP
Sample Description including mass of available mater	ial:		Sample Number:	CR13 Q1	
White cemented Chalk			Depth (m):	17.4	
white temented chark			Sample Type:	Q	
Reason for non-conformar	nce		Test abo	orted	Test aborted
Sample not received			ATT		
Insufficient material for testing					
Sample lost in the laboratory					
Sample is unsuitable for testing	х				
Other					
Signed: Arthur McL	aughlin		Position:	Stores Technici	an
Signed: Arthur McL	-	neer requirem		Stores Technici	an
	-		ents	Stores Technici	an
Alternative sample	-	neer requirem Specify:		Stores Technici	an
Alternative sample Alternative test	Engin	Specify:	ents	Stores Technici	an
Alternative sample Alternative test Non standard test	Engin	Specify:	Change to UCS		an
Alternative sample Alternative test	Engin	Specify:	Change to UCS UCS not possible		an
Alternative sample Alternative test Non standard test	Engin	Specify:	Change to UCS UCS not possible Change to Point Lo		an
Alternative sample Alternative test Non standard test	Engin	Specify: Lab: 28.06.23	Change to UCS UCS not possible Change to Point Lo		an
Alternative sample Alternative test Non standard test	Engin	Specify: Lab: 28.06.23	Change to UCS UCS not possible Change to Point Lo		an
Alternative sample Alternative test Non standard test Dismiss test	Engin	Specify: Lab: 28.06.23	Change to UCS UCS not possible Change to Point Lo	oad	
Alternative sample Alternative test Non standard test	Engin	Specify: Lab: 28.06.23	Change to UCS UCS not possible Change to Point Lo	oad	echnical Engineer

	Samp	le Non	-Conforman	ce Number: 10	6	
Technician Name: Arthur McLau	ghlin			Date:	02/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offshore	2			Location Name:	OWF_GI#12_S	AMP
Sample Description including mass	of available material	:		Sample Number:	CR14 Q1	
White cemented Chalk				Depth (m):	16.85	
White temented chark				Sample Type:	Q	
Reason	for non-conformance	е		Test ab	orted	Test aborted
Sample not received				ATT		
Insufficient material for testing				PSD		
Sample lost in the laboratory						
Sample is unsuitable for testing		х				
Other						
Signed:	Arthur McLau	ughlin		Position	Stores Technic	ian
Ü			Engineer require			
A	lternative sample	х	Specify:	Change to UCS if	sample is long er	nough
	Alternative test					
	Non standard test					
	Dismiss test					
			Engineer commo	ents:		
Signe	d: Jordan Millman			Position	Project Engine	er
Dari	te: 06/03/2023					
Lab actions complete signe	d:			Date		

	Samp	le Non-	Conforman	ce Number: 11	1	
Technician Name: Jacob Morgan				Date:	02/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#20_S	AMP
Sample Description including n	nass of available material	:		Sample Number:	PU01 B1	
Cravish brown CAND				Depth (m):	0	
Greyish brown SAND				Sample Type:	B1	
Rea	son for non-conformance	2		Test ab	orted	Test aborted
Sample not received				Att		
Insufficient material for testing	:					
Sample lost in the laboratory						
Sample is unsuitable for testing	3	х				
Other						
Sample is SAND						
Signed:	Jacob Morg	gan		Position:	Laboratory Tec	chnician
		Er	ngineer requiren	nents		
	Alternative sample		Specify:	Cancel test		
	Alternative test					
	Non standard test					
	Dismiss test	x				
		E	Ingineer comme	nts:		
S	igned: Joradn Millman			Position:	Project Engine	er
	Date: 06/03/2023					
Lab actions complete s	igned:			Date:		

	Samp	le Non-	Conforman	e Number: 11	2	
Technician Name: Jacob Morgan				Date:	02/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OWF_GI#11_S	AMP
Sample Description including n	nass of available material	:		Sample Number:	PU01B B1	
				Depth (m):	0	
Greyish brown SAND				Sample Type:	B1	
Rea	son for non-conformance	2		Test abo	orted	Test aborted
Sample not received				Att		
Insufficient material for testing						
Sample lost in the laboratory						
Sample is unsuitable for testing	S	х				
Other						
Comple is CAND						
Sample is SAND Signed:	Jacob Morg	yan .		Position:	Laboratory Tec	chnician
Signeu.	Jucob More		gineer requiren		Laboratory Tex	cimetan
			·			
	Alternative sample		Specify:	Cancel Test		
	Alternative test					
	Non standard test					
	Dismiss test	х				
		E	ngineer comme	nts:		
S	gned: Jordan Millman			Position:	Project Engine	er
	Date: 06/03/2023			. 55.6.5111	.,	
Lab actions complete si				Date:		

	Samp	le Non-	Conforman	ce Number: 13	1		
Technician Name: peter web	Technician Name: peter webster				09/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#17_S	AMP	
Sample Description including n	nass of available material	:		Sample Number:	P10 IS		
				Depth (m):	10.5		
				Sample Type:	IS		
Rea	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				CIUc			
Insufficient material for testing	3			BE			
Sample lost in the laboratory				UU			
Sample is unsuitable for testing	g	х		UUR			
Other							
Sample is unsuitable for point load testing	or testing, fracture	ed so no	140mm saı	mple available,	sample typ	oe is chalk, recommend	
Signed:	peter webs	ster		Position:	Advanced Labo	oratory Technician	
		Ei	ngineer requirer	ments			
	Alternative sample		Specify:	Change to Point Lo	oad Test		
	Alternative test	Χ					
	Non standard test						
	Dismiss test						
			Engineer comme	onte:			
			ingineer comme	:::::::::::::::::::::::::::::::::::::::			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete s	igned:			Date:			

	Samp	le Non-	-Conforman	ce Number: 13	2	
Technician Name: peter webster				Date:	09/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#20_S	AMP
Sample Description including n	nass of available material	:		Sample Number:	P11 IS	
				Depth (m):	6.7	
				Sample Type:	IS	
Rea	ason for non-conformance	2		Test abo	orted	Test aborted
Sample not received				CIUc		
Insufficient material for testing	3			ВЕ		
Sample lost in the laboratory				UU		
Sample is unsuitable for testing	g	x		UUR		
Other						
Sample is unsuitable f	or testing sample	tyne is	chalk reco	mmend noint l	and testing	
Signed:	peter webs		chan, reco			oratory Technician
	·	E	ngineer requirer	nents		
	Alternative sample		Specify:	Change to Point Lo	oad Test	
	Alternative test	Χ				
	Non standard test					
	Dismiss test					
			Engineer comme	ents:		
			6			
S	igned: Jordan Millman			Position:	Project Engine	er
	Date: 11/04/2023				, , ,	
Lab actions complete s				Date:		

	Samp	le Non-(Conforman	ce Number: 13	33		
Technician Name: peter web	Technician Name: peter webster				09/03/2023	9/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OWF_GI#20_S	AMP	
Sample Description including n	nass of available material	l:		Sample Number:	P14 IS		
				Depth (m):	9.7		
				Sample Type:	IS		
Rea	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				CIUc			
Insufficient material for testing				ВЕ			
Sample lost in the laboratory				UU			
Sample is unsuitable for testing	;	х		UUR			
Other				CRS			
Sample is uncuitable fo	or tocting comple	atuno is	chall ross	mmand naint l	and tacting		
Signed:	peter webs		criaik, recoi	, recommend point load testing Position: Advanced Laboratory Technician			
30 44			gineer requirer			,	
	Alternative sample		Specify:	Change to Point L	oad Test		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	ngineer comme	ents:			
S	igned: Jordan Millman			Position	: Project Engine	er	
	Date: 11/04/2023						
Lab actions complete si	gned:			Date			

	Samp	le Non-	-Conforman	ce Number: 13	4		
Technician Name: peter web	echnician Name: peter webster				Date: 09/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#20_S	AMP	
Sample Description including r	nass of available material	ı:		Sample Number:	P18 IS		
				Depth (m):	13.8		
				Sample Type:	IS		
Rea	ason for non-conformance	е		Test ab	orted	Test aborted	
Sample not received				CIUc			
Insufficient material for testing	3			ВЕ			
Sample lost in the laboratory				CRS			
Sample is unsuitable for testin	g	x					
Other							
Sample is unsuitable f	Ortesting cample	atype is	chalk rocce	mmend noint l	and testing		
Signed:	peter webs		chaik, recoi	Position: Advanced Laboratory Technician			
		E	ngineer requirer	ments			
	Alternative sample		Specify:	Change to Point Lo	oad Test		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
			Engineer comme	ents:			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete s	igned:			Date:			

	Samp	le Non-(Conforman	ce Number: 13	5		
Technician Name: Jacob Morg	gan			Date: 09/03/2023			
Project Name:				Project Number:	GMOP21-G-019		
GMOP21-G-019 -Bretagne offsl	nore			Location Name:	OWF_GI#20_S	AMP	
Sample Description including m	nass of available material	:		Sample Number:	PU01 B1		
Cassiale leasure silter CAND				Depth (m):	0		
Greyish brown silty SAND				Sample Type:	B1		
Rea	son for non-conformance)		Test ab	orted	Test aborted	
Sample not received				Min Max			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	5	х					
Other							
Fines content too high	for NGI min may	mathad					
Signed:	Jacob Morg		•	Position: Laboratory Technician			
organism.			ngineer requirer				
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Χ					
			·				
			ingineer comme	:1165.			
Si	gned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non-	Conforman	ce Number: 13	6		
Technician Name: peter webs	echnician Name: peter webster				09/03/2023		
Project Name:				Project Number:	GMOP21-G-01	19	
GMOP21-G-019 -Bretagne offsh	ore			Location Name:	OWF_GI#17_S	SAMP	
Sample Description including m	ass of available material	:		Sample Number:	PU13 Q1	PU13 Q1	
White page 8.5 N Cemented sar	od / chalk			Depth (m):	16.7		
Write page 8.3 N Cemented Sai	u / Cliaik			Sample Type:	q1		
Reas	on for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				UU			
Insufficient material for testing				UUR			
Sample lost in the laboratory							
Sample is unsuitable for testing		х					
Other							
Sample fractured, cem	ontod cand / chall	k rocom	umand for D				
Signed:	peter webs		illiella loi P	Position: Advanced Laboratory Technician			
- Grant			ngineer requirer				
	Alternative sample		Specify:	Change to Point L	oad Test		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	Engineer comme	ents:			
Sig	gned: Jordan Millman			Position	Project Engine	eer	
	Date: 11/04/2023						
Lab actions complete sig				Date:			

	Samp	le Non	-Conforman	ce Number: 13	7		
Technician Name: peter web	ster			Date:	09/03/2023		
Project Name:				Project Number:	GMOP21-G-019		
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#17_SAMP		
Sample Description including r	mass of available material	:	Sample Number: P		PU13 Q2		
White page 8.5 N Cemented sa	and / chalk			Depth (m):	16.8		
writte page 8.3 N Cementeu sa	and / Chark			Sample Type:	q2		
Rea	son for non-conformance	e		Test abo	orted	Test aborted	
Sample not received				CRS			
Insufficient material for testing	B			CIU			
Sample lost in the laboratory				ВЕ			
Sample is unsuitable for testing	g	x					
Other							
Cemented sand / wea	k rock recommend	LUCS o	or DI				
Signed:	peter webs		7112	Position: Advanced Laboratory Technician			
Ü	·		Engineer requiren			•	
	Alternative sample		Specify:	Change to UCS			
	Alternative test	X	Lab update:	Not suitable for U	CS		
	Non standard test		Alternative:	Change to PLT			
	Dismiss test						
			Engineer comme	nts:			
S	iigned: Jordan Millman		Oliver Sirett	Position:	Project Engineer		
	Date: 11/04/2023		06/07/202	2			
			00/07/202	3			

	Samp	le Non	-Conforman	ce Number: 13	8		
Technician Name: peter web	echnician Name: peter webster						
Project Name:				Project Number:	GMOP21-G-019		
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OWF_GI#20_SAN	ИΡ	
Sample Description including n	nass of available materia	l:		Sample Number: PU			
White page 9.5/N White Ceme	ntod cand / chalk			Depth (m):	13		
writte page 3.3/14 writte cerne	inted Sand / Chark			Sample Type:	q1		
Rea	son for non-conformanc	e		Test abo	orted	Test aborted	
Sample not received				UU			
Insufficient material for testing				UUR			
Sample lost in the laboratory							
Sample is unsuitable for testing	3	x					
Other							
Cancel and put in for F	N / flat on oncido						
Signed:	peter web:	ster		Position: Advanced Laboratory Technician			
Ü	·		Engineer requiren			•	
	Alternative sample		Specify:	Change to Point Lo	oad Test		
	Alternative test	Х	Lab Update:	Not suitable for Pl	.т		
	Non standard test		Alternative:	Cancel Test			
	Dismiss test						
			Engineer comme	nts:			
S	igned: Jordan Millman		Oliver Sirett	Position:	Project Engineer		
	Date: 11/04/2023		06/07/2023				
Lab actions complete si				Date:			

	Samp	le Non	-Conforman	ce Number: 13	9		
Technician Name: peter web	ster			Date:	09/03/2023		
Project Name:				Project Number:	GMOP21-G-019		
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#17_SAN	ЛР	
Sample Description including r	nass of available materia	l:		Sample Number:	CR02 Q1		
GLEY 1 3/1 Very dark Grey Lim	ostono			Depth (m):	4.9		
GLLT 1 3/1 Very dark Grey Lim	estone			Sample Type:	q1		
Rea	son for non-conformanc	e		Test ab	orted	Test aborted	
Sample not received				UU			
Insufficient material for testing	B			UUR			
Sample lost in the laboratory							
Sample is unsuitable for testin	g	x					
Other							
Dark Chalk / cemente	d sand recommen	4 IICS					
Signed:	peter web			Position: Advanced Laboratory Technician			
Ü	·		Engineer requiren			,	
	Alternative sample		Specify:	Change to UCS			
	Alternative test	Х	Lab Update:	Not suitable for U	CS		
	Non standard test		Alternative:	Change to PLT			
	Dismiss test						
			Engineer comme	ents:			
S	igned: Jordan Millman		Oliver Sirett	Position:	Project Engineer		
	Date: 11/04/2023		06/07/2023				
Lab actions complete s				Date:			

	Samp	le Non	-Conforman	ce Number: 14	0		
Technician Name: peter web	ster			Date: 09/03/2023			
Project Name:				Project Number:	GMOP21-G-019		
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#22_SAI	MP	
Sample Description including n	nass of available materia	l:		Sample Number:	PU13 Q1		
White page 9 E N white ciltly c	amontod cand			Depth (m):	13.5		
White page 8.5 N white siltly o	emented sand			Sample Type:	q1		
Rea	son for non-conformanc	e		Test abo	orted	Test aborted	
Sample not received				CIUc			
Insufficient material for testing	5			ВЕ			
Sample lost in the laboratory				CRS			
Sample is unsuitable for testing	3	x					
Other							
Top half cememented	cand hottom half	f ciltu a	nd vory soft	would rocom	aont IIII		
Signed:	peter web		na very sort,	Position: Advanced Laboratory Technician			
Signed.	peter wes		Engineer requiren		Navancea Eabore	acory recrimetari	
			ingineer requirem				
	Alternative sample		Specify:	Change to UU			
	Alternative test	Х	Lab Update:	Sample unsuitable	e - consists of part	ticles of rock	
	Non standard test		Update:	Cancel Test			
	Dismiss test		•				
			Engineer comme	nts:			
s	igned: Jordan Millman		Oliver Sirett	Position:	Project Engineer		
	Date: 11/04/2023		06/07/202	3			
Lab actions complete s	igned:			Date:			

	Samp	le Non-	Conforman	ce Number: 14	1		
Technician Name: Jacob Morga	n			Date: 15/03/2023			
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsho	ore			Location Name:	OWF_GI#12_S	AMP	
Sample Description including ma	ss of available material	l:		Sample Number:	PU02 B2		
Contribution CAND contribution				Depth (m):	1.2		
Greyish brown SAND, containing	gravei and shell fragmo	ents		Sample Type:	B2		
Reaso	n for non-conformance	e		Test abo	orted	Test aborted	
Sample not received				Att			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing		х					
Other							
Samula is SAND							
Sample is SAND Signed:	Jacob Mor	gan		Position: Quality Technician			
Signeu.	3000 11101		ngineer requiren		Quality recinii	Can	
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
		l	Engineer comme	nts:			
Siar	ned: Jordan Millman			Position	Project Fngine	er	
	ned: Jordan Millman ate: 11/04/2023			Position:	Project Engine	er	

	Samp	le Non-0	Conforman	ce Number: 14	2		
Technician Name: Seigfred R.	Ocio			Date:	20/03/2023		
Project Name:				Project Number:	GMOP21-G-019		
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OSS_GI#01_SA	AMP	
Sample Description including n	nass of available material	l:		Sample Number:	CR02 Q1		
				Depth (m):	1.4		
				Sample Type:	Q1		
Rea	son for non-conformance	e		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing	;						
Sample lost in the laboratory							
Sample is unsuitable for testing	5	х					
Other							
Not possible for UCS to			60mm), Alt				
Signed:	Seigfred R. (ngineer requirer		Senior Laborat	cory recnnician	
			ignicer requirer	nents			
	Alternative sample		Specify:	Change to Point Lo	oad Test		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	ngineer comme	ents:			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non-	Conforman	ce Number: 14	3		
Technician Name: Seigfred R.	Ocio			Date:			
Project Name:				Project Number:	GMOP21-G-01	19	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#01A_S	SAMP	
Sample Description including n	nass of available material	:		Sample Number: CR09 Q1			
				Depth (m):	7.45		
				Sample Type:	Q1		
Rea	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	3	х					
Other							
Not possible for UCS to	est, insufficient ler Seigfred R. (60mm), Alt	Position: Senior Laboratory Technician			
Signed:	Seigired R. C		ngineer requirer		Semor Labora	tory recrinician	
		LI	igineer requirer	nents			
	Alternative sample		Specify:	Change to Point L	oad Test		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	Engineer comme	ents:			
	igned: Jordan Millman			Dositions	Project Engine	nor .	
3	Date: 11/04/2023			rosition:	moject Engine	-CI	
Lab actions complete s				Date:			

	Samp	le Non-	Conforman	ce Number: 14	4		
Technician Name: Seigfred R. Ocio				Date: 20/03/2023			
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offshore				Location Name:	OWF_GI#04_S	SAMP	
Sample Description including mass of	available material	:		Sample Number: CR01 B1			
				Depth (m):	1.3		
				Sample Type:	B1		
Reason fo	r non-conformance)		Test abo	orted	Test aborted	
Sample not received				Porosity			
Insufficient material for testing				Density			
Sample lost in the laboratory				Moisture Content			
Sample is unsuitable for testing		х					
Other							
Not possible for porosity te	ort camples -	ro non :	intact and in	ocufficient			
Signed:	Seigfred R. (intact and n	Position: Senior Laboratory Technician			
			ngineer requirer				
Alte	rnative sample		Specify:	Cancel test			
,	Alternative test						
No	n standard test						
	Dismiss test	Х					
		E	Engineer comme	ents:			
Signed.	Jordan Millman			Position:	Project Engine	eer	
_	11/04/2023			. 55.6.611	-,	-	
Lab actions complete signed:				Date:			

	Samp	le Non-C	Conforman	ce Number: 14	5			
Technician Name: Seigfred R	echnician Name: Seigfred R. Ocio				20/03/2023			
Project Name:				Project Number:	GMOP21-G-01	9		
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#04A_S	SAMP		
Sample Description including r	mass of available material	!:		Sample Number:	CR04 Q1			
				Depth (m):	3.5			
				Sample Type:	Q1			
Rea	ason for non-conformance	e		Test abo	orted	Test aborted		
Sample not received				UCS				
Insufficient material for testing	g							
Sample lost in the laboratory								
Sample is unsuitable for testin	g	Х						
Other								
Not possible for UCS t			60mm), Alt					
Signed:	Seigfred R.				Senior Laborat	ory Technician		
		En	gineer requiren	nents				
	Alternative sample		Specify:	Change to Point Lo	oad Test			
	Alternative test	X	opeay.					
	Non standard test							
	Dismiss test							
	2.555 (25)	П						
		E	ngineer comme	ents:				
	iigned: Jordan Millman			Position:	Project Engine	er		
	Date: 11/04/2023							
Lab actions complete s	igned:			Date:				

	Samp	le Non-	-Conforman	ce Number: 14	16		
Technician Name: Seigfred R.	Ocio			Date:	20/03/2023	0/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#04A_S	AMP	
Sample Description including n	nass of available material	l:		Sample Number:	CR05 IS		
				Depth (m):	4.7		
				Sample Type:	IS		
Rea	son for non-conformance	e		Test ab	orted	Test aborted	
Sample not received				PLT			
Insufficient material for testing	;						
Sample lost in the laboratory							
Sample is unsuitable for testing	3	х					
Other							
Not possible for PLT te	est. non-intact						
Signed:	Seigfred R. (Ocio		Position: Senior Laboratory Technician			
		E	ngineer requirer	nents			
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
			Engineer comme	ents:			
5	igned: Jordan Millman			Position	: Project Engine	er	
	Date: 11/04/2023				.,		
Lab actions complete s				Date			

	Samp	le Non-0	Conforman	ce Number: 14	7			
Technician Name: Seigfred R.	echnician Name: Seigfred R. Ocio			Date:	20/03/2023			
Project Name:				Project Number:	GMOP21-G-01	9		
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OSS_GI#04A_S	SAMP		
Sample Description including n	nass of available materia	l:		Sample Number:	CR14 Q1			
				Depth (m):	18.2			
				Sample Type:	Q1			
Rea	son for non-conformance	e		Test ab	orted	Test aborted		
Sample not received				UCS				
Insufficient material for testing								
Sample lost in the laboratory								
Sample is unsuitable for testing	3	x						
Other								
Not possible for UCS to			60mm), Alt					
Signed:	Seigfred R.		ngineer requirer	Position: Senior Laboratory Technician				
			<u> </u>					
	Alternative sample		Specify:	Change to Point Lo	oad Test			
	Alternative test	Χ						
	Non standard test							
	Dismiss test							
		E	ingineer comme	ents:				
S	gned: Jordan Millman			Position:	Project Engine	er		
	Date: 11/04/2023							
Lab actions complete si	gned:			Date:				

	Samp	le Non-	Conforman	ce Number: 14	8		
Technician Name: Seigfred R.	Ocio			Date: 20/03/202		2023	
Project Name:				Project Number:	GMOP21-G-01	19	
GMOP21-G-019 -Bretagne offsh	ıore			Location Name:	OWF_GI#05A_	SAMP	
Sample Description including m	ass of available material	:		Sample Number:	CR03 Q1	CR03 Q1	
				Depth (m):	2.7		
				Sample Type:	Q1		
Reas	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	}	х					
Other							
Nat 11 6 1100	- A Colonia	-1:-1:/	dian d				
Not possible for UCS to Signed:	Seigfred R. (aisturbea	Position: Senior Laboratory Technician			
Signeu.	Scigired N.		ngineer requirer		Schlor Edbord	tory recrimetan	
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
		F	Engineer comme	ents:			
Si	gned: Jordan Millman			Position	Project Engine	eer	
	Date: 11/04/2023				,		
Lab actions complete si				Date:			

	Samp	le Non-	Conforman	ce Number: 14	9		
Technician Name: Seigfred R.	echnician Name: Seigfred R. Ocio				20/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsl	ıore			Location Name:	OSS_GI#05A_S	AMP	
Sample Description including m	nass of available material	:		Sample Number:	CR04 IS		
				Depth (m):	3.55		
				Sample Type:	IS		
Rea	son for non-conformance	e		Test aborted Test abor			
Sample not received				Petrographic			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	5	х					
Other							
Not mosible for Deliver	annahia keck Cala	-i	a n l n				
Not possible for Petrog	Seigfred R. (npie	Position: Senior Laboratory Technician			
Signeu.	Scigired N.		ngineer requiren		Semor Edborde	ory recinician	
			<u> </u>				
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
		E	Engineer comme	ents:			
Si	gned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non-0	Conforman	ce Number: 15	0		
Technician Name: Seigfred R.	echnician Name: Seigfred R. Ocio			Date:	20/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OSS_GI#05A_S	SAMP	
Sample Description including n	nass of available material	1:		Sample Number:	CR04 Q1		
				Depth (m):	3.9		
				Sample Type:	Q1		
Rea	son for non-conformance	e		Test aborted Test aborted			
Sample not received				UCS			
Insufficient material for testing				Porosity			
Sample lost in the laboratory							
Sample is unsuitable for testing	3	х					
Other							
Not posible for all 1	ulad tast Cabac	0.00	0 Alberte 5	NI T			
Not possible for sched Signed:	Seigfred R. (e, Ait test. F	Position: Senior Laboratory Technician			
o.geur	35.854 1		gineer requirer		20.000		
	Alternative sample		Specify:	Change to Point Lo	oad Test		
	Alternative test	Χ					
	Non standard test						
	Dismiss test						
		-	ngineer comme				
			ingineer comme	ents.			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non-	-Conforman	ce Number: 15	1		
Technician Name: Seigfred R.	Ocio			Date:	21/03/2023	1/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OSS_GI#09_SA	MP	
Sample Description including n	nass of available material	1:		Sample Number:	CR05 IS		
				Depth (m):	4		
				Sample Type:	IS		
Rea	son for non-conformance	е		Test ab	orted	Test aborted	
Sample not received				PLT			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	5	x					
Other							
Not possible for PLT te	est, non-intact						
Signed:	Seigfred R. (Ocio		Position: Senior Laboratory Technician			
			ngineer requirer	ments			
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
			Engineer comme	ents:			
ς	igned: Jordan Millman			Position	Project Engine	er	
	Date: 11/04/2023			. 55.2/5/11	-,	-	
Lab actions complete si				Date:			

	Samp	le Non-C	Conforman	ce Number: 15	2		
Technician Name: Seigfred R.	. Ocio			Date: 21/03/2023			
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#09_SA	AMP	
Sample Description including n	nass of available material	:		Sample Number:	CR21 Q1		
				Depth (m):	20.3		
				Sample Type:	Q1		
Rea	son for non-conformance)		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing	5						
Sample lost in the laboratory							
Sample is unsuitable for testing	3	х					
Other							
Signed:	est, insufficient ler Seigfred R. (50mm), Alt	, Alt test: PLT/ Rock Shear			
Signeu.	Seigned K.		gineer requirer	Position: Senior Laboratory Technician			
		LII	gineer requirer	nents			
	Alternative sample		Specify:	Change to Point L	oad Test or Roc	k Shear	
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	ngineer comme	ents:			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023				-,		
Lab actions complete s				Date:			

	Samp	le Non-	-Conforman	ce Number: 15	3		
Technician Name: Seigfred R. (Ocio			Date:	21/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsh	ore			Location Name:	OWF_GI#11_S	AMP	
Sample Description including ma	ass of available material	:		Sample Number:	PU03 B1		
				Depth (m):	2		
				Sample Type:	B1		
Reas	on for non-conformance	2		Test ab	orted	Test aborted	
Sample not received				Porosity			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing		x					
Other							
Not possible for porosi	ty tost						
Signed:	Seigfred R. (Ocio		Position: Senior Laboratory Technician			
Ü			ngineer requirer				
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
			Engineer comme	ents:			
Sig	ned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023				,		
Lab actions complete sig				Date:			

	Samp	le Non-	Conforman	ce Number: 15	4		
Technician Name: Seigfred R	. Ocio			Date:	21/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#11_SA	MP	
Sample Description including n	nass of available material	:		Sample Number:	CR11 Q1		
				Depth (m):	12.85		
				Sample Type:	Q1		
Rea	son for non-conformance	е		Test abo	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing	5						
Sample lost in the laboratory							
Sample is unsuitable for testing	g	x					
Other							
Not possible for UCS to	act inclufficient le	osth / <1	160mm\ Alt	tost: DLT/ Ds -	, Choose		
Signed:	Seigfred R. (ioomini), Ait), Alt test: PLT/ Rock Shear Position: Senior Laboratory Technician			
			ngineer requirer	ments			
	Alternative sample		Specify:	Change to Point Lo	oading Test or R	Rock Shear	
	Alternative test	X					
	Non standard test						
	Dismiss test						
			Engineer comme	ents:			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete s	ignod:			Date:			

	Samp	le Non-	Conforman	ce Number: 15	5			
Technician Name: Seigfred R. C	cio			Date:	21/03/2023			
Project Name:				Project Number:	GMOP21-G-01	19		
GMOP21-G-019 -Bretagne offsho	re			Location Name:	OSS_GI#14A_S	SAMP		
Sample Description including ma	ss of available material	:		Sample Number:	CR02 Q1	CR02 Q1		
				Depth (m):	1.5			
				Sample Type:	Q1			
Reasc	n for non-conformance	2		Test ab	orted	Test aborted		
Sample not received				UCS				
Insufficient material for testing								
Sample lost in the laboratory								
Sample is unsuitable for testing		х						
Other								
Not possible for UCS tes Signed:	st, insufficient ler Seigfred R. (.60mm), Alt					
Signeu.	Seigirea K.		ngineer require	Position: Senior Laboratory Technician				
		LI	igineer requirer	nents				
	Alternative sample		Specify:	Change to Point L	oad Test or Roc	k Shear		
	Alternative test	Х						
	Non standard test							
	Dismiss test							
		E	Engineer comm	ents:				
Sign	ned: Jordan Millman			Position	Project Engine	er		
	ate: 11/04/2023			. 55.2/511	-,,,	-		
Lab actions complete sign				Date:				

	Samp	le Non	-Conformano	e Number: 15	6		
Technician Name: Seigfred R.	echnician Name: Seigfred R. Ocio			Date:	21/03/2023	21/03/2023	
Project Name:				Project Number:	GMOP21-G-019		
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#14A_S	SAMP	
Sample Description including n	nass of available material	l:		Sample Number:	CR02 IS		
				Depth (m):	1.7		
				Sample Type:	IS		
Rea	son for non-conformance	e		Test abo	orted	Test aborted	
Sample not received				PLT			
Insufficient material for testing	;			Rock Shear added	11-5		
Sample lost in the laboratory							
Sample is unsuitable for testing	3	x					
Other							
Not possible for PLT te	ost non intact alt	campl	o. CD02 O4 o4	+ 1 50m			
Signed:	Seigfred R. (e. CNUZ-QI at	Position: Senior Laboratory Technician			
0.8.1.0.0.1	00.8.7.04 1.7.		Engineer requiren		200000	,	
	Alternative sample	Х	Specify:	Change sample to	CR02-Q1 at 1.5	m	
	Alternative test	x	Lab Update:	a) No Sufficient sa	mple of CR02-IS	6@1.7m for rock shear test.	
	Non standard test			•		nostly non-intacts. b) UCS of CR02 55 and it was replied to do the	
	Dismiss test			Point Load over th		is and it was replied to do the	
			Alternative:	Cancel Test			
			Engineer comme	nts:			
S	igned: Jordan Millman		Oliver Sirett	Position:	Project Engine	er	
	Date: 11/04/2023		06/07/2023	3			
Lab actions complete s	igned:			Date:			

	Samp	le Non-	Conforman	ce Number: 15	7		
Technician Name: Seigfred R	. Ocio			Date:	21/03/2023	21/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#14A_S	SAMP	
Sample Description including n	nass of available material	:		Sample Number:	CR11 IS		
				Depth (m):	12.25		
				Sample Type:	IS		
Rea	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing	3						
Sample lost in the laboratory							
Sample is unsuitable for testing	g	х					
Other							
			60	DIT/D	Character		
Signed:	Seigfred R. (oumm), Ait), Alt test: PLT/ Rock Shear Position: Senior Laboratory Technician			
o.gcu.	00.8.7.04 111		ngineer requirer		50	,	
			0				
	Alternative sample		Specify:	Change to Point L	oad Test or Rocl	k Shear	
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	Engineer comme	ents:			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete s	igned:			Date:			

	Samp	le Non-	-Conforman	ce Number: 15	8		
Technician Name: Seigfred R.	Ocio			Date:			
Project Name:				Project Number:	GMOP21-G-01	19	
GMOP21-G-019 -Bretagne offsh	nore			Location Name:	OSS_GI#15A_S	SAMP	
Sample Description including m	nass of available material	:		Sample Number:	CR07 IS		
				Depth (m):	8.8		
				Sample Type:	IS		
Rea	son for non-conformance	=		Test ab	orted	Test aborted	
Sample not received				PLT			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	5	x					
Other							
Not possible for PLT, C	ohasiya sampla						
Signed:	Seigfred R. (Ocio		Position: Senior Laboratory Technician			
Ü	<u> </u>		ngineer requirer			•	
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
			Engineer comme	ents:			
Si	gned: Jordan Millman			Position	: Project Engine	eer	
	Date: 11/04/2023			. 03/0/0/1	. 2,200 21181110		
Lab actions complete si				Date			

	Samp	le Non-C	Conforman	ce Number: 15	9		
Technician Name: Seigfred R.	Ocio			Date:	21/03/2023		
Project Name:				Project Number:	GMOP21-G-019	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#15A_S	AMP	
Sample Description including n	nass of available materia	l:		Sample Number: CR07 Q1			
				Depth (m):	8.6		
				Sample Type:	Q1		
Rea	son for non-conformance	e		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing	5						
Sample lost in the laboratory							
Sample is unsuitable for testing	5	х					
Other							
Not possible for UCS, (Cohesive sample						
Signed:	Seigfred R.	Ocio		Position: Senior Laboratory Technician			
Ü	,		gineer requirer			•	
	Alternative sample		Specify:	Change to Atterbe	erg and PSD		
	Alternative test	Χ					
	Non standard test						
	Dismiss test						
		E	ngineer comme	ents:			
ς	igned: Jordan Millman			Position	Project Enginee	er	
	Date: 11/04/2023				, ,		
Lab actions complete s				Date:			

	Samp	le Non-	Conforman	ce Number: 16	0		
Technician Name: Seigfred R.	echnician Name: Seigfred R. Ocio				21/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsl	ıore			Location Name:	OSS_GI#15A_SAMP		
Sample Description including m	nass of available material	:		Sample Number:	CR05 IS		
				Depth (m):	6.5		
				Sample Type:	IS		
Rea	son for non-conformance	e		Test ab	orted	Test aborted	
Sample not received				Porosity			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing		х					
Other							
Disciple and a desire		Night see	table for a				
Dissintegrates during s	Seigfred R. (table for po	Position: Senior Laboratory Technician			
Signeu.	Seigireu K.		ngineer requiren		Sellioi Laborat	cory recrimician	
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
		E	Engineer comme	ents:			
Si	gned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non-	Conforman	ce Number: 16	1		
Technician Name: Seigfred R.	Ocio			Date: 21/03/2023			
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#15A_S	SAMP	
Sample Description including n	nass of available material	:		Sample Number:	CR09 IS		
				Depth (m):	12.1		
				Sample Type:	IS		
Rea	son for non-conformance	9		Test aborted Test aborte			
Sample not received				Petrographic			
Insufficient material for testing				Porosity			
Sample lost in the laboratory				PLT			
Sample is unsuitable for testing	5	x		UCS			
Other				Rock Shear			
Not possible for sched Signed:	Seigfred R. (le	Decition, Caniar Laboratory Tochnician			
Signeu.	Seigheu K.		ngineer requirer	Position: Senior Laboratory Technician			
			ngmeer requirer	nents			
	Alternative sample		Specify:	Change to Atterbe	rg and PSD		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
			Engineer comme	ents:			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete s	igned:			Date:			

	Samp	le Non-	-Conforman	ce Number: 16	2		
Technician Name: Seigfred R	echnician Name: Seigfred R. Ocio				21/03/2023	21/03/2023	
Project Name:				Project Number: GMOP21-G-01		9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#15A_S	SAMP	
Sample Description including n	nass of available material	l:		Sample Number: CR10 IS			
				Depth (m):	13.4		
				Sample Type:	IS		
Rea	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing	3			PLT			
Sample lost in the laboratory				Rock Shear			
Sample is unsuitable for testing	g	x					
Other							
Not mostly for all	lulad ke-t- C lui		la.				
Not possible for sched	Seigfred R. (ile	Position: Senior Laboratory Technician			
Ü	,		ingineer requirer			,	
	Alternative sample		Specify:	Change to Atterbe	erg and PSD		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
			Engineer comme	onte			
			Liigineer commi	:iits.			
5	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023			. 33.0311	., , ,		
Lab actions complete s				Date:			

	Samp	le Non-	Conforman	ce Number: 16	3		
Technician Name: Seigfred R.	Ocio			Date:	21/03/2023	21/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsh	iore			Location Name:	OSS_GI#15A_S	SAMP	
Sample Description including m	ass of available material	:		Sample Number:	CR11 IS		
				Depth (m):	14.2		
				Sample Type:	IS		
Reas	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				Porosity			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing		х					
Other							
Not possible for porosi	itu tast Cabasina	-ample					
Signed:	Seigfred R. (Position: Senior Laboratory Technician			
			ngineer requirer	ments		•	
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
		F	Engineer comme	ents:			
Şi	gned: Jordan Millman			Position	Project Engine	er	
	Date: 11/04/2023			. 55.2/5/11	-,,,	-	
Lab actions complete si				Date:			

	Samp	le Non-(Conforman	ce Number: 16	4		
Technician Name: Seigfred R.	Ocio			Date:	21/03/2023	1/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsh	iore			Location Name:	OSS_GI#17_SA	MP	
Sample Description including m	ass of available material	:		Sample Number: CR03 Q1			
				Depth (m):	6.25		
				Sample Type:	Q1		
Reas	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing		х					
Sample lost in the laboratory							
Sample is unsuitable for testing		х					
Other							
			60mm), Alt), Alt test: PLT/ Rock Shear			
Signed:	Seigfred R. (aginoor roquiro	Position: Senior Laboratory Technician equirements			
		LII	igilieel Tequilei	nents			
	Alternative sample		Specify:	Change to Point L	oad Test or Roc	k Shear	
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	Ingineer comm	ents:			
Çi	gned: Jordan Millman			Position	Project Engine	er	
	Date: 11/04/2023			1 0310011.	. roject Engine	<u>.</u>	
Lab actions complete si				Date:			

	Samp	le Non-	Conforman	ce Number: 16	5		
Technician Name: Seigfred R. Od	io			Date: 21/03/2		/03/2023	
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offshor	e			Location Name:	OSS_GI#20_SA	MP	
Sample Description including mas	s of available material	1:		Sample Number: CR06 Q1			
				Depth (m):	16.4		
				Sample Type:	Q1		
Reasor	n for non-conformance	e		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing		х					
Sample lost in the laboratory							
Sample is unsuitable for testing		х					
Other							
Not possible for UCS test	Seigfred R. (60mm), Alt	Position: Senior Laboratory Technician			
Signed.	Jeigirea K.		ngineer requirer	·			
			-Billool Lodallo				
,	Alternative sample		Specify:	Change to Point L	oad or Rock She	ear	
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	ngineer comme	ents:			
Sign	ed: Jordan Millman			Position	Project Engine	er	
	te: 11/04/2023			1 03.6/011.	. Joject Engine	- -	
Lab actions complete sign				Date:			

	Samp	le Non-	-Conforman	ce Number: 16	6		
Technician Name: Seigfred R	. Ocio			Date:	21/03/2023	21/03/2023	
Project Name:				Project Number:	oject Number: GMOP21-G-019		
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#20_SA	MP	
Sample Description including n	nass of available material	:		Sample Number:	PU20 IS		
				Depth (m):	18		
				Sample Type:	IS		
Rea	son for non-conformance	2		Test ab	orted	Test aborted	
Sample not received				PLT			
Insufficient material for testing	<u> </u>						
Sample lost in the laboratory							
Sample is unsuitable for testing	B	x					
Other							
Not possible for PLT te	ost non-intact						
Signed:	Seigfred R. (Ocio		Position: Senior Laboratory Technician			
		E	ngineer requirer	nents			
	Alternative sample		Specify:	Cancel Test			
	Alternative test						
	Non standard test						
	Dismiss test	Χ					
			Fusinger comm	auto.			
			Engineer comme	:1105.			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete s	igned:			Date:			

	Samp	le Non-	Conforman	ce Number: 16	7		
Technician Name: Seigfred R.	Ocio			Date:	21/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsh	nore			Location Name:	OSS_GI#22_SA	AMP	
Sample Description including m	nass of available material	:		Sample Number:	CR11 IS		
				Depth (m):	11.8		
				Sample Type:	IS		
Rea	son for non-conformance	2		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	;	х					
Other							
Not possible for UCS to Signed:	est, insufficient ler Seigfred R.		.60mm), Alt), Alt test: PLT Position: Senior Laboratory Technician			
Signeu.	Seigireu K.		ngineer requirer		Sellioi Laborat	tory reclinician	
			igineer requirer	nents			
	Alternative sample		Specify:	Change to Point L	oad Test		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		ı	Engineer comme	ents:			
Si	gned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023				, , ,		
Lab actions complete si				Date:			

	Samp	le Non-	-Conforman	ce Number: 16	8		
Technician Name: Seigfred R.	Ocio			Date:			
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OSS_GI#24_SA	AMP	
Sample Description including n	nass of available material	l:		Sample Number:	CR01 Q1		
				Depth (m):	1.1		
				Sample Type:	Q1		
Rea	son for non-conformance	e		Test ab	orted	Test aborted	
Sample not received				PLT			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	7	х					
Other							
Not we skille for DIT. G							
Not possible for PLT, C Signed:	Seigfred R. (Ocio		Position: Senior Laboratory Technician			
Signed.	Scigired N.		ngineer requirer				
			ingineer requirer	iiciici			
	Alternative sample		Specify:	Change to Atterbe	erg and PSD		
	Alternative test	Х					
	Non standard test						
	Dismiss test						
			Engineer comme	ents:			
S	igned: Jordan Millman			Position	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete si				Date:			

	Samp	le Non-0	Conforman	ce Number: 16	9		
Technician Name: Seigfred R.	Ocio			Date:	21/03/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsh	nore			Location Name:	OSS_GI#24_SA	MP	
Sample Description including m	ass of available material	:		Sample Number:	CR04 IS		
				Depth (m):	4.1		
				Sample Type:	IS		
Reas	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	}	х					
Other							
Not possible for UCS to Signed:	est, insufficient ler Seigfred R. (60mm), Alt), Alt test: PLT/ Rock Shear Position: Senior Laboratory Technician			
Signeu.	Seigireu K.		ngineer requirer	·			
		LII	igilieer requirer	nents			
	Alternative sample		Specify:	Change to Point L	oad Test or Roc	k Shear	
	Alternative test	Х					
	Non standard test						
	Dismiss test						
		E	ngineer comme	ents:			
Si	gned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023				,		
Lab actions complete si				Date:			

	Samp	le Non-	-Conforman	ce Number: 17	0		
Technician Name: Ed Allan				Date:	:: 03/04/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#17_SA	MP	
Sample Description including r	mass of available material	:		Sample Number:	PU07 B1		
Caran ann fin a CAND with man		·		Depth (m):	Depth (m): 3.9		
Green grey fine SAND with ma	ny large and whole shell i	ragments		Sample Type: B			
Rea	ason for non-conformance	9		Test abo	orted	Test aborted	
Sample not received				CID			
Insufficient material for testing	g			BE			
Sample lost in the laboratory							
Sample is unsuitable for testin	g	x					
Other							
Majority of sample is l therefore not be repre after large particles re	esentative when te						
Signed:	Ed Allan	ı		Position: Laboratory Technician			
		E	ngineer require	ments			
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
			Engineer comm	ents:			
s	iigned: Jordan Millman			Position:	Project Engine	er	
s	iigned: Jordan Millman Date: 11/04/2023			Position:	Project Engine	er 	

	Samp	le Non-	Conforman	ce Number: 17	1		
Technician Name: Seigfred R.	Ocio			Date:	04/04/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OSS_GI#17_SA	AMP	
Sample Description including n	nass of available material	:		Sample Number: CR10 IS			
				Depth (m):	13.7		
				Sample Type:	IS		
Rea	son for non-conformance	2		Test ab	orted	Test aborted	
Sample not received				Rock Shear			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	5	x					
Other							
Dock cample is suffered	alywood, Cat area	الموطان	ring costs!	dation tost	ving the re-	sk shoar tost invelid	
Signed:	Seigfred R. (THIS COLISON	nsolidation test making the rock shear test invalid Position: Senior Laboratory Technician			
			ngineer requirer			,	
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Χ					
			Engineer comme	ents:			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 11/04/2023						
Lab actions complete s	igned:			Date:			

	Samp	le Non-	Conforman	ce Number: 17	2		
Technician Name: Peter Web	ster			Date:	06/04/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
AO5 Bretange Offshore GI				Location Name:	OWF_GI#15A_	SAMP	
Sample Description including n	nass of available material	:		Sample Number:	PU07_Q1		
0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				Depth (m):	pth (m): 10.50M		
Green Brown exteremely stiff S	sandy clay			Sample Type:	Quart		
Rea	son for non-conformance	е		Test abo	orted	Test aborted	
Sample not received				CRS			
Insufficient material for testing	5						
Sample lost in the laboratory							
Sample is unsuitable for testing	5	х					
Other							
*	_			mple is also too	o stiff to cu	t into the ring and when	
cut into the ring fractu	Peter Webs		eeueu	Position: advanced Lab tech			
Signed.	reter webs		ngineer requiren				
			<u> </u>				
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
		I	Engineer comme	ents:			
		I	Engineer comme	ents:			
		I	Engineer comme	ents:			
		I	Engineer comme	ents:			
			Engineer comme	ents:			
S	igned: Jordan Millman		Engineer comme		Project Engine	er	
S	igned: Jordan Millman Date: 11/04/2023		Engineer comme		Project Engine	er	

	Samp	le Non-	Conforman	ce Number: 17	3		
Technician Name: Seigfred R.	Technician Name: Seigfred R. Ocio			Date:	06/04/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsl	nore			Location Name:	OWF_GI#11_S	AMP	
Sample Description including m	nass of available material	:		Sample Number:	CR12 Q1		
				Depth (m):	13.9		
				Sample Type:	Q1		
Rea	son for non-conformance	9		Test abo	orted	Test aborted	
Sample not received				Rock Shear			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	}	х					
Other							
Insufficient leastly for	rock choos to t	20m n= \					
Insufficient length for Signed:	Seigfred R. (Position: Senior Laboratory Technician			
Signed.	Jeighteu II.		ngineer requirer				
			<u> </u>				
	Alternative sample		Specify:	Cancel Test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
		E	Ingineer comme	ents:			
Si	gned: Jordan Millman			Position:	Project Engine	er	
	Date: 19/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non	-Conformanc	e Number: 17	4		
Technician Name: Seigfred R.	Ocio			Date:	06/04/2023		
Project Name:				Project Number:	GMOP21-G-01	19	
GMOP21-G-019 -Bretagne offsh	nore			Location Name:	OWF_GI#14_9	SAMP	
Sample Description including m	nass of available materia	l:		Sample Number:	CR02 IS		
				Depth (m):	1.1		
				Sample Type:	IS		
Reas	son for non-conformance	e		Test abo	orted	Test aborted	
Sample not received				Rock Shear			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	<u> </u>	x					
Other							
lacufficient levels	no alle alle a ser trock (4	20mc \					
Insufficient length for I	Seigfred R.			Position: Senior Laboratory Technician			
Signed.	Seign cu ii.		Engineer requirem		Seriioi Eusoru	tory recrimetan	
			-ingilicer requirem				
	Alternative sample		Specify:	Cancel test			
	Alternative test	x	Update 29.06	: Change to Point	Load		
	Non standard test						
	Dismiss test						
			Engineer commer	nts:			
Si	gned: Oliver Sirett			Position:	Graduate Geo	technical Engineer	
	Date: 29/06/2023					<u> </u>	
Lab actions complete si				Date:			

	Samp	le Non-	Conforman	ce Number: 17	5		
Technician Name: Seigfred R.	Ocio			Date:	06/04/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsh	ore			Location Name:	OWF_GI#15A_	SAMP	
Sample Description including m	ass of available material	:		Sample Number:	CR07 IS		
				Depth (m):	8.4		
				Sample Type:	IS		
Reas	on for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				Rock Shear			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing		х					
Other							
Cohosius same same	brokon dunin	anla «	noveti e e e	ad maguldin - 1			
Cohesive-core sample Signed:	Seigfred R. (eparation at	Position: Senior Laboratory Technician			
Signeu.	Jeighteu II.		ngineer requirer		Semon Education	cory recrimeran	
			<u> </u>				
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test						
		ı	Engineer comme	ents:			
Sin	gned: Oliver Sirett			Position:	Graduate Geo	technical Engineer	
	Date: 29/06/2023			. 03/0/11.	3.22000		
Lab actions complete sig				Date:			

	Samp	le Non-	Conforman	ce Number: 17	5		
Technician Name: Seigfred R.	Ocio			Date:	06/04/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsl	nore			Location Name:	OWF_GI#15A_	SAMP	
Sample Description including m	nass of available material	:		Sample Number:	CR07 IS		
				Depth (m):	8.4		
				Sample Type:	IS		
Rea	son for non-conformance	2		Test ab	orted	Test aborted	
Sample not received				Rock Shear			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	3	х					
Other							
Cohosius	brokov dovice	nnla :-:	anavetis - v	ad maguidis = 1			
Cohesive-core sample Signed:	Seigfred R. (eparation ar	Position: Senior Laboratory Technician			
Signeu.	Jeigneu II.		ngineer requirer		Semon Education	cory recrimeran	
			<u> </u>				
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Х					
		I	Engineer comme	ents:			
Si	gned: Jordan Millman			Position:	Project Engine	eer	
	Date: 19/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non-	Conforman	ce Number: 17	6		
Technician Name: Jacob Mor	Fechnician Name: Jacob Morgan			Date:	18/04/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsl	nore			Location Name:	OWF_GI#24_SAMP		
Sample Description including m	nass of available material	:		Sample Number:	CR07 IS		
White very stiff chalky CLAY				Depth (m):	7		
White very still chalky CLAY				Sample Type: IS			
Rea	son for non-conformance	2		Test abo	orted	Test aborted	
Sample not received				Att			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	<u> </u>	х					
Other							
Insufficient material co	ould be washed th	rough 4	25 micron o	iovo for tost			
Signed:	Jacob Morg		25 1111010113	Position: Quality Technician			
5,8.15.1			ngineer requiren				
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	Χ					
			Engineer comme	ntc.			
			ingineer comme	iiits.			
Si	gned: Jordan Millman			Position:	Project Engine	er	
	Date: 19/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non-	Conforman	ce Number: 17	7		
Technician Name: Seigfred R.	Ocio			Date:	18/04/2023	18/04/2023	
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offsh	iore			Location Name:	OWF_GI#05A_	SAMP	
Sample Description including m	ass of available material	:		Sample Number:	CR04 IS		
				Depth (m):	3.6		
				Sample Type:	IS		
Reas	son for non-conformance)		Test ab	orted	Test aborted	
Sample not received				Rock Shear			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing	;	х					
Other							
Net ovitelle for Sold	hoontest (22	\	and the second	DI T			
Not suitable for Rock s Signed:	Seigfred R. (iative test:	Position: Senior Laboratory Technician			
o.g.r.cu.	Jeigh eu in		ngineer requirer		506. 2000.0		
	Alternative sample		Specify:	Change to Point L	oad Test		
	Alternative test	Χ					
	Non standard test						
	Dismiss test						
		E	Engineer comme	ents:			
Si	gned: Jordan Millman			Position:	Project Engine	eer	
	Date: 19/04/2023						
Lab actions complete si	gned:			Date:			

	Samp	le Non-	Conforman	ce Number: 17	8		
Technician Name: Seigfred R. Oci	0			Date:	18/04/2023	18/04/2023	
Project Name:				Project Number:	GMOP21-G-019	9	
GMOP21-G-019 -Bretagne offshore	!			Location Name:	OWF_GI#12_S	AMP	
Sample Description including mass	of available material	:		Sample Number:	CR14 Q1		
				Depth (m):	16.85		
				Sample Type:	Q1		
Reason	for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				UCS			
Insufficient material for testing							
Sample lost in the laboratory							
Sample is unsuitable for testing		х					
Other							
Mith as famous and NOTE OF	C. mak.m. v 21.1	f1100	hart 1:400)			
With reference to NCF106 Signed:	Seigfred R.		test (<160n	Position: Senior Laboratory Technician			
Signed.	Jeight ed K.		ngineer requirer		Serior Education	ory recommend	
			0				
Al	Iternative sample		Specify:	Character Balant			
	Alternative test	X		Change to Point L	oad Test		
		^		Change to Point Li	oad Test		
ľ	Non standard test	_		Change to Point L	oad Test		
iv				Change to Point L	oad Test		
ľ	Non standard test			Change to Point L	oad Test		
I de la constant de	Non standard test		ingineer comme		oad Test		
	Non standard test		Engineer comme		pad Test		
	Non standard test Dismiss test		ingineer comme	ents:			
Signe	Non standard test		ingineer comme	ents:	Project Enginee	er	

	Samp	le Non	-Conformanc	e Number: 17	9	
Technician Name: Seigfred R.	Ocio			Date:	18/04/2023	
Project Name:				Project Number:	GMOP21-G-019	
GMOP21-G-019 -Bretagne offs	nore			Location Name:	OWF_GI#14_SA	MP
Sample Description including n	nass of available materia	ıl:		Sample Number:	CR04 IS	
100mm length very stiff stiff cla				Depth (m): 3.3		
100mm length very still still ca	iy			Sample Type:	IS	
Rea	son for non-conformanc	:e		Test abo	orted	Test aborted
Sample not received				Rock Shear		
Insufficient material for testing						
Sample lost in the laboratory						
Sample is unsuitable for testing	3	х				
Other						
Not ovitable for Dook (·haan kaak aa haasis					
Not suitable for Rock S	Seigfred R.			Position:	Senior Laborato	nry Technician
Signed.	Jeightea K.		Ingineer requirem		Schlor Edborate	ny recimician
			ingineer requirem			
	Alternative sample		Specify:	Cancel test		
	Alternative test		Update 29.06	Cohesive sample -	Change to CIU	
	Non standard test		Update 19.07	•	· ·	
	Dismiss test	x				
			Engineer commer	nts:		
UPDATE 19/7/23-Insuffiicient n	naterial for CIU/Unsuital	ole for CIU	sample is very stif	f CLAY		
S	gned: Oliver Sirett		Oliver Sirett	Position:	Graduate Geote	echnical Engineer
	Date: 29/06/2023		19/07/2023			
Lab actions complete si			, , , ==	Date:		

	Samp	le Non-	-Conforman	ce Number: 18	0	
Technician Name: Seigfred R. (Ocio			Date:	18/04/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offsh	ore			Location Name:	OWF_GI#14A_	SAMP
Sample Description including ma	ass of available material	:		Sample Number:	CR10 B1	
				Depth (m):	11.05	
				Sample Type:	B1	
Reas	on for non-conformance	2		Test ab	orted	Test aborted
Sample not received				PLT		
Insufficient material for testing						
Sample lost in the laboratory						
Sample is unsuitable for testing		х				
Other						
No possible for PLT, no	n-intact core sam	ple				
Signed:	Seigfred R. (Position:	Senior Laborat	ory Technician
		E	ngineer requirer	nents		
	Alternative sample		Specify:	Cancel test		
	Alternative test					
	Non standard test					
	Dismiss test	Х				
			Engineer comme	ents:		
Sie	ned: Jordan Millman			Position:	Project Engine	er
	Date: 19/04/2023				, , , ,	
Lab actions complete sig				Date:		

	Samp	le Non-	-Conforman	ce Number: 18	1	
Technician Name: Seigfred R.	Ocio			Date:	18/04/2023	
Project Name:				Project Number:	GMOP21-G-01	19
GMOP21-G-019 -Bretagne offsh	nore			Location Name:	OWF_GI#17_S	SAMP
Sample Description including m	ass of available material	:		Sample Number:	PU14 Q1	
				Depth (m):	17.7	
				Sample Type:	Q1	
Reas	son for non-conformance	9		Test ab	orted	Test aborted
Sample not received				UCS		
Insufficient material for testing						
Sample lost in the laboratory						
Sample is unsuitable for testing		х				
Other						
Not possible for UCS to	oct (<160mm) ALT	Tost: 「	DI T			
Signed:	Seigfred R. (·LI	Position:	Senior Laborat	tory Technician
5,8.0.0			ngineer requirer			
			<u> </u>			
	Alternative sample		Specify:	Change to Point Lo	oad Test	
	Alternative test	Х				
	Non standard test					
	Dismiss test					
			Engineer comme	ents:		
Si	gned: Jordan Millman			Position:	Project Engine	eer
	Date: 19/04/2023				,	
Lab actions complete si				Date:		

	Samp	le Non-	-Conforman	ce Number: 18	2		
Technician Name: Seigfred R.	Ocio			Date:	18/04/2023		
Project Name:				Project Number:	GMOP21-G-01	9	
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#22_S	AMP	
Sample Description including n	nass of available material	:		Sample Number:	CR07 B1		
				Depth (m):	8		
	Name: Seigfred R. Ocio me: S-019 -Bretagne offshore Scription including mass of available material: Reason for non-conformance t received t material for testing t in the laboratory unsuitable for testing ian Comments, please include mass sable for PLT (non-intact) Signed: Seigfred R. Oc Alternative sample Alternative test Non standard test Dismiss test Signed: Jordan Millman			Sample Type:	B1		
Rea	son for non-conformance	9		Test ab	orted	Test aborted	
Sample not received				PLT			
Insufficient material for testing	:						
Sample lost in the laboratory							
Sample is unsuitable for testing	5	х					
Other							
Not suitable for DLT (n	on-intact)						
-		Ocio		Position:	Senior Laborat	ory Technician	
Ü	<u> </u>		ngineer requirer			,	
	Alternative sample		Specify:	Cancel test			
	Alternative test						
	Non standard test						
	Dismiss test	X					
			Engineer comme	ents:			
S	igned: Jordan Millman			Position:	Project Engine	er	
	Date: 19/04/2023						
Lab actions complete si				Date:			

	Samp	le Non-0	Conforman	ce Number: 18	3	
Technician Name: Seigfred R.	Ocio			Date:	18/04/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offsl	nore			Location Name:	OWF_GI#24_S	AMP
Sample Description including m	nass of available material	1:		Sample Number:	CR19 Q1	
				Depth (m):	19.8	
				Sample Type:	Q1	
Rea	son for non-conformance	9		Test ab	orted	Test aborted
Sample not received				UCS		
Insufficient material for testing	;					
Sample lost in the laboratory						
Sample is unsuitable for testing	3	х				
Other						
Not possible for UCS (<160mm) ALT+oc	t: Dock s	hoar/DIT			
Signed:	Seigfred R. (ileai/FLI	Position:	Senior Laborat	ory Technician
organisti.			gineer requirer			
	Alternative sample		Specify:	Change to Point Lo	oad Test or Roc	k Shear
	Alternative test	Х				
	Non standard test					
	Dismiss test					
		_				
		E	ngineer comme	ents:		
Si	igned: Jordan Millman			Position:	Project Engine	er
	Date: 19/04/2023					
Lab actions complete si	gned:			Date:		

	Samp	le Non-C	Conforman	ce Number: 18	4	
Technician Name: Seigfred R.	. Ocio			Date:	25/04/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#15A_	SAMP
Sample Description including n	nass of available material	:		Sample Number:	CR05 IS	
				Depth (m):	6.5	
				Sample Type:	IS	
Rea	son for non-conformance	9		Test abo	orted	Test aborted
Sample not received				Rock Shear		
Insufficient material for testing	5					
Sample lost in the laboratory						
Sample is unsuitable for testing	5	x				
Other						1
Not possible for Rock S		2		Dec 111	Control de con	Taribatata
Signed:	Seigfred R. (gineer requiren		Senior Laborat	tory Technician
		LII	gineer requirem	incines.		
	Alternative sample		Specify:	Change to Point Lo	oad test	
	Alternative test	x				
	Non standard test					
	Dismiss test					
		E	ngineer comme	nts:		
S	igned: Jordan Millman			Position:	Project Engine	eer
-	Date: 19/05/2023					
Lab actions complete s				Date:		

	Sampl	le Nor	n-Conformanc	e Number: 18	5	
Technician Name: Seigfred R.	Ocio			Date:	28/04/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offsl	nore			Location Name:	OWF_GI#05A_	SAMP
Sample Description including m	nass of available material	:		Sample Number:	CR04 Q1	
				Depth (m):	3.9	
				Sample Type:		
Rea	son for non-conformance	2		Test abo	orted	Test aborted
Sample not received				PLT		
Insufficient material for testing	;					
Sample lost in the laboratory						
Sample is unsuitable for testing	2	х				
Other						
Core sample is cohesiv	vo Alt tast: DSD/by	udro/A	++			
Signed:	Seigfred R. C			Position:	Senior Laborat	ory Technician
5,8,1,5,0	Jengineu III		Engineer requirem		2000.00	ory resimilation
	Alternative sample		Specify:	Change to PSD, At	terberg and CIU	J
	Alternative test	х				
	Non standard test		Update 19.07	Cancel CIU (classif	icaiton already	completed)
	Dismiss test		•	•	•	,
			Engineer commer	nts:		
LAB UPDATE-Sample unsuitable	e/insufficient for CIU test.					
Şi	igned: Jordan Millman		Oliver Sirett	Position:	Project Engine	er
3,	Date: 19/05/2023		19/07/2023		, -00 -1161101	-
Lab actions complete si			1,11,2320		19/07/2023	

	Samp	le Non-	Conforman	ce Number: 18	7	
Technician Name: Peter Web	ster			Date:	11/05/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offsh	nore			Location Name:	OWF_GI#04A_	SAMP
Sample Description including m	nass of available material	:		Sample Number:	PU01A B1	
				Depth (m):	0	
				Sample Type:	B1	
Rea	Name: Peter Webster me: 5-019 -Bretagne offshore scription including mass of available material: Reason for non-conformance t received t material for testing t in the laboratory unsuitable for testing ian Comments, please include mass too coarse to test at 70mm, able to Signed: Peter Webster Alternative sample Alternative test Non standard test			Test ab	orted	Test aborted
Sample not received				BE		
Insufficient material for testing						
Sample lost in the laboratory						
Sample is unsuitable for testing	5	х				
Other						
Sample too coarso to t	ast at 70mm abla	a to tost	the CID at 5	50mm rocomm	and to ser	an RF
			the CID at 5			oratory Technician
		Er	ngineer requirer			
	Alternative sample		Specify:	Change to CID at 5	0mm, cancel B	E
	Alternative test	х				
	Non standard test					
	Dismiss test					
		E	Engineer comme	ents:		
Si	gned: Jordan Millman			Position:	Project Engine	er
	Date: 19/05/2023			. 031(1311.	. 5,500 21161110	-
Lab actions complete si				Date:		

			NCF188			
Technician Name: Daniel Smith				Date:	16/05/2023	
Project Name: Bretagne				Project Number:	GMOP21-G-01	9
				Location Name:	OWF_GI#12_S	amp
Sample Description including mass of ava	ailable materia	l:		Sample Number:	CR16	
l'acceptant				Depth (m):	18.95	
Limestone				Sample Type:	IS	
Reason for no	n-conformanc	e		Test abo	orted	Test aborted
Sample not received				Rock shear		
Insufficient material for testing						
Sample lost in the laboratory						
Sample is unsuitable for testing						
Other						
Signed:	Daniel Sm	ith		Position:	Laboratory ma	nager
ÿ		En	gineer requiren		,	J.
Alterna	tive sample		Specify:	Change to Point Lo	oad Test	
Alte	rnative test	Х				
Non st	andard test					
ן	Dismiss test					
		_				
		E	ngineer comme	ents:		
		E	ngineer comme	ents:		
Cignadi. La	dan Millman	E	ngineer comme		Droiget Engin-	or.
Signed: Jon Date: 19/	dan Millman	E	ngineer comme		Project Engine	er

	Samp	le Non-	Conforman	ce Number: 18	9	
Technician Name: Peter Webs	iter			Date:	17/05/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offsh	ore			Location Name:	OWF_GI#15A_	SAMP
Sample Description including m	ass of available material	l:		Sample Number:	PU06 Q1	
Over the	Reason for non-conformance The treceived contracting the laboratory consultable for testing contraction and a corrupted contraction and a corrupt contr			Depth (m):	10.2	
Quart				Sample Type:	Q1	
Reas	on for non-conformance	2		Test abo	orted	Test aborted
Sample not received				Bender Element		
Insufficient material for testing						
Sample lost in the laboratory						
Sample is unsuitable for testing		х				
Other						
Signed:	Daniel Sm	ith		Position:	Laboratory ma	anager
		Er	ngineer requiren			-
	Alternative sample		Specify:	Cancel test		
	Alternative test					
	Non standard test					
	Dismiss test	х				
		-	Engineer comme	ents:		
Się	gned: Jordan Millman			Position:	Project Engine	eer
	Date: 19/05/2023					
Lab actions complete sig	gned:			Date:		

	Samp	le Non-	Conforman	ce Number: 19	0	
Technician Name: Peter Web	ster			Date:	23/05/2023	
Project Name:				Project Number:	GMOP21-G-01	9
GMOP21-G-019 -Bretagne offs	hore			Location Name:	OWF_GI#15A_	SAMP
Sample Description including n	nass of available material	l:		Sample Number:	PU12	
O t	Reason for non-conformance of received unsuitable for testing x cian Comments, please include mass of adata corrupted-unable to recover Signed: Daniel Smith			Depth (m):	18.1	
Quart				Sample Type:	Q1	
Rea	son for non-conformance	e		Test abo	orted	Test aborted
Sample not received				Bender Element		
Insufficient material for testing	;					
Sample lost in the laboratory						
Sample is unsuitable for testing	5					
Other		Х				
Signed:	Daniel Sm	uith		Position:	Laboratory ma	nager
Signeu.	Burner 3111		ngineer requiren		Laboratory ma	
	Alternative sample		Specify:	CANCEL TEST		
	Alternative test					
	Non standard test					
	Dismiss test					
			Engineer comme	ents:		
S	igned:			Position:		
	Date:					
Lab actions complete s	igned:			Date:		

Appendix B.2 Summary Table of Laboratory Tests

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Motor	Dulle	D=:			Atterberg Limit	S	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#01_SAMP	CR01	0.55		2.70	2.60										
OWF_GI#01_SAMP	CR02	2.4		2.54	2.31										
OWF_GI#01A_SAMP	CR01	0.35		2.79	2.54										
OWF_GI#01A_SAMP	CR02	1.4		2.81	2.73										
OWF_GI#01A_SAMP	CR03	1.7	14.0												
OWF_GI#01A_SAMP	CR05	3.2	16.0												
OWF_GI#01A_SAMP	CR06	4.2	19.0												
OWF_GI#01A_SAMP	CR07	5.2		2.40	1.88										
OWF_GI#01A_SAMP	CR09	7.45		2.35	2.03										
OWF_GI#01A_SAMP	CR10	8.65		2.43	2.17										
OWF_GI#01A_SAMP	CR10	9.3		2.78	2.67										
OWF_GI#01A_SAMP	CR11	10		2.66	2.58										
OWF_GI#01A_SAMP	CR12	11.5	10.0												
OWF_GI#01A_SAMP	CR13	12.5	15.0												
OWF_GI#01A_SAMP	PU02A	14.5		2.12	1.71					30.74	24.90	7.4			
OWF_GI#01A_SAMP	PU03	15		2.04	1.67					68.35	9.23				
OWF_GI#01A_SAMP	CR15	16.1		2.19	1.99										
OWF_GI#01A_SAMP	CR16	17.35	21.0												
OWF_GI#01A_SAMP	CR17	18.65		2.09	1.83										
OWF_GI#01A_SAMP	CR18	20	15.0												
OWF_GI#04_SAMP	PU01A	0								25.38	2.95				
OWF_GI#04_SAMP	PU01A	0.4		2.11	1.77										

CLASSIFICATION RESULTS

Ref: GMOP21-G-019-FAC

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Pulk	Dny			Atterberg Limits	S	Parti	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#04_SAMP	PU02	0.7											1.3	1.87	
OWF_GI#04_SAMP	PU02	1		1.96	1.64										
OWF_GI#04_SAMP	CR01	1.4	1.0												
OWF_GI#04_SAMP	CR03	4.1	6.0												
OWF_GI#04_SAMP	CR05	5.8	5.0												
OWF_GI#04_SAMP	CR06	6.4		2.51	2.46										
OWF_GI#04A_SAMP	PU01A	0.1		1.53	1.32										
OWF_GI#04A_SAMP	PU01A	0.2		1.59	1.37										
OWF_GI#04A_SAMP	CR02	1.5	0.0												
OWF_GI#04A_SAMP	CR03	2.5	2.0												
OWF_GI#04A_SAMP	CR04	3.5		2.11	2.05										
OWF_GI#04A_SAMP	CR06	5.5		2.76	2.56										
OWF_GI#04A_SAMP	PU03	8.3								44.71	16.90	4.4			
OWF_GI#04A_SAMP	PU03	8.5	19.0												
OWF_GI#04A_SAMP	PU04	9.4	27.0												
OWF_GI#04A_SAMP	PU05	9.8		2.07	1.74										
OWF_GI#04A_SAMP	PU05	10								59.73	11.02				
OWF_GI#04A_SAMP	PU05	10.1	22.0												
OWF_GI#04A_SAMP	PU06	11.3	27.0							58.79	12.28				
OWF_GI#04A_SAMP	PU07	11.8	12.0												
OWF_GI#04A_SAMP	CR10	11.9	24.0												
OWF_GI#04A_SAMP	CR10	12.05		2.18	1.76										

CLASSIFICATION RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Bulk	Dni			Atterberg Limits	3	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#04A_SAMP	PU08	13.9	23.0												
OWF_GI#04A_SAMP	PU09	14.2								72.84	7.58				
OWF_GI#04A_SAMP	PU09	14.5	23.0												
OWF_GI#04A_SAMP	PU10	15	19.0												
OWF_GI#04A_SAMP	PU11	15.4	21.0												
OWF_GI#04A_SAMP	PU12	15.8	22.0	2.06	1.69										
OWF_GI#04A_SAMP	PU13	16.1	31.0												
OWF_GI#04A_SAMP	PU14	14.4	18.0												
OWF_GI#04A_SAMP	CR12	14.5		2.59	2.11										
OWF_GI#04A_SAMP	CR13	16.4		2.18	1.91										
OWF_GI#04A_SAMP	CR14	18.5		2.38	2.00										
OWF_GI#04A_SAMP	CR15	19.7		2.35	2.18										
OWF_GI#05_SAMP	PU01A	0.2	16.0												
OWF_GI#05_SAMP	PU01A	0.3	5.0												
OWF_GI#05A_SAMP	PU01A	0								36	5.84				
OWF_GI#05A_SAMP	PU01A	0.1		1.97	1.66										
OWF_GI#05A_SAMP	CR01	0.8		2.56	2.39										
OWF_GI#05A_SAMP	CR01	1	5.0												
OWF_GI#05A_SAMP	CR02	1.7	8.0												
OWF_GI#05A_SAMP	CR03	2.7		2.55	2.41										
OWF_GI#05A_SAMP	CR03	3.4	22.0												
OWF_GI#05A_SAMP	CR04	3.65		2.59	2.35										

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Bulk	Dny			Atterberg Limits	S	Part	icle Size Distrik	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#05A_SAMP	CR04	3.9		2.12	1.46		100	28	72	0	72.91	22.0	(9,)	(9,)	(73)
OWF_GI#05A_SAMP	CR05	4.5					56	28	28	0.08	87.26	27.6			
OWF_GI#05A_SAMP	CR05	4.7		2.01	1.51										
OWF_GI#05A_SAMP	CR05	4.95		2.00	1.50										
OWF_GI#05A_SAMP	PU02	5.5					52	23	29	1.24	90.35	18.7			
OWF_GI#05A_SAMP	PU02	5.6	33.0												
OWF_GI#05B_SAMP	CR01	5.6		2.40	2.11										
OWF_GI#05B_SAMP	CR02	6.5					61	23	38	12.93	76.33	16.4			
OWF_GI#05B_SAMP	CR02	6.8		2.25	1.64										
OWF_GI#05B_SAMP	CR03	7.5								28.12	61.67	16.6			
OWF_GI#05B_SAMP	CR03	7.6					87	24	63						
OWF_GI#05B_SAMP	CR03	7.85		2.02	1.55										
OWF_GI#05B_SAMP	CR03	8		2.17	1.89										
OWF_GI#05B_SAMP	CR04	8.5					62	32	30	0	94.98	17.8			
OWF_GI#05B_SAMP	CR04	8.65		2.27	1.97										
OWF_GI#05B_SAMP	CR05	9.5					52	28	24	0.085	82.74	13.9			
OWF_GI#05B_SAMP	CR05	10.2		2.06	1.67										
OWF_GI#08_CPT	CR01	1.55		2.34	2.05										
OWF_GI#08_CPT	CR02	2.6		2.45	2.17										
OWF_GI#08_CPT	CR03	4		2.53											
OWF_GI#08_CPT	CR06	6.55	13.0												
OWF_GI#08_CPT	CR07	3		1.93	1.64										

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Pulk	Dn/			Atterberg Limit	s	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content	Bulk Density	Dry Density	Specific Gravity	LL	PL	PI	Gravel Content	Fines Content	Clay Content	Min. Density	Max. Density	Relative Density
		(111)	(%)	(Mg/m ³)	(Mg/m ³)	Clavity	(%)	(%)	(%)	(%)	(%)	(%)	Density (Mg/m³)	Density (Mg/m³)	Density (%)
OWF_GI#08_CPT	CR08	9.5	12.0												
OWF_GI#08_CPT	CR09	10.75		2.17	1.89										
OWF_GI#08_CPT	CR10	11.55		2.62	2.20										
OWF_GI#08_CPT	CR10	11.65		2.12	1.81										
OWF_GI#08_CPT	CR11	13		2.30	1.95										
OWF_GI#08_CPT	CR12	13.65		1.94	1.60										
OWF_GI#08_CPT	CR12	14.05		2.47	2.25										
OWF_GI#08_CPT	CR13	14.6		2.37	2.21										
OWF_GI#08_CPT	PU02	15.7		1.53	1.11										
OWF_GI#08_CPT	PU02	16		1.60	1.16										
OWF_GI#08_CPT	CR14	16.7		1.89	1.59										
OWF_GI#08_CPT	CR15	17.65		2.35	2.18										
OWF_GI#08_CPT	CR16	18.7		2.22	2.16										
OWF_GI#08_CPT	CR17	19.75		2.63	2.48										
OWF_GI#08_CPT	CR17	20.45		2.10	1.88										
OWF_GI#08_CPT	CR18	20.65	37.0												
OWF_GI#09_SAMP	CR01	0.2		2.48	2.02										
OWF_GI#09_SAMP	CR02	1.2		2.63	2.29										
OWF_GI#09_SAMP	CR04	3.1	16.0												
OWF_GI#09_SAMP	CR05	4.1	16.0												
OWF_GI#09_SAMP	CR06	5.1	12.0												
OWF_GI#09_SAMP	CR07	6	9.0												

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Location: A05 OWF



		Test	Water	Bulk	Dry			Atterberg Limits	S	Part	icle Size Distrik	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#09_SAMP	CR09	8.3		1.74	1.54										
OWF_GI#09_SAMP	CR10	9.3		2.34	2.11										
OWF_GI#09_SAMP	CR11	10.35		1.73	1.45										
OWF_GI#09_SAMP	CR12	11		2.11	1.74										
OWF_GI#09_SAMP	CR13	12	22.0												
OWF_GI#09_SAMP	CR14	13		1.79	1.49										
OWF_GI#09_SAMP	CR15	14		2.70	2.62										
OWF_GI#09_SAMP	CR16	15.1		1.84	1.82										
OWF_GI#09_SAMP	CR17	16.1	12.0												
OWF_GI#09_SAMP	CR18	17.1	12.0												
OWF_GI#09_SAMP	CR19	18.1	8.0												
OWF_GI#09_SAMP	CR20	19.1	12.0												
OWF_GI#09_SAMP	CR20	19.4		1.60	1.34										
OWF_GI#09_SAMP	CR21	20.1	15.0												
OWF_GI#09_SAMP	CR21	20.3		1.96	1.57										
OWF_GI#11_SAMP	PU01B	0								2.61	3.96		1.28	1.68	
OWF_GI#11_SAMP	PU01B	0.2		2.01	1.62										
OWF_GI#11_SAMP	PU01B	0.4		1.86	1.51										
OWF_GI#11_SAMP	PU01B	0.6	24.0												
OWF_GI#11_SAMP	PU02A	1.1		1.65	1.50										
OWF_GI#11_SAMP	PU02A	1.4	11.0												
OWF_GI#11_SAMP	PU02A	1.3		1.86	1.58										

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Project Name: A05 Bretagne Offshore GI

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Location: A05 OWF



		Test	\\/_ +	Bulk	D			Atterberg Limit	s	Part	icle Size Distrib	oution		Relative Densit	.y
Borehole	Sample No.	Depth (m)	Water Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#11_SAMP	PU03	2											1.25	1.77	
OWF_GI#11_SAMP	PU03	2.1		1.79	1.46										
OWF_GI#11_SAMP	PU03	2.3	23.0												
OWF_GI#11_SAMP	PU06	4.05	25.0												
OWF_GI#11_SAMP	CR04	4.55		2.09											
OWF_GI#11_SAMP	CR05	5.55	22.0												
OWF_GI#11_SAMP	CR06	7.1	7.0												
OWF_GI#11_SAMP	CR08	9.05		2.41	2.11										
OWF_GI#11_SAMP	CR09	9.8		2.23	1.89										
OWF_GI#11_SAMP	PU07	11.6	22.0												
OWF_GI#11_SAMP	PU08	12.25								72.85	7.11				
OWF_GI#11_SAMP	PU08	12.3		1.73	1.42										
OWF_GI#11_SAMP	CR11	13.2		1.82	1.53										
OWF_GI#11_SAMP	CR12	13.9		1.92	1.68										
OWF_GI#11_SAMP	CR13	14.7		2.22	1.93										
OWF_GI#11_SAMP	CR13	15		2.14	1.89										
OWF_GI#11_SAMP	CR14	16.1	15.0												
OWF_GI#11_SAMP	CR15	16.5		2.62	2.24										
OWF_GI#11_SAMP	CR15	17		2.50	2.16										
OWF_GI#11_SAMP	CR16	17.5		2.66	2.22										
OWF_GI#11_SAMP	CR16	17.85					30	21	9	16.37	19.83	9.2			
OWF_GI#11_SAMP	CR16	17.9		1.68	1.34										

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Location: A05 OWF



		Test	Water	Bulk	Dry			Atterberg Limits	s	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#11_SAMP	CR17	18.5		2.55	2.22										
OWF_GI#11_SAMP	CR17	18.75					31	17	14	23.43	47.29	14.8			
OWF_GI#11_SAMP	CR17	19	26.0												
OWF_GI#11_SAMP	CR18	19.7		2.20	1.88										
OWF_GI#12_SAMP	P01	0								0.55	4.42				
OWF_GI#12_SAMP	P01	0.1		1.86	1.50										
OWF_GI#12_SAMP	PU01	0.5											1.22	1.62	
OWF_GI#12_SAMP	PU01A	0.5											1.22	1.62	
OWF_GI#12_SAMP	PU01A	0.6		1.86	1.52										
OWF_GI#12_SAMP	PU01A	0.9		1.93	1.64										
OWF_GI#12_SAMP	PU02	1.1		1.79	1.39										
OWF_GI#12_SAMP	PU02	1.2								32.91	1.96				
OWF_GI#12_SAMP	PU02	1.4		1.76	1.59										
OWF_GI#12_SAMP	PU03	1.55	7.0												
OWF_GI#12_SAMP	PU03	1.7		1.83	1.53										
OWF_GI#12_SAMP	PU04	2.1		1.81	1.45										
OWF_GI#12_SAMP	PU05	2.4		1.80	1.47										
OWF_GI#12_SAMP	PU07	3.9								76.92	9.21				
OWF_GI#12_SAMP	PU07	4	11.0												
OWF_GI#12_SAMP	CR02	4.35		2.59	2.23										
OWF_GI#12_SAMP	CR05	7.45		2.67	2.38										
OWF_GI#12_SAMP	CR06	8.36	1.0												

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Location: A05 OWF



		Test	Mater	Dulk	Dmi			Atterberg Limit	S	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Water Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#12_SAMP	CR07	9.62	1.0	2.73	2.65										
OWF_GI#12_SAMP	CR09	12		2.33	1.96										
OWF_GI#12_SAMP	CR10	13.85	20.0												
OWF_GI#12_SAMP	CR12	14.35	7.0												
OWF_GI#12_SAMP	CR12	14.6	20.0												
OWF_GI#12_SAMP	CR12	14.75		1.58	1.48										
OWF_GI#12_SAMP	PU10	16.3		1.34	1.14										
OWF_GI#12_SAMP	CR14	16.4	17.0												
OWF_GI#12_SAMP	PU11	18.3	13.0												
OWF_GI#12_SAMP	CR16	19		2.45	2.36										
OWF_GI#12_SAMP	CR17	19.55		2.10	2.06										
OWF_GI#13_CPT	PU01	0.1	18.0												
OWF_GI#13_CPT	CR01	1.4		2.11	1.97										
OWF_GI#13_CPT	CR02	2.4		1.92	1.66										
OWF_GI#13_CPT	CR03	3.3		2.42	1.36										
OWF_GI#13_CPT	CR04	4		2.61											
OWF_GI#13_CPT	CR05	5.45		2.55	2.38										
OWF_GI#13_CPT	CR06	6.25	19.0												
OWF_GI#13_CPT	CR07	7.15	10.0												
OWF_GI#13_CPT	CR09	9.1		2.44	2.12										
OWF_GI#13_CPT	CR10	10.6		2.39	1.98										
OWF_GI#13_CPT	CR10	10.75		2.60	1.32										

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Location: A05 OWF



		Test	Water	Dulk	Dny			Atterberg Limits	s	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#13_CPT	CR12	12.05	18.0												
OWF_GI#13_CPT	CR13	13		1.68	1.09										
OWF_GI#13_CPT	CR13	13.1		2.21	2.03										
OWF_GI#13_CPT	CR14	14.1		1.99	1.76										
OWF_GI#13_CPT	CR15	15.3		2.33	1.99										
OWF_GI#13_CPT	CR16	16.6		2.18	1.91										
OWF_GI#13_CPT	CR17	17.5		2.11	1.69										
OWF_GI#13_CPT	CR18	18.75		2.14	1.84										
OWF_GI#13_CPT	CR19	19.7	14.0												
OWF_GI#14_SAMP	CR01	0.3	12.0												
OWF_GI#14_SAMP	CR02	1.3		2.21	1.99										
OWF_GI#14_SAMP	CR03	2.2	7.0	2.73	2.55										
OWF_GI#14_SAMP	CR03	2.4	12.0												
OWF_GI#14_SAMP	CR04	3		2.51	2.01										
OWF_GI#14_SAMP	CR04	3.8		2.75	2.25										
OWF_GI#14_SAMP	PU01	4		2.21	1.91										
OWF_GI#14A_SAMP	CR01	0.45		2.27	2.08										
OWF_GI#14A_SAMP	CR02	2.3		2.25	1.97										
OWF_GI#14A_SAMP	CR04	4.6					48	23	25	10.73	34.27	16.5			
OWF_GI#14A_SAMP	CR08	8.5					35	25	10	0.15	31.01	10.2			
OWF_GI#14A_SAMP	CR08	8.25		2.61	2.33										
OWF_GI#14A_SAMP	CR08	8.75		2.61	2.33										

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Location: A05 OWF



		Test	Water	Bulk	Dny			Atterberg Limits	S	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#14A_SAMP	CR08	9.05		1.88	1.52										
OWF_GI#14A_SAMP	PU02	9.55		2.08	1.63										
OWF_GI#14A_SAMP	PU02	9.6	28.0				38	25	13	0.01	41.79	13.4			
OWF_GI#14A_SAMP	CR09	10.2		2.56	2.44										
OWF_GI#14A_SAMP	CR10	11.05		2.68	2.55										
OWF_GI#14A_SAMP	CR11	12.05		2.92	2.65										
OWF_GI#14A_SAMP	CR11	12.55		2.78	2.60										
OWF_GI#14A_SAMP	CR12	12.4		2.51	2.16										
OWF_GI#14A_SAMP	CR13	14.5		2.50	2.21										
OWF_GI#14A_SAMP	CR13	14.7		2.65	2.39										
OWF_GI#14A_SAMP	PU08	18.7								6.46	6.42				
OWF_GI#14A_SAMP	PU08	18.8		1.75	1.37										
OWF_GI#14A_SAMP	PU09	19.3		1.56	1.28										
OWF_GI#14A_SAMP	PU10	19.6		1.65	1.31										
OWF_GI#14A_SAMP	PU11	20.05		1.62	1.31										
OWF_GI#15A_SAMP	CR01	0.1		2.31	2.03										
OWF_GI#15A_SAMP	PU02	2					46	22	24	25.09	56.37	26.2			
OWF_GI#15A_SAMP	PU02	2.1		1.80	1.28										
OWF_GI#15A_SAMP	PU03	2.55		1.51	1.17										
OWF_GI#15A_SAMP	CR03	3.3	11.0												
OWF_GI#15A_SAMP	CR03	3.05	18.0												
OWF_GI#15A_SAMP	CR04	4								82.27	4.58				

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		Test	Mater	Bulk	Dmr			Atterberg Limits	s	Part	icle Size Distrib	oution		Relative Densit	.y
Borehole	Sample No.	Depth (m)	Water Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#15A_SAMP	CR04	4.1	17.0												
OWF_GI#15A_SAMP	PU04	5		1.90	1.56										
OWF_GI#15A_SAMP	PU05	5.5	25.0												
OWF_GI#15A_SAMP	CR05	6	20.0												
OWF_GI#15A_SAMP	CR06	7					41	24	17	0.52	78.84	16.9			
OWF_GI#15A_SAMP	CR06	7.4		2.04	1.47										
OWF_GI#15A_SAMP	CR07	8.6		2.13	1.85		61	26	35	0.02	78.00	14.3			
OWF_GI#15A_SAMP	CR08	9.3	38.0							8.57	56.37	7.4			
OWF_GI#15A_SAMP	CR08	9.4		1.82	1.36										
OWF_GI#15A_SAMP	PU06	10					91	27	64	0.16	97.73	26.6			
OWF_GI#15A_SAMP	PU06	10.2		1.90	1.56										
OWF_GI#15A_SAMP	PU07	10.5		2.31	1.53										
OWF_GI#15A_SAMP	PU07	10.6		2.07	1.39										
OWF_GI#15A_SAMP	PU08	11.05	53.0												
OWF_GI#15A_SAMP	PU08	11.3		2.13	1.61										
OWF_GI#15A_SAMP	PU09	11.55	5.0												
OWF_GI#15A_SAMP	CR09	12.1					57	29	28	1.39	91.30	14.4			
OWF_GI#15A_SAMP	CR09	12.8		1.94	1.41										
OWF_GI#15A_SAMP	CR10	13.2	28.0	1.85	1.36										
OWF_GI#15A_SAMP	CR10	13.4					53	20	33	13.11	52.78	10.6			
OWF_GI#15A_SAMP	CR11	14.1		1.32	1.08										
OWF_GI#15A_SAMP	CR12	15					48	21	27	4.8	75.93	23.1			

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Bulk	Des			Atterberg Limit	S	Part	icle Size Distrib	oution		Relative Densit	.y
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#15A_SAMP	CR12	15.5		2.05	1.50										
OWF_GI#15A_SAMP	CR13	16.25					61	24	37	0.02	95.52	33.8			
OWF_GI#15A_SAMP	CR13	16.5		1.97	1.54										
OWF_GI#15A_SAMP	CR14	17.3		2.03	1.48										
OWF_GI#15A_SAMP	PU12	18					65	25	40	0.14	95.23	41.6			
OWF_GI#15A_SAMP	PU12	18.1		2.08	1.66										
OWF_GI#15A_SAMP	PU13	18.6	28.0												
OWF_GI#15A_SAMP	CR15	18.6					43	28	15	85.12	8.54				
OWF_GI#15A_SAMP	CR15	19.2		1.70	1.23										
OWF_GI#15A_SAMP	CR16	19.5					48	25	23	3.88	78.33	29.4			
OWF_GI#15A_SAMP	CR16	19.9		1.84	1.39										
OWF_GI#17_SAMP	PU01	0		1.75	1.49					0.38	14.90	7.3			
OWF_GI#17_SAMP	PU01	0.6		1.64	1.38										
OWF_GI#17_SAMP	PU02	0.8		1.79	1.47										
OWF_GI#17_SAMP	PU02	1.3		1.92	1.56										
OWF_GI#17_SAMP	PU04	2.5								0.5	5.44				
OWF_GI#17_SAMP	PU04	2.6		1.92	1.54										
OWF_GI#17_SAMP	PU05	2.9											1.32	1.74	
OWF_GI#17_SAMP	PU05	3.1		1.93	1.60										
OWF_GI#17_SAMP	PU06A	3.5								16.33	8.45				
OWF_GI#17_SAMP	PU06A	3.7		1.69	1.38										
OWF_GI#17_SAMP	PU07	4.2		1.89	1.49										

CLASSIFICATION RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Bulk	Dry			Atterberg Limits	3	Part	icle Size Distrik	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#17_SAMP	PU08	4.7		1.75	1.39										
OWF_GI#17_SAMP	CR02	5.6		2.32	1.92										
OWF_GI#17_SAMP	CR02	5.8								68.87	16.10	6.6			
OWF_GI#17_SAMP	CR03	6.25		2.02	1.57										
OWF_GI#17_SAMP	CR04	7.1	7.0												
OWF_GI#17_SAMP	CR05	7.6		2.21	1.97										
OWF_GI#17_SAMP	CR06	8.5	13.0												
OWF_GI#17_SAMP	PU10	10.5		2.02	1.60										
OWF_GI#17_SAMP	PU10	10.6								18.89	25.80	7.3			
OWF_GI#17_SAMP	PU11	11.5	21.0												
OWF_GI#17_SAMP	PU12	11.8	14.0												
OWF_GI#17_SAMP	CR08	11.8		2.02	1.73										
OWF_GI#17_SAMP	CR09	13.1		2.04	1.73										
OWF_GI#17_SAMP	CR10	14.2		1.79	1.40										
OWF_GI#17_SAMP	CR11	15		1.82	1.49										
OWF_GI#17_SAMP	CR12	15.9	28.0												
OWF_GI#17_SAMP	PU13	16.7								36.94	13.01				
OWF_GI#17_SAMP	PU13	16.8		1.94	1.52										
OWF_GI#17_SAMP	PU14	17.7		2.00	1.57										
OWF_GI#17_SAMP	PU15	18.4	24.0												
OWF_GI#17_SAMP	CR13	19.1	18.0												
OWF_GI#17_SAMP	CR14	19.9	29.0												

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Bulk	Dni			Atterberg Limits	3	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#20_CPT	CR01	5.4	18.0												
OWF_GI#20_CPT	CR01	5.6		2.00	1.61										
OWF_GI#20_CPT	CR02	12	17.0												
OWF_GI#20_CPT	CR03	18.7		2.47	2.08										
OWF_GI#20_CPT	CR03	18.9		1.94	1.60										
OWF_GI#20_CPT	CR04	19.5		1.92	1.54										
OWF_GI#20_SAMP	PU01	0								0.64	11.42				
OWF_GI#20_SAMP	PU01	0.1		1.90	1.53										
OWF_GI#20_SAMP	PU01	0.5		1.82	1.51										
OWF_GI#20_SAMP	PU02	0.9		1.87	1.56										
OWF_GI#20_SAMP	PU02	1.2		1.70	1.39										
OWF_GI#20_SAMP	PU03	1.7		1.77	1.47										
OWF_GI#20_SAMP	PU05	2.4		1.74	1.40										
OWF_GI#20_SAMP	PU07	3.2								0.81	4.33				
OWF_GI#20_SAMP	PU07	3.4		1.71	1.38										
OWF_GI#20_SAMP	PU08	4		1.85	1.52										
OWF_GI#20_SAMP	PU11	6.7								76.47	4.56				
OWF_GI#20_SAMP	PU11	7	24.0												
OWF_GI#20_SAMP	PU12	8.2		1.99	1.50										
OWF_GI#20_SAMP	PU13	9.4		1.88	1.65										
OWF_GI#20_SAMP	PU14	9.7								7.6	21.60	5.1			
OWF_GI#20_SAMP	PU14	10.4		1.89	1.51										

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Dulk	Dny			Atterberg Limit	ts	Part	icle Size Distril	oution		Relative Densit	.y
Borehole	Sample No.	Depth (m)	Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#20_SAMP	PU15	11.2		1.82	1.38										
OWF_GI#20_SAMP	CR03	11.7		2.07	1.88										
OWF_GI#20_SAMP	CR04	12	32.0												
OWF_GI#20_SAMP	PU17	13								49.7	6.88				
OWF_GI#20_SAMP	PU17	13.35		1.82	1.44										
OWF_GI#20_SAMP	PU18	13.8								70	5.41				
OWF_GI#20_SAMP	PU18	14.6		2.03	1.64										
OWF_GI#20_SAMP	PU19	15		2.61	2.19										
OWF_GI#20_SAMP	CR05	15.55		2.00	1.50										
OWF_GI#20_SAMP	CR06	16.4		2.11	1.69										
OWF_GI#20_SAMP	PU20	18		2.18	1.72										
OWF_GI#20_SAMP	PU21	18.3	16.0												
OWF_GI#20_SAMP	CR08	19		1.90	1.48										
OWF_GI#22_CPT	CR01	5.25		2.07	2.03										
OWF_GI#22_CPT	CR03	6.1	7.0												
OWF_GI#22_CPT	CR04	7.1	28.0												
OWF_GI#22_CPT	CR05	8	5.0												
OWF_GI#22_CPT	CR06	9		2.58	2.30										
OWF_GI#22_CPT	CR07	11.35	3.0												
OWF_GI#22_CPT	CR08	12.65		2.42	2.14										
OWF_GI#22_CPT	CR09	13.6	29.0												
OWF_GI#22_CPT	CR10	14.2		2.31	2.10										

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Bulk	Dny			Atterberg Limits	S	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#22_CPT	CR11	15.1		2.38	2.02										
OWF_GI#22_CPT	CR12	16		1.87	1.47										
OWF_GI#22_SAMP	PU01	0								2.04	5.24		1.27	1.73	
OWF_GI#22_SAMP	PU01	0.1		1.98	1.65										
OWF_GI#22_SAMP	PU01	0.3		1.73	1.60										
OWF_GI#22_SAMP	PU02	0.8		1.72	1.37										
OWF_GI#22_SAMP	PU06	2.7								2.25	3.03				
OWF_GI#22_SAMP	PU06	2.9		1.88	1.62										
OWF_GI#22_SAMP	PU06	3		1.89	1.59										
OWF_GI#22_SAMP	PU07	3.3								5.82	4.38				
OWF_GI#22_SAMP	PU07	3.4		1.82	1.54										
OWF_GI#22_SAMP	PU07	3.5		1.83	1.57										
OWF_GI#22_SAMP	PU08	3.9		2.07	1.70										
OWF_GI#22_SAMP	PU08	4.1								0.2	7.45				
OWF_GI#22_SAMP	PU08	4.2	22.0												
OWF_GI#22_SAMP	CR03	5.5	15.0												
OWF_GI#22_SAMP	CR07	8		2.25	2.05										
OWF_GI#22_SAMP	CR08	8.5	5.0												
OWF_GI#22_SAMP	CR09	9.6		2.62	2.30										
OWF_GI#22_SAMP	CR11	11.8		2.46	2.39										
OWF_GI#22_SAMP	CR12	12.5		2.73	2.53										
OWF_GI#22_SAMP	CR12	12.7	8.0												

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Bulk	Dry			Atterberg Limit	s	Part	icle Size Distrib	oution		Relative Densit	у
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Specific Gravity	LL (%)	PL (%)	PI (%)	Gravel Content (%)	Fines Content (%)	Clay Content (%)	Min. Density (Mg/m³)	Max. Density (Mg/m³)	Relative Density (%)
OWF_GI#22_SAMP	PU13	13.5					32	25	7	4.4	60.40	29.1	, , ,		
OWF_GI#22_SAMP	PU13	13.6	27.0	2.01	1.43										
OWF_GI#22_SAMP	PU13	13.8		1.98	1.40										
OWF_GI#22_SAMP	CR13	14.3	9.0												
OWF_GI#22_SAMP	CR15	16.3	9.0												
OWF_GI#22_SAMP	PU15	18.2		1.86	1.48										
OWF_GI#22_SAMP	PU15	18.3		2.10	1.67										
OWF_GI#22_SAMP	PU15	18.4								16.27	22.39	4.8			
OWF_GI#22_SAMP	PU15	18.5	26.0												
OWF_GI#22_SAMP	PU16	18.9		1.98	1.60										
OWF_GI#22_SAMP	PU16	19.2	24.0												
OWF_GI#22_SAMP	PU16	19.3		2.09	1.69										
OWF_GI#22_SAMP	PU17	19.9	20.0												
OWF_GI#22_SAMP	PU17	19.95		2.02	1.68										
OWF_GI#24_SAMP	PU01	0								1.97	17.47	7.9			
OWF_GI#24_SAMP	PU01	0.1		1.89	1.45										
OWF_GI#24_SAMP	PU01	0.4								3.08	49.19	24.6			
OWF_GI#24_SAMP	PU01	0.5		1.71	1.31										
OWF_GI#24_SAMP	CR01	1.1					23	16	7	11.8	42.72	26.0			
OWF_GI#24_SAMP	CR01	1.2		2.06	1.82										
OWF_GI#24_SAMP	CR02	2.2	5.0												
OWF_GI#24_SAMP	CR03	3.2		2.84	2.51										

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



		Test	Water	Bulk	Dn/			Atterberg Limit	ts	Parti	icle Size Distrib	oution		Relative Densit	ıy
Borehole	Sample No.	Depth (m)	Content (%)	Density (Mg/m³)	Dry Density (Mg/m³)	Specific Gravity	LL	PL	PI	Gravel Content	Fines Content	Clay Content	Min. Density	Max. Density	Relative Density
		()	(70)	(IVIg/III)	(IVIG/III)	,	(%)	(%)	(%)	(%)	(%)	(%)	(Mg/m ³)	(Mg/m ³)	(%)
OWF_GI#24_SAMP	CR04	4.35		1.92	1.49										
OWF_GI#24_SAMP	CR05	5.2		2.21	2.07										
OWF_GI#24_SAMP	CR06	6.1		2.08	1.84										
OWF_GI#24_SAMP	CR07	7								7.11	66.73	35.1			
OWF_GI#24_SAMP	CR07	7.5		2.04	1.79										
OWF_GI#24_SAMP	CR07	7.7		2.65	2.23										
OWF_GI#24_SAMP	CR08	8	14.0												
OWF_GI#24_SAMP	CR10	10		2.11	1.94										
OWF_GI#24_SAMP	CR11	11	10.0												
OWF_GI#24_SAMP	CR12	12.1		2.41	1.90										
OWF_GI#24_SAMP	CR13	13		2.69	2.56										
OWF_GI#24_SAMP	CR14	14	23.0												
OWF_GI#24_SAMP	CR15	15	22.0												
OWF_GI#24_SAMP	CR16	16.1		3.02	2.72										
OWF_GI#24_SAMP	CR17	17	9.0												
OWF_GI#24_SAMP	PU06	18	14.0							61.38	13.37				
OWF_GI#24_SAMP	PU07	18.5	11.0												
OWF_GI#24_SAMP	CR18	18.7	10.0												
OWF_GI#24_SAMP	CR19	19.8		1.81	1.55										

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RTE_DGEC Client:

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

A05 OWF Location:



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Borehole / Location	Sample No.	Test Depth (m)	Test Type	Test Stage Number	ф' (°)	c' (kPa)	Su (kPa)	8 ₅₀ (%)	K0	Effective Stress (kPa)	Initial Bulk Density (Mg/m3)	Initial Moisture Content (%)	Deviator Stress (kPa)	Axial Strain at Failure (%)	Failure Mode	Minor Principle Stress at Failure (kPa)	Major Principle Stress at Failure (kPa)	
OWF_GI#04_SAMP	PU02	0.70	CD	1	38.50	4					1.80	9.89	98	11.2	Compound	25.0	122.9	
OWF_GI#04_SAMP	PU02	0.70	CD	2	38.50	4					1.80	9.97	186	5.7	Compound	50.0	236.0	
OWF_GI#04_SAMP	PU02	0.70	CD	3	38.50	4					1.80	9.74	344	3.3	Compound	100.3	443.9	
OWF_GI#04A_SAMP	PU01A	0.00	CD	1	41.60	0				25	1.46	10	85	15.0	Compound	25.0	110.0	
OWF_GI#04A_SAMP	PU01A	0.00	CD	2	41.60	0				50	1.46	10	189	4.3	Compound	50.0	239.2	
OWF_GI#04A_SAMP	PU01A	0.00	CD	3	41.60	0				100	1.48	10	402	5.3	Compound	100.0	501.9	
OWF_GI#11_SAMP	PU02A	1.15	CD	1	36.80	4					1.74	11	87	2.6	Compound	25.0	112.0	
OWF_GI#11_SAMP	PU02A	1.15	CD	2	36.80	4					1.74	10	156	4.0	Compound	50.0	206.2	
OWF_GI#11_SAMP	PU02A	1.15	CD	3	36.80	4					1.74	10	308	3.3	Compound	100.1	407.9	
OWF_GI#11_SAMP	PU03	2.00	CD	1	23.90	10	31			25	1.619.69	567404426	55962	12.5	Plastic	25.0	87.0	
OWF_GI#11_SAMP	PU03	2.00	CD	2	23.90	10	49			50	1.60	10	98	15.0	Plastic	50.0	147.7	
OWF_GI#11_SAMP	PU03	2.00	CD	3	23.90	10	106			100	1.61	10	212	12.0	Compound	100.0	265.0	
OWF_GI#12_SAMP	PU02	1.20	CD	1	36.70	5					1.75	10	91	6.2	Compound	25.3	116.3	
OWF_GI#12_SAMP	PU02	1.20	CD	2	36.70	5					1.75	10	169	7.3	Compound	50.0	218.7	
OWF_GI#12_SAMP	PU02	1.20	CD	3	36.70	5					1.75	10	313	2.6	Compound	100.0	413.1	
OWF_GI#12_SAMP	PU05	2.30	CD	1	32.50	3				25	1.6210.1	413133832	08678	15.0	Plastic	25.0	103.0	
OWF_GI#12_SAMP	PU05	2.30	CD	2	32.50	3				50	1.61	10	114	12.2	Compound	50.0	163.7	
OWF_GI#12_SAMP	PU05	2.30	CD	3	32.50	3				100	1.62	10	246	9.7	Plastic	100.0	346.0	
OWF_GI#15A_SAMP	PU06	10.20	CU	1			370			100	2.12	19.7	740	18.3	Compound	266.0	1007.0	
OWF_GI#15A_SAMP	PU08	11.30	CU	1			393			115	2.15	19.1	785	10.8	Compound	290.0	1074.0	
OWF_GI#15A_SAMP	PU12	18.10	CU	1			239			175	2.08	24.7	478	4.3	Compound	109.0	587.0	
OWF_GI#17_SAMP	PU02	0.80	CD	1	39.50	4					1.62	10	100	3.2	Compound	25.0	125.0	

8₅₀ - Strain at half max. deviator stress; CU - Isotropically Consolidated Undrained Triaxial; CAUc/e - Anisotropically Consolidated Undrained Triaxial (compression/extension); CIDC - Consolidated Drained Triaxial

Note: The letter 'R' denotes a remoulded/residual test

STRENGTH RESULTS - TRIAXIAL EFFECTIVE ¹ Local Geodetic Datum: ETRS89 / UTMN30, Actual Coordinates

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Test Type	Test Stage Number	ф' (°)	c' (kPa)	Su (kPa)	8 ₅₀ (%)	K0	Effective Stress (kPa)	Initial Bulk Density (Mg/m3)	Initial Moisture Content (%)	Deviator Stress (kPa)	Axial Strain at Failure (%)	Failure Mode	Minor Principle Stress at Failure (kPa)	Major Principle Stress at Failure (kPa)	
OWF_GI#17_SAMP	PU02	0.80	CD	2	39.50	4					1.62	10	185	1.6	Compound	50.0	235.0	
OWF_GI#17_SAMP	PU02	0.80	CD	3	39.50	4					1.62	10	359	3.3	Compound	100.0	459.0	
OWF_GI#20_SAMP	PU02	0.80	CD	1	33.90	0				25	1.70	10	62	2.6	Plastic	25.0	87.0	
OWF_GI#20_SAMP	PU02	0.80	CD	2	33.90	0				50	1.70	10	122	2.5	Plastic	50.0	172.0	
OWF_GI#20_SAMP	PU02	0.80	CD	3	33.90	0				100	1.71	10	254	9.9	Plastic	100.0	354.4	
OWF_GI#20_SAMP	PU05	2.20	CD	1	33.30	1					1.54	10	59	2.0	Compound	25.0	84.2	
OWF_GI#20_SAMP	PU05	2.20	CD	2	33.30	1					1.54	9.92	121	1.4	Compound	50.0	171.0	
OWF_GI#20_SAMP	PU05	2.20	CD	3	33.30	1					1.54	9.92	241	3.5	Compound	100.0	341.4	
OWF_GI#22_SAMP	PU06	2.70	CD	1	32.70	2				25	1.79	10	65	8.8	Plastic	25.0	90.0	
OWF_GI#22_SAMP	PU06	2.70	CD	2	32.70	2				50	1.80	10	122	2.5	Plastic	50.0	172.1	
OWF_GI#22_SAMP	PU06	2.70	CD	3	32.70	2				100	1.80	10	241	4.1	Plastic	100.0	341.0	
OWF_GI#22_SAMP	PU08	3.90	CD	1	30.00	7					1.87	10	73	5.3	Plastic	25.0	98.4	
OWF_GI#22_SAMP	PU08	3.90	CD	2	30.00	7					1.87	10	124	19.8	Plastic	50.0	174.2	
OWF_GI#22_SAMP	PU08	3.90	CD	3	30.00	7					1.87	10	225	13.9	Plastic	100.0	325.4	

8₅₀ - Strain at half max. deviator stress; CU - Isotropically Consolidated Undrained Triaxial; CAUc/e - Anisotropically Consolidated Undrained Triaxial (compression/extension); CIDC - Consolidated Drained Triaxial

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#01_SAMP	CR01	0.30	24100		79	60	1.17	Axial	5.60	GM Lab			
OWF_GI#01_SAMP	CR01	0.55	17200		78	35	1.08	Axial	5.33	Offshore			
OWF_GI#01_SAMP	CR02	1.40	3550	78	0	75.46	1.20	Diametral	0.80	GM Lab			
OWF_GI#01_SAMP	CR04	3.50	34200			78.8	1.19	Diametral	7.40	GM Lab			
OWF_GI#01A_SAMP	CR01	0.00	25800			75.3	1.17	Diametral	6.00	GM Lab			
OWF_GI#01A_SAMP	CR02	0.70	39800			77.15	1.19	Diametral	8.90	GM Lab			
OWF_GI#01A_SAMP	CR05	3.20	6250		76.6	66.2	1.19	Axial	1.40	GM Lab			
OWF_GI#01A_SAMP	CR06	4.20	3100			75	1.14	Diametral	0.80	GM Lab			
OWF_GI#01A_SAMP	CR07	5.20	4100			76	1.14	Diametral	1.00	GM Lab			
OWF_GI#01A_SAMP	CR07	5.20	3000		76	55.1	1.15	Axial	0.70	GM Lab			
OWF_GI#01A_SAMP	CR07	5.35	1500		76	34	1.06	Axial	0.48	Offshore			
OWF_GI#01A_SAMP	CR09	7.20	13550			77.5	1.17	Diametral	3.10	GM Lab			
OWF_GI#01A_SAMP	CR09	7.45	7800	78	0	74.94	1.20	Diametral	1.70	GM Lab			
OWF_GI#01A_SAMP	CR09	7.60	5800		77	40	1.11	Axial	1.64	Offshore			
OWF_GI#01A_SAMP	CR09	7.65	13550	77.5	0	70.98	1.17	Diametral	3.10	GM Lab			
OWF_GI#01A_SAMP	CR10	9.25	33500		77	45	1.14	Axial	8.63	Offshore			
OWF_GI#01A_SAMP	CR10	9.30	28050		78.4	52	1.16	Axial	6.70	GM Lab			
OWF_GI#01A_SAMP	CR10	9.30	22700			78.4	1.20	Diametral	4.80	GM Lab			
OWF_GI#01A_SAMP	CR11	9.90	4000		78	55	1.19	Axial	0.87	Offshore			
OWF_GI#01A_SAMP	CR11	10.00	26850			77.8	1.16	Diametral	6.50	GM Lab			
OWF_GI#01A_SAMP	CR11	10.00	23750			77.8	1.20	Diametral	5.00	GM Lab			
OWF_GI#01A_SAMP	CR12	11.00	5450		77.41	68.5	1.20	Axial	1.10	GM Lab			

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#01A_SAMP	CR15	16.10	6800		78	65	1.24	Axial	1.30	Offshore			
OWF_GI#01A_SAMP	CR16	17.00	2150			79	1.20	Diametral	0.50	GM Lab			
OWF_GI#01A_SAMP	CR16	17.35	1600		76	30	1.03	Axial	0.57	Offshore			
OWF_GI#01A_SAMP	CR17	18.50	2850		76.8	51	1.12	Axial	0.80	GM Lab			
OWF_GI#01A_SAMP	CR17	18.65	1400		77	45	1.14	Axial	0.36	Offshore			
OWF_GI#04_SAMP	CR03	3.80	17600		56	48	1.04	Axial	6.10	GM Lab			
OWF_GI#04_SAMP	CR06	6.40	19650			79.55	1.22	Diametral	4.00	GM Lab			
OWF_GI#04_SAMP	CR06	6.40	9550		79.55	32	1.03	Axial	3.50	GM Lab			
OWF_GI#04A_SAMP	CR04	3.50	15650	79	0	69.42	1.16	Diametral	3.80	GM Lab			
OWF_GI#04A_SAMP	CR04	3.70	11300			91.64	1.25	Diametral	2.10	GM Lab			
OWF_GI#04A_SAMP	CR04	3.70	11650		98.64	63	1.28	Axial	2.00	GM Lab			
OWF_GI#04A_SAMP	CR05	4.60	13110	112		78	1.22	Diametral	2.63	Offshore			
OWF_GI#04A_SAMP	CR06	5.85	24960	112		78	1.22	Diametral	5.01	Offshore			
OWF_GI#04A_SAMP	CR10	11.90	1100		78	68	1.25	Axial	0.20	Offshore			
OWF_GI#04A_SAMP	CR10	12.05	750			77	1.18	Diametral	0.20	GM Lab			
OWF_GI#04A_SAMP	PU12	15.80	763		78	76	1.28	Axial	0.13	Offshore			
OWF_GI#04A_SAMP	PU13	16.10	238		75	45	1.13	Axial	0.06	Offshore			
OWF_GI#04A_SAMP	CR12	16.50	3010		73	43	1.11	Axial	0.84	Offshore			
OWF_GI#04A_SAMP	CR13	17.40	6700			76.93	1.19	Diametral	1.50	GM Lab			
OWF_GI#04A_SAMP	CR13	17.40	5500		76.93	65.8	1.22	Axial	1.10	GM Lab			
OWF_GI#04A_SAMP	CR13	17.55	1230		74	45	1.13	Axial	0.33	Offshore			
OWF_GI#04A_SAMP	CR14	18.00	6350			76.5	1.17	Diametral	1.50	GM Lab			_

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ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#04A_SAMP	CR14	18.00	8650		76.5	53	1.14	Axial	2.20	GM Lab			
OWF_GI#04A_SAMP	CR14	18.15	5.89		77	52	1.17	Axial	0.00	Offshore			
OWF_GI#04A_SAMP	CR14	18.20	6800	78	0	74.94	1.20	Diametral	1.50	GM Lab			
OWF_GI#04A_SAMP	CR14	18.40	6350	76.5	0	71.11	1.17	Diametral	1.50	GM Lab			
OWF_GI#04A_SAMP	CR15	19.00	12400			79.35	1.21	Diametral	2.60	GM Lab			
OWF_GI#04A_SAMP	CR15	19.00	17500		79.35	65	1.22	Axial	3.50	GM Lab			
OWF_GI#04A_SAMP	CR15	19.25	12400	79.35	0	76.11	1.21	Diametral	2.60	GM Lab			
OWF_GI#04A_SAMP	CR15	19.70	6060		78	43	1.13	Axial	1.60	Offshore			
OWF_GI#05A_SAMP	CR01	0.50	11700		76.8	52	1.09	Axial	3.40	GM Lab			
OWF_GI#05A_SAMP	CR01	0.50	9600			76.8	1.19	Diametral	2.10	GM Lab			
OWF_GI#05A_SAMP	CR01	0.70	13990		76.5	54.7	1.19	Axial	3.11	Offshore			
OWF_GI#05A_SAMP	CR01	0.80	9600	76.8	0	73.32	1.19	Diametral	2.10	GM Lab			
OWF_GI#05A_SAMP	CR01	1.00	7670		77.1	50.4	1.17	Axial	1.81	Offshore			
OWF_GI#05A_SAMP	CR02	1.50	7550		78.37	37	1.04	Axial	2.60	GM Lab			
OWF_GI#05A_SAMP	CR02	1.70	12600		75.4	58.8	1.20	Axial	2.68	Offshore			
OWF_GI#05A_SAMP	CR03	2.50	800			76	1.20	Diametral	0.20	GM Lab			
OWF_GI#05A_SAMP	CR03	2.50	300		76	52	1.14	Axial	0.10	GM Lab			
OWF_GI#05A_SAMP	CR03	2.90	800	76	0	74.48	1.20	Diametral	0.20	GM Lab			
OWF_GI#05A_SAMP	CR04	3.55	1400		77	58	1.20	Axial	0.30	Offshore			
OWF_GI#05A_SAMP	CR04	3.60	4350		75.75	47.89	1.13	Axial	1.10	GM Lab			
OWF_GI#05B_SAMP	CR01	5.50	8050		48.8	63	1.09	Axial	2.40	GM Lab			
OWF_GI#05B_SAMP	CR01	6.00	9700		77	76	1.28	Axial	1.66	Offshore			

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#05B_SAMP	CR02	6.95	400		77	70	1.26	Axial	0.07	Offshore			
OWF_GI#05B_SAMP	CR04	8.65	3200		78	74	1.27	Axial	0.55	Offshore			
OWF_GI#05B_SAMP	CR05	10.40	400		78	74	1.27	Axial	0.07	Offshore			
OWF_GI#08_CPT	CR02	2.50	8800		78	69	1.25	Axial	1.61	Offshore			
OWF_GI#08_CPT	CR03	3.95	7800	98		80	1.24	Diametral	1.51	Offshore			
OWF_GI#08_CPT	CR07	7.65	1480		75	38	1.09	Axial	0.44	Offshore			
OWF_GI#08_CPT	CR10	11.50	5220		70	60	1.19	Axial	1.16	Offshore			
OWF_GI#08_CPT	CR11	13.00	2720		70	45	1.11	Axial	0.75	Offshore			
OWF_GI#08_CPT	CR12	13.65	600		77	50	1.16	Axial	0.14	Offshore			
OWF_GI#08_CPT	CR12	14.10	5100		80	80	1.30	Axial	0.82	Offshore			
OWF_GI#08_CPT	CR13	14.55	5500		80	45	1.15	Axial	1.38	Offshore			
OWF_GI#08_CPT	CR15	17.50	14200	112		78	1.22	Diametral	2.85	Offshore			
OWF_GI#08_CPT	CR16	18.60	13100	110		78	1.22	Diametral	2.63	Offshore			
OWF_GI#08_CPT	CR17	19.75	12500		78	66	1.24	Axial	2.37	Offshore			
OWF_GI#08_CPT	CR17	20.40	3100		78	48	1.16	Axial	0.75	Offshore			
OWF_GI#09_SAMP	CR01	0.00	20450			77.8	1.20	Diametral	4.30	GM Lab			
OWF_GI#09_SAMP	CR02	1.00	8550		78.85	62	1.20	Axial	1.80	GM Lab			
OWF_GI#09_SAMP	CR04	3.00	11600		77.7	64	1.12	Axial	3.10	GM Lab			
OWF_GI#09_SAMP	CR09	8.30	4000		78.5	60	1.15	Axial	1.00	GM Lab			
OWF_GI#09_SAMP	CR12	11.00	9650			79.5	1.16	Diametral	2.30	GM Lab			
OWF_GI#09_SAMP	CR12	11.00	9950		79.5	42	1.07	Axial	3.10	GM Lab			
OWF_GI#09_SAMP	CR15	14.10	15500			79	1.20	Diametral	3.40	GM Lab			
OWF_GI#09_SAMP OWF_GI#09_SAMP OWF_GI#09_SAMP OWF_GI#09_SAMP	CR02 CR04 CR09 CR12 CR12	1.00 3.00 8.30 11.00	8550 11600 4000 9650 9950		77.7 78.5	62 64 60 79.5 42	1.20 1.12 1.15 1.16 1.07	Axial Axial Axial Diametral Axial	1.80 3.10 1.00 2.30 3.10	GM Lab GM Lab GM Lab GM Lab GM Lab			

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



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Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#09_SAMP	CR16	15.00	32050			79.5	1.18	Diametral	7.20	GM Lab			
OWF_GI#09_SAMP	CR16	15.00	30250		79.5	50	1.12	Axial	8.20	GM Lab			
OWF_GI#09_SAMP	CR16	15.30	32050	79.5	0	72.44	1.18	Diametral	7.20	GM Lab			
OWF_GI#09_SAMP	CR20	19.40	1650			75.7	1.17	Diametral	0.40	GM Lab			
OWF_GI#09_SAMP	CR21	20.00	2350		78	72	1.22	Axial	0.50	GM Lab			
OWF_GI#09_SAMP	CR21	20.00	1600			76.71	1.12	Diametral	0.40	GM Lab			
OWF_GI#09_SAMP	CR21	20.30	2200	77.5	0	73.65	1.19	Diametral	0.50	GM Lab			
OWF_GI#09_SAMP	CR21	20.50	1600	76.71	0	64.95	1.12	Diametral	0.40	GM Lab			
OWF_GI#11_SAMP	CR04	4.50	16250			77.43	1.19	Diametral	3.60	GM Lab			
OWF_GI#11_SAMP	CR04	4.50	9850		77.43	46	1.11	Axial	2.70	GM Lab			
OWF_GI#11_SAMP	CR08	8.50	1850		76.5	71	1.20	Axial	0.40	GM Lab			
OWF_GI#11_SAMP	CR09	9.50	2700			75	1.17	Diametral	0.60	GM Lab			
OWF_GI#11_SAMP	CR09	9.50	2300		75	42	1.07	Axial	0.70	GM Lab			
OWF_GI#11_SAMP	CR11	12.50	3750			76.7	1.16	Diametral	0.90	GM Lab			
OWF_GI#11_SAMP	CR11	12.85	6500	78.2	0	73.99	1.19	Diametral	1.40	GM Lab			
OWF_GI#11_SAMP	CR11	13.00	3750	76.7	0	70.06	1.16	Diametral	0.90	GM Lab			
OWF_GI#11_SAMP	CR12	13.90	7750			67.18	1.14	Diametral	2.00	GM Lab			
OWF_GI#11_SAMP	CR12	13.90	7100		79.18	73.1	1.19	Axial	1.60	GM Lab			
OWF_GI#11_SAMP	CR14	15.50	7050		79.75	54.05	1.19	Axial	1.60	GM Lab			
OWF_GI#11_SAMP	CR16	17.50	7600			77.8	1.18	Diametral	1.70	GM Lab			
OWF_GI#11_SAMP	CR16	17.50	5450		77.8	35	1.05	Axial	1.90	GM Lab			
OWF_GI#11_SAMP	CR16	17.95	7600	77.8	0	72.74	1.18	Diametral	1.70	GM Lab			

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ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory						
CR02	4.30	18850			83.5	1.20	Diametral	4.00	GM Lab						
CR02	4.30	11750		83.3	54	1.17	Axial	2.80	GM Lab						
CR02	4.35	11250		75	58	1.20	Axial	2.43	Offshore						
CR05	7.30	12000			84.36	1.19	Diametral	2.60	GM Lab						
CR05	7.30	8300		84.3	58	1.20	Axial	1.80	GM Lab						
CR06	8.30	14550		79.39	53	1.17	Axial	3.40	GM Lab						
CR06	8.30	28150			79.39	1.21	Diametral	5.80	GM Lab						
CR07	9.62	26300		80	60	1.22	Axial	5.26	Offshore						
CR08	10.30	23050			79	1.20	Diametral	4.90	GM Lab						
CR08	10.30	19500		79	47	1.11	Axial	5.40	GM Lab						
CR09	12.05	6650			73	1.17	Diametral	1.50	GM Lab						
CR09	12.05	5950		73	55	1.13	Axial	1.50	GM Lab						
CR09	12.08	4900		80	60	1.22	Axial	0.98	Offshore						
CR12	14.30	2100		80	60	1.22	Axial	0.42	Offshore						
CR14	16.85	10300	146.35		78.3	1.15	Diametral	2.50	GM Lab						
CR14	16.85	7300		78.3	65	1.21	Axial	1.50	GM Lab						
CR16	18.30	26900			79.4	1.20	Diametral	5.70	GM Lab						
CR16	18.30	11850		79.4	32	1.02	Axial	4.40	GM Lab						
CR16	18.30	34950			79.4	1.20	Diametral	7.50	GM Lab						
CR16	18.95	4510	157		80	1.24	Diametral	0.87	Offshore						
CR17	19.30	22750		77.82	58	1.08	Axial	6.90	GM Lab						
CR17	19.45	2830	95		80	1.24	Diametral	0.55	Offshore						
	CR02 CR02 CR02 CR05 CR05 CR06 CR06 CR07 CR08 CR09 CR09 CR09 CR12 CR14 CR14 CR16 CR16 CR16 CR16 CR16 CR17	No. Depth (m) CR02 4.30 CR02 4.30 CR02 4.35 CR05 7.30 CR05 7.30 CR06 8.30 CR06 8.30 CR07 9.62 CR08 10.30 CR08 10.30 CR09 12.05 CR09 12.05 CR09 12.08 CR12 14.30 CR14 16.85 CR14 16.85 CR16 18.30 CR16 18.30 CR16 18.30 CR16 18.30 CR16 18.30 CR16 18.95 CR17 19.30	No. Depth (m) Load (N) CR02 4.30 18850 CR02 4.30 11750 CR02 4.35 11250 CR05 7.30 12000 CR05 7.30 8300 CR06 8.30 14550 CR06 8.30 28150 CR07 9.62 26300 CR08 10.30 23050 CR08 10.30 19500 CR09 12.05 6650 CR09 12.05 5950 CR09 12.08 4900 CR12 14.30 2100 CR14 16.85 7300 CR14 16.85 7300 CR16 18.30 11850 CR16 18.30 34950 CR16 18.95 4510 CR17 19.30 22750	No. Depth (m) Load (N) (mm) CR02 4.30 18850 11750 CR02 4.35 11250 11250 CR05 7.30 12000 12000 CR05 7.30 8300 8300 CR06 8.30 14550 14550 CR06 8.30 28150 28150 CR07 9.62 26300 26300 CR08 10.30 19500 19500 CR09 12.05 6650 6650 CR09 12.05 5950 5950 CR09 12.08 4900 4900 CR12 14.30 2100 146.35 CR14 16.85 7300 7300 7300 CR16 18.30 11850 11850 7300 CR16 18.30 34950 34510 157 CR16 18.95 4510 157 CR17 19.30 22750 750	No. Depth (m) Load (N) (mm) (mm) CR02 4.30 18850 83.3 CR02 4.35 11250 75 CR05 7.30 12000 75 CR05 7.30 8300 84.3 CR06 8.30 14550 79.39 CR06 8.30 28150 80 CR07 9.62 26300 80 CR08 10.30 23050 79 CR08 10.30 19500 79 CR09 12.05 6650 79 CR09 12.05 5950 73 CR09 12.08 4900 80 CR12 14.30 2100 80 CR14 16.85 7300 78.3 CR16 18.30 26900 79.4 CR16 18.30 34950 79.4 CR16 18.95 4510 157 CR17 19.30 22750 <td< td=""><td>No. Depth (m) Load (N) (mm) (mm) or Length (mm) CR02 4.30 18850 83.5 CR02 4.30 11750 83.3 54 CR02 4.35 11250 75 58 CR05 7.30 12000 84.36 84.36 CR05 7.30 8300 84.3 58 CR06 8.30 14550 79.39 53 CR06 8.30 28150 79.39 53 CR07 9.62 26300 80 60 CR08 10.30 23050 79 47 CR08 10.30 19500 79 47 CR09 12.05 6650 73 55 CR09 12.05 5950 73 55 CR09 12.08 4900 80 60 CR14 16.85 10300 146.35 78.3 CR16 18.30 26900 79.4</td><td>No. Depth (m) Load (N) (mm) (mm) or Length (mm) Ratio CR02 4.30 18850 83.5 1.20 CR02 4.30 11750 83.3 54 1.17 CR02 4.35 11250 75 58 1.20 CR05 7.30 12000 84.36 1.19 CR05 7.30 8300 84.3 58 1.20 CR06 8.30 14550 79.39 53 1.17 CR06 8.30 28150 79.39 1.21 CR07 9.62 26300 80 60 1.22 CR08 10.30 23050 79 47 1.11 CR08 10.30 19500 79 47 1.11 CR09 12.05 6650 73 55 1.13 CR09 12.08 4900 80 60 1.22 CR12 14.30 2100 80 60</td><td>No. Depth (m) Load (N) (mm) (mm) action (mm) Type CR02 4.30 18850 83.5 1.20 Diametral CR02 4.30 11750 83.3 54 1.17 Axial CR02 4.35 11250 75 58 1.20 Axial CR05 7.30 12000 84.36 1.19 Diametral CR05 7.30 8300 84.3 58 1.20 Axial CR06 8.30 14550 79.39 53 1.17 Axial CR06 8.30 28150 79.39 1.21 Diametral CR07 9.62 26300 80 60 1.22 Axial CR08 10.30 23050 79 47 1.11 Axial CR08 10.30 19500 79 47 1.11 Axial CR09 12.05 6650 73 55 1.13 Axial <tr< td=""><td>No. Depth (m) Load (N) (mm) (mm) Chength (mm) Ratio (mm) Type (MPa) CR02 4.30 18850 83.5 1.20 Diametral 4.00 CR02 4.30 11750 83.3 54 1.17 Axial 2.80 CR02 4.35 11250 75 58 1.20 Axial 2.43 CR05 7.30 12000 84.36 1.19 Diametral 2.60 CR05 7.30 8300 84.3 58 1.20 Axial 1.80 CR06 8.30 14550 79.39 53 1.17 Axial 3.40 CR06 8.30 28150 79.39 1.21 Diametral 5.80 CR07 9.62 26300 80 60 1.22 Axial 5.26 CR08 10.30 19500 79 47 1.11 Axial 1.50 CR09 12.05 6650 73 55</td><td>No. Depth (m) Load (N) (mm) (mm) Ratio (mm) Type (MPa) CR02 4.30 18850 83.5 1.20 Diametral 4.00 GM Lab CR02 4.30 11750 83.3 54 1.17 Axial 2.80 GM Lab CR02 4.35 11250 75 58 1.20 Axial 2.43 Offshore CR05 7.30 12000 84.3 1.19 Diametral 2.60 GM Lab CR05 7.30 8300 84.3 58 1.20 Axial 1.80 GM Lab CR06 8.30 14550 79.39 53 1.17 Axial 3.40 GM Lab CR06 8.30 28150 79.39 1.21 Diametral 5.80 GM Lab CR07 9.62 26300 80 60 1.22 Axial 5.26 Offshore CR08 10.30 19500 79 47 1.11</td><td>No. Depth (m) Load (m) (mm) Length (mm) Ratio (mm) Type (MPa) (MPa) CR02 4:30 18850 83.5 1:20 Diametral Diametral 4.00 GM Lab GM Lab CR02 4:30 11750 83.3 54 1.17 Axial 2:80 GM Lab CR02 4:35 11250 75 58 1:20 Axial 2:43 Offshore CR05 7:30 12000 84:36 1:19 Diametral 2:60 GM Lab CR05 7:30 8300 84:3 58 1:20 Axial 1:80 GM Lab CR06 8:30 14550 79:39 53 1:17 Axial 3:40 GM Lab CR06 8:30 14550 79:39 1:21 Diametral 5:80 GM Lab CR07 9:62 26300 80 60 1:22 Axial 5:26 Offshore CR08 10:30 19500 79</td><td> No. Chepth Chod Chepth Chepth</td><td> No. Depth Chy Ch</td><td> No. Composition Composit</td><td>No. Depth (N) (N) (N) (N) (N) (N) (N) (N) (N) (N)</td></tr<></td></td<>	No. Depth (m) Load (N) (mm) (mm) or Length (mm) CR02 4.30 18850 83.5 CR02 4.30 11750 83.3 54 CR02 4.35 11250 75 58 CR05 7.30 12000 84.36 84.36 CR05 7.30 8300 84.3 58 CR06 8.30 14550 79.39 53 CR06 8.30 28150 79.39 53 CR07 9.62 26300 80 60 CR08 10.30 23050 79 47 CR08 10.30 19500 79 47 CR09 12.05 6650 73 55 CR09 12.05 5950 73 55 CR09 12.08 4900 80 60 CR14 16.85 10300 146.35 78.3 CR16 18.30 26900 79.4	No. Depth (m) Load (N) (mm) (mm) or Length (mm) Ratio CR02 4.30 18850 83.5 1.20 CR02 4.30 11750 83.3 54 1.17 CR02 4.35 11250 75 58 1.20 CR05 7.30 12000 84.36 1.19 CR05 7.30 8300 84.3 58 1.20 CR06 8.30 14550 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CR07 9.62 26300 80 60 1.22 Axial 5.26 CR08 10.30 19500 79 47 1.11 Axial 1.50 CR09 12.05 6650 73 55</td><td>No. Depth (m) Load (N) (mm) (mm) Ratio (mm) Type (MPa) CR02 4.30 18850 83.5 1.20 Diametral 4.00 GM Lab CR02 4.30 11750 83.3 54 1.17 Axial 2.80 GM Lab CR02 4.35 11250 75 58 1.20 Axial 2.43 Offshore CR05 7.30 12000 84.3 1.19 Diametral 2.60 GM Lab CR05 7.30 8300 84.3 58 1.20 Axial 1.80 GM Lab CR06 8.30 14550 79.39 53 1.17 Axial 3.40 GM Lab CR06 8.30 28150 79.39 1.21 Diametral 5.80 GM Lab CR07 9.62 26300 80 60 1.22 Axial 5.26 Offshore CR08 10.30 19500 79 47 1.11</td><td>No. Depth (m) Load (m) (mm) Length (mm) Ratio (mm) Type (MPa) (MPa) CR02 4:30 18850 83.5 1:20 Diametral Diametral 4.00 GM Lab GM Lab CR02 4:30 11750 83.3 54 1.17 Axial 2:80 GM Lab CR02 4:35 11250 75 58 1:20 Axial 2:43 Offshore CR05 7:30 12000 84:36 1:19 Diametral 2:60 GM Lab CR05 7:30 8300 84:3 58 1:20 Axial 1:80 GM Lab CR06 8:30 14550 79:39 53 1:17 Axial 3:40 GM Lab CR06 8:30 14550 79:39 1:21 Diametral 5:80 GM Lab CR07 9:62 26300 80 60 1:22 Axial 5:26 Offshore CR08 10:30 19500 79</td><td> No. Chepth Chod Chepth Chepth</td><td> No. Depth Chy Ch</td><td> No. Composition Composit</td><td>No. Depth (N) (N) (N) (N) (N) (N) (N) (N) (N) (N)</td></tr<>	No. Depth (m) Load (N) (mm) (mm) Chength (mm) Ratio (mm) Type (MPa) CR02 4.30 18850 83.5 1.20 Diametral 4.00 CR02 4.30 11750 83.3 54 1.17 Axial 2.80 CR02 4.35 11250 75 58 1.20 Axial 2.43 CR05 7.30 12000 84.36 1.19 Diametral 2.60 CR05 7.30 8300 84.3 58 1.20 Axial 1.80 CR06 8.30 14550 79.39 53 1.17 Axial 3.40 CR06 8.30 28150 79.39 1.21 Diametral 5.80 CR07 9.62 26300 80 60 1.22 Axial 5.26 CR08 10.30 19500 79 47 1.11 Axial 1.50 CR09 12.05 6650 73 55	No. Depth (m) Load (N) (mm) (mm) Ratio (mm) Type (MPa) CR02 4.30 18850 83.5 1.20 Diametral 4.00 GM Lab CR02 4.30 11750 83.3 54 1.17 Axial 2.80 GM Lab CR02 4.35 11250 75 58 1.20 Axial 2.43 Offshore CR05 7.30 12000 84.3 1.19 Diametral 2.60 GM Lab CR05 7.30 8300 84.3 58 1.20 Axial 1.80 GM Lab CR06 8.30 14550 79.39 53 1.17 Axial 3.40 GM Lab CR06 8.30 28150 79.39 1.21 Diametral 5.80 GM Lab CR07 9.62 26300 80 60 1.22 Axial 5.26 Offshore CR08 10.30 19500 79 47 1.11	No. Depth (m) Load (m) (mm) Length (mm) Ratio (mm) Type (MPa) (MPa) CR02 4:30 18850 83.5 1:20 Diametral Diametral 4.00 GM Lab GM Lab CR02 4:30 11750 83.3 54 1.17 Axial 2:80 GM Lab CR02 4:35 11250 75 58 1:20 Axial 2:43 Offshore CR05 7:30 12000 84:36 1:19 Diametral 2:60 GM Lab CR05 7:30 8300 84:3 58 1:20 Axial 1:80 GM Lab CR06 8:30 14550 79:39 53 1:17 Axial 3:40 GM Lab CR06 8:30 14550 79:39 1:21 Diametral 5:80 GM Lab CR07 9:62 26300 80 60 1:22 Axial 5:26 Offshore CR08 10:30 19500 79	No. Chepth Chod Chepth Chepth	No. Depth Chy Ch	No. Composition Composit	No. Depth (N)

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ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#13_CPT	CR01	1.40	4220	130		80	1.24	Diametral	0.81	Offshore			
OWF_GI#13_CPT	CR04	4.00	13040	102		77	1.21	Diametral	2.67	Offshore			
OWF_GI#13_CPT	CR05	5.45	8180	110		80	1.24	Diametral	1.58	Offshore			
OWF_GI#13_CPT	CR09	9.10	4030		75	60	1.21	Axial	0.85	Offshore			
OWF_GI#13_CPT	CR10	10.60	4620		70	55	1.16	Axial	1.10	Offshore			
OWF_GI#13_CPT	CR10	10.75	3850		70	40	1.08	Axial	1.17	Offshore			
OWF_GI#13_CPT	CR12	12.50	1600		75.7	52.3	1.17	Axial	0.37	Offshore			
OWF_GI#13_CPT	CR13	13.05	2900		78	71	1.26	Axial	0.52	Offshore			
OWF_GI#13_CPT	CR14	14.15	1900		78	56	1.20	Axial	0.41	Offshore			
OWF_GI#13_CPT	CR15	15.30	1730		78	48	1.16	Axial	0.42	Offshore			
OWF_GI#13_CPT	CR16	16.60	1950		78	69	1.25	Axial	0.36	Offshore			
OWF_GI#13_CPT	CR17	17.50	190		78	68	1.25	Axial	0.04	Offshore			
OWF_GI#13_CPT	CR18	18.75	330		78	42	1.12	Axial	0.09	Offshore			
OWF_GI#13_CPT	CR19	19.70	3950		78	57	1.20	Axial	0.84	Offshore			
OWF_GI#14_SAMP	CR01	0.00	15900		76	56	1.16	Axial	3.80	GM Lab			
OWF_GI#14_SAMP	CR02	1.10	6000			78.9	1.20	Diametral	1.30	GM Lab			
OWF_GI#14_SAMP	CR02	1.30	3120		80	75	1.29	Axial	0.53	Offshore			
OWF_GI#14_SAMP	CR02	1.40	13550			78	1.17	Diametral	3.20	GM Lab			
OWF_GI#14_SAMP	CR02	1.40	7350		78	50	1.14	Axial	1.90	GM Lab			
OWF_GI#14_SAMP	CR03	2.00	27050		78.95	66	1.21	Axial	5.50	GM Lab			
OWF_GI#14_SAMP	CR03	2.00	19650			78.96	1.21	Diametral	4.00	GM Lab			
OWF_GI#14_SAMP	CR04	3.00	420	85		75	1.20	Diametral	0.09	Offshore			

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ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



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Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory				
OWF_GI#14_SAMP	CR04	3.15	2000		75.5	45	1.09	Axial	0.60	GM Lab				
OWF_GI#14_SAMP	CR04	3.80	4100	150		75	1.20	Diametral	0.87	Offshore				
OWF_GI#14A_SAMP	CR01	0.45	3450		76	55	1.19	Axial	0.77	Offshore				
OWF_GI#14A_SAMP	CR02	1.50	11000	77.8	0	73.8	1.19	Diametral	2.40	GM Lab				
OWF_GI#14A_SAMP	CR02	2.10	18650			78.83	1.21	Diametral	3.90	GM Lab				
OWF_GI#14A_SAMP	CR02	2.10	20850			78.83	1.21	Diametral	4.30	GM Lab				
OWF_GI#14A_SAMP	CR03	4.00	2310			79.2	1.20	Diametral	0.50	GM Lab				
OWF_GI#14A_SAMP	CR05	5.50	12250			80	1.20	Diametral	2.60	GM Lab				
OWF_GI#14A_SAMP	CR05	5.50	9100		80	42	1.10	Axial	2.60	GM Lab				
OWF_GI#14A_SAMP	CR05	5.70	12250	80	0	74.83	1.20	Diametral	2.60	GM Lab				
OWF_GI#14A_SAMP	CR08	8.75	1110		78	55	1.19	Axial	0.24	Offshore				
OWF_GI#14A_SAMP	CR09	10.00	8550			76.8	1.20	Diametral	1.80	GM Lab				
OWF_GI#14A_SAMP	CR09	10.00	6400		76.8	47	1.11	Axial	1.80	GM Lab				
OWF_GI#14A_SAMP	CR09	10.10	6100	85		76	1.21	Diametral	1.28	Offshore				
OWF_GI#14A_SAMP	CR10	11.05	5800		75	65	1.23	Axial	1.15	Offshore				
OWF_GI#14A_SAMP	CR11	12.00	4820		75	75	1.27	Axial	0.85	Offshore				
OWF_GI#14A_SAMP	CR11	12.10	4300			76	1.19	Diametral	0.90	GM Lab				
OWF_GI#14A_SAMP	CR11	12.10	6800		76	38	1.06	Axial	2.20	GM Lab				
OWF_GI#14A_SAMP	CR11	12.25	1550	77.3	0	75.12	1.20	Diametral	0.30	GM Lab				
OWF_GI#14A_SAMP	CR11	12.50	8520	135		75	1.20	Diametral	1.82	Offshore				
OWF_GI#14A_SAMP	CR12	13.40	1110	105		75	1.20	Diametral	0.24	Offshore				
OWF_GI#14A_SAMP	CR12	13.50	1900			78.5	1.19	Diametral	0.40	GM Lab				
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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#14A_SAMP	CR12	13.50	3100			78.5	1.17	Diametral	0.70	GM Lab			
OWF_GI#14A_SAMP	CR13	14.50	2060	190		75	1.20	Diametral	0.44	Offshore			
OWF_GI#14A_SAMP	CR13	14.70	1180	98		75	1.20	Diametral	0.25	Offshore			
OWF_GI#15_SAMP	CR01	0.00	14350		60	53	1.07	Axial	4.50	GM Lab			
OWF_GI#15A_SAMP	CR01	0.10	34800	10.7		80	1.24	Diametral	6.72	Offshore			
OWF_GI#15A_SAMP	CR02	1.00	29300		78	72	1.25	Axial	5.40	GM Lab			
OWF_GI#15A_SAMP	CR05	6.10	1400			80.1	1.20	Diametral	0.30	GM Lab			
OWF_GI#17_SAMP	CR02	5.60	9700	77	0	73.42	1.19	Diametral	2.10	GM Lab			
OWF_GI#17_SAMP	CR03	6.00	11500		77	72	1.26	Axial	2.06	Offshore			
OWF_GI#17_SAMP	CR03	6.05	8250			76.2	1.17	Diametral	1.90	GM Lab			
OWF_GI#17_SAMP	CR03	6.25	1500	75.7	0	74.34	1.20	Diametral	0.30	GM Lab			
OWF_GI#17_SAMP	CR04	7.00	650		76	45	1.13	Axial	0.17	Offshore			
OWF_GI#17_SAMP	CR05	7.50	6150		79.9	58	1.10	Axial	1.80	GM Lab			
OWF_GI#17_SAMP	CR05	7.60	1300		78	66	1.24	Axial	0.25	Offshore			
OWF_GI#17_SAMP	CR05	7.65	6150	58	79.9	62.18	1.10	Axial	1.80	GM Lab			
OWF_GI#17_SAMP	CR06	8.50	5300		78	43	1.13	Axial	1.40	Offshore			
OWF_GI#17_SAMP	PU10	10.60	100	59	0	56.96	1.06	Diametral	0.00	GM Lab			
OWF_GI#17_SAMP	CR08	11.80	1350		76.35	35	1.02	Axial	0.50	GM Lab			
OWF_GI#17_SAMP	CR08	11.90	1920		77	67.6	1.25	Axial	0.36	Offshore			
OWF_GI#17_SAMP	CR08	12.00	1350	35	76.35	52.17	1.02	Axial	0.50	GM Lab			
OWF_GI#17_SAMP	CR09	13.10	2317		75	56.5	1.19	Axial	0.51	Offshore			
OWF_GI#17_SAMP	CR10	14.20	1334		75	57.6	1.19	Axial	0.29	Offshore			

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#17_SAMP	CR11	14.70	500			72	1.15	Diametral	0.10	GM Lab			
OWF_GI#17_SAMP	CR11	15.00	1566		74	73	1.26	Axial	0.29	Offshore			
OWF_GI#17_SAMP	PU13	16.90	250	66	0	62.93	1.11	Diametral	0.10	GM Lab			
OWF_GI#17_SAMP	PU13	17.10	600	69	0	62.16	1.10	Diametral	0.20	GM Lab			
OWF_GI#17_SAMP	PU14	17.70	700		66.99	48.64	1.07	Axial	0.20	GM Lab			
OWF_GI#17_SAMP	CR13	18.80	4350		78.4	60	1.18	Axial	1.00	GM Lab			
OWF_GI#20_CPT	CR02	11.90	6400		75	50	1.16	Axial	1.55	Offshore			
OWF_GI#20_CPT	CR04	19.70	1852		75	72	1.26	Axial	0.34	Offshore			
OWF_GI#20_SAMP	PU11	6.70	350	50	67	62.64	1.11	Axial	0.10	GM Lab			
OWF_GI#20_SAMP	PU14	9.70	200	64	70	66.76	1.14	Axial	0.10	GM Lab			
OWF_GI#20_SAMP	CR03	11.50	1900		75	45	1.13	Axial	0.50	Offshore			
OWF_GI#20_SAMP	PU18	13.80	300	76	0	74.48	1.20	Diametral	0.10	GM Lab			
OWF_GI#20_SAMP	PU19	15.00	1900		70	40	1.08	Axial	0.58	Offshore			
OWF_GI#20_SAMP	CR05	15.05	800		76	51	1.11	Axial	0.20	GM Lab			
OWF_GI#20_SAMP	CR05	15.50	200		75	68	1.24	Axial	0.04	Offshore			
OWF_GI#20_SAMP	CR06	16.00	650		76	51	1.15	Axial	0.20	GM Lab			
OWF_GI#20_SAMP	CR06	16.00	500			76.1	1.18	Diametral	0.10	GM Lab			
OWF_GI#20_SAMP	CR06	16.05	500		75	35	1.07	Axial	0.16	Offshore			
OWF_GI#20_SAMP	CR06	16.10	500	76.1	0	72.46	1.18	Diametral	0.10	GM Lab			
OWF_GI#20_SAMP	CR06	16.40	1250	76	0	71.89	1.18	Diametral	0.30	GM Lab			
OWF_GI#20_SAMP	CR08	19.00	750			76.1	1.18	Diametral	0.20	GM Lab			
OWF_GI#20_SAMP	CR08	19.00	1200		76.1	61	1.16	Axial	0.30	GM Lab			

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ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#20_SAMP	CR08	19.10	1000		77	67	1.24	Axial	0.19	Offshore			
OWF_GI#22_CPT	CR01	4.50	10950		76	48	1.15	Axial	2.71	Offshore			
OWF_GI#22_CPT	CR08	12.65	9800		77	52	1.17	Axial	2.26	Offshore			
OWF_GI#22_CPT	CR10	14.20	12000	60		77.9	1.22	Diametral	2.41	Offshore			
OWF_GI#22_CPT	CR11	15.30	10280		77.9	60	1.22	Axial	2.10	Offshore			
OWF_GI#22_CPT	CR12	16.10	2780		78.1	42	1.12	Axial	0.75	Offshore			
OWF_GI#22_SAMP	CR04	6.00	39210	45.5		71	1.17	Diametral	9.11	Offshore			
OWF_GI#22_SAMP	CR07	8.00	602		78	71	1.26	Axial	0.11	Offshore			
OWF_GI#22_SAMP	CR09	9.60	26700			78	1.20	Diametral	5.80	GM Lab			
OWF_GI#22_SAMP	CR09	9.60	29600		78	48	1.12	Axial	8.00	GM Lab			
OWF_GI#22_SAMP	CR11	11.80	18100	79	0	77.49	1.22	Diametral	3.70	GM Lab			
OWF_GI#22_SAMP	CR12	12.50	13750			76.3	1.20	Diametral	2.90	GM Lab			
OWF_GI#22_SAMP	CR12	12.60	14800		78	52.2	1.18	Axial	3.36	Offshore			
OWF_GI#22_SAMP	CR15	16.20	8150		77.6	50	1.12	Axial	2.20	GM Lab			
OWF_GI#22_SAMP	CR15	16.20	12150			77.61	1.16	Diametral	2.90	GM Lab			
OWF_GI#24_SAMP	CR04	4.10	650	75.5	0	71.12	1.17	Diametral	0.20	GM Lab			
OWF_GI#24_SAMP	CR05	5.10	11210	95		77	1.21	Diametral	2.30	Offshore			
OWF_GI#24_SAMP	CR05	5.20	18950		77.4	64	1.18	Axial	4.30	GM Lab			
OWF_GI#24_SAMP	CR06	6.10	100		77	44	1.13	Axial	0.03	Offshore			
OWF_GI#24_SAMP	CR07	7.70	33130	110		78	1.22	Diametral	6.65	Offshore			
OWF_GI#24_SAMP	CR10	10.00	5650			76.5	1.17	Diametral	1.30	GM Lab			
OWF_GI#24_SAMP	CR12	12.10	1200		77	50	1.16	Axial	0.28	Offshore			

TXL - Hoek Triaxial

ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	Failure Load (N)	Length (mm)	Width (mm)	Diameter or Length (mm)	Correction Ratio	Test Type	Is50 (MPa)	Testing Laboratory			
OWF_GI#24_SAMP	CR13	13.00	9420		77	35	1.07	Axial	2.95	Offshore			
OWF_GI#24_SAMP	CR16	16.00	8100		76	43	1.12	Axial	2.18	Offshore			
OWF_GI#24_SAMP	CR18	18.50	7350		76	60	1.19	Axial	1.60	GM Lab			
OWF_GI#24_SAMP	CR18	18.70	4400		77	41	1.11	Axial	1.22	Offshore			
OWF_GI#24_SAMP	CR19	19.80	1400		76.6	58	1.09	Axial	0.40	GM Lab			
OWF_GI#24_SAMP	CR19	19.80	4500		77	40	1.11	Axial	1.27	Offshore			
OWF_GI#24_SAMP	CR19	19.80	2450			76.6	1.19	Diametral	0.50	GM Lab			
OWF_GI#24_SAMP	CR19	19.80	450			76.6	1.19	Diametral	0.10	GM Lab			

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
0005 00004 0005		4.00										
OWF_GI#01_SAMP	0.00	1.00	0.70	0.25	0	70	25	0		Offshore		
OWF_GI#01_SAMP	1.00	2.00	0.80	0.5	0.15	80	50	15		Offshore		
OWF_GI#01_SAMP	2.00	3.50	0.05	0	0	3	0	0		Offshore		
OWF_GI#01_SAMP	3.50	4.00	0.10	0.1	0	20	20	0		Offshore		
OWF_GI#01A_SAMP	0.00	0.70	0.50	0.35	0.15	71	50	21		Offshore		
OWF_GI#01A_SAMP	0.70	1.70	0.90	0.4	0.1	90	40	10		Offshore		
OWF_GI#01A_SAMP	1.70	2.70	0.10	0.05	0	10	5	0		Offshore		
OWF_GI#01A_SAMP	2.70	3.20	0.00	0	0	0				Offshore		
OWF_GI#01A_SAMP	3.20	4.20	0.20	0.05	0	20	5	0		Offshore		
OWF_GI#01A_SAMP	4.20	5.20	0.20	0.05	0	20	5	0		Offshore		
OWF_GI#01A_SAMP	5.20	6.20	0.55	0.25	0	55	25	0		Offshore		
OWF_GI#01A_SAMP	6.20	7.20	0.05	0.05	0	5	5	0		Offshore		
OWF_GI#01A_SAMP	7.20	8.50	0.65	0.4	0.17	50	31	13		Offshore		
OWF_GI#01A_SAMP	8.50	9.50	1.00	1	0.8	100	100	80		Offshore		
OWF_GI#01A_SAMP	9.50	11.00	0.85	0.65	0.55	57	43	37		Offshore		
OWF_GI#01A_SAMP	11.00	12.50	0.55	0.2	0	37	13	0		Offshore		
OWF_GI#01A_SAMP	12.50	13.50	0.20	0	0	20	0	0		Offshore		
OWF_GI#01A_SAMP	13.50	14.50	0.00	0	0	0				Offshore		
OWF_GI#01A_SAMP	16.00	17.00	0.40	0.1	0	40	10	0		Offshore		
OWF_GI#01A_SAMP	17.00	18.50	0.65	0.2	0	43	13	0		Offshore		
OWF_GI#01A_SAMP	18.50	20.00	0.40	0.05	0	27	3	0		Offshore		
OWF_GI#01A_SAMP	20.00	20.10	0.10	0	0	100	0	0		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
				_	_		_	-				
OWF_GI#04_SAMP	1.30	2.80	0.20	0	0	13	0	0		Offshore		
OWF_GI#04_SAMP	2.80	3.80	0.00	0	0	0				Offshore		
OWF_GI#04_SAMP	3.80	4.80	0.40	0	0	40	0	0		Offshore		
OWF_GI#04_SAMP	4.80	5.80	0.00	0	0	0				Offshore		
OWF_GI#04_SAMP	5.80	6.30	0.10	0	0	20	0	0		Offshore		
OWF_GI#04_SAMP	6.30	6.80	0.20	0.2	0.1	40	40	20		Offshore		
OWF_GI#04A_SAMP	0.50	1.50	0.00	0	0	0				Offshore		
OWF_GI#04A_SAMP	1.50	2.50	0.20	0	0	20	0	0		Offshore		
OWF_GI#04A_SAMP	2.50	3.50	0.10	0	0	10	0	0		Offshore		
OWF_GI#04A_SAMP	3.50	4.50	0.50	0.4	0.4	50	40	40		Offshore		
OWF_GI#04A_SAMP	4.50	5.50	0.60	0.1	0	60	10	0		Offshore		
OWF_GI#04A_SAMP	5.50	6.50	0.45	0.3	0.3	45	30	30		Offshore		
OWF_GI#04A_SAMP	6.50	7.30	0.00	0	0	0				Offshore		
OWF_GI#04A_SAMP	7.30	8.30	0.00	0	0	0				Offshore		
OWF_GI#04A_SAMP	10.30	11.30	0.10	0.1	0.1	10	10	10		Offshore		
OWF_GI#04A_SAMP	11.90	12.90	0.30	0.3	0.15	30	30	15		Offshore		
OWF_GI#04A_SAMP	12.90	13.90	0.00	0	0	0				Offshore		
OWF_GI#04A_SAMP	16.40	16.90	0.35	0.1	0	70	20	0		Offshore		
OWF_GI#04A_SAMP	16.90	18.00	0.85	0.6	0.35	77	55	32		Offshore		
OWF_GI#04A_SAMP	18.00	19.00	0.55	0.5	0.3	55	50	30		Offshore		
OWF_GI#04A_SAMP	19.00	20.00	0.85	0.7	0.3	85	70	30		Offshore		
OWF_GI#05A_SAMP	0.50	1.50	0.80	0.5	0.25	80	50	25		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



											_	1	
Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory			
	, ,		,	,	,	,	, ,	, ,	,				
OWF_GI#05A_SAMP	1.50	2.50	0.30	0.2	0	30	20	0		Offshore			
OWF_GI#05A_SAMP	2.50	3.50	1.00	0.75	0.55	100	75	55		Offshore			
OWF_GI#05A_SAMP	3.50	4.50	0.70	0.45	0.35	70	45	35		Offshore			
OWF_GI#05A_SAMP	4.50	5.50	0.60	0.55	0.45	60	55	45		Offshore			
OWF_GI#05B_SAMP	5.50	6.50	0.90	0.33	0.22	90	33	22		Offshore			
OWF_GI#05B_SAMP	6.50	7.50	0.55	0.45	0.45	55	45	45		Offshore			
OWF_GI#05B_SAMP	7.50	8.50	0.70	0.55	0.55	70	55	55		Offshore			
OWF_GI#05B_SAMP	8.50	9.50	0.70	0.7	0.7	70	70	70		Offshore			
OWF_GI#05B_SAMP	9.50	10.50	1.00	1	1	100	100	100		Offshore			
OWF_GI#08_CPT	1.50	2.50	0.50	0.4	0.12	50	40	12		Offshore			
OWF_GI#08_CPT	2.50	3.50	0.85	0.71	0.42	85	71	42		Offshore			
OWF_GI#08_CPT	3.50	4.50	0.55	0.21	0.13	55	21	13		Offshore			
OWF_GI#08_CPT	4.50	5.50	0.35	0	0	35	0	0		Offshore			
OWF_GI#08_CPT	5.50	6.50	0.20	0	0	20	0	0		Offshore			
OWF_GI#08_CPT	6.50	7.50	0.25	0	0	25	0	0		Offshore			
OWF_GI#08_CPT	7.50	8.50	0.30	0.05	0	30	5	0		Offshore			
OWF_GI#08_CPT	9.50	10.50	0.10	0	0	10	0	0		Offshore			
OWF_GI#08_CPT	10.50	11.50	0.30	0.06	0	30	6	0		Offshore			
OWF_GI#08_CPT	11.50	12.50	0.60	0.12	0	60	12	0		Offshore			
OWF_GI#08_CPT	12.50	13.50	0.55	0.05	0	55	5	0		Offshore			
OWF_GI#08_CPT	13.50	14.50	0.85	0.255	0.13	85	26	13		Offshore			
OWF_GI#08_CPT	14.50	15.50	0.35	0.02	0	35	2	0		Offshore			

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#08_CPT	16.50	17.50	0.40	0.3	0.15	40	30	15		Offshore		
OWF_GI#08_CPT	17.50	18.50	0.35	0.18	0	35	18	0		Offshore		
OWF_GI#08_CPT	18.50	19.50	0.55	0.35	0.32	55	35	32		Offshore		
OWF_GI#08_CPT	19.50	20.50	1.00	0.95	0.7	100	95	70		Offshore		
OWF_GI#08_CPT	20.50	21.50	0.30	0	0	30	0	0		Offshore		
OWF_GI#09_SAMP	0.00	1.00	0.75	0.75	0.4	75	75	40	80	Offshore		
OWF_GI#09_SAMP	1.00	2.00	0.80	0.6	0.3	80	60	30	80	Offshore		
OWF_GI#09_SAMP	3.00	4.00	0.30	0	0	30	0	0	80	Offshore		
OWF_GI#09_SAMP	4.00	5.00	0.50	0.2	0.2	50	20	20	80	Offshore		
OWF_GI#09_SAMP	5.00	6.00	0.30	0.1	0	30	10	0	80	Offshore		
OWF_GI#09_SAMP	6.00	7.00	0.20	0	0	20	0	0	80	Offshore		
OWF_GI#09_SAMP	7.00	8.00	0.05	0	0	5	0	0	80	Offshore		
OWF_GI#09_SAMP	8.00	9.00	0.40	0.1	0.1	40	10	10	80	Offshore		
OWF_GI#09_SAMP	9.00	10.00	0.35	0	0	35	0	0	80	Offshore		
OWF_GI#09_SAMP	10.00	11.00	0.50	0.1	0	50	10	0	80	Offshore		
OWF_GI#09_SAMP	11.00	12.00	0.70	0.2	0.2	70	20	20	80	Offshore		
OWF_GI#09_SAMP	12.00	13.00	0.10	0	0	10	0	0	80	Offshore		
OWF_GI#09_SAMP	13.00	14.00	0.50	0.2	0.2	50	20	20	80	Offshore		
OWF_GI#09_SAMP	14.00	15.00	0.90	0.9	0.9	90	90	90	80	Offshore		
OWF_GI#09_SAMP	15.00	16.00	1.00	0.8	0.8	100	80	80	80	Offshore		
OWF_GI#09_SAMP	16.00	17.00	0.50	0.2	0	50	20	0	80	Offshore		
OWF_GI#09_SAMP	17.00	18.00	0.40	0.1	0	40	10	0	80	Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#09_SAMP	18.00	19.00	0.40	0.1	0	40	10	0	80	Offshore		
OWF_GI#09_SAMP	19.00	20.00	0.60	0.22	0	60	22	0	80	Offshore		
OWF_GI#09_SAMP	20.00	20.70	0.70	0.6	0.28	100	86	40	80	Offshore		
OWF_GI#11_CPT	5.50	6.20	0.51	0.215	0	73	31	0	70	Offshore		
OWF_GI#11_CPT	6.20	7.80	1.34	0.55	0.32	84	34	20	70	Offshore		
OWF_GI#11_CPT	7.80	9.30	0.23	0.07	0	15	5	0	70	Offshore		
OWF_GI#11_CPT	10.30	11.50	0.50	0.31	0.22	42	26	18	70	Offshore		
OWF_GI#11_SAMP	4.50	5.50	0.25	0.15	0.1	25	15	10	80	Offshore		
OWF_GI#11_SAMP	5.50	6.50	0.50	0.4	0.4	50	40	40	80	Offshore		
OWF_GI#11_SAMP	6.50	7.50	0.75	0.6	0.55	75	60	55	80	Offshore		
OWF_GI#11_SAMP	7.50	8.50	0.10	0	0	10	0	0	80	Offshore		
OWF_GI#11_SAMP	8.50	9.50	0.65	0.14	0.11	65	14	11	80	Offshore		
OWF_GI#11_SAMP	9.50	10.50	0.35	0.17	0	35	17	0	80	Offshore		
OWF_GI#11_SAMP	10.50	11.50	0.06	0.04	0	6	4	0	80	Offshore		
OWF_GI#11_SAMP	12.50	13.50	0.80	0.25	0.15	80	25	15	80	Offshore		
OWF_GI#11_SAMP	13.50	14.50	0.70	0.1	0	70	10	0	80	Offshore		
OWF_GI#11_SAMP	14.50	15.50	0.60	0.17	0	60	17	0	80	Offshore		
OWF_GI#11_SAMP	15.50	16.50	0.73	0.55	0.52	73	55	52	80	Offshore		
OWF_GI#11_SAMP	16.50	17.50	0.65	0.475	0.265	65	48	27	80	Offshore		
OWF_GI#11_SAMP	17.50	18.50	0.72	0.4	0.4	72	40	40	80	Offshore		
OWF_GI#11_SAMP	18.50	19.50	1.00	0.24	0.2	100	24	20	80	Offshore		
OWF_GI#11_SAMP	19.50	20.50	0.40	0.36	0.18	40	36	18	80	Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#11B_CPT	5.50	7.00	0.65	0.42	0.35	43	28	23		Offshore		
OWF_GI#11B_CPT	7.00	8.50	0.86	0.4	0.23	57	27	15		Offshore		
OWF_GI#11B_CPT	8.50	10.00	0.75	0.335	0.17	50	22	11		Offshore		
OWF_GI#11B_CPT	10.00	11.00	0.33	0	0	33	0	0		Offshore		
OWF_GI#11B_CPT	13.50	14.50	0.60	0.53	0.45	60	53	45		Offshore		
OWF_GI#11B_CPT	14.50	15.50	1.00	0.405	0.24	100	41	24		Offshore		
OWF_GI#11B_CPT	15.50	16.50	0.65	0.45	0.45	65	45	45		Offshore		
OWF_GI#11B_CPT	16.50	17.50	0.35	0.065	0	35	7	0		Offshore		
OWF_GI#11B_CPT	17.50	18.50	0.65	0.36	0.22	65	36	22		Offshore		
OWF_GI#11B_CPT	18.50	19.50	0.35	0.35	0.3	35	35	30		Offshore		
OWF_GI#11B_CPT	19.50	20.50	0.06	0.06	0	6	6	0		Offshore		
OWF_GI#12_CPT	3.50	4.50	0.35	0	0	35	0	0		Offshore		
OWF_GI#12_CPT	4.50	5.50	0.75	0.56	0.29	75	56	29		Offshore		
OWF_GI#12_CPT	5.50	6.50	0.85	0.52	0.52	85	52	52		Offshore		
OWF_GI#12_CPT	6.50	7.50	0.60	0.44	0.44	60	44	44		Offshore		
OWF_GI#12_CPT	7.50	8.50	0.85	0.49	0.45	85	49	45		Offshore		
OWF_GI#12_CPT	8.50	10.00	1.10	0.69	0.6	73	46	40		Offshore		
OWF_GI#12_CPT	10.00	11.50	1.05	0.945	0.72	70	63	48		Offshore		
OWF_GI#12_CPT	12.00	13.00	0.30	0	0	30	0	0		Offshore		
OWF_GI#12_CPT	13.00	14.00	0.40	0.27	0	40	27	0		Offshore		
OWF_GI#12_CPT	14.00	15.00	0.05	0	0	5	0	0		Offshore		
OWF_GI#12_CPT	15.00	16.00	0.50	0.295	0.15	50	30	15		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#12_CPT	16.00	17.00	0.20	0	0	20	0	0		Offshore		
OWF_GI#12_CPT	18.00	19.00	0.20	0.06	0.06	20	6	6		Offshore		
OWF_GI#12_CPT	19.00	20.50	1.05	0.9	0.615	70	60	41		Offshore		
OWF_GI#12_SAMP	2.80	3.80	0.15	0	0	15	0	0		Offshore		
OWF_GI#12_SAMP	4.30	5.30	0.44	0.32	0.14	44	32	14		Offshore		
OWF_GI#12_SAMP	5.30	6.30	0.30	0.06	0	30	6	0		Offshore		
OWF_GI#12_SAMP	7.30	8.30	0.35	0.24	0.2	35	24	20		Offshore		
OWF_GI#12_SAMP	8.30	9.30	0.50	0.42	0.42	50	42	42		Offshore		
OWF_GI#12_SAMP	9.30	10.30	0.45	0.37	0	45	37	0		Offshore		
OWF_GI#12_SAMP	11.30	12.30	0.85	0.52	0	85	52	0		Offshore		
OWF_GI#12_SAMP	12.30	13.30	0.65	0.1	0	65	10	0		Offshore		
OWF_GI#12_SAMP	13.30	14.30	0.15	0.08	0	15	8	0		Offshore		
OWF_GI#12_SAMP	14.30	15.30	0.45	0	0	45	0	0		Offshore		
OWF_GI#12_SAMP	16.30	17.30	0.75	0.31	0.17	75	31	17		Offshore		
OWF_GI#12_SAMP	18.30	19.30	1.00	0.77	0.77	100	77	77		Offshore		
OWF_GI#12_SAMP	19.30	20.30	0.35	0.06	0	35	6	0		Offshore		
OWF_GI#13_CPT	1.00	2.00	0.50	0.1	0.1	50	10	10		Offshore		
OWF_GI#13_CPT	2.00	3.00	0.50	0.1	0.1	50	10	10		Offshore		
OWF_GI#13_CPT	3.00	4.00	0.75	0.5	0.5	75	50	50		Offshore		
OWF_GI#13_CPT	4.00	5.00	0.70	0.33	0.33	70	33	33		Offshore		
OWF_GI#13_CPT	5.00	6.00	0.55	0.25	0.21	55	25	21		Offshore		
OWF_GI#13_CPT	6.00	7.00	0.30	0	0	30	0	0		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
0005 00040 005		0.00					_			27.1		
OWF_GI#13_CPT	7.00	8.00	0.20	0	0	20	0	0		Offshore		
OWF_GI#13_CPT	8.00	9.00	0.00	0	0	0				Offshore		
OWF_GI#13_CPT	9.00	10.00	0.70	0.14	0	70	14	0		Offshore		
OWF_GI#13_CPT	10.00	11.00	1.00	0.68	0.65	100	68	65		Offshore		
OWF_GI#13_CPT	11.00	12.00	0.05	0	0	5	0	0		Offshore		
OWF_GI#13_CPT	12.00	13.00	0.60	0.46	0.35	60	46	35		Offshore		
OWF_GI#13_CPT	13.00	14.00	0.25	0.07	0	25	7	0		Offshore		
OWF_GI#13_CPT	14.00	15.00	0.70	0.6	0.6	70	60	60		Offshore		
OWF_GI#13_CPT	15.00	16.00	0.55	0.55	0.55	55	55	55		Offshore		
OWF_GI#13_CPT	16.00	17.00	0.65	0.53	0.26	65	53	26		Offshore		
OWF_GI#13_CPT	17.00	18.00	0.55	0.45	0.45	55	45	45		Offshore		
OWF_GI#13_CPT	18.00	19.00	1.00	0.65	0.65	100	65	65		Offshore		
OWF_GI#13_CPT	19.00	20.00	0.67	0.58	0.39	67	58	39		Offshore		
OWF_GI#14_SAMP	0.00	1.00	0.40	0	0	40	0	0		Offshore		
OWF_GI#14_SAMP	1.00	2.00	0.65	0.31	0.25	65	31	25		Offshore		
OWF_GI#14_SAMP	2.00	3.00	0.65	0.4	0.4	65	40	40		Offshore		
OWF_GI#14_SAMP	3.00	4.00	0.95	0.91	0.91	95	91	91		Offshore		
OWF_GI#14_SAMP	4.30	5.50	0.30	0	0	25	0	0		Offshore		
OWF_GI#14_SAMP	5.50	6.50	0.70	0.41	0.38	70	41	38		Offshore		
OWF_GI#14_SAMP	6.50	7.50	0.35	0.25	0.25	35	25	25		Offshore		
OWF_GI#14_SAMP	7.50	8.50	0.15	0	0	15	0	0		Offshore		
OWF_GI#14_SAMP	8.50	9.50	0.65	0.09	0	65	9	0		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#14_SAMP	10.00	11.00	0.30	0.3	0.1	30	30	10		Offshore		
OWF_GI#14_SAMP	11.00	12.00	0.65	0.22	0	65	22	0		Offshore		
OWF_GI#14_SAMP	12.00	13.00	0.65	0.62	0.57	65	62	57		Offshore		
OWF_GI#14_SAMP	13.00	14.00	0.65	0.28	0.24	65	28	24		Offshore		
OWF_GI#14_SAMP	14.00	15.00	0.95	0.34	0.34	95	34	34		Offshore		
OWF_GI#14_SAMP	15.00	16.50	0.53	0	0	35	0	0		Offshore		
OWF_GI#14_SAMP	16.50	17.50	0.00	0	0	0				Offshore		
OWF_GI#14_SAMP	17.50	18.50	0.00	0	0	0				Offshore		
OWF_GI#14A_SAMP	0.00	1.50	0.33	0.06	0	22	4	0		Offshore		
OWF_GI#14A_SAMP	1.50	3.00	0.70	0.49	0.43	47	33	29		Offshore		
OWF_GI#14A_SAMP	3.00	4.30	0.96	0.9	0.85	74	69	65		Offshore		
OWF_GI#14A_SAMP	4.30	5.50	0.30	0	0	25	0	0		Offshore		
OWF_GI#14A_SAMP	5.50	6.50	0.70	0.41	0.38	70	41	38		Offshore		
OWF_GI#14A_SAMP	6.50	7.50	0.35	0.25	0.25	35	25	25		Offshore		
OWF_GI#14A_SAMP	7.50	8.50	0.15	0	0	15	0	0		Offshore		
OWF_GI#14A_SAMP	8.50	9.50	0.65	0.09	0	65	9	0		Offshore		
OWF_GI#14A_SAMP	10.00	11.00	0.30	0.3	0.1	30	30	10		Offshore		
OWF_GI#14A_SAMP	11.00	12.00	0.65	0.22	0	65	22	0		Offshore		
OWF_GI#14A_SAMP	12.00	13.00	0.65	0.62	0.57	65	62	57		Offshore		
OWF_GI#14A_SAMP	13.00	14.00	0.65	0.28	0.24	65	28	24		Offshore		
OWF_GI#14A_SAMP	14.00	15.00	0.95	0.34	0.34	95	34	34		Offshore		
OWF_GI#14A_SAMP	15.00	16.50	0.80	0	0	53	0	0		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#14A_SAMP	16.50	17.50	0.00	0	0	0				Offshore		
OWF_GI#14A_SAMP	17.50	18.50	0.00	0	0	0				Offshore		
OWF_GI#15_SAMP	0.00	1.00	0.40	0.125	0	40	13	0	70	Offshore		
OWF_GI#15_SAMP	1.00	2.00	0.65	0.1	0	65	10	0	70	Offshore		
OWF_GI#15_SAMP	2.00	2.30	0.30	0.1	0	100	33	0	70	Offshore		
OWF_GI#15A_SAMP	0.00	1.00	0.30	0.1	0.1	30	10	10	80	Offshore		
OWF_GI#15A_SAMP	1.00	2.00	0.35	0.1	0	35	10	0	80	Offshore		
OWF_GI#15A_SAMP	3.00	4.00	0.40	0.1	0	40	10	0	80	Offshore		
OWF_GI#15A_SAMP	4.00	5.00	0.15	0	0	15	0	0	80	Offshore		
OWF_GI#15A_SAMP	6.00	7.00	0.90	0.6	0.6	90	60	60	80	Offshore		
OWF_GI#15A_SAMP	7.00	8.00	0.60	0.6	0.4	60	60	40	80	Offshore		
OWF_GI#15A_SAMP	8.00	9.00	0.95	0.95	0.6	95	95	60	80	Offshore		
OWF_GI#15A_SAMP	9.00	10.00	0.60	0.6	0.4	60	60	40	80	Offshore		
OWF_GI#15A_SAMP	12.00	13.00	0.90	0.9	0.9	90	90	90	80	Offshore		
OWF_GI#15A_SAMP	13.00	14.00	1.00	1	0.8	100	100	80	80	Offshore		
OWF_GI#15A_SAMP	14.00	15.00	0.85	0.75	0.7	85	75	70	80	Offshore		
OWF_GI#15A_SAMP	15.00	16.00	0.90	0.9	0.9	90	90	90	80	Offshore		
OWF_GI#15A_SAMP	16.00	17.00	0.75	0.75	0.75	75	75	75	80	Offshore		
OWF_GI#15A_SAMP	17.00	18.00	1.00	1	1	100	100	100	80	Offshore		
OWF_GI#15A_SAMP	18.60	19.50	0.75	0.7	0.7	83	78	78	80	Offshore		
OWF_GI#15A_SAMP	19.50	20.50	1.00	1	0.9	100	100	90	80	Offshore		
OWF_GI#17_SAMP	1.50	2.50	0.00	0	0	0				Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole /	Top Depth	Base Depth	TCR Length	SCR Length	RQD Length	TCR	SCR	RQD	Diameter	Testing Laboratory		
Location	(m)	(m)	(m)	(m)	(m)	(%)	(%)	(%)	(mm)	resuring Laboratory		
OWF_GI#17_SAMP	4.90	6.00	0.40	0.175	0.175	36	16	16		Offshore		
OWF_GI#17_SAMP	6.00	7.00	0.60	0.6	0.52	60	60	52		Offshore		
OWF_GI#17_SAMP	7.00	7.50	0.15	0.15	0	30	30	0		Offshore		
OWF_GI#17_SAMP	7.50	8.50	0.35	0.1	0	35	10	0		Offshore		
OWF_GI#17_SAMP	8.50	9.50	0.30	0.1	0	30	10	0		Offshore		
OWF_GI#17_SAMP	9.50	10.50	0.00	0	0	0				Offshore		
OWF_GI#17_SAMP	11.70	12.70	0.70	0.7	0	70	70	0		Offshore		
OWF_GI#17_SAMP	12.70	13.70	0.60	0.55	0.3	60	55	30		Offshore		
OWF_GI#17_SAMP	13.70	14.70	0.80	0.65	0.15	80	65	15		Offshore		
OWF_GI#17_SAMP	14.70	15.70	0.50	0.45	0	50	45	0		Offshore		
OWF_GI#17_SAMP	15.70	16.70	0.40	0.1	0	40	10	0		Offshore		
OWF_GI#17_SAMP	18.80	19.80	0.70	0.15	0	70	15	0		Offshore		
OWF_GI#17_SAMP	19.80	20.30	0.50	0.15	0	100	30	0		Offshore		
OWF_GI#20_CPT	5.30	6.30	0.60	0.55	0.4	60	55	40		Offshore		
OWF_GI#20_CPT	11.90	12.90	0.20	0.05	0	20	5	0		Offshore		
OWF_GI#20_CPT	18.40	19.40	0.80	0.55	0.25	80	55	25		Offshore		
OWF_GI#20_CPT	19.40	20.40	0.90	0.85	0.15	90	85	15		Offshore		
OWF_GI#20_SAMP	4.70	5.70	0.20	0	0	20	0	0		Offshore		
OWF_GI#20_SAMP	5.70	6.70	0.10	0	0	10	0	0		Offshore		
OWF_GI#20_SAMP	11.50	12.00	0.30	0.25	0	60	50	0		Offshore		
OWF_GI#20_SAMP	12.00	13.00	0.05	0	0	5	0	0		Offshore		
OWF_GI#20_SAMP	15.00	16.00	0.70	0.55	0	70	55	0		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#20_SAMP	16.00	17.00	0.60	0.5	0.22	60	50	22		Offshore		
OWF_GI#20_SAMP	17.00	18.00	0.00	0	0	0				Offshore		
OWF_GI#20_SAMP	18.30	19.30	0.50	0.2	0.12	50	20	12		Offshore		
OWF_GI#22_CPT	4.50	5.50	0.80	0.33	0.33	80	33	33		Offshore		
OWF_GI#22_CPT	5.50	6.00	0.00	0	0	0				Offshore		
OWF_GI#22_CPT	6.00	7.00	0.20	0	0	20	0	0		Offshore		
OWF_GI#22_CPT	7.00	8.00	0.30	0.1	0	30	10	0		Offshore		
OWF_GI#22_CPT	8.00	9.00	0.40	0.2	0.2	40	20	20		Offshore		
OWF_GI#22_CPT	9.00	10.50	0.35	0.2	0.2	23	13	13		Offshore		
OWF_GI#22_CPT	10.50	12.00	0.65	0.25	0.15	43	17	10		Offshore		
OWF_GI#22_CPT	12.00	13.00	0.70	0.3	0.25	70	30	25		Offshore		
OWF_GI#22_CPT	13.00	13.80	0.20	0.2	0	25	25	0		Offshore		
OWF_GI#22_CPT	13.80	15.00	0.50	0.4	0.4	42	33	33		Offshore		
OWF_GI#22_CPT	15.00	16.00	0.40	0.35	0.13	40	35	13		Offshore		
OWF_GI#22_CPT	16.00	17.00	0.35	0.35	0.11	35	35	11		Offshore		
OWF_GI#22_CPT	17.00	18.20	0.00	0	0	0				Offshore		
OWF_GI#22_CPT	18.20	19.50	0.00	0	0	0				Offshore		
OWF_GI#22_CPT	19.50	20.00	0.00	0	0	0				Offshore		
OWF_GI#22_SAMP	1.40	2.40	0.00	0	0	0				Offshore		
OWF_GI#22_SAMP	4.50	5.50	0.00	0	0	0				Offshore		
OWF_GI#22_SAMP	5.50	6.00	0.10	0.05	0	20	10	0		Offshore		
OWF_GI#22_SAMP	6.00	6.50	0.10	0.05	0	20	10	0		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#22_SAMP	6.50	7.00	0.00	0	0	0				Offshore		
OWF_GI#22_SAMP	7.00	8.00	0.00	0	0	0				Offshore		
OWF_GI#22_SAMP	8.00	8.50	0.10	0.1	0	20	20	0		Offshore		
OWF_GI#22_SAMP	8.50	9.50	0.20	0.2	0	20	20	0		Offshore		
OWF_GI#22_SAMP	9.50	10.50	0.30	0.1	0	30	10	0		Offshore		
OWF_GI#22_SAMP	10.50	11.50	0.00	0	0	0				Offshore		
OWF_GI#22_SAMP	11.50	12.50	0.50	0.3	0.2	50	30	20		Offshore		
OWF_GI#22_SAMP	12.50	13.50	0.60	0.35	0.2	60	35	20		Offshore		
OWF_GI#22_SAMP	14.20	15.20	0.20	0.1	0	20	10	0		Offshore		
OWF_GI#22_SAMP	15.20	16.20	0.20	0	0	20	0	0		Offshore		
OWF_GI#22_SAMP	16.20	17.20	0.30	0.2	0	30	20	0		Offshore		
OWF_GI#22_SAMP	17.20	18.20	0.10	0.1	0	10	10	0		Offshore		
OWF_GI#24_SAMP	1.10	2.10	0.20	0.2	0.2	20	20	20		Offshore		
OWF_GI#24_SAMP	2.10	3.10	0.40	0.25	0.15	40	25	15		Offshore		
OWF_GI#24_SAMP	3.10	4.10	0.30	0.15	0	30	15	0		Offshore		
OWF_GI#24_SAMP	4.10	5.10	0.60	0.55	0.35	60	55	35		Offshore		
OWF_GI#24_SAMP	5.10	6.10	0.60	0.2	0	60	20	0		Offshore		
OWF_GI#24_SAMP	6.10	7.00	0.10	0	0	11	0	0		Offshore		
OWF_GI#24_SAMP	7.00	8.00	1.00	0.95	0.9	100	95	90		Offshore		
OWF_GI#24_SAMP	8.00	9.00	0.20	0.1	0	20	10	0		Offshore		
OWF_GI#24_SAMP	9.00	10.00	0.00	0	0	0				Offshore		
OWF_GI#24_SAMP	10.00	11.00	0.35	0.25	0.13	35	25	13		Offshore		

ROCK CORING RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Top Depth (m)	Base Depth (m)	TCR Length (m)	SCR Length (m)	RQD Length (m)	TCR (%)	SCR (%)	RQD (%)	Diameter (mm)	Testing Laboratory		
OWF_GI#24_SAMP	11.00	12.00	0.05	0	0	5	0	0		Offshore		
OWF_GI#24_SAMP	12.00	13.00	0.30	0.15	0	30	15	0		Offshore		
OWF_GI#24_SAMP	13.00	14.00	0.10	0	0	10	0	0		Offshore		
OWF_GI#24_SAMP	14.00	15.00	0.15	0	0	15	0	0		Offshore		
OWF_GI#24_SAMP	15.00	16.00	0.20	0	0	20	0	0		Offshore		
OWF_GI#24_SAMP	16.00	17.00	0.20	0	0	20	0	0		Offshore		
OWF_GI#24_SAMP	17.00	18.00	0.10	0	0	10	0	0		Offshore		
OWF_GI#24_SAMP	18.50	19.50	0.40	0.15	0	40	15	0		Offshore		
OWF_GI#24_SAMP	19.50	20.50	0.55	0.3	0.2	55	30	20		Offshore		

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



								•					
Borehole / Location	Sample No.	Test Depth (m)	UCS (MPa)	Water Content (%)	Dry Density (Mg/m³)	Porosity (%)							
OWF_GI#01_SAMP	CR01	0.30			2.60	7.4							
OWF_GI#01A_SAMP	CR01	0.00			2.62	7.1							
OWF_GI#01A_SAMP	CR05	3.20			2.15	24.3							
OWF_GI#01A_SAMP	CR06	4.20			1.91	33.2							
OWF_GI#01A_SAMP	CR07	5.20			1.71	40.0							
OWF_GI#01A_SAMP	CR09	7.20			2.05	27.8							
OWF_GI#01A_SAMP	CR10	8.65			2.05	26.7							
OWF_GI#01A_SAMP	CR10	8.80	24.30										
OWF_GI#01A_SAMP	CR10	9.30			2.75	2.4							
OWF_GI#01A_SAMP	CR11	9.50			2.38	15.8							
OWF_GI#01A_SAMP	CR15	16.15			2.28	19.5							
OWF_GI#01A_SAMP	CR16	17.00			1.91	29.5							
OWF_GI#01A_SAMP	CR17	18.50			2.01	25.9							
OWF_GI#04_SAMP	CR03	3.80			2.59	7.8							
OWF_GI#04_SAMP	CR06	6.40			2.49	10.6							
OWF_GI#04A_SAMP	CR04	3.70			2.26	20.8							
OWF_GI#04A_SAMP	CR05	4.70			2.42	15.2							
OWF_GI#04A_SAMP	CR10	11.90			1.43	47.6							
OWF_GI#04A_SAMP	CR13	16.90			1.86	31.2							
OWF_GI#04A_SAMP	CR14	18.00			2.13	21.0							
OWF_GI#04A_SAMP	CR15	19.25			2.31	15.2							
OWF_GI#05A_SAMP	CR01	0.50			2.30	14.5							
TVI Heak Triavial	•	•	-	-			•		•			 •	

TXL - Hoek Triaxial

ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



<u> </u>																	
Borehole / Location	Sample No.	Test Depth (m)	UCS (MPa)	Water Content (%)	Dry Density (Mg/m³)	Porosity (%)											
OWF_GI#05A_SAMP	CR02	1.50			2.32	14.1											
OWF_GI#05A_SAMP	CR03	2.90			1.82	34.5											
OWF_GI#05B_SAMP	CR01	5.50	16.00		2.35	16.6											
OWF_GI#09_SAMP	CR01	0.00			2.56	10.1											
OWF_GI#09_SAMP	CR01	0.20	27.10														
OWF_GI#09_SAMP	CR02	1.20	46.20														
OWF_GI#09_SAMP	CR05	4.00			2.08	26.6											
OWF_GI#09_SAMP	CR12	11.10			1.91	32.7											
OWF_GI#09_SAMP	CR14	13.00	28.50														
OWF_GI#09_SAMP	CR14	13.10			2.18	22.8											
OWF_GI#09_SAMP	CR15	14.00	32.30														
OWF_GI#09_SAMP	CR15	14.10			2.66	5.6											
OWF_GI#09_SAMP	CR16	15.10	34.70														
OWF_GI#09_SAMP	CR17	16.00			1.70	37.5											
OWF_GI#11_SAMP	CR04	4.50			2.23	21.5											
OWF_GI#11_SAMP	CR05	5.50	43.40														
OWF_GI#11_SAMP	CR06	6.50			2.45	13.2											
OWF_GI#11_SAMP	CR08	8.50			1.94	28.0											
OWF_GI#11_SAMP	CR11	12.50			1.97	23.9											
OWF_GI#11_SAMP	CR12	13.50			2.27	15.9											
OWF_GI#11_SAMP	CR14	15.50	49.10		2.13	24.0											
OWF_GI#11_SAMP	CR15	16.55	11.80														
TXI - Hoek Triavial	•	•	1			1	1	1	1	1	1	1	1	1	1	1	

TXL - Hoek Triaxial

ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	UCS (MPa)	Water Content (%)	Dry Density (Mg/m³)	Porosity (%)									
OWF_GI#11_SAMP	CR15	16.75			1.95	30.5									
OWF_GI#11_SAMP	CR16	17.50	35.10												
OWF_GI#11_SAMP	CR17	18.50	14.60												
OWF_GI#11_SAMP	CR18	19.60	21.70												
OWF_GI#11_SAMP	CR18	19.80			2.24	19.8									
OWF_GI#12_SAMP	CR01	2.80			1.96	30.2									
OWF_GI#12_SAMP	CR02	4.40			2.14	23.9									
OWF_GI#12_SAMP	CR05	7.45	59.60												
OWF_GI#12_SAMP	CR06	8.30	52.00		2.57	8.5									
OWF_GI#12_SAMP	CR09	11.30			2.05	25.6									
OWF_GI#12_SAMP	CR14	16.30			1.77	35.1									
OWF_GI#12_SAMP	CR16	18.95			2.37	14.9									
OWF_GI#12_SAMP	CR16	19.10	88.90												
OWF_GI#14_SAMP	CR02	1.10			2.26	15.8									
OWF_GI#14_SAMP	CR03	2.10			2.18	23.1									
OWF_GI#14_SAMP	CR04	3.30	1.94												
OWF_GI#14A_SAMP	CR02	1.70			2.14	20.3									
OWF_GI#14A_SAMP	CR02	2.10			2.71	4.4									
OWF_GI#14A_SAMP	CR03	3.10	11.60												
OWF_GI#14A_SAMP	CR03	3.30			1.99	30.2									
OWF_GI#14A_SAMP	CR03	4.00			2.50	12.4									
OWF_GI#14A_SAMP	CR04	4.30			2.42	14.3									
TXI - Hoek Triavial	•	•	1	1			1	'	1	1	1	1	1	'	-

TXL - Hoek Triaxial

ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	UCS (MPa)	Water Content (%)	Dry Density (Mg/m³)	Porosity (%)								
OWF_GI#14A_SAMP	CR05	5.70	17.00											
OWF_GI#14A_SAMP	CR09	10.10			2.29	17.6								
OWF_GI#14A_SAMP	CR10	11.20			2.00	28.5								
OWF_GI#14A_SAMP	CR11	12.50			2.42	12.9								
OWF_GI#14A_SAMP	CR12	13.00			1.83	31.4								
OWF_GI#14A_SAMP	CR13	14.00			1.93	29.2								
OWF_GI#14A_SAMP	CR13	14.75	18.20											
OWF_GI#15_SAMP	CR01	0.00			2.58	8.2								
OWF_GI#15A_SAMP	CR01	0.00			2.74	2.4								
OWF_GI#15A_SAMP	CR03	3.10			1.83	32.3								
OWF_GI#15A_SAMP	CR05	6.50	6.76											
OWF_GI#15A_SAMP	CR07	8.00			2.19	23.0								
OWF_GI#17_SAMP	CR03	6.45			2.20	18.2								
OWF_GI#17_SAMP	CR06	8.50			2.20	18.4								
OWF_GI#17_SAMP	CR08	12.00			1.77	33.9								
OWF_GI#17_SAMP	CR09	12.70	15.30											
OWF_GI#17_SAMP	CR10	13.70			1.53	42.6								
OWF_GI#17_SAMP	CR14	19.80			1.57	41.1								
OWF_GI#20_SAMP	CR03	11.50			1.92	27.4								
OWF_GI#20_SAMP	CR05	15.05			2.37	11.9								
OWF_GI#20_SAMP	CR06	16.10			1.54	42.8								
OWF_GI#20_SAMP	CR08	18.80			1.58	40.6								
TXI - Hoek Triavial	•	•					1		1		•	•	1	1

TXL - Hoek Triaxial

ROCK TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019

Location: A05 OWF



Borehole / Location	Sample No.	Test Depth (m)	UCS (MPa)	Water Content (%)	Dry Density (Mg/m³)	Porosity (%)						
OWF_GI#22_SAMP	CR08	8.50			2.54	4.7						
OWF_GI#22_SAMP	CR11	11.80			2.47	7.6						
OWF_GI#22_SAMP	CR12	12.70			2.42	9.9						
OWF_GI#24_SAMP	CR03	3.10			2.45	7.7						
OWF_GI#24_SAMP	CR05	5.20			2.50	7.2						
OWF_GI#24_SAMP	CR10	10.00			2.29	15.1						
OWF_GI#24_SAMP	CR18	18.50			2.15	19.7						

TXL - Hoek Triaxial

Ref: GMOP21-G-019-FAC

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019 Location: A05 OWF



			- .	Maiaton	D. II.	D	T	- DD	Lab Man	1111	
Borehole / Location	Sample No.	Subample Type	Test Depth	Moisture Content	Bulk Density	Dry Density	Torvane Su	PP Su	Lab Vane Su	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
			(m)	(%)	(Mg/m³)	(Mg/m ³)	(kPa)	(kPa)	(kPa)	(кРа)	(%)
OWF_GI#01_SAMP	CR01	B1	0.55	4	2.70	2.60					
OWF_GI#01_SAMP	CR02	Q1	2.40	10	2.54	2.31					
OWF_GI#01A_SAMP	CR01	IS	0.35	10	2.79	2.54					
OWF_GI#01A_SAMP	CR02	IS	1.40	3	2.81	2.73					
OWF_GI#01A_SAMP	CR03	B1	1.70	14							
OWF_GI#01A_SAMP	CR05	IS	3.20	16							
OWF_GI#01A_SAMP	CR06	IS	4.20	19							
OWF_GI#01A_SAMP	CR07	IS	5.20	28	2.40	1.88					
OWF_GI#01A_SAMP	CR09	Q1	7.45	16	2.35	2.03					
OWF_GI#01A_SAMP	CR10	Q1	8.65	12	2.43	2.17					
OWF_GI#01A_SAMP	CR10	Q2	9.30	4	2.78	2.67					
OWF_GI#01A_SAMP	CR11	Q1	10.00	3	2.66	2.58					
OWF_GI#01A_SAMP	CR12	IS	11.50	10							
OWF_GI#01A_SAMP	CR13	IS	12.50	15							
OWF_GI#01A_SAMP	PU02A	IS	14.50	24	2.12	1.71					
OWF_GI#01A_SAMP	PU03	IS	15.00	22	2.04	1.67					
OWF_GI#01A_SAMP	CR15	B1	16.10	10	2.19	1.99					
OWF_GI#01A_SAMP	CR16	B1	17.35	21							
OWF_GI#01A_SAMP	CR17	B1	18.65	14	2.09	1.83					
OWF_GI#01A_SAMP	CR18	B1	20.00	15							
OWF_GI#04_SAMP	PU01A	B1	0.40	19	2.11	1.77					
OWF_GI#04_SAMP	PU02	B1	1.00	20	1.96	1.64					

PP - Pocket Penetrometer UU - Undrained Unconsolidated Triaxial $\mathbf{8}_{50}$ - Strain at half max. deviator stress

1 Local Geodetic Datum: ETRS89 / UTMN30, Actual Coordinates SUMMARY OF OFFSHORE TEST RESULTS

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019 Location: A05 OWF



Borehole /				NA-:-4	D. II.	D	T	DD	L = - \ / - -	1111	1.11.1
Location	Sample No.	Subample Type	Test Depth (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Torvane Su (kPa)	PP Su (kPa)	Lab Vane Su (kPa)	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
OVALE OFFICE OFFICE	0004	D4			(g,)	(g,)	(4)	(4)	(4)	(4)	(10)
OWF_GI#04_SAMP	CR01	B1	1.40	1							
OWF_GI#04_SAMP	CR03	IS	4.10	6							
OWF_GI#04_SAMP	CR05	B1	5.80	5							
OWF_GI#04_SAMP	CR06	Q1	6.40	2	2.51	2.46					
OWF_GI#04A_SAMP	PU01A	B1	0.10	16	1.53	1.32					
OWF_GI#04A_SAMP	PU01A	B1	0.20	16	1.59	1.37					
OWF_GI#04A_SAMP	CR02	B1	1.50	0							
OWF_GI#04A_SAMP	CR03	B1	2.50	2							
OWF_GI#04A_SAMP	CR04	Q1	3.50	3	2.11	2.05					
OWF_GI#04A_SAMP	CR06	Q1	5.50	8	2.76	2.56					
OWF_GI#04A_SAMP	PU03	B1	8.50	19							
OWF_GI#04A_SAMP	PU04	B1	9.40	27							
OWF_GI#04A_SAMP	PU05	Q1	9.80	19	2.07	1.74					
OWF_GI#04A_SAMP	PU05	B1	10.10	22							
OWF_GI#04A_SAMP	PU06	B1	11.30	27							
OWF_GI#04A_SAMP	PU07	B1	11.80	12							
OWF_GI#04A_SAMP	CR10	B1	11.90	24							
OWF_GI#04A_SAMP		Q1	12.05	24	2.18	1.76					
OWF_GI#04A_SAMP		IS	13.90	23							
OWF_GI#04A_SAMP		IS	14.50	23							
OWF_GI#04A_SAMP		B1	15.00	19							
OWF_GI#04A_SAMP		IS	15.40	21							

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019 Location: A05 OWF



Borehole /	Sample	Subample	Test	Moisture	Bulk	Dry	Torvane	PP	Lab_Vane	UU	UU
Location	No.	Туре	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Su (kPa)	Su (kPa)	Su (kPa)	Su _{∪∪} (kPa)	8 ₅₀ (%)
OWF_GI#04A_SAMP	PU12	B1	15.80	22	2.06	1.69					
OWF_GI#04A_SAMP	PU13	B1	16.10	31							
OWF_GI#04A_SAMP	PU14	B1	14.40	18							
OWF_GI#04A_SAMP	CR12	B1	14.50	23	2.59	2.11					
OWF_GI#04A_SAMP	CR13	Q1	16.40	14	2.18	1.91					
OWF_GI#04A_SAMP	CR14	B1	18.50	19	2.38	2.00					
OWF_GI#04A_SAMP	CR15	B1	19.70	8	2.35	2.18					
OWF_GI#05_SAMP	PU01A	B1	0.20	16							
OWF_GI#05_SAMP	PU01A	B2	0.30	5							
OWF_GI#05A_SAMP	PU01A	B1	0.10	18	1.97	1.66					
OWF_GI#05A_SAMP	CR01	IS	0.80	7	2.56	2.39					
OWF_GI#05A_SAMP	CR01	B2	1.00	5							
OWF_GI#05A_SAMP	CR02	B1	1.70	8							
OWF_GI#05A_SAMP	CR03	Q1	2.70	6	2.55	2.41					
OWF_GI#05A_SAMP	CR03	IS	3.40	22							
OWF_GI#05A_SAMP	CR04	IS	3.65	10	2.59	2.35					
OWF_GI#05A_SAMP	CR04	Q1	3.90	45	2.12	1.46					
OWF_GI#05A_SAMP	CR05	B1	4.70	33	2.01	1.51					
OWF_GI#05A_SAMP	CR05	B1	4.95	33	2.00	1.50					
OWF_GI#05A_SAMP	CR05	Q1	4.70	30	1.90	1.46				165.00	
OWF_GI#05A_SAMP	CR05	Q1	4.71							129.00R	
OWF_GI#05A_SAMP	CR05	Q1	4.90					150			

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019 Location: A05 OWF



Borehole / Location	Sample No.	Subample Type	Test Depth (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Torvane Su (kPa)	PP Su (kPa)	Lab Vane Su (kPa)	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
OWF_GI#05A_SAMP	CR05	Q1	4.90					163			
OWF_GI#05A_SAMP	CR05	Q2	5.10					188			
OWF_GI#05A_SAMP	CR05	Q2	5.10					175			
OWF_GI#05A_SAMP	PU02	B1	5.60	33							
OWF_GI#05B_SAMP	CR01	IS	5.60	14	2.40	2.11					
OWF_GI#05B_SAMP	CR02	IS	6.80	37	2.25	1.64					
OWF_GI#05B_SAMP	CR03	Q1	7.85	30	2.02	1.55					
OWF_GI#05B_SAMP	CR03	Q2	8.00	15	2.17	1.89					
OWF_GI#05B_SAMP	CR04	B1	8.65	15	2.27	1.97					
OWF_GI#05B_SAMP	CR05	Q1	10.20	23	2.06	1.67					
OWF_GI#08_CPT	CR01	B1	1.55	14	2.34	2.05					
OWF_GI#08_CPT	CR02	IS	2.60	13	2.45	2.17					
OWF_GI#08_CPT	CR03	B1	4.00		2.53						
OWF_GI#08_CPT	CR06	IS	6.55	13							
OWF_GI#08_CPT	CR07	B1	3.00	18	1.93	1.64					
OWF_GI#08_CPT	CR08	B1	9.50	12							
OWF_GI#08_CPT	CR09	Q1	10.75	15	2.17	1.89					
OWF_GI#08_CPT	CR10	B1	11.55	19	2.62	2.20					
OWF_GI#08_CPT	CR10	Q1	11.65	17	2.12	1.81					
OWF_GI#08_CPT	CR11	B1	13.00	18	2.30	1.95					
OWF_GI#08_CPT	CR12	B1	13.65	21	1.94	1.60					
OWF_GI#08_CPT	CR12	B2	14.05	10	2.47	2.25					

PP - Pocket Penetrometer UU - Undrained Unconsolidated Triaxial $\mathbf{8}_{50}$ - Strain at half max. deviator stress

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Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019 Location: A05 OWF



•											
Borehole / Location	Sample No.	Subample Type	Test Depth (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Torvane Su (kPa)	PP Su (kPa)	Lab Vane Su (kPa)	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
OWF_GI#08_CPT	CR13	B1	14.60	7	2.37	2.21					
OWF_GI#08_CPT	PU02	B1	15.70	37	1.53	1.11					
OWF_GI#08_CPT	PU02	B1	16.00	37	1.60	1.16					
OWF_GI#08_CPT	CR14	B1	16.70	19	1.89	1.59					
OWF_GI#08_CPT	CR15	B1	17.65	8	2.35	2.18					
OWF_GI#08_CPT	CR16	B1	18.70	3	2.22	2.16					
OWF_GI#08_CPT	CR17	B1	19.75	6	2.63	2.48					
OWF_GI#08_CPT	CR17	B2	20.45	12	2.10	1.88					
OWF_GI#08_CPT	CR18	IS	20.65	37							
OWF_GI#09_SAMP	CR01	Q1	0.20	23	2.48	2.02					
OWF_GI#09_SAMP	CR02	Q1	1.20	15	2.63	2.29					
OWF_GI#09_SAMP	CR04	IS	3.10	16							
OWF_GI#09_SAMP	CR05	IS	4.10	16							
OWF_GI#09_SAMP	CR06	IS	5.10	12							
OWF_GI#09_SAMP	CR07	IS	6.00	9							
OWF_GI#09_SAMP	CR09	Q1	8.30	13	1.74	1.54					
OWF_GI#09_SAMP	CR10	Q1	9.30	11	2.34	2.11					
OWF_GI#09_SAMP	CR11	Q1	10.35	19	1.73	1.45					
OWF_GI#09_SAMP	CR12	Q1	11.00	21	2.11	1.74					
OWF_GI#09_SAMP	CR13	B1	12.00	22							
OWF_GI#09_SAMP	CR14	Q1	13.00	20	1.79	1.49					
OWF_GI#09_SAMP	CR15	Q1	14.00	3	2.70	2.62					

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019 Location: A05 OWF



									T		
Borehole / Location	Sample No.	Subample Type	Test Depth (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Torvane Su (kPa)	PP Su (kPa)	Lab Vane Su (kPa)	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
OWF_GI#09_SAMP	CR16	Q1	15.10	1	1.84	1.82					
OWF_GI#09_SAMP	CR17	IS	16.10	12							
OWF_GI#09_SAMP	CR18	IS	17.10	12							
OWF_GI#09_SAMP	CR19	IS	18.10	8							
OWF_GI#09_SAMP	CR20	IS	19.10	12							
OWF_GI#09_SAMP	CR20	Q1	19.40	19	1.60	1.34					
OWF_GI#09_SAMP	CR21	IS	20.10	15							
OWF_GI#09_SAMP	CR21	Q1	20.30	25	1.96	1.57					
OWF_GI#11_SAMP	PU01B	B1	0.20	24	2.01	1.62					
OWF_GI#11_SAMP	PU01B	B2	0.40	23	1.86	1.51					
OWF_GI#11_SAMP	PU01B	B2	0.60	24							
OWF_GI#11_SAMP	PU02A	B1	1.10	10	1.65	1.50					
OWF_GI#11_SAMP	PU02A	B1	1.40	11							
OWF_GI#11_SAMP	PU02A	B2	1.30	17	1.86	1.58					
OWF_GI#11_SAMP	PU03	B1	2.00	22	1.79						
OWF_GI#11_SAMP	PU03	B1	2.10	23	1.79	1.46					
OWF_GI#11_SAMP	PU03	B1	2.30	23							
OWF_GI#11_SAMP	PU06	B1	4.05	25							
OWF_GI#11_SAMP	CR04	IS	4.55		2.09						
OWF_GI#11_SAMP	CR05	IS	5.55	22							
OWF_GI#11_SAMP	CR06	IS	7.10	7							
OWF_GI#11_SAMP	CR08	Q1	9.05	14	2.41	2.11					

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019 Location: A05 OWF



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Borehole / Location	Sample No.	Subample Type	Test Depth	Moisture Content	Bulk Density	Dry Density	Torvane Su	PP Su	Lab Vane Su	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
2004.0.1			(m)	(%)	(Mg/m³)	(Mg/m³)	(kPa)	(kPa)	(kPa)	(кРа)	(%)
OWF_GI#11_SAMP	CR09	IS	9.80	18	2.23	1.89					
OWF_GI#11_SAMP	PU07	B1	11.60	22							
OWF_GI#11_SAMP	PU08	B2	12.30	22	1.73	1.42					
OWF_GI#11_SAMP	CR11	IS	13.20	19	1.82	1.53					
OWF_GI#11_SAMP	CR12	Q1	13.90	14	1.92	1.68					
OWF_GI#11_SAMP	CR13	IS	14.70	15	2.22	1.93					
OWF_GI#11_SAMP	CR13	IS	15.00	13	2.14	1.89					
OWF_GI#11_SAMP	CR14	B1	16.10	15							
OWF_GI#11_SAMP	CR15	IS	16.50	17	2.62	2.24					
OWF_GI#11_SAMP	CR15	IS	17.00	16	2.50	2.16					
OWF_GI#11_SAMP	CR16	IS	17.50	20	2.66	2.22					
OWF_GI#11_SAMP	CR16	B1	17.90	26	1.68	1.34					
OWF_GI#11_SAMP	CR17	Q1	18.50	15	2.55	2.22					
OWF_GI#11_SAMP	CR17	B1	19.00	26							
OWF_GI#11_SAMP	CR18	IS	19.70	17	2.20	1.88					
OWF_GI#12_SAMP	P01	B1	0.10	24	1.86	1.50					
OWF_GI#12_SAMP	PU01A	B1	0.60	22	1.86	1.52					
OWF_GI#12_SAMP	PU01A	B1	0.90	18	1.93	1.64					
OWF_GI#12_SAMP	PU02	B1	1.10	29	1.79	1.39					
OWF_GI#12_SAMP	PU02	B2	1.40	11	1.76	1.59					
OWF_GI#12_SAMP	PU03	B1	1.55	7							
OWF_GI#12_SAMP	PU03	B2	1.70	20	1.83	1.53					

Project Name: A05 Bretagne Offshore GI

Project Number: GMOP21-G-019 Location: A05 OWF



			Test	Moisture	Bulk	Dry	Torvane	PP	Lab Vane	UU	UU
Borehole / Location	Sample No.	Subample Type	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Su (kPa)	Su (kPa)	Su (kPa)	Su _{∪∪} (kPa)	8 ₅₀ (%)
OWF_GI#12_SAMP	PU04	B1	2.10	25	1.81	1.45	, ,	, ,	. ,		, ,
OWF_GI#12_SAMP	PU05	B1	2.30	25.8	1.81						
OWF_GI#12_SAMP	PU05	B1	2.40	23	1.80	1.47					
OWF_GI#12_SAMP	PU07	B2	4.00	11							
OWF_GI#12_SAMP	CR02	B1	4.35	16	2.59	2.23					
OWF_GI#12_SAMP	CR05	Q1	7.45	12	2.67	2.38					
OWF_GI#12_SAMP	CR06	IS	8.36	1	2.0.						
OWF_GI#12_SAMP	CR07	B1	9.62	1	2.73	2.65					
OWF_GI#12_SAMP	CR09	B1	12.00	19	2.33	1.96					
OWF_GI#12_SAMP	CR10	IS	13.85	20	2.00	1.50					
OWF_GI#12_SAMP	CR12	IS	14.35	7							
OWF_GI#12_SAMP	CR12	IS	14.60	20							
OWF_GI#12_SAMP	CR12	B1	14.75	7	1.58	1.48					
OWF_GI#12_SAMP	PU10	B1	16.30	18	1.34	1.14					
OWF_GI#12_SAMP	CR14	IS	16.40	17	1.54	1.14					
OWF_GI#12_SAMP	PU11	B1	18.30	13							
OWF_GI#12_SAMP	CR16	B1	19.00	4	2.45	2.36					
	CR17	В1									
OWF_GI#12_SAMP			19.55	2	2.10	2.06					
OWF_GI#13_CPT	PU01	B1	0.10	18	0.44	4.07					
OWF_GI#13_CPT	CR01 CR02	B1 Q1	1.40	7	2.11	1.97					
OWF_GI#13_CPT			2.40	16	1.92	1.66					
OWF_GI#13_CPT	CR03	Q1	3.30	78	2.42	1.36					

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Bl. I. /	Cample	Culturant	Test	Moisture	Bulk	Dry	Torvane	PP	Lab Vane	UU	UU
Borehole / Location	Sample No.	Subample Type	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Su (kPa)	Su (kPa)	Su (kPa)	Su _{∪∪} (kPa)	8 ₅₀ (%)
OWF_GI#13_CPT	CR04	B1	4.00		2.61						
OWF_GI#13_CPT	CR05	B1	5.45	7	2.55	2.38					
OWF_GI#13_CPT	CR06	IS	6.25	19							
OWF_GI#13_CPT	CR07	IS	7.15	10							
OWF_GI#13_CPT	CR09	B1	9.10	15	2.44	2.12					
OWF_GI#13_CPT	CR10	B1	10.60	21	2.39	1.98					
OWF_GI#13_CPT	CR10	B2	10.75	97	2.60	1.32					
OWF_GI#13_CPT	CR12	B1	12.05	18							
OWF_GI#13_CPT	CR13	B1	13.00	54	1.68	1.09					
OWF_GI#13_CPT	CR13	B2	13.10	9	2.21	2.03					
OWF_GI#13_CPT	CR14	B1	14.10	13	1.99	1.76					
OWF_GI#13_CPT	CR15	B1	15.30	17	2.33	1.99					
OWF_GI#13_CPT	CR16	B1	16.60	14	2.18	1.91					
OWF_GI#13_CPT	CR17	B1	17.50	25	2.11	1.69					
OWF_GI#13_CPT	CR18	Q1	18.00					450			
OWF_GI#13_CPT	CR18	B1	18.75	16	2.14	1.84					
OWF_GI#13_CPT	CR19	B1	19.70	14							
OWF_GI#14_SAMP	CR01	IS	0.30	12							
OWF_GI#14_SAMP	CR02	B1	1.30	11	2.21	1.99					
OWF_GI#14_SAMP	CR03	IS	2.20	7	2.73	2.55					
OWF_GI#14_SAMP	CR03	IS	2.40	12							
OWF_GI#14_SAMP	CR04	B1	3.00	25	2.51	2.01					

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Borehole / Location	Sample No.	Subample Type	Test Depth (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Torvane Su (kPa)	PP Su (kPa)	Lab Vane Su (kPa)	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
OWF_GI#14_SAMP	CR04	B2	3.80	22	2.75	2.25					
OWF_GI#14_SAMP	PU01	B1	4.00	16	2.21	1.91					
OWF_GI#14A_SAMP	CR01	B1	0.45	9	2.27	2.08					
OWF_GI#14A_SAMP	CR02	B1	2.30	14	2.25	1.97					
OWF_GI#14A_SAMP	CR08	B2	8.25	12	2.61	2.33					
OWF_GI#14A_SAMP	CR08	B2	8.75	12	2.61	2.33					
OWF_GI#14A_SAMP	CR08	В3	9.05	24	1.88	1.52					
OWF_GI#14A_SAMP	PU02	B1	9.55	28	2.08	1.63					
OWF_GI#14A_SAMP	PU02	B1	9.60	28							
OWF_GI#14A_SAMP	CR09	B1	10.20	5	2.56	2.44					
OWF_GI#14A_SAMP	CR10	B1	11.05	5	2.68	2.55					
OWF_GI#14A_SAMP	CR11	B1	12.05	10	2.92	2.65					
OWF_GI#14A_SAMP	CR11	B2	12.55	7	2.78	2.60					
OWF_GI#14A_SAMP	CR12	B1	12.40	16	2.51	2.16					
OWF_GI#14A_SAMP	CR13	B1	14.50	13	2.50	2.21					
OWF_GI#14A_SAMP	CR13	B1	14.70	11	2.65	2.39					
OWF_GI#14A_SAMP	PU08	B1	18.80	27	1.75	1.37					
OWF_GI#14A_SAMP	PU09	B1	19.30	22	1.56	1.28					
OWF_GI#14A_SAMP	PU10	B1	19.60	26	1.65	1.31					
OWF_GI#14A_SAMP	PU11	B1	20.05	24	1.62	1.31					
OWF_GI#15A_SAMP	CR01	B1	0.10	14	2.31	2.03					
OWF_GI#15A_SAMP	PU02	B2	2.10	40	1.80	1.28					

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			Test	Moisture	Bulk	Dry	Torvane	PP	Lab Vane	UU	UU
Borehole / Location	Sample No.	Subample Type	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Su (kPa)	Su (kPa)	Su (kPa)	Su _{∪∪} (kPa)	8 ₅₀ (%)
OWF_GI#15A_SAMP	PU03	B1	2.55	29	1.51	1.17	,	,	,		,
					1.31	1.17					
OWF_GI#15A_SAMP	CR03	IS	3.30	11							
OWF_GI#15A_SAMP	CR03	B1	3.05	18							
OWF_GI#15A_SAMP	CR04	IS	4.10	17							
OWF_GI#15A_SAMP	PU04	Q1	5.00	22	1.90	1.56					
OWF_GI#15A_SAMP	PU05	B1	5.50	25							
OWF_GI#15A_SAMP	CR05	B1	6.00	20							
OWF_GI#15A_SAMP	CR06	Q1	7.40	39	2.04	1.47					
OWF_GI#15A_SAMP	CR07	Q1	8.60	15	2.13	1.85					
OWF_GI#15A_SAMP	CR08	B1	9.30	38							
OWF_GI#15A_SAMP	CR08	Q1	9.40	34	1.82	1.36					
OWF_GI#15A_SAMP	PU06	Q1	10.20	22	1.90	1.56		800			
OWF_GI#15A_SAMP	PU07	Q1	10.50	51	2.31	1.53		800			
OWF_GI#15A_SAMP	PU07	Q2	10.50					800			
OWF_GI#15A_SAMP	PU07	Q2	10.60	49	2.07	1.39					
OWF_GI#15A_SAMP	PU08	B1	11.05	53							
OWF_GI#15A_SAMP	PU08	Q1	11.30	32	2.13	1.61		800			
OWF_GI#15A_SAMP	PU09	B1	11.55	5							
OWF_GI#15A_SAMP	CR09	Q1	12.80	38	1.94	1.41					
OWF_GI#15A_SAMP	CR10	Q1	13.20	36	1.85	1.36					
OWF_GI#15A_SAMP	CR10	B1	13.20	28							
OWF_GI#15A_SAMP	CR11	Q1	14.10	22	1.32	1.08					

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Borehole / Location	Sample No.	Subample Type	Test Depth (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Torvane Su (kPa)	PP Su (kPa)	Lab Vane Su (kPa)	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
OWF_GI#15A_SAMP	CR12	IS	15.40					400			
OWF_GI#15A_SAMP	CR12	Q1	15.50	37	2.05	1.50					
OWF_GI#15A_SAMP	CR12	Q1	15.60					450			
OWF_GI#15A_SAMP	CR13	Q1	16.50	28	1.97	1.54		400			
OWF_GI#15A_SAMP	CR13	Q1	16.70					400			
OWF_GI#15A_SAMP	CR14	Q1	17.30	37	2.03	1.48		450			
OWF_GI#15A_SAMP	CR14	Q1	17.50					450			
OWF_GI#15A_SAMP	PU12	Q1	18.10	25	2.08	1.66					
OWF_GI#15A_SAMP	PU13	B1	18.60	28							
OWF_GI#15A_SAMP	CR15	Q1	19.20	38	1.70	1.23					
OWF_GI#15A_SAMP	CR16	Q1	19.90	32	1.84	1.39					
OWF_GI#17_SAMP	PU01	B1	0.00	17	1.75	1.49					
OWF_GI#17_SAMP	PU01	B2	0.60	19	1.64	1.38					
OWF_GI#17_SAMP	PU02	B1	0.80	22	1.79	1.47					
OWF_GI#17_SAMP	PU02	B2	1.30	23	1.92	1.56					
OWF_GI#17_SAMP	PU04	B1	2.60	24	1.92	1.54					
OWF_GI#17_SAMP	PU05	B1	3.10	21	1.93	1.60					
OWF_GI#17_SAMP	PU06A	B1	3.70	22	1.69	1.38					
OWF_GI#17_SAMP	PU07	B1	4.20	27	1.89	1.49					
OWF_GI#17_SAMP	PU08	B1	4.70	26	1.75	1.39					
OWF_GI#17_SAMP	CR02	Q1	5.60	21	2.32	1.92					
OWF_GI#17_SAMP	CR03	Q1	6.25	29	2.02	1.57					

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Borehole /	Sample	Subample	Test Depth	Moisture Content	Bulk Density	Dry Density	Torvane Su	PP Su	Lab Vane Su	UU Su,,,	UU 8 ₅₀
Location	No.	Туре	(m)	(%)	(Mg/m ³)	(Mg/m ³)	(kPa)	(kPa)	(kPa)	Su _{∪∪} (kPa)	8 ₅₀ (%)
OWF_GI#17_SAMP	CR04	B1	7.10	7							
OWF_GI#17_SAMP	CR05	B1	7.60	12	2.21	1.97					
OWF_GI#17_SAMP	CR06	IS	8.50	13							
OWF_GI#17_SAMP	PU10	Q1	10.50	26	2.02	1.60					
OWF_GI#17_SAMP	PU11	IS	11.50	21							
OWF_GI#17_SAMP	PU12	B1	11.80	14							
OWF_GI#17_SAMP	CR08	IS	11.80	17	2.02	1.73					
OWF_GI#17_SAMP	CR09	B1	13.10	18	2.04	1.73					
OWF_GI#17_SAMP	CR10	B1	14.20	28	1.79	1.40					
OWF_GI#17_SAMP	CR11	B1	15.00	22	1.82	1.49					
OWF_GI#17_SAMP	CR12	IS	15.90	28							
OWF_GI#17_SAMP	PU13	B1	16.80	28	1.94	1.52					
OWF_GI#17_SAMP	PU14	Q1	17.70	27	2.00	1.57					
OWF_GI#17_SAMP	PU15	IS	18.40	24							
OWF_GI#17_SAMP	CR13	IS	19.10	18							
OWF_GI#17_SAMP	CR14	IS	19.90	29							
OWF_GI#20_CPT	CR01	IS	5.40	18							
OWF_GI#20_CPT	CR01	IS	5.60	24	2.00	1.61					
OWF_GI#20_CPT	CR02	B1	12.00	17							
OWF_GI#20_CPT	CR03	IS	18.70	19	2.47	2.08					
OWF_GI#20_CPT	CR03	IS	18.90	21	1.94	1.60					
OWF_GI#20_CPT	CR04	IS	19.50	25	1.92	1.54					

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Borehole / Location	Sample No.	Subample Type	Test Depth (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Torvane Su (kPa)	PP Su (kPa)	Lab Vane Su (kPa)	UU Su _{uu} (kPa)	UU 8 ₅₀ (%)
OWF_GI#20_SAMP	PU01	B1	0.10	24	1.90	1.53					
OWF_GI#20_SAMP	PU01	В3	0.50	21	1.82	1.51					
OWF_GI#20_SAMP	PU02	B1	0.90	20	1.87	1.56					
OWF_GI#20_SAMP	PU02	B2	1.20	22	1.70	1.39					
OWF_GI#20_SAMP	PU03	B1	1.70	20	1.77	1.47					
OWF_GI#20_SAMP	PU05	B1	2.40	24	1.74	1.40					
OWF_GI#20_SAMP	PU07	B1	3.40	24	1.71	1.38					
OWF_GI#20_SAMP	PU08	B1	4.00	22	1.85	1.52					
OWF_GI#20_SAMP	PU11	IS	7.00	24							
OWF_GI#20_SAMP	PU12	IS	8.20	33	1.99	1.50					
OWF_GI#20_SAMP	PU13	IS	9.40	14	1.88	1.65					
OWF_GI#20_SAMP	PU14	IS	10.40	25	1.89	1.51					
OWF_GI#20_SAMP	PU15	Q1	11.20	32	1.82	1.38					
OWF_GI#20_SAMP	CR03	IS	11.70	10	2.07	1.88					
OWF_GI#20_SAMP	CR04	B1	12.00	32							
OWF_GI#20_SAMP	PU17	Q1	13.35	26	1.82	1.44					
OWF_GI#20_SAMP	PU18	Q1	14.60	24	2.03	1.64					
OWF_GI#20_SAMP	PU19	B1	15.00	19	2.61	2.19					
OWF_GI#20_SAMP	CR05	Q1	15.55	33	2.00	1.50					
OWF_GI#20_SAMP	CR06	Q1	16.40	25	2.11	1.69					
OWF_GI#20_SAMP	PU20	IS	18.00	27	2.18	1.72					
OWF_GI#20_SAMP	PU21	B1	18.30	16							

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Davida I.	Sample	Cubomri	Test	Moisture	Bulk	Dry	Torvane	PP	Lab Vane	UU	UU
Borehole / Location	Sample No.	Subample Type	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Su (kPa)	Su (kPa)	Su (kPa)	Su _{∪∪} (kPa)	8 ₅₀ (%)
OWF_GI#20_SAMP	CR08	Q1	19.00	28	1.90	1.48					
OWF_GI#22_CPT	CR01	IS	5.25	2	2.07	2.03					
OWF_GI#22_CPT	CR03	IS	6.10	7							
OWF_GI#22_CPT	CR04	IS	7.10	28							
OWF_GI#22_CPT	CR05	IS	8.00	5							
OWF_GI#22_CPT	CR06	IS	9.00	12	2.58	2.30					
OWF_GI#22_CPT	CR07	IS	11.35	3							
OWF_GI#22_CPT	CR08	IS	12.65	13	2.42	2.14					
OWF_GI#22_CPT	CR09	IS	13.60	29							
OWF_GI#22_CPT	CR10	IS	14.20	10	2.31	2.10					
OWF_GI#22_CPT	CR11	IS	15.10	18	2.38	2.02					
OWF_GI#22_CPT	CR12	IS	16.00	27	1.87	1.47					
OWF_GI#22_SAMP	PU01	B1	0.10	20	1.98	1.65					
OWF_GI#22_SAMP	PU01	B1	0.30	8	1.73	1.60					
OWF_GI#22_SAMP	PU02	B1	0.80	26	1.72	1.37					
OWF_GI#22_SAMP	PU06	B1	2.90	16	1.88	1.62					
OWF_GI#22_SAMP	PU06	B1	3.00	19	1.89	1.59					
OWF_GI#22_SAMP	PU07	B1	3.40	18	1.82	1.54					
OWF_GI#22_SAMP	PU07	B1	3.50	17	1.83	1.57					
OWF_GI#22_SAMP	PU08	Q1	3.90	22	2.07	1.70					
OWF_GI#22_SAMP	PU08	B2	4.20	22							
OWF_GI#22_SAMP	CR03	B1	5.50	15							

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Perebela /	Sample	Subample	Test	Moisture	Bulk	Dry	Torvane	PP	Lab Vane	UU	UU
Borehole / Location	Sample No.	Type	Depth (m)	Content (%)	Density (Mg/m³)	Density (Mg/m³)	Su (kPa)	Su (kPa)	Su (kPa)	Su _{∪∪} (kPa)	8 ₅₀ (%)
OWF_GI#22_SAMP	CR07	B1	8.00	10	2.25	2.05					
OWF_GI#22_SAMP	CR08	B1	8.50	5							
OWF_GI#22_SAMP	CR09	Q1	9.60	14	2.62	2.30					
OWF_GI#22_SAMP	CR11	IS	11.80	3	2.46	2.39					
OWF_GI#22_SAMP	CR12	IS	12.50	8	2.73	2.53					
OWF_GI#22_SAMP	CR12	IS	12.70	8							
OWF_GI#22_SAMP	PU13	B1	13.60	27							
OWF_GI#22_SAMP	PU13	Q1	13.60	41	2.01	1.43					
OWF_GI#22_SAMP	PU13	Q2	13.80	41	1.98	1.40					
OWF_GI#22_SAMP	CR13	IS	14.30	9							
OWF_GI#22_SAMP	CR15	IS	16.30	9							
OWF_GI#22_SAMP	PU15	Q1	18.20	26	1.86	1.48					
OWF_GI#22_SAMP	PU15	Q2	18.30	26	2.10	1.67					
OWF_GI#22_SAMP	PU15	B1	18.50	26							
OWF_GI#22_SAMP	PU16	Q1	18.90	24	1.98	1.60					
OWF_GI#22_SAMP	PU16	B1	19.20	24							
OWF_GI#22_SAMP	PU16	Q2	19.30	24	2.09	1.69					
OWF_GI#22_SAMP	PU17	B1	19.90	20							
OWF_GI#22_SAMP	PU17	Q1	19.95	20	2.02	1.68					
OWF_GI#24_SAMP	PU01	B1	0.10	30	1.89	1.45					
OWF_GI#24_SAMP	PU01	В3	0.50	31	1.71	1.31					
OWF_GI#24_SAMP	CR01	Q1	1.20	13	2.06	1.82					

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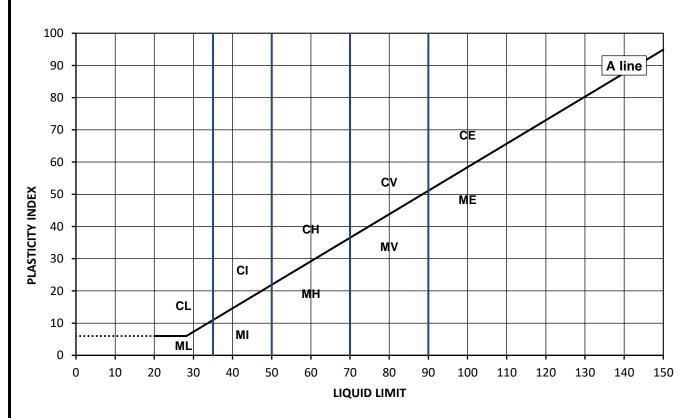
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Borehole / Location	Sample No.	Subample Type	Test Depth (m)	Moisture Content (%)	Bulk Density (Mg/m³)	Dry Density (Mg/m³)	Torvane Su (kPa)	PP Su (kPa)	Lab Vane Su (kPa)	UU Su _{∪∪} (kPa)	UU 8 ₅₀ (%)
OWF_GI#24_SAMP	CR02	IS	2.20	5							
OWF_GI#24_SAMP	CR03	IS	3.20	13	2.84	2.51					
OWF_GI#24_SAMP	CR04	IS	4.35	29	1.92	1.49					
OWF_GI#24_SAMP	CR05	B1	5.20	7	2.21	2.07					
OWF_GI#24_SAMP	CR06	B1	6.10	13	2.08	1.84					
OWF_GI#24_SAMP	CR07	Q1	7.50	14	2.04	1.79					
OWF_GI#24_SAMP	CR07	B1	7.70	19	2.65	2.23					
OWF_GI#24_SAMP	CR08	IS	8.00	14							
OWF_GI#24_SAMP	CR10	IS	10.00	9	2.11	1.94					
OWF_GI#24_SAMP	CR11	B1	11.00	10							
OWF_GI#24_SAMP	CR12	B1	12.10	27	2.41	1.90					
OWF_GI#24_SAMP	CR13	B1	13.00	5	2.69	2.56					
OWF_GI#24_SAMP	CR14	B1	14.00	23							
OWF_GI#24_SAMP	CR15	B1	15.00	22							
OWF_GI#24_SAMP	CR16	B1	16.10	11	3.02	2.72					
OWF_GI#24_SAMP	CR17	B1	17.00	9							
OWF_GI#24_SAMP	PU06	IS	18.00	14							
OWF_GI#24_SAMP	PU07	B1	18.50	11							
OWF_GI#24_SAMP	CR18	B1	18.70	10							
OWF_GI#24_SAMP	CR19	Q1	19.80	17	1.81	1.55					

Appendix B.3 Classification Test Results

CEOOL HIDMADINE	ISO Attorb	ora Plasticity	(A-line) Chart		Job Ref	GMOP21-G-019
GEOQUIPMARINE	130 Atterb	erg Flasticity	(A-IIIIe) Chart		Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A05 Bretagne Offshore	GI			Sample No.	PU02A
Specimen Reference	IS	Specimen Depth	14.5	m	Depth	14.5
Date started	16/03/2023				Sample Type	IS
Test Method	ISO 17892-12				Keylab ID	BH012023022733



OWF_GI#01A_SAMP PU02A

Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90

Organic

Notes	Date Printed	Approved By
	18/04/2023	D.Smith

append to classification for organic material (eg CHO)



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

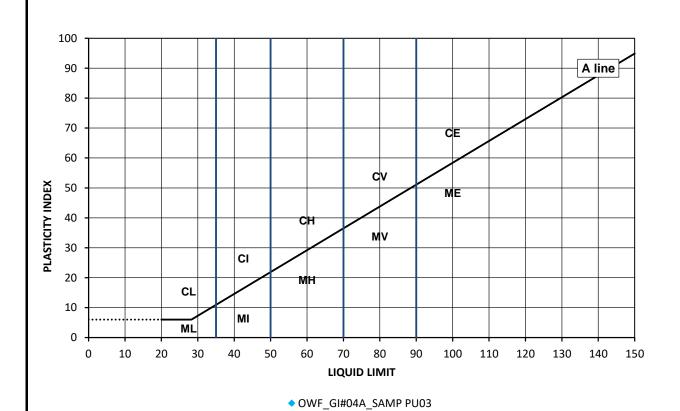
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	S	ample		bi %	: %	cit ex	%	.± °	%	Prep.	Test		
Location	Ref	Top Depth		异별	Plast Limit	Plasti y Inde	Water Cont.	Liquid Index	l	Method	Method	Sample Description	Remarks
OWF_GI#01 A_SAMP	PU02A	14.50	IS	NP	NP		17.6		57	3	4 Point Method	Very pale yellow, white page 2.6y/2-9 silty, clayey, gravelly SAND	Specimen cannot roll - Non-plastic specimen

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	40/04/0000	D C:4h
Preparation Method 1 = Tested in natural condition	18/04/2023	D.Smith
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
	1	

GEOQUIPMARINE	ISO Attorbe		Job Ref	GMOP21-G-019		
G C C C C C C C C C C C C C C C C C C C	130 Atterbe	ery Flasticity	(A-line) Chart	Borehole/Pit No.	OWF_GI#04A_SAMP	
Site Name	A05 Bretagne Offshore	GI	Sample No.	PU03		
Specimen Reference	B1	Specimen Depth	8.3	m	Depth	8.3
Date started	17/03/2023				Sample Type	B1
Test Method	ISO 17892-12				Keylab ID	BH012023022765



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plasticity		Liquid Limit			
С	Clay	L	Low	below 35			
М	Silt	I	Medium	35 to 50			
		Н	High	50 to 70			
		٧	Very high	70 to 90			
		E	Extremely high	exceeding 90			
	Organic	0	append to classification for	organic material (eg CHO)			

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

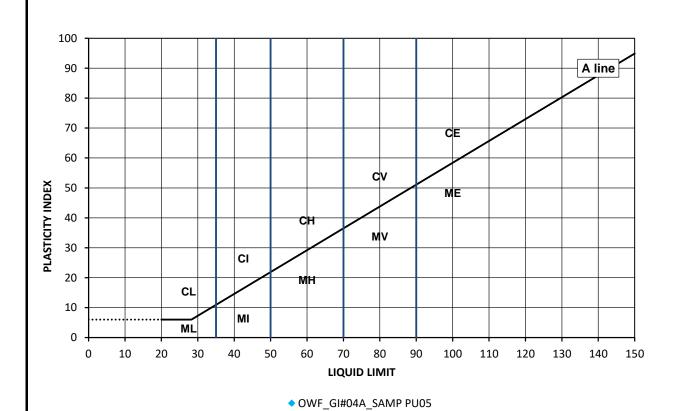
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

Location	Ref	ample Top Depth	Туре	Liquid Limit %	Plastic Limit %	Plasticit y Index	ater ont.	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#04 A_SAMP	PU03	8.30	B1	NP	NP		22.2		51	3	4 Point Method	white page 2.5y 9/2 Very pale yellow silty SAND with gravel and clay	Too sandy to roll, sample non-plastic

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	4.4/0.4/0.000	II Markar
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorbe	(A-line) Chart		Job Ref	GMOP21-G-019	
G CESTON IN WHITE	130 Atterbe	ery Flasticity	(A-IIIIe) Chart	Borehole/Pit No.	OWF_GI#04A_SAMP	
Site Name	A05 Bretagne Offshore	GI			Sample No.	PU05
Specimen Reference	B1	Specimen Depth	10	m	Depth	10
Date started	17/03/2023				Sample Type	B1
Test Method	ISO 17892-12				Keylab ID	BH012023022769



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

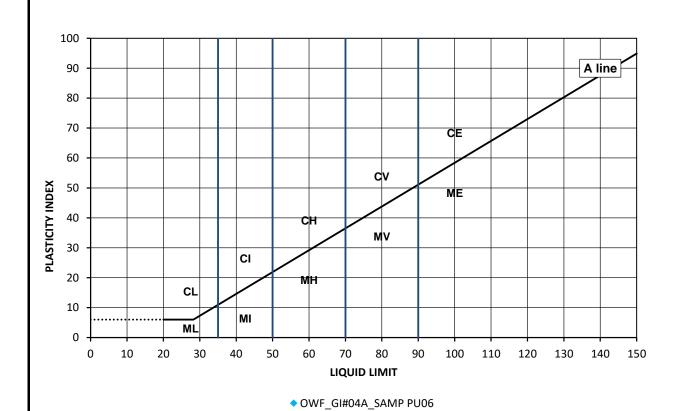
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

Location	Ref	Top Depth	Type	Liquid Limit %	Plastic Limit %	Plasticit y Index	Water Cont. %	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#04 A_SAMP	PU05	10.00	B1	NP	NP		24.1		53	3	4 Point Method	2.5y 9/2 Very pale yellow silty, sandy, GRAVEL	Too sandy to roll, report as non-plastic

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.		, ,	
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point. Legend			
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Attorbo		Job Ref	GMOP21-G-019		
G C C C C C C C C C C C C C C C C C C C	130 Atterbe	ery Flasticity	(A-line) Chart	Borehole/Pit No.	OWF_GI#04A_SAMP	
Site Name	A05 Bretagne Offshore 0	GI			Sample No.	PU06
Specimen Reference	B1	Specimen Depth	11.3	m	Depth	11.3
Date started	15/03/2023				Sample Type	B1
Test Method	ISO 17892-12				Keylab ID	BH012023022771



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	ticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		V	Very high	70 to 90		
		E	Extremely high	exceeding 90		
	Organic	0	append to classification for o	organic material (eg CHO)		

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

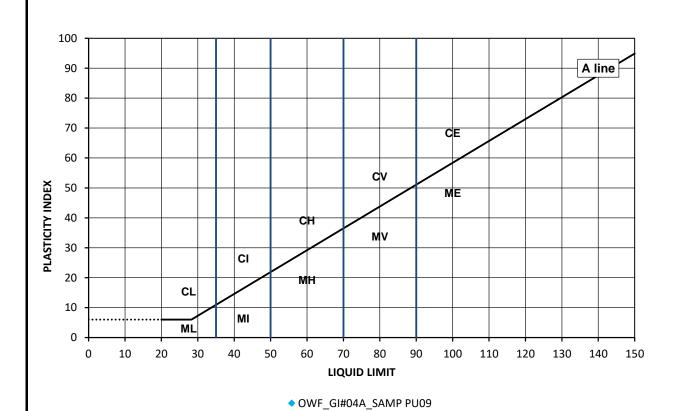
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	S	ample		p. %	ic %	cit ex	. %	ity %		Prep.	Test			
Location	Ref	Top Depth	Туре	Liqu Limit	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks	
OWF_GI#04 A_SAMP	PU06	11.30	B1	NP	NP		23.4		42	3	4 Point Method	Very pale yellow white page 2.5y 9/2 silty, sandy, GRAVEL including cemented sand	Specimen cannot roll - non-plastic	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	14/04/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	14/04/2023	o. waznar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
	1	

GEOQUIPMARINE	ISO Attorbe	ora Plasticity	(A-line) Chart		Job Ref	GMOP21-G-019
ISO Atterberg Plasticity (A-line) Chart					Borehole/Pit No.	OWF_GI#04A_SAMP
Site Name	A05 Bretagne Offshore	GI		Sample No.	PU09	
Specimen Reference	IS	Specimen Depth	m	Depth	14.2	
Date started	15/03/2023			Sample Type	IS	
Test Method	ISO 17892-12				Keylab ID	BH012023022776



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	ticity	Liquid Limit			
С	Clay	L	Low	below 35			
М	Silt	I	Medium	35 to 50			
		Н	High	50 to 70			
		V	Very high	70 to 90			
		Е	Extremely high	exceeding 90			
	Organic	0	append to classification for o	organic material (eg CHO)			

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

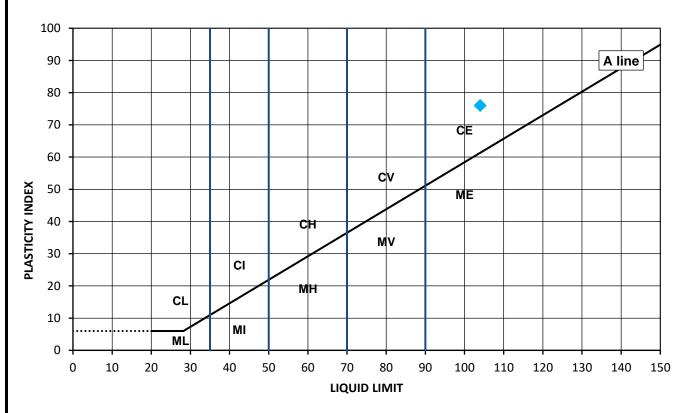
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	S	ample		id %	ic %	cit ex		lity %		Prop Toet		Prep. Test		Prop. Tost			
Location	Ref	Top Depth	Туре	Liqu Limit	Plast Limit	Plasti y Ind	Vater Sont.	iquid ndex	% Passing 0.425mm	Method	Method	Sample Description	Remarks				
		Dopui				_	7	- -	0.42311111								
OWF_GI#04 A_SAMP	PU09	14.20	ıs	NP	NP		17.1		29	3	4 Point Method	Very pale yellow, white page 2.5y 9/2 silty sandy, GRAVEL including shell fragments and cemented sand	Specimen cannot roll - non-plastic				

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	4.4/0.4/00000	II Mambar
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
	1	

GEOQUIPMARINE	ISO Attori	perg Plasticity (Job Ref	GMOP21-G-019	
G CESTON I MANAGE	130 Atteri	Derg Flasticity (Borehole/Pit No.	OWF_GI#05A_SAMP	
Site Name	A05 Bretagne Offshore	e GI		Sample No.	CR04	
Specimen Reference	Q1	Specimen Depth	3.9	m	Depth	3.9
Date started	03/05/2023			Sample Type	Q1	
Test Method	ISO 17892-12			Keylab ID	BH0120230227112	



OWF_GI#05A_SAMP CR04

Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	29/06/2023	D.Smith	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

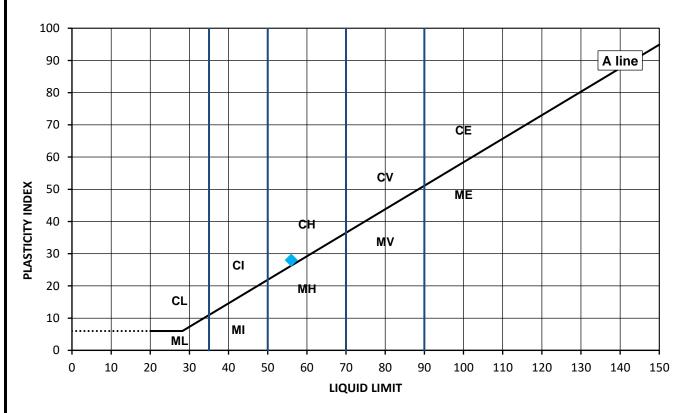
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

Location	Ref	ample Top Depth	Tyne	Liquid Limit %	olas imit	Plasticit y Index	Water Cont. %	Liquidity Index %		Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#05 A_SAMP	CR04	3.90	Q1	104	28	76	37.6	0.13	100	1	4 Point Method	Green sandy, silty, CLAY	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	00/00/0000	D. Considh
Preparation Method 1 = Tested in natural condition	29/06/2023	D.Smith
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attori	perg Plasticity (Job Ref	GMOP21-G-019		
G CESTON I MANAGE	130 Atteri	beig Flasticity (Borehole/Pit No.	OWF_GI#05A_SAMP		
Site Name	A05 Bretagne Offshore	e GI		Sample No.	CR05	
Specimen Reference	B1	Specimen Depth	4.5	m	Depth	4.5
Date started	06/03/2023				Sample Type	B1
Test Method	ISO 17892-12			Keylab ID	BH0120230227114	



OWF_GI#05A_SAMP CR05

Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	sticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		V	Very high	70 to 90		
		Е	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		

Notes	Date Printed	Approved By	
	18/04/2023	U. Mazhar	



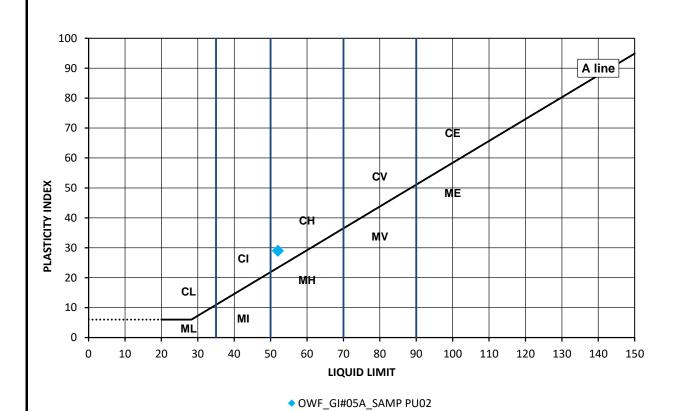
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

Project Name	A05 Bretagne Offshore GI
Project No.	GMOP21-G-010

Location	S Ref	ample Top Depth	Туре	l'à E	Plastic Limit %	Plasticit y Index	Water Cont. %	Liquidity Index %	, , ,	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#05 A_SAMP	CR05	4.50	B1	56	28	28	33.3	0.19	100	1	4 Point Method	GLEY 1 5GY 2.5/1 Greenish black slightly gravelly, sandy, CLAY	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend	18/04/2023	U. Mazhar	
Preparation Method 1 = Tested in natural condition	18/04/2023	U. Maznar	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			
			i

GEOQUIPMARINE	ISO Attorbe	erg Plasticity	Job Ref	GMOP21-G-019		
G C C C C C C C C C C C C C C C C C C C	130 Atterbe	ery Flasticity	Borehole/Pit No.	OWF_GI#05A_SAMP		
Site Name	A05 Bretagne Offshore	GI		Sample No.	PU02	
Specimen Reference	B1	Specimen Depth	5.5	m	Depth	5.5
Date started	21/03/2023			Sample Type	B1	
Test Method	ISO 17892-12			Keylab ID	BH0120230227117	



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plasticity		Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		٧	Very high	70 to 90		
		Е	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		

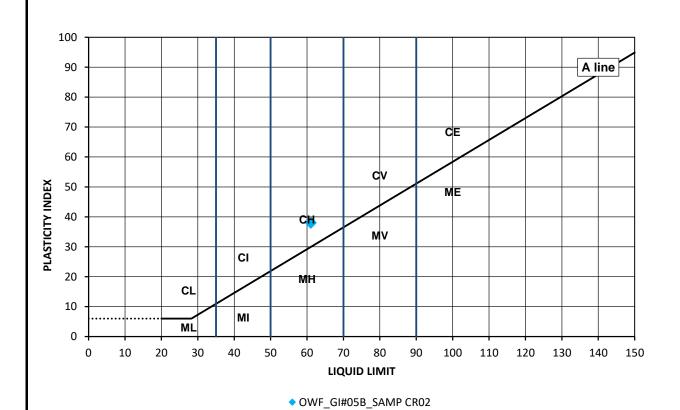
Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



Location	Ref	Top Depth	Туре	Liquid Limit %	Plast imit	Plasticit y Index	Water Cont. %	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#05 A_SAMP	PU02	5.50	B1	52	23	29	25.2	0.08	100	1	4 Point Method	10y-5Gy 6/2 10y Light greyish olive sandy, gravelly silty CLAY	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend	44/04/0000	II Mozbor	
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Attorbe	erg Plasticity		Job Ref	GMOP21-G-019	
G C C C C C C C C C C C C C C C C C C C	130 Atterb	ery Flasticity		Borehole/Pit No.	OWF_GI#05B_SAMP	
Site Name	A05 Bretagne Offshore	GI		Sample No.	CR02	
Specimen Reference	IS	Specimen Depth	Depth	6.5		
Date started	21/03/2023				Sample Type	IS
Test Method	ISO 17892-12				Keylab ID	BH0120230227121



		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



GMOP21-G-019

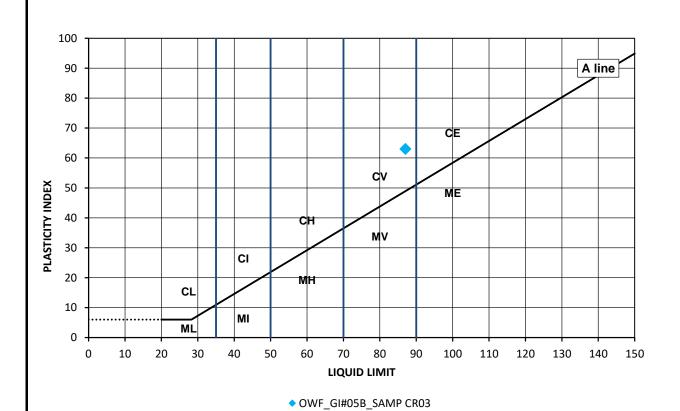
Project Name A05 Bretagne Offshore GI

	S	ample		p %	: %	cit ex	. %	ality %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#05 B_SAMP	CR02	6.50	IS	61	23	38	28.1	0.13	97	3	4 Point Method	10y 3/2 Very dark greyish olive gravelly, sandy, CLAY with shell fragments	

Project No.

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend		
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorbe	erg Plasticity		Job Ref	GMOP21-G-019	
G C C C C C C C C C C C C C C C C C C C	130 Atterbe	ery Flasticity		Borehole/Pit No.	OWF_GI#05B_SAMP	
Site Name	A05 Bretagne Offshore	GI		Sample No.	CR03	
Specimen Reference	IS	Specimen Depth	Depth	7.6		
Date started	16/03/2023				Sample Type	IS
Test Method	ISO 17892-12			Keylab ID	BH0120230227125	



		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	İ
	04/04/2023	U. Mazhar	



Liquid Limit %

87 24 63 26.2 0.04

Туре

Sample

Ref

CR03

Top

Depth

7.60

Location

OWF_GI#05

B_SAMP

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

4 Point

Method

90

3

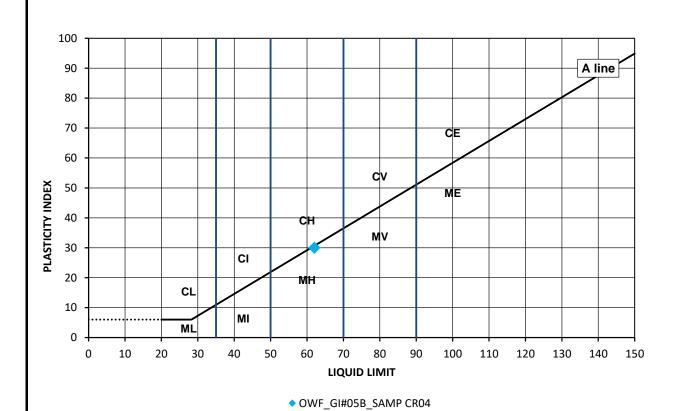
Prep. Test Method Method Sample Description Remarks

10y 4/2 Dark greyish olive very

stiff CLAY with shell fragments

Date Printed	Approved By
04/04/2023	U. Mazhar
	Date Printed 04/04/2023

GEOQUIPMARINE	ISO Attorb	erg Plasticity		Job Ref	GMOP21-G-019	
G C C C C C C C C C C C C C C C C C C C	130 Atterb	erg Flasticity		Borehole/Pit No.	OWF_GI#05B_SAMP	
Site Name	A05 Bretagne Offshore	GI		Sample No.	CR04	
Specimen Reference	IS	Specimen Depth	Depth	8.5		
Date started	21/03/2023			Sample Type	IS	
Test Method	ISO 17892-12				Keylab ID	BH0120230227128



		Plasticity		Liquid Limit	
С	Clay	L	Low	below 35	
М	Silt	I	Medium	35 to 50	
		Н	High	50 to 70	
		٧	Very high	70 to 90	
		Е	Extremely high	exceeding 90	
	Organic	0	append to classification for	organic material (eg CHO)	

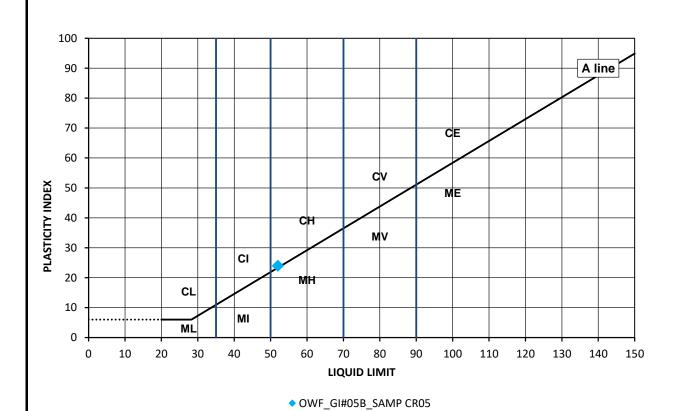
Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



	S	ample		р. %	ic %	cit ex	. %	ity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui	ਭ ⊑	Plasti y Ind	at C	9	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#05 B_SAMP	CR04	8.50	IS	62	32	30	22.5	-0.32	100	1	4 Point Method	5Gy 6/2 Light greyish green very stiff, clayey SILT	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	4.4/0.4/00000	U. Mazhar
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Maznar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
	I	

GEOQUIPMARINE	ISO Attorbe	erg Plasticity		Job Ref	GMOP21-G-019
G C C C C C C C C C C C C C C C C C C C	130 Atterb	ery Flasticity		Borehole/Pit No.	OWF_GI#05B_SAMP
Site Name	A05 Bretagne Offshore	GI		Sample No.	CR05
Specimen Reference	IS	Specimen Depth	Depth	9.5	
Date started	21/03/2023			Sample Type	IS
Test Method	ISO 17892-12			Keylab ID	BH0120230227131



		Plas	sticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		V	Very high	70 to 90		
		Е	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		

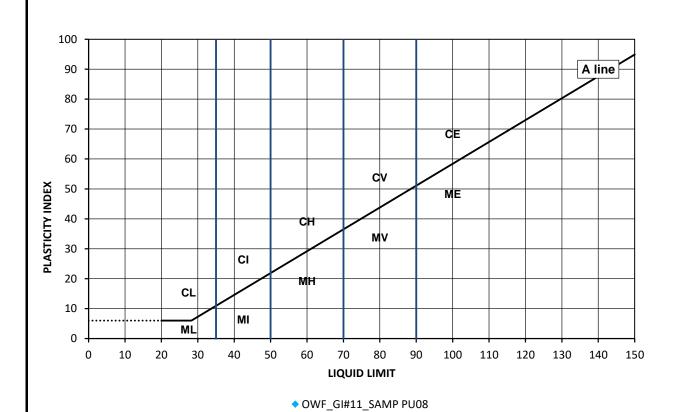
Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



	_								1		1		
	S	ample		₽%	.2 %	ë ë	. %	dity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#05 B_SAMP	CR05	9.50	IS	52	28	24	19.7	-0.35	100	1	4 Point Method	5Gy 6/2 Light greyish green silty CLAY with few shell fragments and stones	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.		,	
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend	14/04/2023	U. Mazhar	
Preparation Method 1 = Tested in natural condition	1-1/0-1/2020	O. Maznai	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Attorbo	erg Plasticity	Job Ref	GMOP21-G-019
GEOGOII I MININE	130 Atterbe	ery Plasticity	Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore 0	3I	Sample No.	PU08
Specimen Reference		Specimen Depth	Depth	12.25
Date started	16/03/2023		Sample Type	B2
Test Method	ISO 17892-12		Keylab ID	BH0120230227193



		Plasticity		Liquid Limit	
С	Clay	L	Low	below 35	
М	Silt	I	Medium	35 to 50	
		Н	High	50 to 70	
		٧	Very high	70 to 90	
		Е	Extremely high	exceeding 90	
	Organic	0	append to classification for	organic material (eg CHO)	

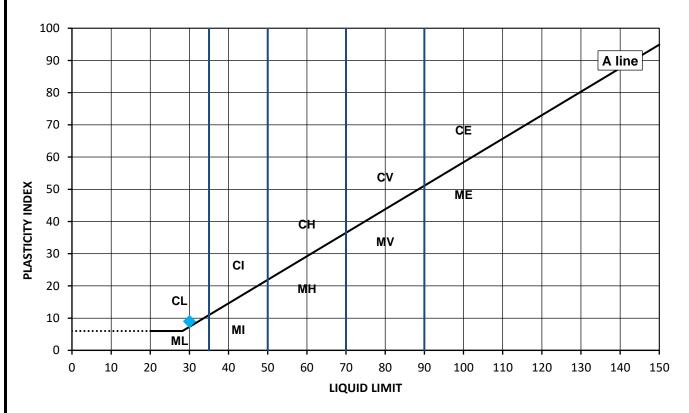
Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



	S	ъ %	<u>ن</u> %	cit ex	%	ity %		Dron	Test				
Location	Ref	Top Depth		Liqui	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm	Prep. Method	Method	Sample Description	Remarks
OWF_GI#11 _SAMP	PU08	12.25	B2	NP	NP		16.5		28	3	4 Point Method	Very pale yellow, white page 2.5y 9/2 silty, very sandy, GRAVEL including cemented sand	Cannot roll - Non- plastic specimen

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	14/04/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Maznar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
		i e

GEOQUIPMARINE	ISO Attorb	erg Plasticity		Job Ref	GMOP21-G-019	
G CESTON I MANAGE	130 Atterb	ery Plasticity		Borehole/Pit No.	OWF_GI#11_SAMP	
Site Name	A05 Bretagne Offshore	GI			Sample No.	CR16
Specimen Reference	B1	Specimen Depth	17.85	m	Depth	17.85
Date started	13/03/2023			Sample Type	B1	
Test Method	ISO 17892-12				Keylab ID	BH0120230227207



OWF_GI#11_SAMP CR16

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
M	Silt	1	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

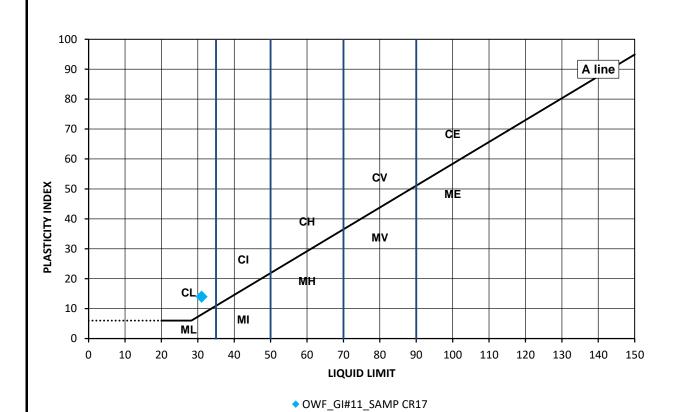
Notes	Date Printed	Approved By	
	19/04/2023	U. Mazhar	



Location	S Ref	ample Top Depth	Туре	Liquid Limit %	Plastic Limit %	Plasticit y Index	Water Cont. %	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#11 _SAMP	CR16	17.85	B1	30	21	9	21.9	0.1	67	3		5GY 4/2 Dark greyish green silty wet gravelly, silty, clayey, SAND	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	40/04/0000	II Massass
Preparation Method 1 = Tested in natural condition	19/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorbo	erg Plasticity		Job Ref	GMOP21-G-019	
GC STONE IN INVITA	130 Atterbe	rig Flasticity		Borehole/Pit No.	OWF_GI#11_SAMP	
Site Name	A05 Bretagne Offshore 0	3I			Sample No.	CR17
Specimen Reference	B1	Specimen Depth	18.75	m	Depth	18.75
Date started				Sample Type	B1	
Test Method	ISO 17892-12				Keylab ID	BH0120230227210



		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		٧	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



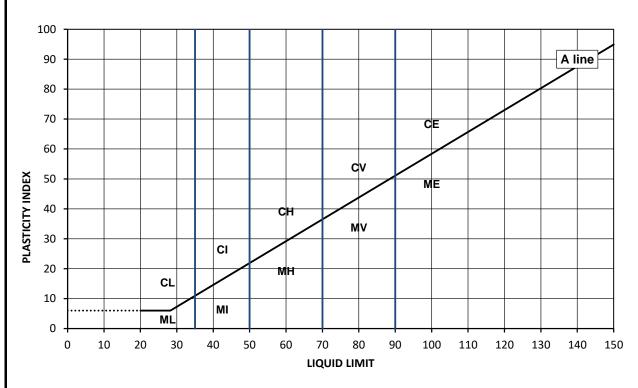
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	Sample			% pi	ic %	cit ex		lity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqu Limit	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#11 _SAMP	CR17	18.75	B1	31	17	14	31.8	1.06	71	3	4 Point Method	5GY 6/2 Light greyish gravelly, sandy, CLAY with shell fragments	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend	14/04/2023	U. Mazhar	
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazriai	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Attorbo	Job Ref	GMOP21-G-019			
GC STONE IN INVITA	130 Atterbe	ry Flasticity	(A-line) Chart		Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore 0	3I			Sample No.	P01
Specimen Reference	B1	Specimen Depth	Depth	0		
Date started	17/03/2023				Sample Type	B1
Test Method	ISO 17892-12				Keylab ID	BH0120230227214



OWF_GI#12_SAMP P01

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
M	Silt	ı	Medium	35 to 50
		Н	High	50 to 70
		٧	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



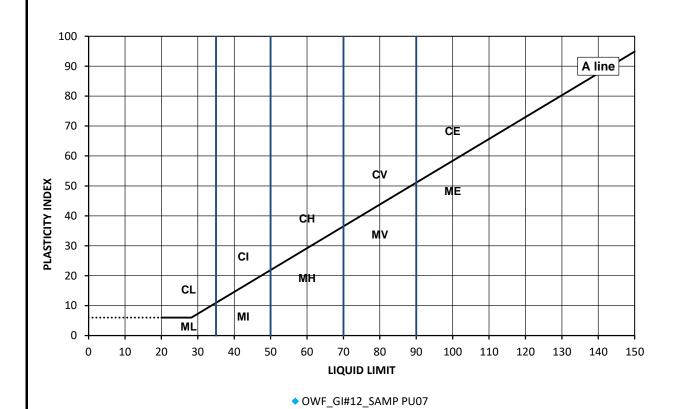
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	Sample 5 % in the state of the												
	S	ample		bi %	ic %	cit ex	. %	ity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm		Method	Sample Description	Remarks
OWF_GI#12 _SAMP	P01	0.00	B1	NP	NP		22.1		96	3	4 Point Method	2.5y 4/4 Olive brown silty SAND with shell fragments	Too sandy to roll. Report as non- plastic

ı			
ļ	Notes	Date Printed	Approved By
ŀ	Testing to ISO 17892-12 4 point test.		
ļ	Testing to ISO 17892-12 1 point test.		
ļ	Cone Type 80g / 30Deg		
ļ	NP = Non-Plastic Sample		
ľ	All samples tested in sequence from driest point to the wettest point.		
	Legend	14/04/2023	U. Mazhar
ļ	Preparation Method 1 = Tested in natural condition	14/04/2023	U. Maznai
ı	Preparation Method 2 = Tested after >0.425mm removed by hand		
ļ	Preparation Method 3 = Tested after washing to remove >0.425mm		
1			Ī

GEOQUIPMARINE	ISO Attorbe		Job Ref	GMOP21-G-019		
G CESTON IN WALL	130 Atterbe	ISO Atterberg Plasticity (A-line) Chart				OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	GI		Sample No.	PU07	
Specimen Reference	B2	Specimen Depth	Depth	3.9		
Date started	13/03/2023				Sample Type	B2
Test Method	ISO 17892-12				Keylab ID	BH0120230227225



		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	1	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Ε	Extremely high	exceeding 90

Organic O append to classification for organic material (eg CHO)

Notes Date Printed Approved By

14/04/2023 U. Mazhar



GMOP21-G-019

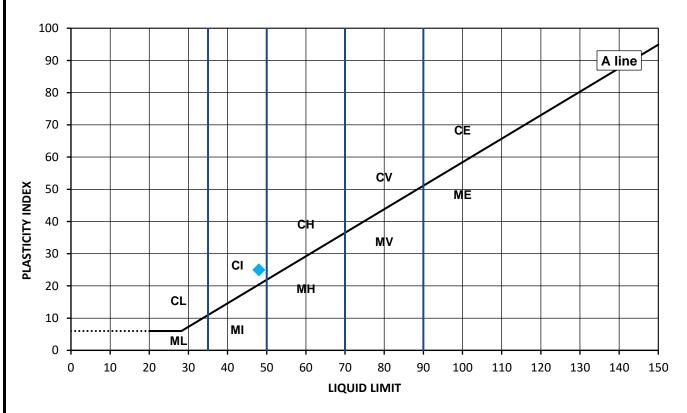
Project Name A05 Bretagne Offshore GI

Project No.

	S	ample		bi %	ic %	cit ex		ity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#12 _SAMP	PU07	3.90	B2	NP	NP		22.8		33	3	4 Point Method	Yellow 2.5y 7/8 , sandy, GRAVEL including cemented sand	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	4.4/0.4/0.000	II Ma-bar
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

CEOOL HIDMADINE	ISO Attorb	Job Ref	GMOP21-G-019			
GEOQUIPMARINE	130 Atterb	erg Flasticity	(A-line) Chart	Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Offshore	GI			Sample No.	CR04
Specimen Reference	B2	Specimen Depth	Depth	4.6		
Date started	21/03/2023				Sample Type	B2
Test Method	ISO 17892-12				Keylab ID	BH0120230227290



OWF_GI#14A_SAMP CR04

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		٧	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg (

Notes	Date Printed	Approved By	
	17/04/2023	U. Mazhar	

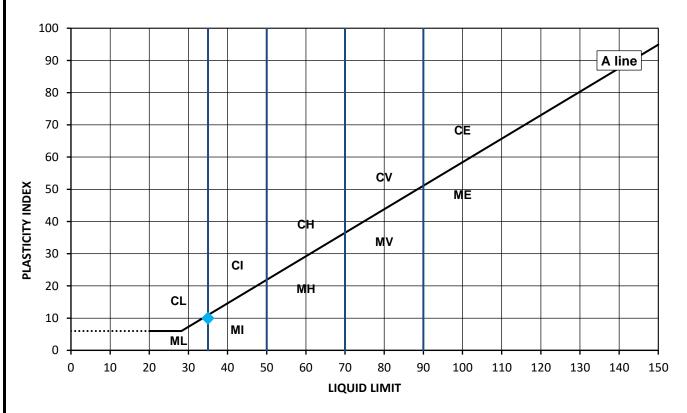


Project Name	A05 Bretagne Offshore GI
Project No.	GMOP21-G-019

	S	ample		ъ %	ic %	cit ex	%	uidity ex %	%	Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	Water Cont.	Liquid Index	Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#14 A_SAMP	CR04	4.60	B2	48	23	25	30.5	0.3	50	3	4 Point Method	10y 5/2 greyish olive silty, CLAY including shell fragments	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	47/04/0000	II Markar
Preparation Method 1 = Tested in natural condition	17/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorb	ora Plasticity	(A-line) Chart		Job Ref GMOP21-G-019				
G CESTON I MANAGE	130 Atterb	erg Flasticity	(A-IIIIe) Chart		Borehole/Pit No.	OWF_GI#14A_SAMP			
Site Name	A05 Bretagne Offshore	GI		Sample No.	CR08				
Specimen Reference	B1	Specimen Depth	8.5	m	Depth	8.5			
Date started	13/03/2023				Sample Type	B1			
Test Method	ISO 17892-12				Keylab ID	BH0120230227300			



OWF_GI#14A_SAMP CR08

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
M	Silt	1	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	17/04/2023	U. Mazhar	
	17/04/2023	O. Maznai	

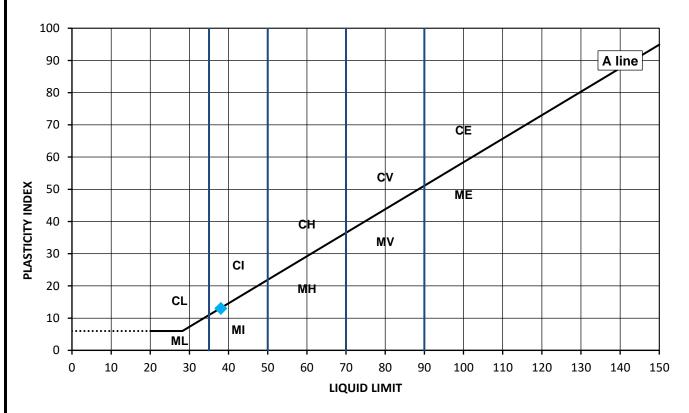


Project Name	A05 Bretagne Offshore GI
Project No.	GMOP21-G-019

	S	ample			tic %	icit lex	r %	dity < %	%	Prep.	Test		
Location	Ref	Top	1 4 0 0	-iqu imit	las imit	last Ind	ate ont.	quic	Passing	Method	Method	Sample Description	Remarks
		Depth	71 -	!П П	ш П	Р	ĭ ∧	Lid In	0.425mm				
OWF_GI#14											4 Point	5Gy 3/2 Very dark greyish green	
A_SAMP	CR08	8.50	B1	35	25	10	36.9	1.19	98	3	Method	slightly gravelly, clayey, silty	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.		''	1
Testing to ISO 17892-12 1 point test.			· ·
Cone Type 80g / 30Deg			· ·
NP = Non-Plastic Sample			· ·
All samples tested in sequence from driest point to the wettest point.			1
Legend	47/04/0000	II Markar	· '
Preparation Method 1 = Tested in natural condition	17/04/2023	U. Mazhar	· '
Preparation Method 2 = Tested after >0.425mm removed by hand			· '
Preparation Method 3 = Tested after washing to remove >0.425mm			· '
			1

GEOQUIPMARINE	ISO Attorb	ora Plasticity	(A-line) Chart		Job Ref GMOP21-G-0				
G CESTON I MANAGE	130 Atterb	erg Flasticity	(A-IIIIe) Chart		Borehole/Pit No.	OWF_GI#14A_SAMP			
Site Name	A05 Bretagne Offshore	GI		Sample No.	PU02				
Specimen Reference	B1	Specimen Depth	9.6	m	Depth	9.6			
Date started	21/03/2023				Sample Type	B1			
Test Method	ISO 17892-12				Keylab ID	BH0120230227304			



OWF_GI#14A_SAMP PU02

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	1	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	17/04/2023	U. Mazhar	

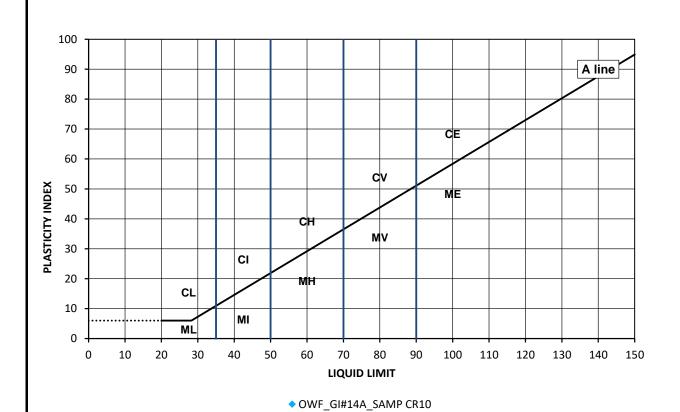


Project Name	A05 Bretagne Offshore GI
Project No.	GMOP21-G-019

	S	ample			Drop	Test							
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	ਲ ≒	Liquid Index	Passing 0.425mm	Method Method	Sample Description Re	Remarks	
OWF_GI#14 A_SAMP	PU02	9.60	B1	38	25	13	22.5	-0.19	97	3	4 Point Method	GLEY 1 10Gy 2.5/1 Greenish black clayey, silty, SAND	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point. Legend			
Preparation Method 1 = Tested in natural condition	17/04/2023	U. Mazhar	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Attorbo	erg Plasticity		Job Ref	GMOP21-G-019	
GEOGOII IMMINE	130 Atterbe	ery Plasticity	(A-line) Chart	Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Offshore 0	3I		Sample No.	CR10	
Specimen Reference	B2	Specimen Depth	11.35	m	Depth	11.35
Date started	21/03/2023			·	Sample Type	B2
Test Method	ISO 17892-12			Keylab ID	BH0120230227314	



		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



fragments

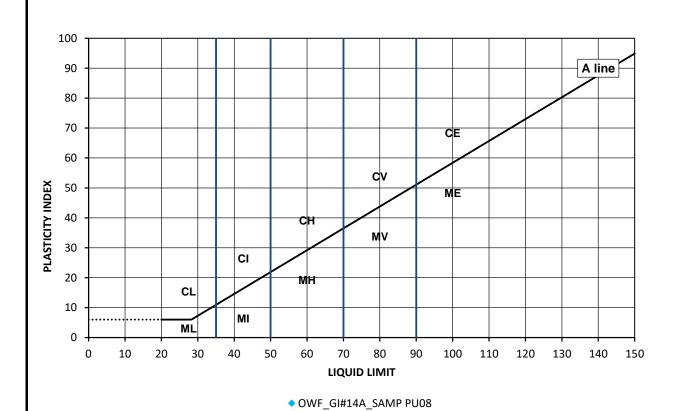
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

Sample Plastic Limit % Plasticit y Index Water Cont. % Liquidity Index % O'4752MM Liquid Limit % Prep. Test Sample Description Remarks Location Top Ref Туре Method Method Depth 0.425mm 5Gy 3/2 Very dark greyish Non-plastic, unable green, gravelly, very sandy, clayey SILT with sparse shell OWF_GI#14 4 Point 3 CR10 11.35 NP 26.6 86 B2 NP to roll specimen to A_SAMP Method 3mm thread

Date Printed	Approved By	
14/04/2023	U. Mazhar	

GEOQUIPMARINE	ISO Attorbo	ora Plasticity		Job Ref	GMOP21-G-019	
ISO Atterberg Plasticity (A-line) Chart					Borehole/Pit No.	OWF_GI#14A_SAMP
Site Name	A05 Bretagne Offshore 0	GI		Sample No.	PU08	
Specimen Reference	B1	Specimen Depth	18.7	m	Depth	18.7
Date started	21/03/2023			Sample Type	B1	
Test Method	ISO 17892-12				Keylab ID	BH0120230227328



		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

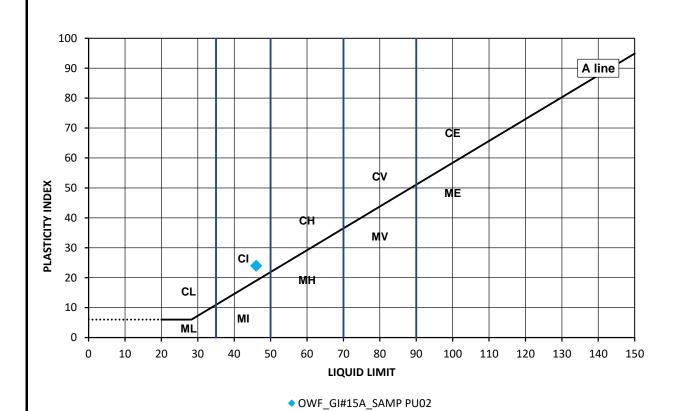
Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



	S	ample		p!	ic %	cit ex	. %	ity %		Prep.	Test			
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks	
OWF_GI#14 A_SAMP	PU08	18.70	B1	NP	NP		27.7		90	3	4 Point Method	10y 6/2 Light greyish olive silty SAND with small shell fragments	Too sandy to roll. Specimen non plastic	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend	4.4/0.4/0.000	U. Mazhar	
Preparation Method 1 = Tested in natural condition	14/04/2023	o. waznar	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE ISO Atterberg Plasticity (A-line) Chart					Job Ref	GMOP21-G-019
G CESTON IN WALL	130 Atterb	ery Flasticity	Borehole/Pit No.	OWF_GI#15A_SAMP		
Site Name	A05 Bretagne Offshore	GI	Sample No.	PU02		
Specimen Reference	B1	Specimen Depth	2	m	Depth	2
Date started	15/03/2023		Sample Type	B1		
Test Method	ISO 17892-12		Keylab ID	BH012023030711		



		Plas	sticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		٧	Very high	70 to 90		
		E	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		

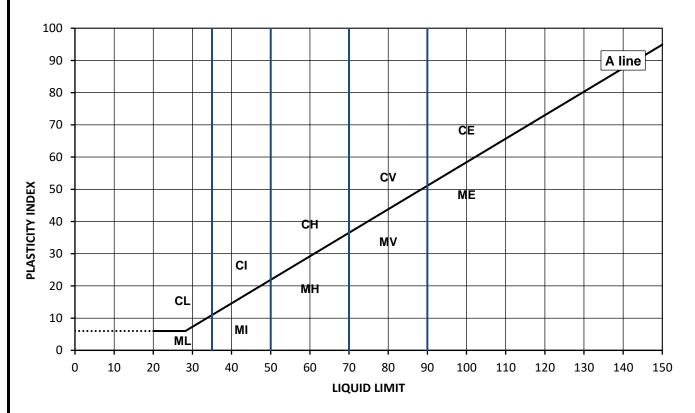
Notes	Date Printed	Approved By	
	05/04/2023	U. Mazhar	



	Sample		Sample		Sample		Sample		Sample		Sample		d %	ic %	cit ex	%	ity %		Prep.	Test		
Location	Ref	Top Depth		Liqui Limit	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks									
OWF_GI#15 A_SAMP	PU02	2.00	B1	46	22	24	24.1	0.09	66	3	4 Point Method	Light brown, sandy and gravelly, CLAY with frequent shell fragments										

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	05/04/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	05/04/2023	U. Maznar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorb	ora Plasticity	(A-line) Chart	Job Ref	GMOP21-G-019	
G CESTON I MANAGE	130 Atterb	erg Flasticity	(A-IIIIe) Chart	Borehole/Pit No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne Offshore	GI	Sample No.	CR04		
Specimen Reference	IS	Specimen Depth	4	m	Depth	4
Date started	13/04/2023			Sample Type	IS	
Test Method	ISO 17892-12			Keylab ID	BH012023030717	



OWF_GI#15A_SAMP CR04

		Plas	sticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		٧	Very high	70 to 90		
		Е	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg		

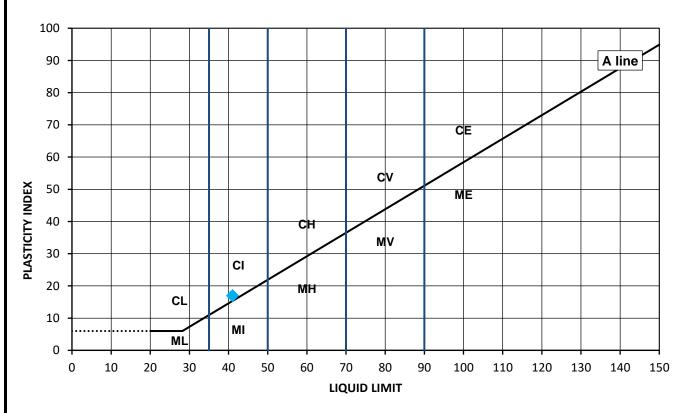
Notes	Date Printed	Approved By	
	17/04/2023	D.Smith	



	Sample				ity %	dity % P		Test					
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	Water Cont.	Liquid Index	Passing 0.425mm	Prep. Method	Method	Sample Description	Remarks
OWF_GI#15 A_SAMP	CR04	4.00	IS	NP	NP		15.7		22	3	4 Point Method	5Y 8/2 Pale yellow, slightly silty, sandy GRAVEL	Non-plastic

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point. Legend		5 0 33	
Preparation Method 1 = Tested in natural condition	17/04/2023	D.Smith	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Atto	rberg Plasticity (A-line \ Chart		Job Ref	GMOP21-G-019
G CESTON INVINITE	130 Atte	berg Flasticity (A-IIIIe / Cliant	Borehole/Pit No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne Offsho	re GI	Sample No.	CR06		
Specimen Reference	IS	Specimen Depth	7	m	Depth	7
Date started	21/03/2023		Sample Type	IS		
Test Method	ISO 17892-12		Keylab ID	BH012023030724		



OWF_GI#15A_SAMP CR06

		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg C

Notes	Date Printed	Approved By	
	17/04/2023	D.Smith	

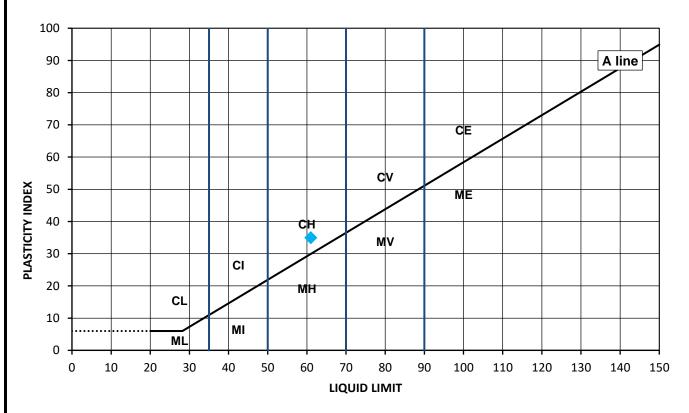


Project Name	A05 Bretagne Offshore GI
Project No.	GMOP21-G-019

Location	Ref	Top Depth	Туре	Liquid Limit %	Plastic Limit %	Plasticit y Index	atel ont.	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#15 A_SAMP	CR06	7.00	IS	41	24	17	21.8	-0.13	99	3	4 Point Method	GLEY 1 4/1 Dark greyish green very stiff sandy, clayey, SILT with shell fragments	

			l
Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend	47/04/0000	D 0	
Preparation Method 1 = Tested in natural condition	17/04/2023	D.Smith	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			
			i

GEOQUIPMARINE	ISO Attori	perg Plasticity (Job Ref	GMOP21-G-019		
G CESTON I MANAGE	130 Atteri	beig Flasticity (Borehole/Pit No.	OWF_GI#15A_SAMP		
Site Name	A05 Bretagne Offshore GI				Sample No.	CR07
Specimen Reference	Q1	Specimen Depth	8.6	m	Depth	8.6
Date started	03/05/2023				Sample Type	Q1
Test Method	ISO 17892-12				Keylab ID	BH012023030730



OWF_GI#15A_SAMP CR07

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

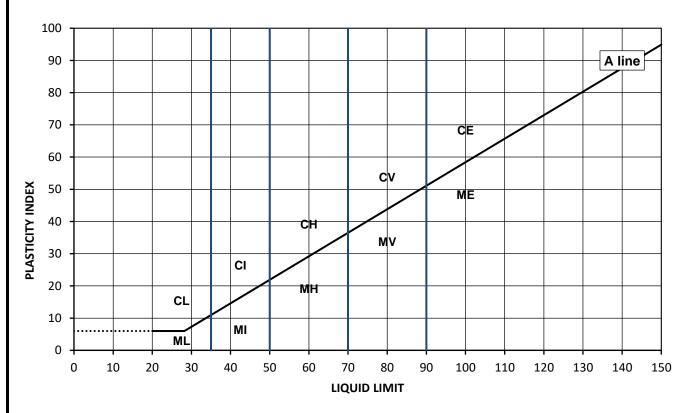
Notes	Date Printed	Approved By	
	24/05/2023	D.Smith	



	S	ample		pi %	: %	cit ex	%	dity < %	%	Dron	Test		
Location	Ref	Top Depth	Туре	ו∺וב	olas imit	Plasti y Inde	Water Cont.	qui de)	Passing 0.425mm	Prep. Method	Method	Sample Description	Remarks
OWF_GI#15 A_SAMP	CR07	8.60	Q1	61	26	35	21.4	-0.13	100	1	4 Point Method	Dark brown sandy, clayey, SILT	

Nata	Data Drintad	Ammanus d Du	
Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			l
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend		D 0 1/1	
Preparation Method 1 = Tested in natural condition	24/05/2023	D.Smith	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			
	i i	1	1

GEOQUIPMARINE	ISO Attorb	erg Plasticity (Job Ref	GMOP21-G-019	
G CESTON I MANAGE	130 Atterb	erg Flasticity (Borehole/Pit No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne Offshore	GI		Sample No.	CR08	
Specimen Reference	B1	Specimen Depth	9.3	m	Depth	9.3
Date started	20/03/2023			Sample Type	B1	
Test Method	ISO 17892-12		Keylab ID	BH012023030733		



OWF_GI#15A_SAMP CR08

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	1	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	17/04/2023	D.Smith	

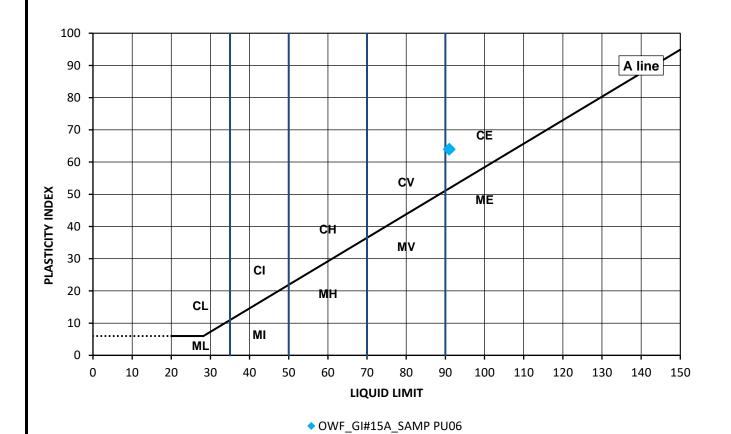


Project Name	A05 Bretagne Offshore GI
Project No.	GMOP21-G-019

	S	ample		p %	ic %	cit ex	%	ality %	%	Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	Water Cont.	Liquid Index	Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#15 A_SAMP	CR08	9.30	B1	NP	NP		17.9		74	3	4 Point Method	GLEY 1 3/1 Very dark greenish grey gravelly, sandy, clayey, SILT including cemented sand	Cannot roll to 3mm thread, non-plastic

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point. Legend		5 0 33	
Preparation Method 1 = Tested in natural condition	17/04/2023	D.Smith	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Attorb	erg Plasticity (Job Ref	GMOP21-G-019	
G CESTON I MANAGE	130 Atterb	ery Flasticity (Borehole/Pit No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne Offshore	GI	Sample No.	PU06		
Specimen Reference	UU1	Specimen Depth	10	m	Depth	10
Date started	04/04/2023			Sample Type	UU1	
Test Method	ISO 17892-12		Keylab ID	BH012023030735		



		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90

Organic

Notes	Date Printed	Approved By
	17/04/2023	D.Smith

append to classification for organic material (eg CHO)

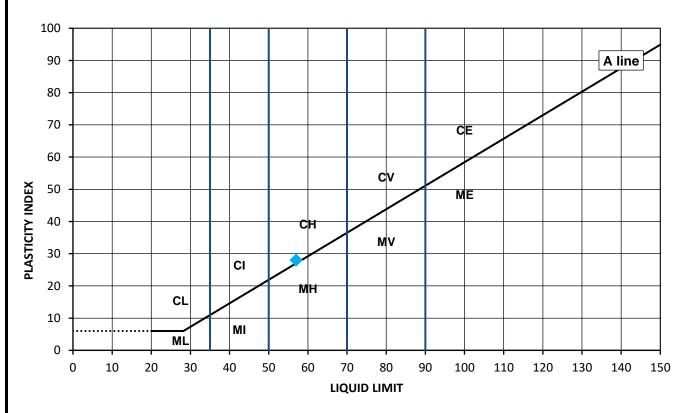


Project Name	A05 Bretagne Offshore GI
Project No.	GMOP21-G-019

	S	р %	ic %	cit ex	%	lity %	≧% % Dro		Test				
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	ē ÷	Liquid Index	Daccina	Prep. Method	Method	Sample Description	Remarks
OWF_GI#15 A_SAMP	PU06	10.00	UU1	91	27	64	31.5	0.07	100	1	4 Point Method	2.5y 4/1 Dark grey, slightly gravelly, slightly sandy, CLAY	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.		, ,	
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point. Legend			
Preparation Method 1 = Tested in natural condition	17/04/2023	D.Smith	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Attor	berg Plasticity (Job Ref	GMOP21-G-019	
G CESTON I MANAGE	150 Atter	Borehole/Pit No.	OWF_GI#15A_SAMP			
Site Name	A05 Bretagne Offshore	e GI			Sample No.	CR09
Specimen Reference	IS	IS Specimen 12.1 m				12.1
Date started	28/04/2023			Sample Type	IS	
Test Method	ISO 17892-12			Keylab ID	BH012023030744	



OWF_GI#15A_SAMP CR09

		Plas	sticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	1	Medium	35 to 50		
		Н	High	50 to 70		
		V	Very high	70 to 90		
		Ε	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		

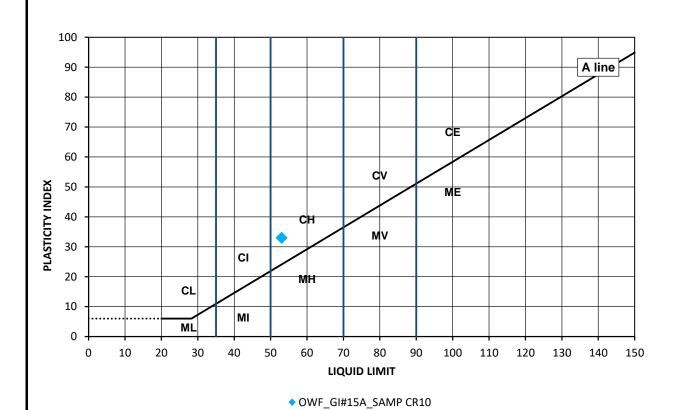
Notes	Date Printed	Approved By	
	24/05/2023	D.Smith	



	S	ample		pi %	့ %	cit ex	%	dity <%	%	D	T1			
Location	Ref	Top Depth	Туре	ו ב: כו	olas imit	Plasti y Inde	Water Cont.	ge,		Prep. Method	Test Method	Sample Description	Remarks	
OWF_GI#15 A_SAMP	CR09	12.10	IS	57	29	28	28	-0.04	100	2	4 Point Method	Greenish grey mottled greenish brown sandy, clayey, SILT with sparse shell fragments (<5mm)		

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	0.4/05/0000	D C:4h
Preparation Method 1 = Tested in natural condition	24/05/2023	D.Smith
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
	I	

GEOQUIPMARINE	ISO Attorbe	ora Plasticity	(A-line) Chart		Job Ref	GMOP21-G-019	
G C C C C C C C C C C C C C C C C C C C	130 Atterbe		Borehole/Pit No.	OWF_GI#15A_SAMP			
Site Name	A05 Bretagne Offshore	GI		Sample No.	CR10		
Specimen Reference	IS	Specimen Depth	m	Depth	13.4		
Date started	05/06/2023			Sample Type	IS		
Test Method	ISO 17892-12			Keylab ID	BH012023030749		



		Plas	sticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		٧	Very high	70 to 90		
		Е	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		
	Organic	0	append to classification for	ŭ		

Notes	Date Printed	Approved By	Test Technician
Page	13/07/2023	U. Mazhar	A Martin



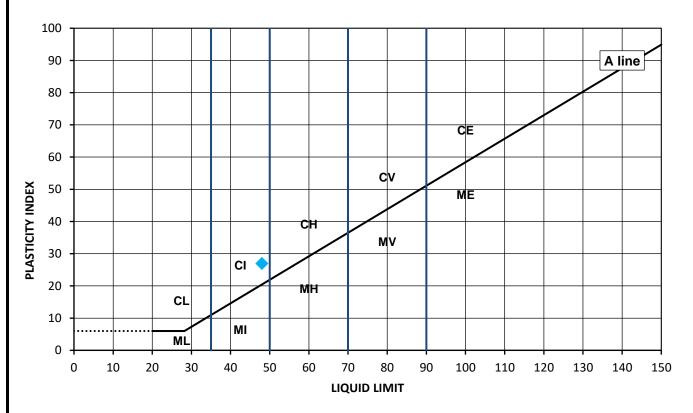
A05 Bretagne Offshore GI Project Name GMOP21-G-019

	S	Sample		bi %	ic %	cit ex	. %	ity %		Dron	Test		Remarks
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Ind	Water Cont.	σ	% Passing 0.425mm	Prep. Method	Method	Sample Description	
OWF_GI#* A_SAMP		13.40	IS	53	20	33	36.1	0.49	100	3	4 Point Method	Greyish green gravelly, sandy, CLAY.	

Project No.

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend	13/07/2023	U. Mazhar	
Preparation Method 1 = Tested in natural condition	13/07/2023	U. Maznai	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			
			Page 2 of 2

GEOQUIPMARINE	ISO Attorb	Job Ref	GMOP21-G-019			
ISO Atterberg Plasticity (A-line) Chart					Borehole/Pit No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne Offshore	GI		Sample No.	CR12	
Specimen Reference	IS	Specimen Depth	15	m	Depth	15
Date started	13/03/2023			Sample Type	IS	
Test Method	ISO 17892-12			Keylab ID	BH012023030753	



OWF_GI#15A_SAMP CR12

		Plas	sticity	Liquid Limit			
С	Clay	L	Low	below 35			
М	Silt	I	Medium	35 to 50			
		Н	High	50 to 70			
		V	Very high	70 to 90			
		Е	Extremely high	exceeding 90			
	Organic	0	append to classification for	organic material (eg CHO)			

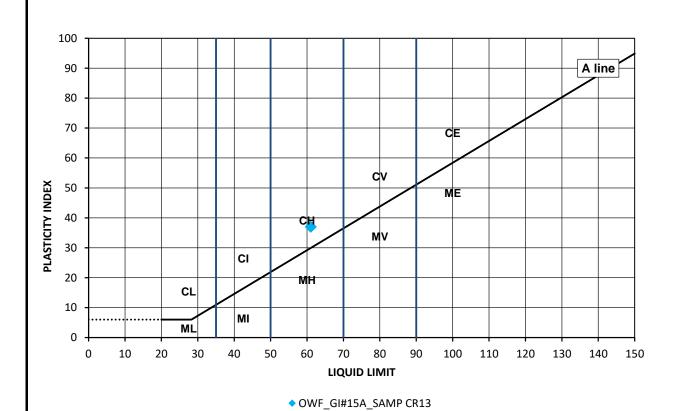
Notes	Date Printed	Approved By	
	17/04/2023	D.Smith	



	S	ample		% g	ci: %	icit	. %	i≕ °`	%	Prep.	Test		
Location	Ref	Top Depth	Туре	Liqu Limit	Plas Limit	Plasti y Ind	ë ÷	Liquic Index	Daccina	Method	Method	Sample Description	Remarks
OWF_GI#15 A_SAMP	CR12	15.00	IS	48	21	27	20.5	-0.02	79	3	4 Point Method	GLEY 1 4/1 Dark greyish green, slightly gravelly, slightly sandy, CLAY	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.		, ,	
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point. Legend			
Preparation Method 1 = Tested in natural condition	17/04/2023	D.Smith	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Atterbe	Job Ref	GMOP21-G-019			
GEOGOII IMMINE	130 Atterbe	ery Plasticity	Borehole/Pit No.	OWF_GI#15A_SAMP		
Site Name	A05 Bretagne Offshore 0	GI	·	Sample No.	CR13	
Specimen Reference	IS	Specimen Depth	16.25	m	Depth	16.25
Date started	15/03/2023		·	Sample Type	IS	
Test Method	ISO 17892-12			Keylab ID	BH012023030760	



		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

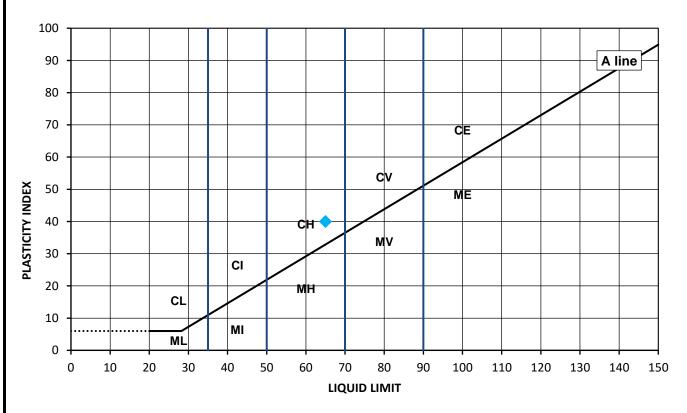
Notes	Date Printed	Approved By	İ
	04/04/2023	U. Mazhar	



	S	ample		uid it %	ic %	cit ex	. %	ity %		Dron	Test		
Location	Ref	Top Depth	Туре	Liqui	Plast Limit	Plasti y Ind	S at		% Passing 0.425mm	Prep. Method	Method	Sample Description	Remarks
OWF_GI#15 A_SAMP	CR13	16.25	IS	61	24	37	30.5	0.18	100	3	4 Point Method	5y 4/2 Olive grey CLAY	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	04/04/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	04/04/2023	U. Maznar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attori	Job Ref	GMOP21-G-019			
ISO Atterberg Plasticity (A-line) Chart					Borehole/Pit No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne Offshore	e GI	Sample No.	PU12		
Specimen Reference	B1	Specimen Depth	18	m	Depth	18
Date started	16/03/2023			Sample Type	B1	
Test Method	ISO 17892-12		Keylab ID	BH012023030767		



OWF_GI#15A_SAMP PU12

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	17/04/2023	D.Smith	

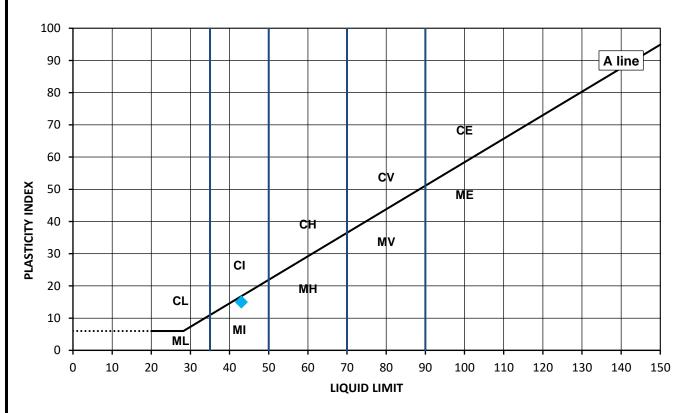


Project Name	A05 Bretagne Offshore GI
Project No.	GMOP21-G-019

	S	ample		p %	ic %	cit ex	%	ity %	%	Prep.	Test		
Location	Ref	Top Depth	Туре	Liquid Limit	Plast Limit	Plasti v Inde	Water Cont.	Liquidity Index %	Passing 0.425mm	Method		Sample Description	Remarks
OWF_GI#15 A_SAMP	PU12	18.00	B1	65	25	40	43	0.45	100	2	4 Point Method	GLEY 1 5/1 Greenish grey sandy, silty, CLAY	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	47/04/0000	D 0:41-
Preparation Method 1 = Tested in natural condition	17/04/2023	D.Smith
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorb	erg Plasticity		Job Ref	GMOP21-G-019	
G CESTON I MANAGE	130 Atterb	ery Flasticity		Borehole/Pit No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne Offshore	GI	Sample No.	CR15		
Specimen Reference	IS	Specimen Depth	18.6	m	Depth	18.6
Date started	11/04/2023				Sample Type	IS
Test Method	ISO 17892-12				Keylab ID	BH012023030770



OWF_GI#15A_SAMP CR15

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	1	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

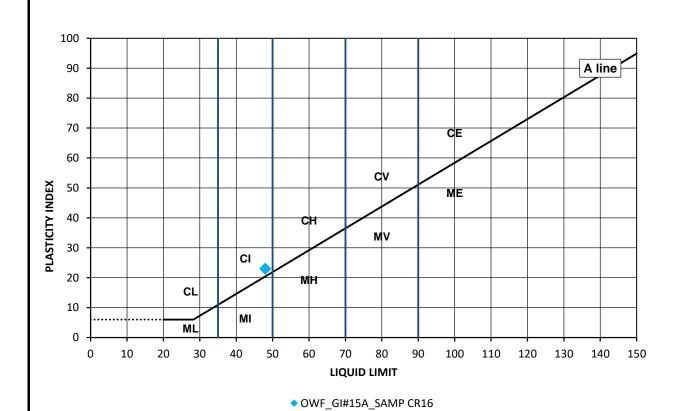
Notes	Date Printed	Approved By	
	24/05/2023	D.Smith	



Location	Ref	Top Depth	Tyne	Liquid Limit %	olas imit	Plasticit y Index	Water Cont. %	Liquidity Index %		Prep. Method	Test Method	Sample Description	Remarks	
OWF_GI#15 A_SAMP	CR15	18.60	IS	43	28	15	17.7	-0.69	84	3	4 Point Method	GLEY 1 6/1 Greenish grey, clayey, gravelly, SILT		

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	0.4/05/0000	D 0
Preparation Method 1 = Tested in natural condition	24/05/2023	D.Smith
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorbe	erg Plasticity		Job Ref	GMOP21-G-019
G CESTON IN WALL	130 Atterb	ery Flasticity	Borehole/Pit No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne Offshore	GI	Sample No.	CR16	
Specimen Reference	IS	Specimen Depth	m	Depth	19.5
Date started	15/03/2023		Sample Type	IS	
Test Method	ISO 17892-12		Keylab ID	BH012023030773	



		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

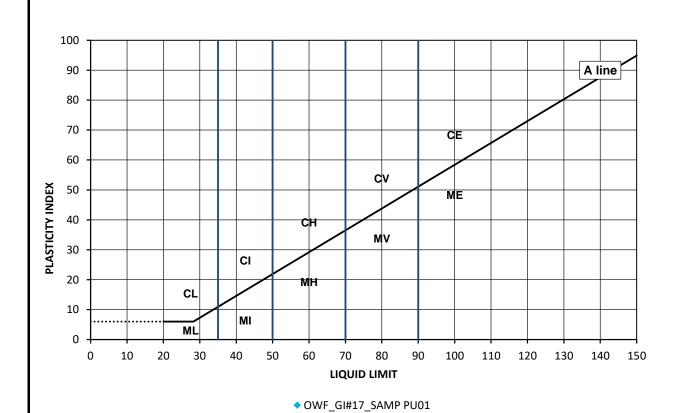
Notes	Date Printed	Approved By	ĺ
	04/04/2023	U. Mazhar	



	S	ample		% pi	ic %	ticit dex		ity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui Limit	સ :=	Plasti y Ind	at o	9	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#15 A_SAMP	CR16	19.50	IS	48	25	23	31.3	0.27	96	3	4 Point Method	GLEY 1 4/1 Dark greenish grey silty CLAY	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			1
Testing to ISO 17892-12 1 point test.			1
Cone Type 80g / 30Deg			1
NP = Non-Plastic Sample			1
All samples tested in sequence from driest point to the wettest point.			
Legend	04/04/2023	U. Mazhar	1
Preparation Method 1 = Tested in natural condition	04/04/2023	O. IVIAZITAI	1
Preparation Method 2 = Tested after >0.425mm removed by hand			1
Preparation Method 3 = Tested after washing to remove >0.425mm			1
		1	1

GEOQUIPMARINE	ISO Attorbo	ra Placticity	(A-line) Chart		Job Ref	GMOP21-G-019
G CESCON PARINE	130 Atterbe	ry Plasticity	(A-IIIIe) Chart		Borehole/Pit No.	OWF_GI#17_SAMP
Site Name	A05 Bretagne Offshore 0	3I			Sample No.	PU01
Specimen Reference	B1	Specimen Depth	0	m	Depth	0
Date started	14/03/2023				Sample Type	B1
Test Method	ISO 17892-12				Keylab ID	BH0120230227332



		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for o	organic material (eg CHO)

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



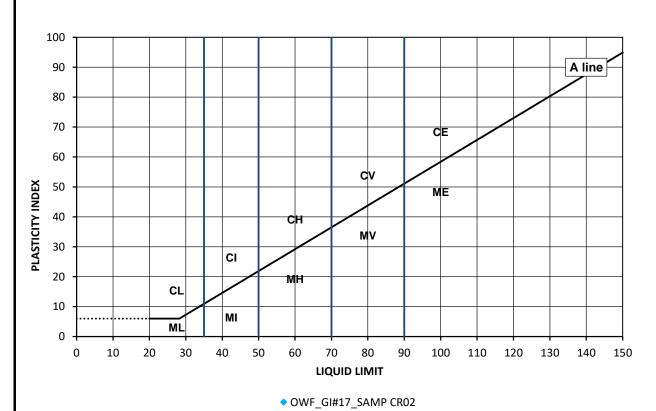
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	S	ample		p!	ic %	cit ex		ity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#17 _SAMP	PU01	0.00	B1	NP	NP		29.2		97	3	4 Point Method	5Y 4/2 Olive grey silty, SAND	Too sandy to roll. Specimen non plastic

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	4.4/0.4/0000	II Mambar
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorbo	vra Plasticity	(A-line) Chart		Job Ref	GMOP21-G-019
GEOGOII IMMINE	130 Atterbe	ery Plasticity	(A-line) Chart		Borehole/Pit No.	OWF_GI#17_SAMP
Site Name	A05 Bretagne Offshore 0	3I			Sample No.	CR02
Specimen Reference	CR02	Specimen Depth	5.8	m	Depth	5.8
Date started	26/04/2023			·	Sample Type	B1
Test Method	ISO 17892-12				Keylab ID	BH0120230227342



		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		٧	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	0	append to classification for c	organic material (eg CHO)

Notes	Date Printed	Approved By	
	16/05/2023	U. Mazhar	



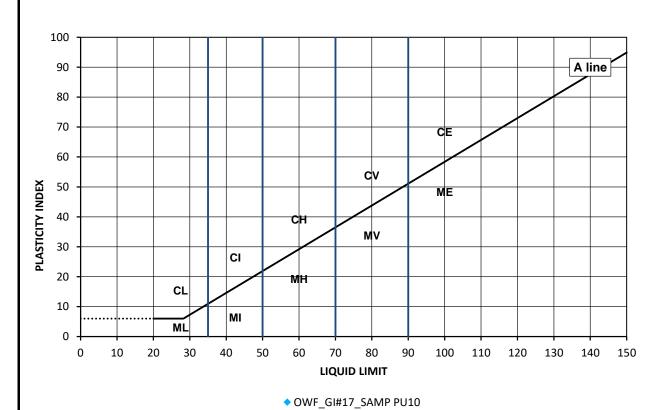
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

Location	Ref	ample Top Depth	Туре	Liquid Limit %	Plastic Limit %	Plasticit y Index	Water Cont. %	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#17 _SAMP	CR02	5.80	B1	NP	NP		19.9		38	3	4 Point Method	5Y 6/2 Light olive grey wet clayey, silty, sandy GRAVEL including cemented sand	

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			1
Legend	16/05/2023	U. Mazhar	1
Preparation Method 1 = Tested in natural condition	10/03/2023	U. IVIAZITAI	1
Preparation Method 2 = Tested after >0.425mm removed by hand			1
Preparation Method 3 = Tested after washing to remove >0.425mm			İ

GEOQUIPMARINE ISO Atterberg Plasticity (A-line) Chart					Job Ref	GMOP21-G-019
G CESTON IN WALL	130 Atterbe	ery Flasticity	(A-IIIIe) Chart	Borehole/Pit No.	OWF_GI#17_SAMP	
Site Name	A05 Bretagne Offshore 0	GI	Sample No.	PU10		
Specimen Reference	PU10	Specimen Depth	10.6	m	Depth	10.6
Date started	26/04/2023			Sample Type	IS	
Test Method	ISO 17892-12			Keylab ID	BH0120230227353	



		Plas	ticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		V	Very high	70 to 90		
		E	Extremely high	exceeding 90		
	Organic	0	append to classification for o	organic material (eg CHO)		

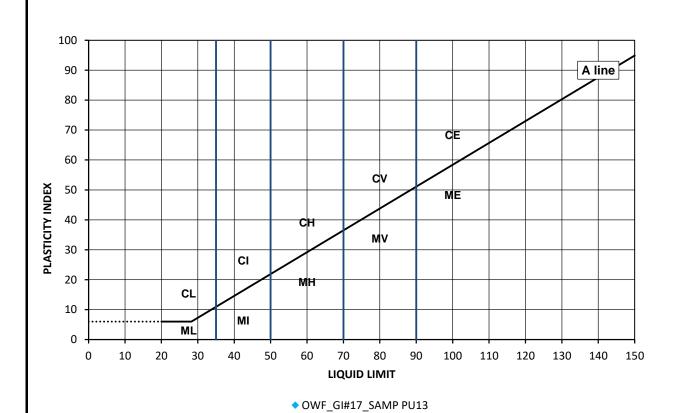
Notes	Date Printed	Approved By	
	16/05/2023	U. Mazhar	



	S	ample		bi %	iic %	cit ex	. %	lity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqu Limit	Plast Limit	Plasti y Ind	Water Cont.	Liquid Index	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#17 _SAMP	PU10	10.60	IS	NP	NP		24.4		66	3	4 Point Method	2.5y 7/3 Pale brown, clayey, silty and gravelly, SAND	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	16/05/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	16/05/2023	U. Maznai
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE ISO Atterberg Plasticity (A-line) Chart					Job Ref	GMOP21-G-019
G CESTON IN WALL	130 Atterbe	ery Flasticity	(A-IIIIe) Chart	Borehole/Pit No.	OWF_GI#17_SAMP	
Site Name	A05 Bretagne Offshore 0	GI	Sample No.	PU13		
Specimen Reference	PU13	Specimen Depth	16.7	m	Depth	16.7
Date started	13/03/2023			Sample Type	B1	
Test Method	ISO 17892-12			Keylab ID	BH0120230227369	



		Plas	ticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		V	Very high	70 to 90		
		E	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		

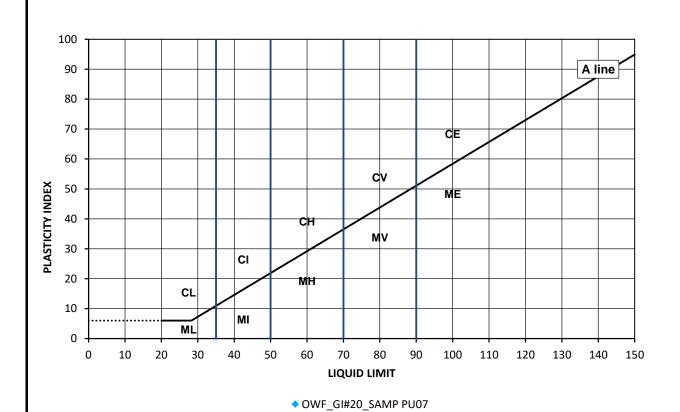
Notes	Date Printed	Approved By	
	16/05/2023	U. Mazhar	



Location	Ref	ample Top Depth	Туре	Liquid Limit %	Plastic Limit %	Plasticit y Index	Water Cont. %	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#17 _SAMP	PU13	16.70	B1	NP	NP		26.2		48	3	4 Point Method	white page 2.5y 8/1 White cemented silty SAND	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	16/05/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	16/05/2023	U. Maznai
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE ISO Atterberg Plasticity (A-line) Chart					Job Ref	GMOP21-G-019
GC STONE IN INVITA	130 Atterbe	rig Flasticity	A-IIIIe / Cilait	Borehole/Pit No.	OWF_GI#20_SAMP	
Site Name	A05 Bretagne Offshore 0	GI .	Sample No.	PU07		
Specimen Reference	B1	Specimen Depth	3.2	m	Depth	3.2
Date started	13/03/2023			Sample Type	B1	
Test Method	ISO 17892-12			Keylab ID	BH0120230227387	



		Plas	ticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		V	Very high	70 to 90		
		Е	Extremely high	exceeding 90		
	Organic	0	append to classification for o	organic material (eg CHO)		

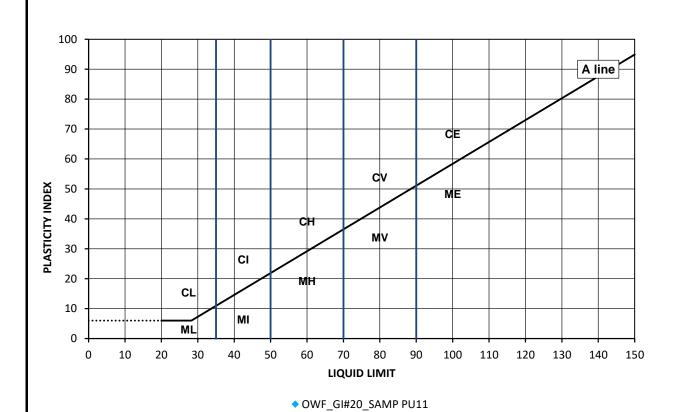
Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



Location	Ref	Top Depth	Туре	Liquid Limit %	Plastic Limit %	Plasticit y Index	Water Cont. %	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#20 _SAMP	PU07	3.20	B1	NP	NP		23.7		99	3	4 Point Method	2.5y 3/1 Very dark grey silty SAND	Too sandy to roll. Specimen non- plastic

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	14/04/2023	II Mamban
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorbo	ora Placticity	(A-line) Chart		Job Ref	GMOP21-G-019
GEOGOII I MININE	130 Atterbe	ery Plasticity		Borehole/Pit No.	OWF_GI#20_SAMP	
Site Name	A05 Bretagne Offshore 0	GI		Sample No.	PU11	
Specimen Reference	PU11	Specimen Depth	Depth	6.7		
Date started	16/03/2023				Sample Type	IS
Test Method	ISO 17892-12				Keylab ID	BH0120230227391



		Plas	ticity	Liquid Limit			
С	Clay	L	Low	below 35			
М	Silt	I	Medium	35 to 50			
		Н	High	50 to 70			
		٧	Very high	70 to 90			
		Е	Extremely high	exceeding 90			
	Organic	0	append to classification for organic material (eg CHO)				

Notes	Date Printed	Approved By	
	16/05/2023	U. Mazhar	



GMOP21-G-019

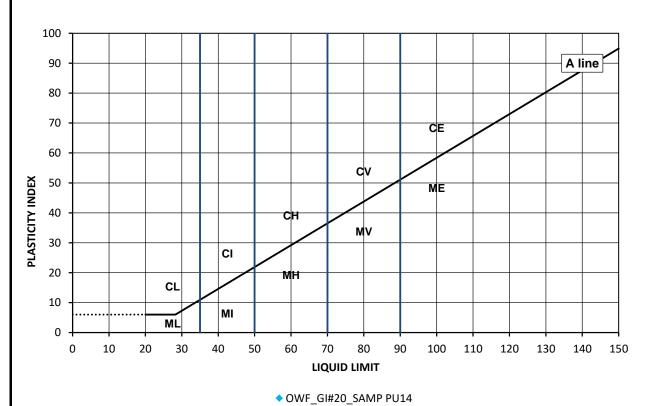
Project Name A05 Bretagne Offshore GI

	Sample			% <u>q</u>	ic %	cit ex	. %	ity %		Dron	Toot		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	Water Cont.	Liquid Index	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#20 _SAMP	PU11	6.70	IS	NP	NP		27.9		34	3	4 Point Method	2.5y 7/3 pale brown cemented SAND	

Project No.

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	16/05/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	10/05/2025	U. Maznai
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorbe	ora Plasticity	(A-line) Chart		Job Ref	GMOP21-G-019
G CESTON IN WHAT	130 Atterbe	ery Flasticity		Borehole/Pit No.	OWF_GI#20_SAMP	
Site Name	A05 Bretagne Offshore	GI		Sample No.	PU14	
Specimen Reference	PU14	Specimen Depth	Depth	9.7		
Date started	16/03/2023				Sample Type	IS
Test Method	ISO 17892-12			Keylab ID	BH0120230227394	



		Plas	ticity	Liquid Limit				
С	Clay	L	Low	below 35				
М	Silt	I	Medium	35 to 50				
		Н	High	50 to 70				
		٧	Very high	70 to 90				
		E	Extremely high	exceeding 90				
	Organic	0	append to classification for o	organic material (eg CHO)				

Notes	Date Printed	Approved By	
	16/05/2023	U. Mazhar	



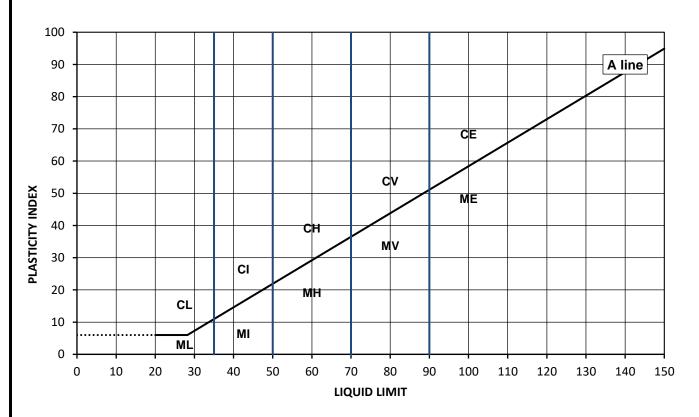
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

Lo	ocation	S Ref	Sample Ref Top Depth		Liquid Limit %	Plastic Limit %	Plasticit y Index	Water Cont. %	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks	
	/F_GI#20 _SAMP	PU14	9.70	IS	NP	NP		31		72	3	4 Point Method	2.5y 7/3 Pale brown, clayey, silty, gravelly, SAND		

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	16/05/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	16/05/2023	U. Maznai
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
		Í

GEOQUIPMARINE	ISO Attorb	ora Plasticity (Job Ref	GMOP21-G-019		
ISO Atterberg Plasticity (A-line) Chart					Borehole/Pit No.	OWF_GI#20_SAMP
Site Name	A05 Bretagne Offshore	GI		Sample No.	PU17	
Specimen Reference	PU17	Specimen Depth	Depth	13		
Date started	16/03/2023		Sample Type	IS		
Test Method	ISO 17892-12			Keylab ID	BH0120230227400	



OWF_GI#20_SAMP PU17

		Plas	sticity	Liquid Limit	
С	Clay	L	Low	below 35	
М	Silt	I	Medium	35 to 50	
		Н	High	50 to 70	
		V	Very high	70 to 90	
		Е	Extremely high	exceeding 90	
	Organic	0	append to classification for	organic material (eg CHO)	

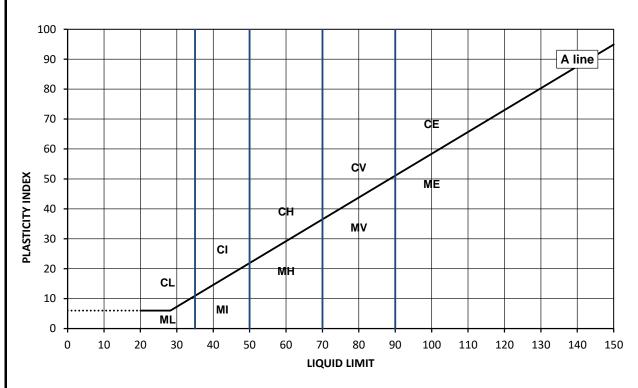
Notes	Date Printed	Approved By	
	16/05/2023	U. Mazhar	
	. 0, 00/2020	S. Maznai	



Location	S Ref	ample Top Depth	Tyne	Liquid Limit %	olas imit	Plasticit y Index Water	Cont. % Liquidity Index %		Prep. Method	Test Method	Sample Description	Remarks	
OWF_GI#20 _SAMP	PU17	13.00	IS	NP	NP	25	2	41	3	4 Point Method	2.5y 7/3 pale brown, silty SAND		

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	40/05/0000	
Preparation Method 1 = Tested in natural condition	16/05/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		

GEOQUIPMARINE	ISO Attorb		Job Ref	GMOP21-G-019	
G CESTON IN WALL	130 Atterb	erg Flasticity	(A-line) Chart	Borehole/Pit No.	OWF_GI#20_SAMP
Site Name	A05 Bretagne Offshore	GI		Sample No.	PU18
Specimen Reference	IS	Specimen Depth	Depth	13.8	
Date started	09/03/2023			Sample Type	IS
Test Method	ISO 17892-12			Keylab ID	BH0120230227403



OWF_GI#20_SAMP PU18

		Plasticity		Liquid Limit
С	Clay	L	Low	below 35
М	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	0	append to classification for o	organic material (eg CHO)

Notes	Date Printed	Approved By	
	16/05/2023	U. Mazhar	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX **SUMMARY (EN ISO 17892-12:2018)**

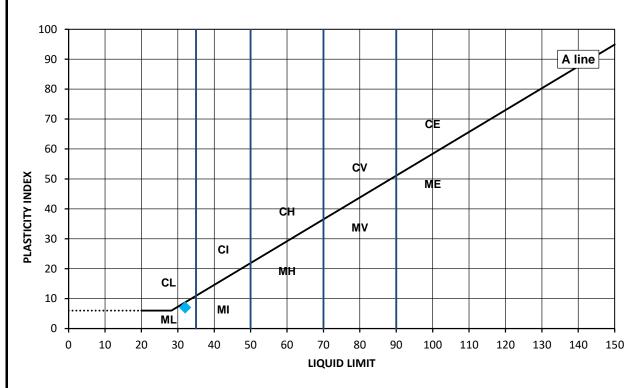
A05 Bretagne Offshore GI Project Name GMOP21-G-019

Location	Ref	Top Depth	Туре	Liquid Limit %	Plastic Limit %	Plasticit y Index	Water Cont. %	Liquidity Index %	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#2 _SAMP) PU18	13.80	IS	NP	NP		25.3		37	3	4 Point Method	2.5y 7/3 Pale brown cemented SAND	

Project No.

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			1
Legend	16/05/2023	U. Mazhar	1
Preparation Method 1 = Tested in natural condition	10/03/2023	U. IVIAZITAI	1
Preparation Method 2 = Tested after >0.425mm removed by hand			1
Preparation Method 3 = Tested after washing to remove >0.425mm			İ

GEOQUIPMARINE	ISO Attorbo	vra Plasticity	(A-line) Chart		Job Ref	GMOP21-G-019
GC CESTON IN WALL	130 Atterbe	rig Flasticity	(A-IIIIe) Chart		Borehole/Pit No.	OWF_GI#22_SAMP
Site Name	A05 Bretagne Offshore 0	31			Sample No.	PU13
Specimen Reference	B1	Specimen Depth	13.5	m	Depth	13.5
Date started	20/03/2023			Sample Type	B1	
Test Method	ISO 17892-12				Keylab ID	BH0120230227443



OWF_GI#22_SAMP PU13

Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	sticity	Liquid Limit
С	Clay	L	Low	below 35
M	Silt	I	Medium	35 to 50
		Н	High	50 to 70
		٧	Very high	70 to 90
		E	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

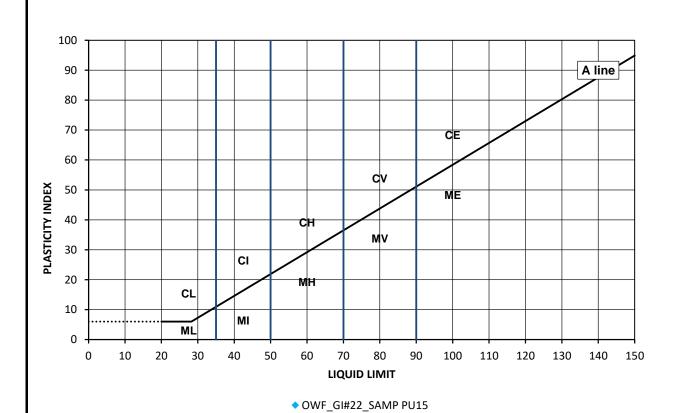
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	S	ample		р. %	ic %	cit ex	%	ity %		Prep.	Test		
Location	Ref	Top Depth	Туре	Liqui	Plast Limit	Plasti y Ind	Water Cont.	5	% Passing 0.425mm	Method	Method	Sample Description	Remarks
OWF_GI#22 _SAMP	PU13	13.50	B1	32	25	7	29.5	0.65	94	3	4 Point Method	2.5y 8/4 Pale brown, slightly gravelly, sandy, SILT	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	4.4/0.4/0.000	II Markar
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
	I	1

GEOQUIPMARINE	ISO Attorbo	ora Plasticity	(A-line) Chart		Job Ref	GMOP21-G-019
GC STONE IN INVITA	130 Atterbe	ery Flasticity	(A-IIIIe) Chart		Borehole/Pit No.	OWF_GI#22_SAMP
Site Name	A05 Bretagne Offshore 0	GI			Sample No.	PU15
Specimen Reference	B1	Specimen Depth	18.4	m	Depth	18.4
Date started	14/03/2023			Sample Type	B1	
Test Method	ISO 17892-12				Keylab ID	BH0120230227452



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	ticity	Liquid Limit
С	Clay	L	Low	below 35
М	Silt	1	Medium	35 to 50
		Н	High	50 to 70
		V	Very high	70 to 90
		Е	Extremely high	exceeding 90
	Organic	0	append to classification for	organic material (eg CHO)

Notes	Date Printed	Approved By	
	14/04/2023	U. Mazhar	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

GMOP21-G-019

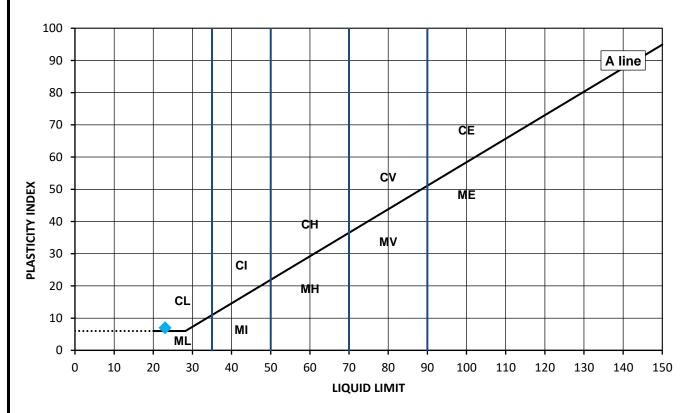
Project Name A05 Bretagne Offshore GI

	S	ample		% pi	<u>ب</u> د:	cit əx	%	dity < %		Prep.	Test		
Location	Ref	Top Depth	Type	큐	Plast Limit	Plasti y Inde	Water Cont.	Liquid Index	% Passing 0.425mm		Method	Sample Description	Remarks
OWF_GI#22 _SAMP	PU15	18.40	B1	NP	NP		27.9		67	3	4 Point Method	2.5y 8/3 Pale brown, slightly clayey, silty, gravelly, SAND	Too sandy to roll. Specimen non- plastic

Project No.

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend		l	
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Mazhar	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

GEOQUIPMARINE	ISO Attorb	erg Plasticity(Job Ref	GMOP21-G-019	
G CESTON I MANAGE	130 Atterb	erg Flasticity	Borehole/Pit No.	OWF_GI#24_SAMP		
Site Name	A05 Bretagne Offshore	GI	Sample No.	CR01		
Specimen Reference	Q1	Specimen Depth	1.1	m	Depth	1.1
Date started	03/05/2023			Sample Type	Q1	
Test Method	ISO 17892-12			Keylab ID	BH0120230227462	



OWF_GI#24_SAMP CR01

Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	sticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		٧	Very high	70 to 90		
		Е	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		

Notes	Date Printed	Approved By	
	23/06/2023	D.Smith	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

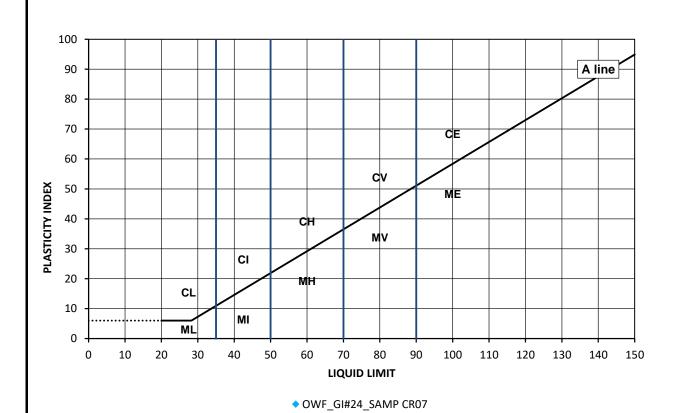
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

Location	S Ref	ample Top Depth	Туре	Liquid Limit %	Plastic Limit %	Plasticit y Index	Water Cont. %	quidi dex		Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#24 _SAMP	CR01	1.10	Q1	23	16	7	12.3	-0.52	79	3	4 Point Method	Greyish white slightly gravelly, clayey, silty, SAND	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	00/00/0000	D C:4h
Preparation Method 1 = Tested in natural condition	23/06/2023	D.Smith
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
1		

GEOQUIPMARINE ISO Atterberg Plasticity (A-line) Chart					Job Ref	GMOP21-G-019
GC STONE IN INVITA	ISO Atterbe	rig Flasticity	Borehole/Pit No.	OWF_GI#24_SAMP		
Site Name	A05 Bretagne Offshore 0	GI .	Sample No.	CR07		
Specimen Reference	CR07	Specimen Depth	7	m	Depth	7
Date started	26/04/2023			Sample Type	IS	
Test Method	ISO 17892-12			Keylab ID	BH0120230227470	



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	ticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	1	Medium	35 to 50		
		Н	High	50 to 70		
		V	Very high	70 to 90		
		Е	Extremely high	exceeding 90		
	Ouncein	0				
	Organic	0	append to classification for d	lassification for organic material (eg CHO)		

Notes	Date Printed	Approved By	
	16/05/2023	U. Mazhar	



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

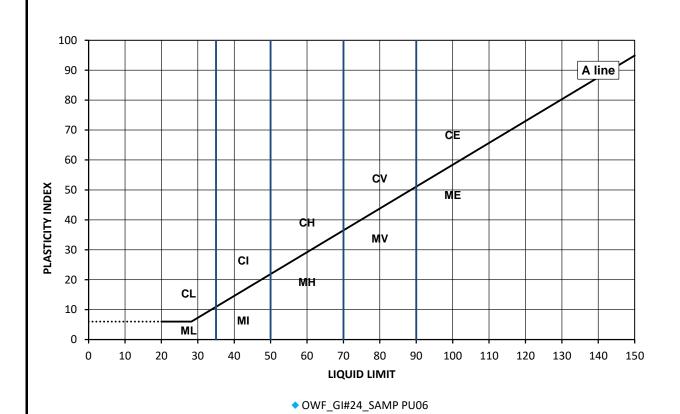
Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	S	ample		id %	ic %	cit ex	%	ity %		Prep.	Test		
Location	Ref	Top	Туре	iqu mit	last mit	asti Ind	ater ont.	auid Jex	% Passing	Method	Method	Sample Description	Remarks
	1101	Depth	Турс	ļη Γ	P Li	Ę ×	>ို ပိ	Lic Inc	0.425mm	Wictioa	Wictioa		
OWF_GI#24 _SAMP	CR07	7.00	IS	NP	NP		17.2		87	3	4 Point Method	white page 2.5y 9/2 Pale yellow, slightly gravelly, slightly sandy, silty CLAY	

Notes	Date Printed	Approved By
Testing to ISO 17892-12 4 point test.		
Testing to ISO 17892-12 1 point test.		
Cone Type 80g / 30Deg		
NP = Non-Plastic Sample		
All samples tested in sequence from driest point to the wettest point.		
Legend	16/05/2023	U. Mazhar
Preparation Method 1 = Tested in natural condition	10/05/2023	U. Maznai
Preparation Method 2 = Tested after >0.425mm removed by hand		
Preparation Method 3 = Tested after washing to remove >0.425mm		
	l	

GEOQUIPMARINE ISO Atterberg Plasticity (A-line) Chart					Job Ref	GMOP21-G-019
GC STONE IN INVITA	130 Atterb	ery Flasticity	Borehole/Pit No.	OWF_GI#24_SAMP		
Site Name	A05 Bretagne Offshore	GI	Sample No.	PU06		
Specimen Reference	IS	Specimen Depth	18	m	Depth	18
Date started	02/03/2023			Sample Type	IS	
Test Method	ISO 17892-12			Keylab ID	BH0120230227485	



Legend, based on BS 5930:1999 +A2: 2010 Code of practice for site investigations

		Plas	sticity	Liquid Limit		
С	Clay	L	Low	below 35		
М	Silt	I	Medium	35 to 50		
		Н	High	50 to 70		
		٧	Very high	70 to 90		
		E	Extremely high	exceeding 90		
	Organic	0	append to classification for	organic material (eg CHO)		

Notes Date Printed Approved By

14/04/2023 U. Mazhar



LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX SUMMARY (EN ISO 17892-12:2018)

Project Name A05 Bretagne Offshore GI

Project No. GMOP21-G-019

	S	ample		% p	<u>ي</u> %	cit ex	%	aity %		D===	Tool		
Location	Ref	Top Depth	Туре	Liqui Limit	Plast Limit	Plasti y Inde	Water Cont.	U ×	% Passing 0.425mm	Prep. Method	Test Method	Sample Description	Remarks
OWF_GI#24 _SAMP	PU06	18.00	IS	NP	NP		29.3		44	3	4 Point Method	white page 2.5y 8/2 pale yellow sandy, GRAVEL including cemented sand	Cannot roll specimen - Non- plastic

Notes	Date Printed	Approved By	
Testing to ISO 17892-12 4 point test.			
Testing to ISO 17892-12 1 point test.			
Cone Type 80g / 30Deg			
NP = Non-Plastic Sample			
All samples tested in sequence from driest point to the wettest point.			
Legend	14/04/2023	U. Mazhar	
Preparation Method 1 = Tested in natural condition	14/04/2023	U. Maznai	
Preparation Method 2 = Tested after >0.425mm removed by hand			
Preparation Method 3 = Tested after washing to remove >0.425mm			

	NINE	M	aximum and Minir			ļ	Job Ref	GI	MOP21-G-019
			Using NGI Geo	abs Me	thod		Borehole No.	OWI	F_GI#04_SAMP
Site Name	A05 Bretagn	ne Offshore (GI				Sample No.		PU02
Soil Description	2.5y 6/8 Oliv	e yellow SAI	ND with shell fragments				Depth m		0.70
Specimen Reference	B1		Specimen Depth		0.70	m	Specimen Type		B1
Specimen Description	2.5y 6/8 Oliv	e yellow SAI	ND with shell fragments				Unique ID	BH	012023022747
Test Method	NGI-Geolabs	S					Date of test		27/03/2023
ERCENTAGE OF MATERI	IAL RETAINED	ON THE 2	mm TEST SIEVE						29.77 %
IEAN MAXIMUM DRY DEN	ISITY								1.87 Mg/m
URCHARGE APPLICATIO									
	Run Nur		ensity Before Surcharge	Applicatio 1.81	n Mg/m³	Maxir	mum Density After Surcharg	ge Application 1.88	n Mg/m³
	Run Nur			1.80	Mg/m ³			1.86	Mg/m³
							Tolerance (max 1.5%)	0.91	%
MOUNTURE OFFEING HOE	ED.							2.00	mm
MPLITUDE SETTING USE									
IEAN MINIMUM DRY DEN:		mber 2 mber 3 mber 4					Average	575.30 574.40 576.90 576.20 577.20 576.00	1.30 g/cm ³ 9 9 9 9 9 9
EMARKS IEAN MINIMUM DRY DEN:	Run Nur Run Nur Run Nur Run Nur Run Nur	mber 2 mber 3 mber 4 mber 5					Average	574.40 576.90 576.20 577.20	9 9 9
TEAN MINIMUM DRY DENS MASS OF SAND VATER CALIBRATED VOL	Run Nur Run Nur Run Nur Run Nur Run Nur	mber 2 mber 3 mber 4 mber 5					Average	574.40 576.90 576.20 577.20 576.00	9 9 9 9
MPLITUDE SETTING USE EMARKS HEAN MINIMUM DRY DEN: HASS OF SAND VATER CALIBRATED VOL VEIGHT OF THE MOULD	Run Nur Run Nur Run Nur Run Nur Run Nur	mber 2 mber 3 mber 4 mber 5					Average	574.40 576.90 576.20 577.20 576.00	9 9 9 9 9 9 9
IEAN MINIMUM DRY DEN: IASS OF SAND VATER CALIBRATED VOL VEIGHT OF THE MOULD	Run Nur Run Nur Run Nur Run Nur Run Nur	mber 2 mber 3 mber 4 mber 5					Average	574.40 576.90 576.20 577.20 576.00	9 9 9 9 9 9 9
IEAN MINIMUM DRY DENSIASS OF SAND	Run Nur Run Nur Run Nur Run Nur Run Nur	mber 2 mber 3 mber 4 mber 5					Average	574.40 576.90 576.20 577.20 576.00	9 9 9 9 9 9 9

Lab Sheet Reference : Minmax output 26-9-22

GEOQUIPMA	RINE	IVI	aximum and Minir Using NGI Geo			ŀ	Job Ref		MOP21-G-019	
				iads ivie	etriou		Borehole No.	OW	F_GI#11_SAM	P
Site Name		ne Offshore G					Sample No.		PU01B	
Soil Description			y gravelly, SAND				Depth m		0.00	
Specimen Reference	B1		Specimen Depth		0.00	m	Specimen Type		B1	
Specimen Description	2.5y 4/1 Dar	rk grey SAND	1				Unique ID	BHO	012023022717	3
Test Method	NGI-Geolab	S					Date of test		23/03/2023	
ERCENTAGE OF MATER	RIAL RETAINED	ON THE 2 r	mm TEST SIEVE						0.00	%
IEAN MAXIMUM DRY DE	NSITY								1.68	Mg/m ³
URCHARGE APPLICATION			noity Roforo Comban	Applic=4'	nn	N.A'	mum Donoity After Court	ao Applicati		
	Run Nui		nsity Before Surcharge	1.64	Mg/m³	iviaxii	mum Density After Surchar	ge Application 1.68	Mg/m ³	
	Run Nui			1.62	Mg/m ³			1.67	Mg/m ³	
							Tolerance (max 1.5%)	0.15	%	
MPLITUDE SETTING US	ED							2.00	mm	
211002 0211110 00	ED									
REMARKS									1.28	g/cm³
EMARKS IEAN MINIMUM DRY DEI										g/cm³
EMARKS IEAN MINIMUM DRY DEI		mber 1						566.90		g/cm³
EMARKS IEAN MINIMUM DRY DEI	NSITY								1.28	g/cm³
EMARKS IEAN MINIMUM DRY DEI	NSITY Run Nui Run Nui Run Nui	mber 2 mber 3						566.90 565.10 565.60	9 9 9	g/cm³
EMARKS IEAN MINIMUM DRY DEI	Run Nui Run Nui Run Nui Run Nui Run Nui	mber 2 mber 3 mber 4						566.90 565.10 565.60 565.70	9 9 9 9	g/cm³
EMARKS IEAN MINIMUM DRY DEI	NSITY Run Nui Run Nui Run Nui	mber 2 mber 3 mber 4					Average	566.90 565.10 565.60	9 9 9	g/cm³
IEAN MINIMUM DRY DEI	Run Nui Run Nui Run Nui Run Nui Run Nui	mber 2 mber 3 mber 4 mber 5					Average	566.90 565.10 565.60 565.70 565.50	9 9 9 9	g/cm³
REMARKS MEAN MINIMUM DRY DEI MASS OF SAND VATER CALIBRATED VO	Run Nui Run Nui Run Nui Run Nui Run Nui	mber 2 mber 3 mber 4 mber 5					Average	566.90 565.10 565.60 565.70 565.50 565.76	9 9 9 9 9	g/cm³
REMARKS MEAN MINIMUM DRY DEI MASS OF SAND VATER CALIBRATED VO	Run Nui Run Nui Run Nui Run Nui Run Nui	mber 2 mber 3 mber 4 mber 5					Average	566.90 565.10 565.60 565.70 565.50 565.76	9 9 9 9 9 cm ³	g/cm³
EMARKS JEAN MINIMUM DRY DEI JASS OF SAND JATER CALIBRATED VO	Run Nui Run Nui Run Nui Run Nui Run Nui	mber 2 mber 3 mber 4 mber 5					Average	566.90 565.10 565.60 565.70 565.50 565.76	9 9 9 9 9 cm ³	g/cm³
IEAN MINIMUM DRY DEI IASS OF SAND VATER CALIBRATED VO	Run Nui Run Nui Run Nui Run Nui Run Nui	mber 2 mber 3 mber 4 mber 5					Average	566.90 565.10 565.60 565.70 565.50 565.76	9 9 9 9 9 cm ³	g/cm³
IEAN MINIMUM DRY DEI IASS OF SAND VATER CALIBRATED VO	Run Nui Run Nui Run Nui Run Nui Run Nui	mber 2 mber 3 mber 4 mber 5					Average	566.90 565.10 565.60 565.70 565.50 565.76	9 9 9 9 9 cm ³	g/cm³

C. C.	RINE	IVI	aximum and Minin			ŀ	Job Ref	-	MOP21-G-019
			Using NGI Geol	abs Me	tnoa		Borehole No.	OW	F_GI#11_SAMP
Site Name	_	ne Offshore (Sample No.		PU03
Soil Description	-	rk grey silty S	1				Depth m		2.00
Specimen Reference	B1		Specimen Depth		2.00	m	Specimen Type		B1
Specimen Description	2.5y 4/1 Da	rk grey silty S	AND				Unique ID	BH	0120230227178
Test Method	NGI-Geolab	S					Date of test		09/05/2023
ERCENTAGE OF MATER	RIAL RETAINED	ON THE 2	mm TEST SIEVE						1.55 %
IEAN MAXIMUM DRY DE	NSITY								1.77 Mg/m
URCHARGE APPLICATION			anaity Bafara Suraharaa	Applicatio	<u> </u>	Movin	mum Density After Surcharg	as Application	
	Run Nu		ensity Before Surcharge	1.73	n Mg/m³	iviaXII	mum Density After Suicharg	де Арріісаціої 1.77	Mg/m ³
	Run Nu			1.70	Mg/m ³			1.77	Mg/m ³
							Tolerance (max 1.5%)	0.16	%
MPLITUDE SETTING US	ED							2.00	mm
MPLITUDE SETTING US	ED							2.00	mm
REMARKS								2.00	mm
EEMARKS IEAN MINIMUM DRY DEI								2.00	
EEMARKS IEAN MINIMUM DRY DEI		mber 1						2.00	1.25 g/cm ³
EEMARKS IEAN MINIMUM DRY DEI	NSITY								
EEMARKS IEAN MINIMUM DRY DEI	NSITY Run Nu Run Nu Run Nu	mber 2 mber 3						549.30 547.40 552.50	1.25 g/cm ³
EEMARKS IEAN MINIMUM DRY DEI	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4						549.30 547.40 552.50 552.70	1.25 g/cm ³ g g g g g
EMARKS IEAN MINIMUM DRY DEI	NSITY Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4					Average	549.30 547.40 552.50	1.25 g/cm ³ 9 9 9
EEMARKS IEAN MINIMUM DRY DEI IASS OF SAND	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	549.30 547.40 552.50 552.70 550.00	1.25 g/cm ³ 9 9 9 9 9
EEMARKS SEAN MINIMUM DRY DEI SAND WATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	549.30 547.40 552.50 552.70 550.00 550.38	9 9 9 9
	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	549.30 547.40 552.50 552.70 550.00 550.38	9 9 9 9 9 cm ³
IEAN MINIMUM DRY DEI IASS OF SAND VATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	549.30 547.40 552.50 552.70 550.00 550.38	9 9 9 9 9 cm ³
IEAN MINIMUM DRY DEI IASS OF SAND VATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	549.30 547.40 552.50 552.70 550.00 550.38	9 9 9 9 9 cm ³
TEAN MINIMUM DRY DEI MASS OF SAND VATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	549.30 547.40 552.50 552.70 550.00 550.38	9 9 9 9 9 cm ³

Specimen Reference Specimen Description Test Method	B1	Using NGI Geolab GI ND with shell fragments Specimen Depth ND with shell fragments	0.50		m	Borehole No. Sample No. Depth m Specimen Type		PU01 0.50
Soil Description Specimen Reference Specimen Description Test Method	2.5y 4/3 Olive brown SA B1 2.5y 4/3 Olive brown SA NGI-Geolabs	ND with shell fragments Specimen Depth	0.50		m	Depth m Specimen Type		
Specimen Reference Specimen Description Test Method	B1 2.5y 4/3 Olive brown SA NGI-Geolabs	Specimen Depth	0.50		m	Specimen Type		0.50
Specimen Description Test Method	2.5y 4/3 Olive brown SA NGI-Geolabs		0.50		m			
Test Method	NGI-Geolabs	ND with shell fragments				Haiawa ID		B1
						Unique ID	BH0	120230227215
PERCENTAGE OF MATE	RIAL RETAINED ON THE 2					Date of test	2	22/03/2023
		mm TEST SIEVE						4.94 %
MEAN MAXIMUM DRY DE	:NSITY							1.62 Mg/n
SURCHARGE APPLICATI								
		ensity Before Surcharge Ap		3	Maxim	ium Density After Surcha		_
	Run Number 1 Run Number 2			g/m ³ g/m ³			1.61 1.62	Mg/m ³ Mg/m ³
	Kun number 2		1.01 IVI	9/111	7	Tolerance (max 1.5%)	-0.55	%
MPLITUDE SETTING US	ED						2.00	mm
REMARKS								
MEAN MINIMUM DRY DE	Run Number 1 Run Number 2 Run Number 3 Run Number 4 Run Number 5					Average	539.60 535.60 539.70 537.40 539.80 538.42	9 9 9 9 9
MASS OF SAND	Run Number 1 Run Number 2 Run Number 3 Run Number 4 Run Number 5					Average	535.60 539.70 537.40 539.80	a a a
	Run Number 1 Run Number 2 Run Number 3 Run Number 4 Run Number 5					Average	535.60 539.70 537.40 539.80 538.42	g g g

Lab Sheet Reference :

Minmax output 26-9-22

	RINE	Maximum and Minin			-	Job Ref	-	MOP21-G-019
		Using NGI Geol	abs Met	inoa		Borehole No.	OW	F_GI#17_SAMP
Site Name	A05 Bretagne Offsho	ore GI				Sample No.		PU05
Soil Description	5y 4/2 Olive grey SA	ND				Depth m		2.90
Specimen Reference	B1	Specimen Depth	2	2.90	m	Specimen Type		B1
Specimen Description	5y 4/2 Olive grey SA	ND				Unique ID	BHO	0120230227337
Test Method	NGI-Geolabs					Date of test		23/03/2023
ERCENTAGE OF MATER	RIAL RETAINED ON TH	E 2 mm TEST SIEVE						0.43 %
IEAN MAXIMUM DRY DE								1.74 Mg/m
URCHARGE APPLICATION		n Density Before Surcharge	Application	n	Maxin	num Density After Surchar	ge Application	1
	Run Number 1	Demony Donoro Garonia go	1.73	Mg/m ³	maxiii	nam Bonony rinor Garona.	1.74	Mg/m ³
	Run Number 2		1.71	Mg/m ³		Tolerance (max 1.5%)	1.74 -0.14	Mg/m³ %
MPLITUDE SETTING US	ED						2.00	mm
EMARKS								
	NSITY							1.32 g/cm ³
IEAN MINIMUM DRY DEN	NSITY							1.32 g/cm ³
IEAN MINIMUM DRY DEN	NSITY Run Number 1						586.60	1.32 g/cm ³
EAN MINIMUM DRY DEN							586.60 585.70	
IEAN MINIMUM DRY DEN	Run Number 1 Run Number 2 Run Number 3						585.70 585.10	9 9 9
IEAN MINIMUM DRY DEN	Run Number 1 Run Number 2 Run Number 3 Run Number 4						585.70 585.10 582.90	9 9 9
EAN MINIMUM DRY DEN	Run Number 1 Run Number 2 Run Number 3					Average	585.70 585.10	9 9 9
IEAN MINIMUM DRY DEN	Run Number 1 Run Number 2 Run Number 3 Run Number 4 Run Number 5					Average	585.70 585.10 582.90 586.30	9 9 9 9
IEAN MINIMUM DRY DEN IASS OF SAND VATER CALIBRATED VO	Run Number 1 Run Number 2 Run Number 3 Run Number 4 Run Number 5					Average	585.70 585.10 582.90 586.30 585.32	9 9 9
IEAN MINIMUM DRY DEN IASS OF SAND VATER CALIBRATED VO	Run Number 1 Run Number 2 Run Number 3 Run Number 4 Run Number 5					Average	585.70 585.10 582.90 586.30 585.32	9 9 9 9 9 9 9
IEAN MINIMUM DRY DEN IASS OF SAND VATER CALIBRATED VO VEIGHT OF THE MOULD	Run Number 1 Run Number 2 Run Number 3 Run Number 4 Run Number 5					Average	585.70 585.10 582.90 586.30 585.32	9 9 9 9 9 9 9
IEAN MINIMUM DRY DEN IASS OF SAND VATER CALIBRATED VO	Run Number 1 Run Number 2 Run Number 3 Run Number 4 Run Number 5					Average	585.70 585.10 582.90 586.30 585.32	9 9 9 9 9 9 9

GEOQUIPMA	RINE	Mi	aximum and Minin			ŀ	Job Ref		MOP21-G-019	
			Using NGI Geol	abs Me	tnoa		Borehole No.	OW	F_GI#22_SAM	IP
Site Name	_	ne Offshore (Sample No.		PU01	
Soil Description			AND with small shell frag				Depth m		0.00	
Specimen Reference	B1		Specimen Depth		0.00	m	Specimen Type		B1	
Specimen Description	2.5y 4/1 Dar	rk grey wet S	AND with frequent shell	fragment	S		Unique ID	BHO	012023022742	:1
Test Method	NGI-Geolab	S					Date of test		20/03/2023	
PERCENTAGE OF MATER	RIAL RETAINED	ON THE 2	mm TEST SIEVE						0.00	%
MEAN MAXIMUM DRY DE	NSITY								1.73	Mg/m3
URCHARGE APPLICATION			ancity Boforo Curcho	Applicati-	un.	Maxii	mum Donoity After Surebear	ao Annliastin		
	Run Nu		ensity Before Surcharge	1.70	m Mg/m3	iviaxii	mum Density After Surchar	ge Application 1.72	Mg/m3	
	Run Nu			1.69	Mg/m3			1.73	Mg/m3	
							Tolerance (max 1.5%)	-0.51	%	
MPLITUDE SETTING US	ED							2.00	mm	
211002 0211110 00	ED									
REMARKS										
REMARKS									1.27	g/cm3
REMARKS MEAN MINIMUM DRY DEI										g/cm3
EEMARKS IEAN MINIMUM DRY DEI		mber 1						566.30		g/cm3
EEMARKS IEAN MINIMUM DRY DEI	NSITY								1.27	g/cm3
EEMARKS IEAN MINIMUM DRY DEI	NSITY Run Nu Run Nu Run Nu	mber 2 mber 3						566.30 562.00 560.80	1.27 g	g/cm3
EEMARKS IEAN MINIMUM DRY DEI	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4						566.30 562.00 560.80 561.20	9 9 9 9	g/cm3
EEMARKS IEAN MINIMUM DRY DEI	NSITY Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4					Average	566.30 562.00 560.80	9 9 9 9	g/cm3
EEMARKS IEAN MINIMUM DRY DEI IASS OF SAND	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	566.30 562.00 560.80 561.20 563.60	9 9 9 9	g/cm3
REMARKS MEAN MINIMUM DRY DEI MASS OF SAND VATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	566.30 562.00 560.80 561.20 563.60 562.78	9 9 9 9 9	g/cm3
MEAN MINIMUM DRY DEI MASS OF SAND VATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	566.30 562.00 560.80 561.20 563.60 562.78	9 9 9 9 9 9 9	g/cm3
TEAN MINIMUM DRY DEI MASS OF SAND VATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	566.30 562.00 560.80 561.20 563.60 562.78	9 9 9 9 9 9 9	g/cm3
TEAN MINIMUM DRY DEI MASS OF SAND VATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	566.30 562.00 560.80 561.20 563.60 562.78	9 9 9 9 9 9 9	g/cm3
REMARKS MEAN MINIMUM DRY DEI MASS OF SAND VATER CALIBRATED VO	Run Nu Run Nu Run Nu Run Nu Run Nu	mber 2 mber 3 mber 4 mber 5					Average	566.30 562.00 560.80 561.20 563.60 562.78	9 9 9 9 9 9 9	g/cm3



Petrographic Description

Client Geoquip Marine Limited

Project Number GEO/37677

Project Name GMOP21-G-019 Bretange Offshore

Subject PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard ISRM SUGGESTED METHODS

Bh No / TP OWF_GI#01_SAMP

Sample ref CR01-IS

Depth (m) 0.00 - 0.30

Geolabs Sample Id 479151

Remarks

CBR

Prepared by Reviewed by

Kristian Jovanov Christian Clergeaud Head of Department Senior Geologist

QUICK UNDRAINED EFFECTIVE STRESS PARTICLE SIZE DISTRIBUTION **OEDOMETER** DYNAMIC MODULUS STRESS PATH CYCLIC TRIAXIAL CONSOLIDATION

YOUNG'S MODULUS POISSON'S RATIO



Date	03/04/23
Project No	GEO/37677
Reference	37677/479151

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (95.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

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Date	03/04/23
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Reference	37677/479151

Clay (3%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolomite				
Minerals	Average Percent (%)	Average Diameter (mm)			
Carbonate minerals	95.5	0.4-0.01			
Clay	3	<0.003			
Opaque Mineral	1.5	0.2-0.1			
Total	100	-			

FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (95.5%), clay (3%) and opaque mineral (1.5%).

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479151

APPENDIX A: MICROPHOTOGRAPHS

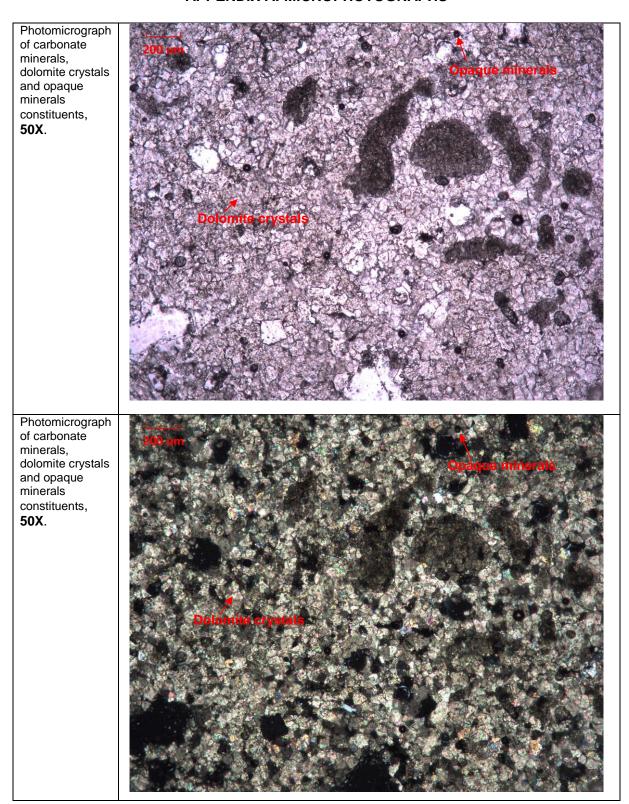


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479151

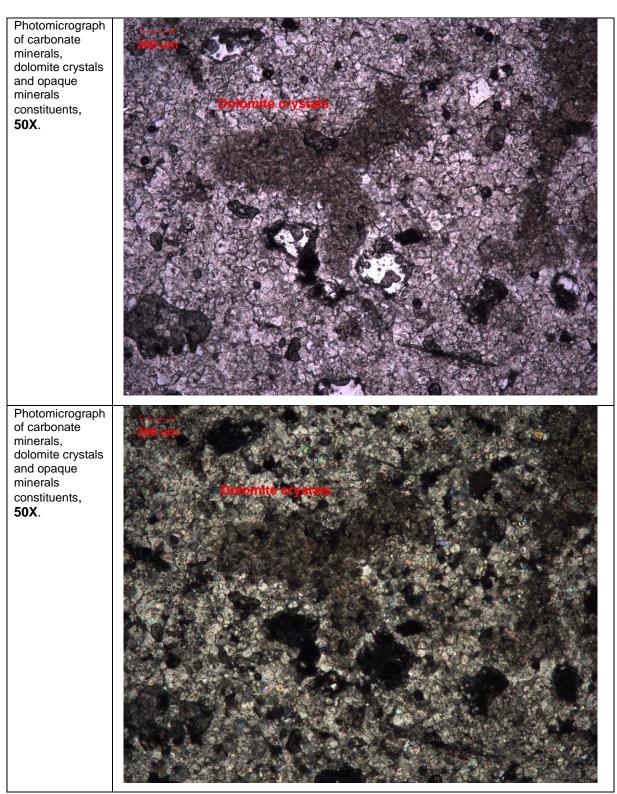


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#01A_SAMP

Sample ref : CR01-IS

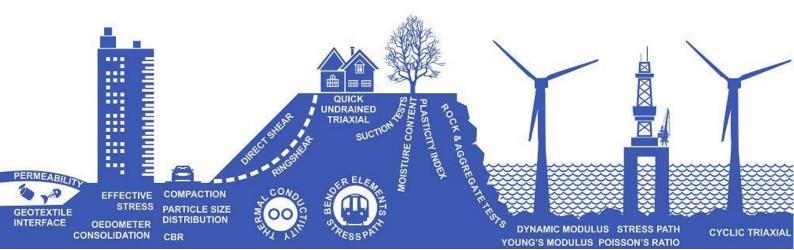
Depth (m) : 0.00 - 0.00

Geolabs Sample Id : 479157

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479157

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (97.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

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Date	03/04/23
Project No	GEO/37677
Reference	37677/479157

Clay (1%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	nite	
Minerals	Average Percent (%)	Average Diameter (mm)	
Carbonate minerals	97.5	0.4-0.01	
Clay	1	<0.003	
Opaque Mineral	1.5	0.2-0.1	
Total	100	-	

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (97.5%), clay (1%) and opaque mineral (1.5%).

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 Date
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 Project No
 GEO/37677

 Reference
 37677/479157

APPENDIX A: MICROPHOTOGRAPHS

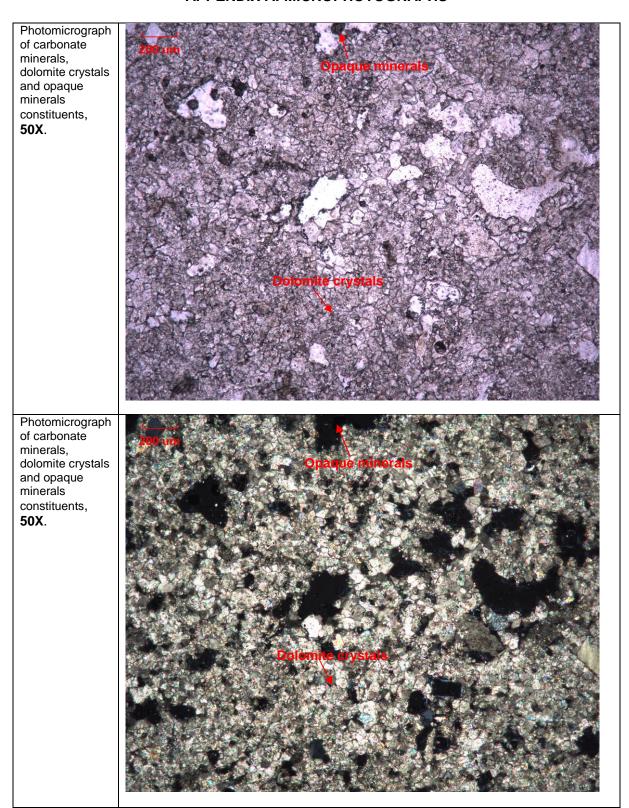


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479157

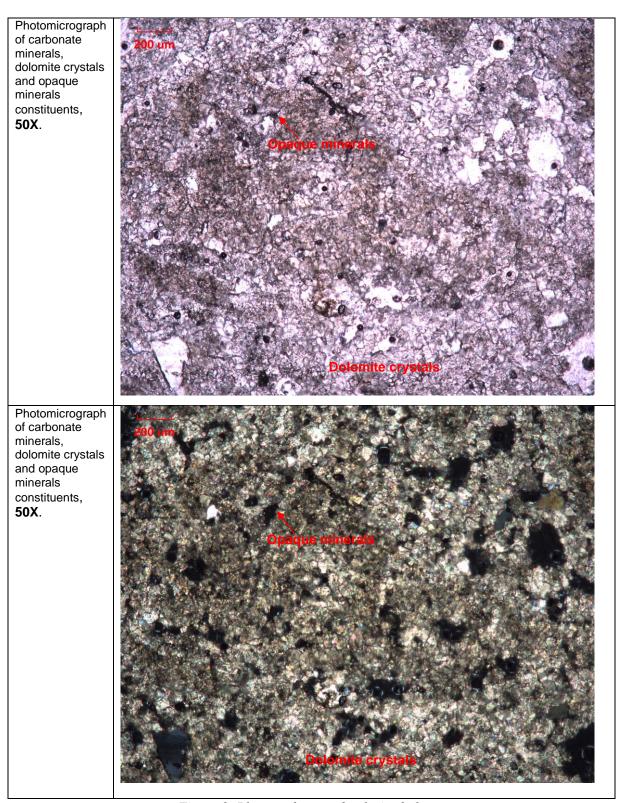


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Petrographic Description

Client Geoquip Marine Limited

Project Number GEO/37677

Project Name GMOP21-G-019 Bretange Offshore

Subject PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard ISRM SUGGESTED METHODS

Bh No / TP OWF_GI#01A_SAMP

Sample ref CR06-IS

Depth (m) 4.20 - 4.20

Geolabs Sample Id 479154

Remarks

Prepared by Reviewed by

Kristian Jovanov Senior Geologist

QUICK UNDRAINED EFFECTIVE STRESS PARTICLE SIZE DISTRIBUTION **OEDOMETER** DYNAMIC MODULUS STRESS PATH CYCLIC TRIAXIAL CONSOLIDATION **CBR**

Christian Clergeaud

YOUNG'S MODULUS POISSON'S RATIO

Head of Department



Date	03/04/23
Project No	GEO/37677
Reference	37677/479154

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (96.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

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Date	03/04/23
Project No	GEO/37677
Reference	37677/479154

Clay (1%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	nite	
Minerals	Average Percent (%)	Average Diameter (mm)	
Carbonate minerals	96.5	0.4-0.01	
Clay	1	<0.003	
Opaque Mineral	2.5	0.2-0.1	
Total	100	-	

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (96.5%), clay (1%) and opaque mineral (2.5%).

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 Date
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 Project No
 GEO/37677

 Reference
 37677/479154

APPENDIX A: MICROPHOTOGRAPHS

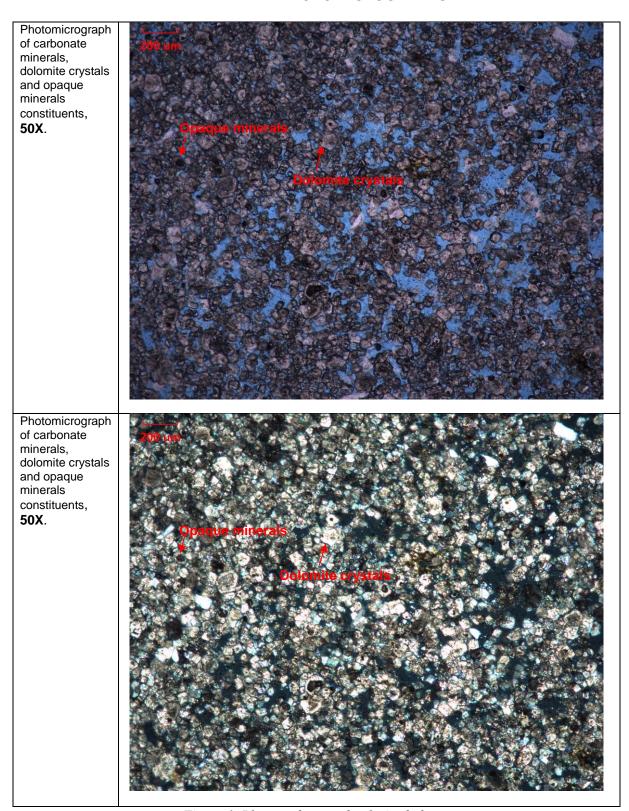


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479154

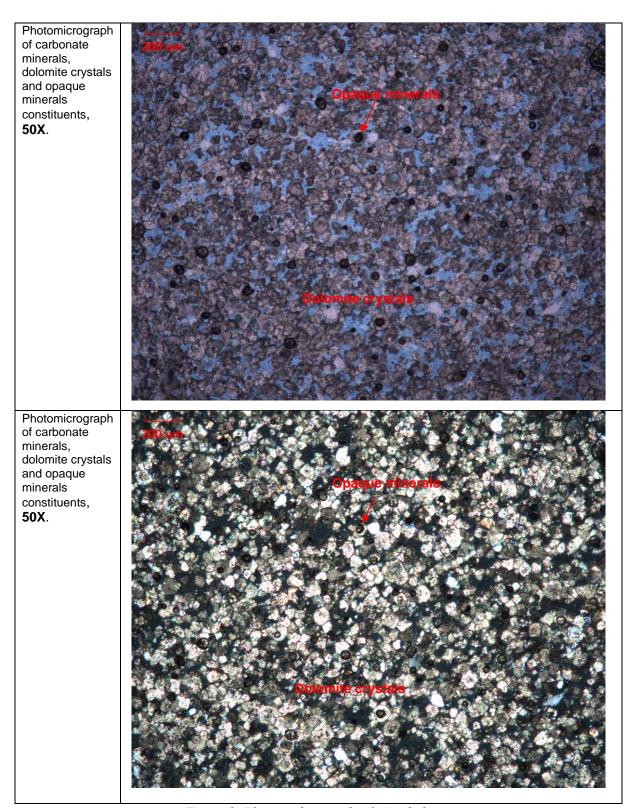


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#01A_SAMP

Sample ref : CR10-IS

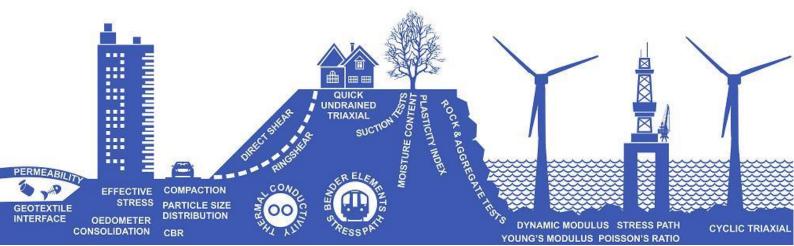
Depth (m) : 8.50 - 8.80

Geolabs Sample Id : 479159

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479159

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (96.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

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Date	03/04/23
Project No	GEO/37677
Reference	37677/479159

Clay (1%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	nite	
Minerals	Average Percent (%)	Average Diameter (mm)	
Carbonate minerals	96.5	0.4-0.01	
Clay	1	<0.003	
Opaque Mineral	2.5	0.2-0.1	
Total	100	-	

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (96.5%), clay (1%) and opaque mineral (2.5%).

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 Date
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 Project No
 GEO/37677

 Reference
 37677/479159

APPENDIX A: MICROPHOTOGRAPHS

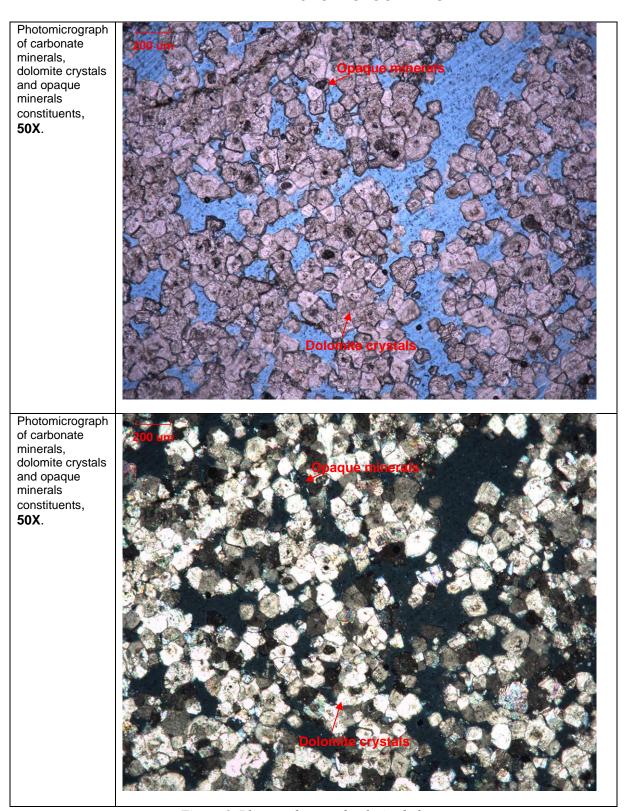


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479159

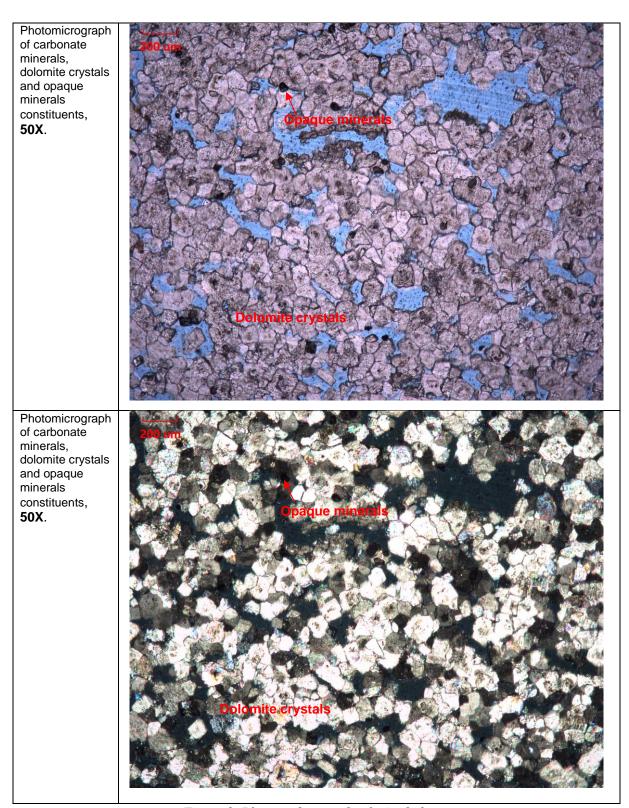


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#01A_SAMP

Sample ref : CR10-Q2

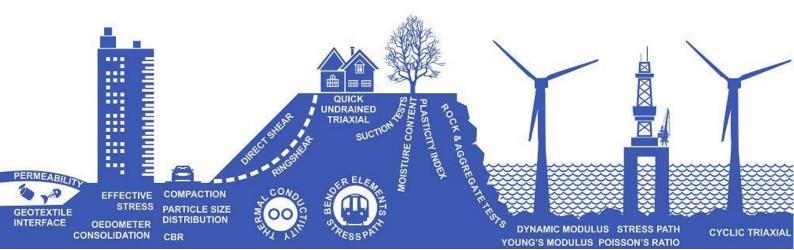
Depth (m) : 8.50 - 9.30

Geolabs Sample Id : 479152

Remarks : -

Prepared by Reviewed by

Kristian Jovanov Senior Geologist



Christian Clergeaud Head of Department



Date	03/04/23
Project No	GEO/37677
Reference	37677/479152

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (97.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479152

Clay (1%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Doloi	nite	
Minerals	Average Percent (%)	Average Diameter (mm)	
Carbonate minerals	97.5	0.4-0.01	
Clay	1	<0.003	
Opaque Mineral	1.5	0.2-0.1	
Total	100	-	

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (97.5%), clay (1%) and opaque mineral (1.5%).



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 Project No
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 Reference
 37677/479152

APPENDIX A: MICROPHOTOGRAPHS

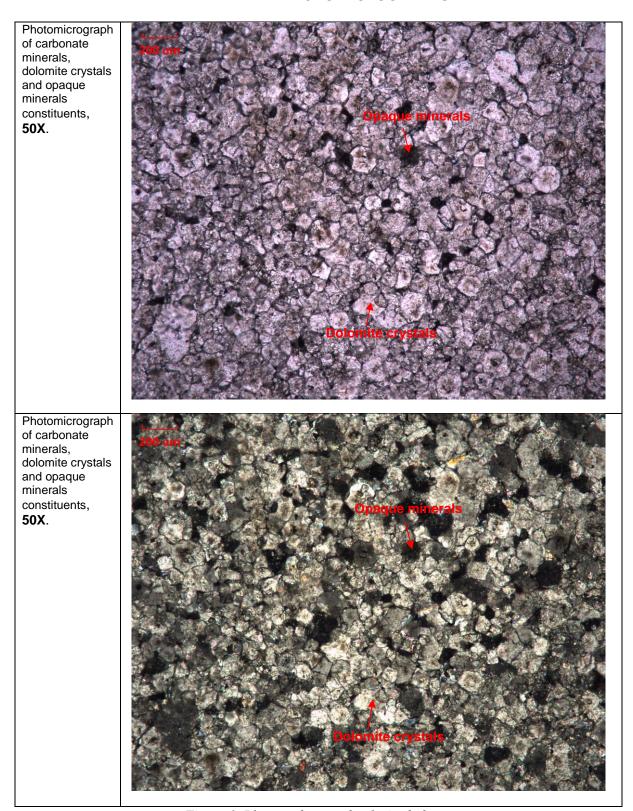


Figure 1. Plane and crossed polarized photos



 Date
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 Project No
 GEO/37677

 Reference
 37677/479152

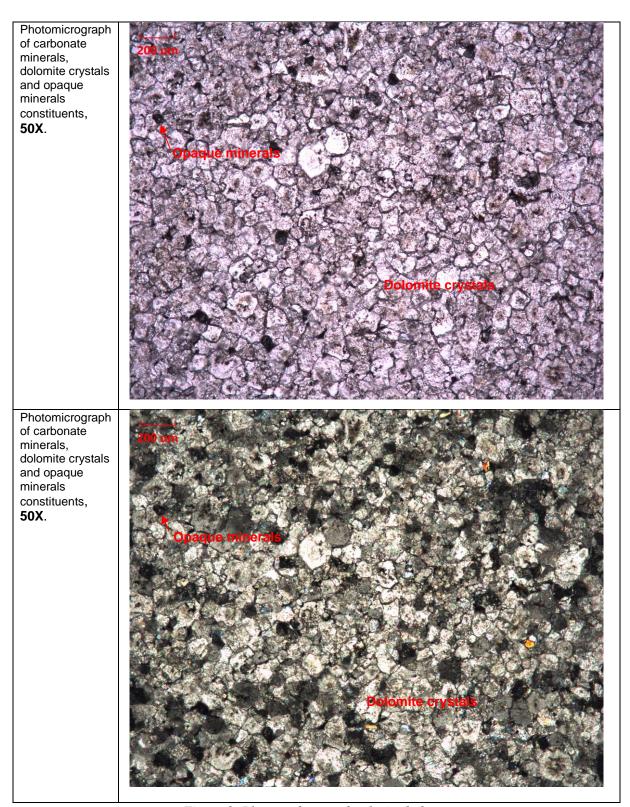


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#01A_SAMP

Sample ref : CR15-IS

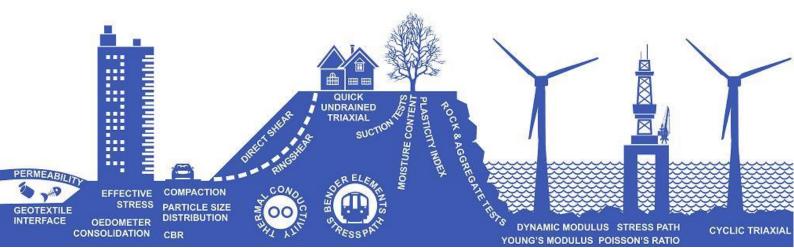
Depth (m) : 16.00 - 16.15

Geolabs Sample Id : 479153

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479153

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:



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Project No	GEO/37677
Reference	37677/479153

Carbonate minerals (95.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

Clay (3%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	nite
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	95.5	0.4-0.01
Clay	3	<0.003
Opaque Mineral	1.5	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (95.5%), clay (3%) and opaque mineral (1.5%).



 Date
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 GEO/37677

 Reference
 37677/479153

APPENDIX A: MICROPHOTOGRAPHS

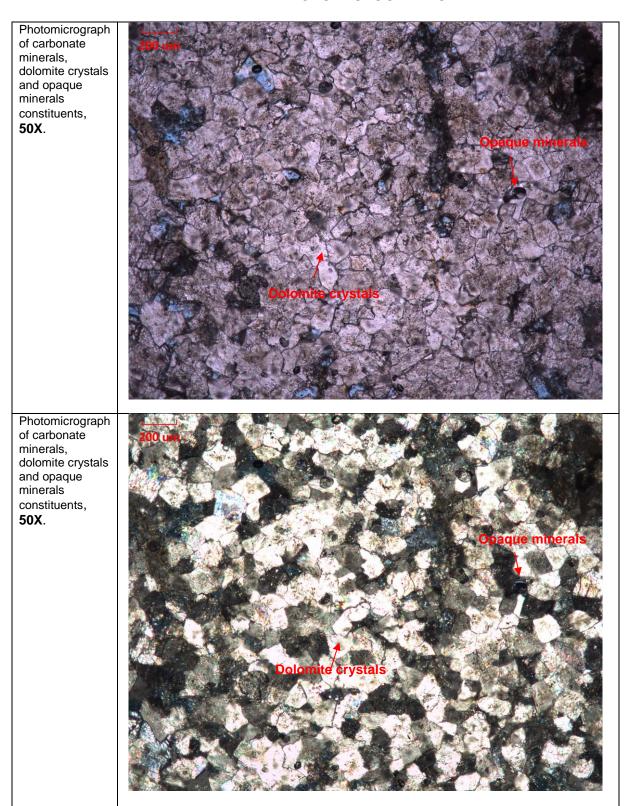


Figure 1. Plane and crossed polarized photos



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479153

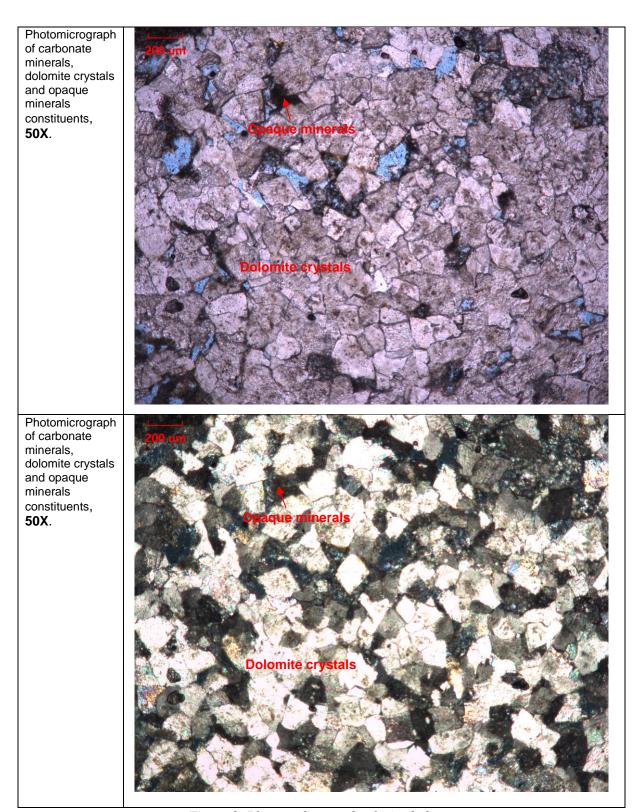


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#01A_SAMP

Sample ref : CR16-IS

Depth (m) : 17.00 - 17.00

Geolabs Sample Id : 479158

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department



Date	03/04/23
Project No	GEO/37677
Reference	37677/479158

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light grey / cream colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 2.0 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (64%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (20%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479158

Matrix (14%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Lir	nestone
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	64	1.8-0.01
Calcite	20	0.2-0.01
Matrix	14	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (64%), calcite (20%), matrix (14%) and opaque mineral (2%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479158

APPENDIX A: MICROPHOTOGRAPHS

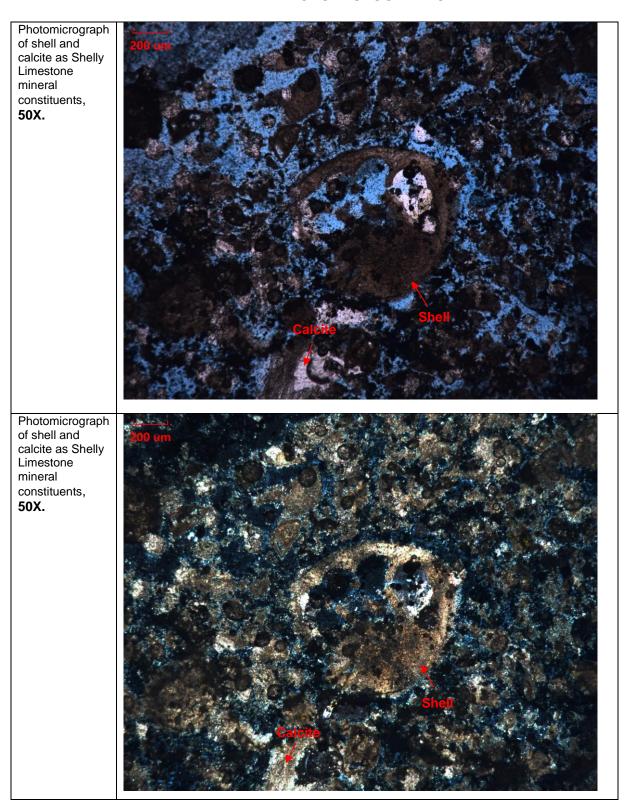


Figure 1. Plane and crossed polarized photos



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479158

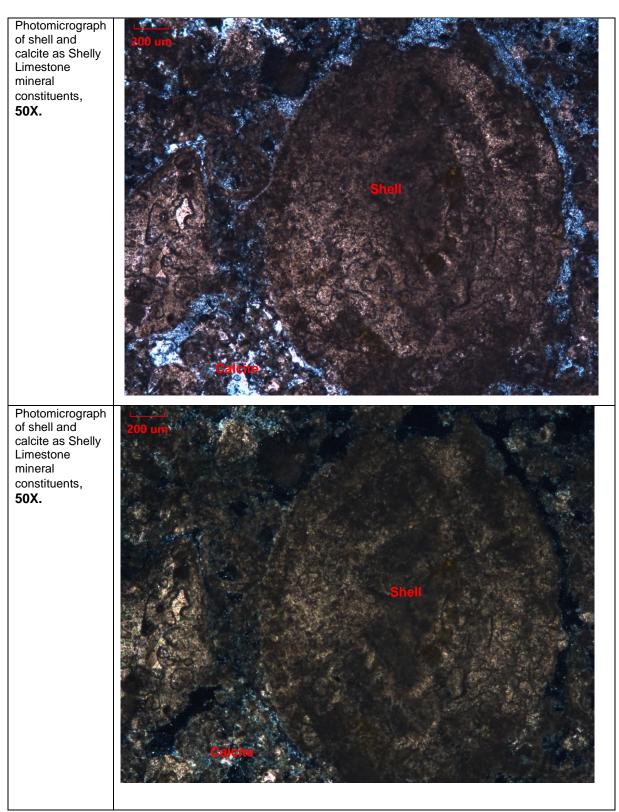


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#04_SAMP

Sample ref : CR01-B1

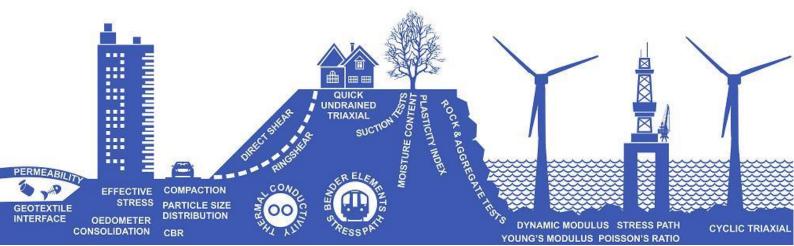
Depth (m) : 1.30 - 1.30

Geolabs Sample Id : 479186

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479186

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (95.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479186

Clay (2%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	nite
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	95.5	0.4-0.01
Clay	2	<0.003
Opaque Mineral	2.5	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (95.5%), clay (2%) and opaque mineral (2.5%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479186

APPENDIX A: MICROPHOTOGRAPHS

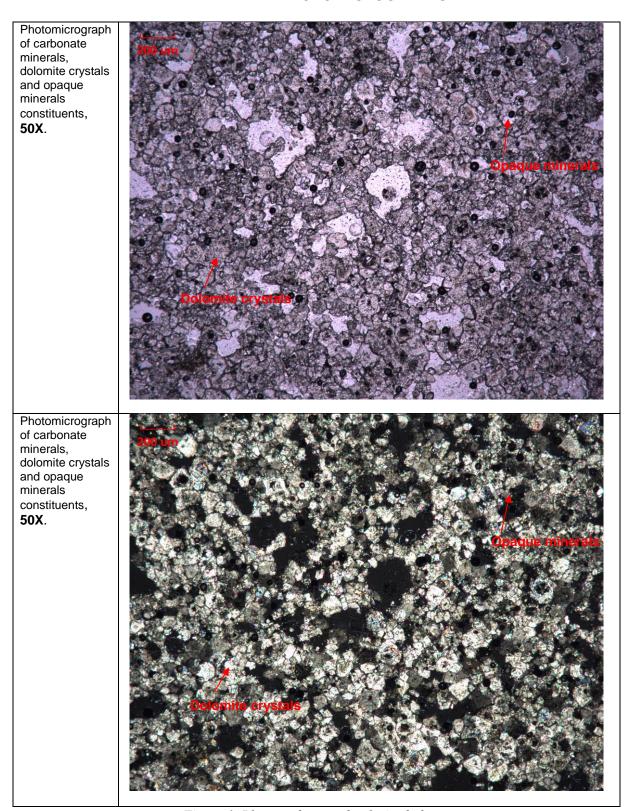


Figure 1. Plane and crossed polarized photos



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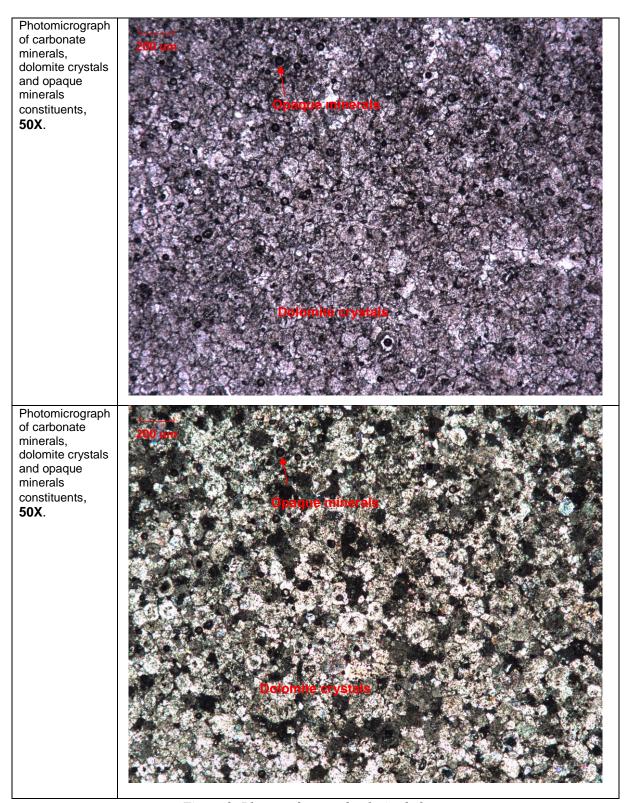


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#04A_SAMP

Sample ref : CR05-IS

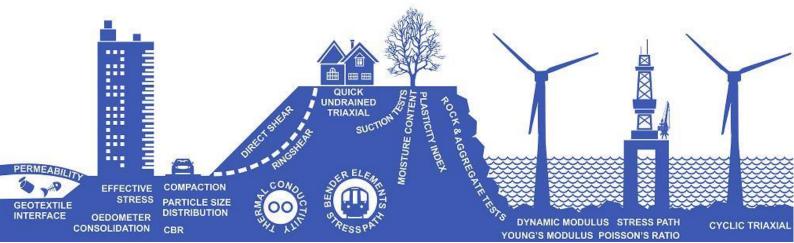
Depth (m) : 4.50 - 4.70

Geolabs Sample Id : 479150

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





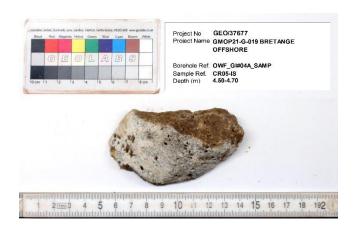
Date	03/04/23
Project No	GEO/37677
Reference	37677/479150

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (94.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.



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Clay (2%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (3.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Doloi	mite	
Minerals	Average Percent (%)	Average Diameter (mm)	
Carbonate minerals	94.5	0.4-0.01	
Clay	2	<0.003	
Opaque Mineral	3.5	0.2-0.1	
Total	100	-	

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (94.5%), clay (2%) and opaque mineral (3.5%).



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APPENDIX A: MICROPHOTOGRAPHS

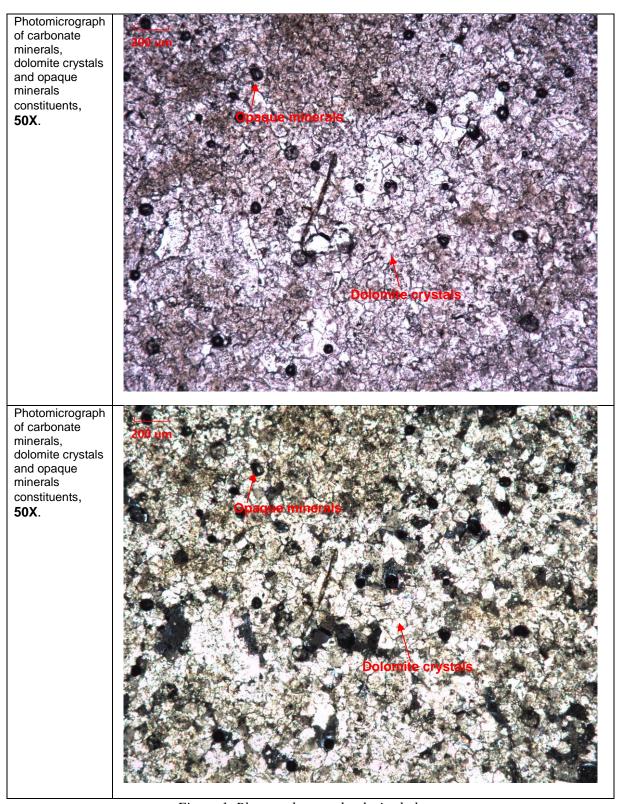


Figure 1. Plane and crossed polarized photos



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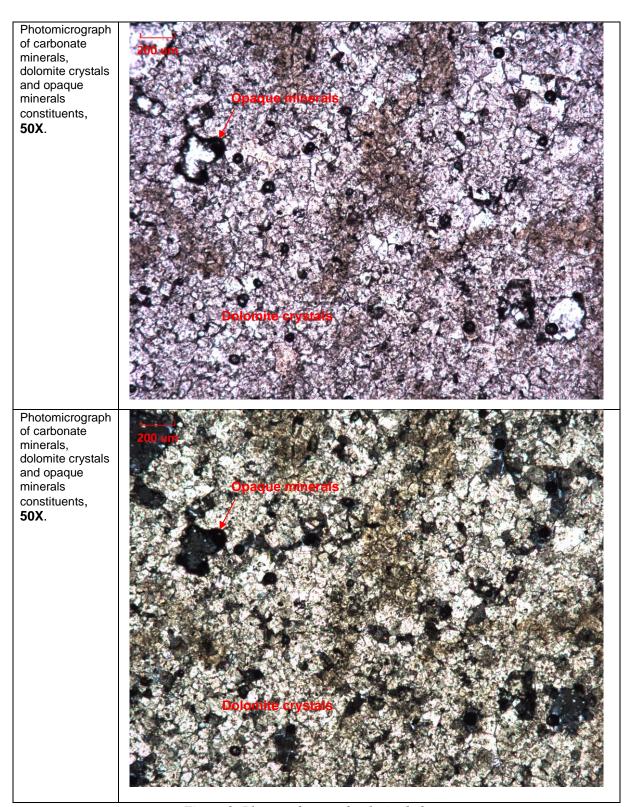


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#04A_SAMP

Sample ref : CR10-B1

Depth (m) : 11.90 - 11.90

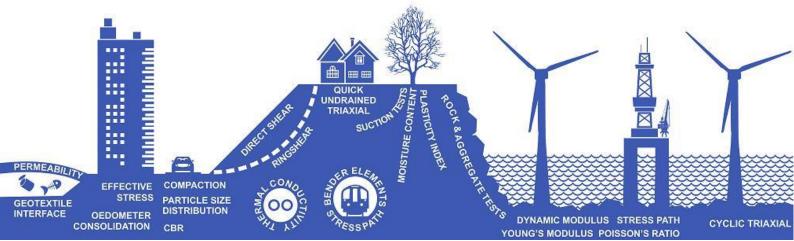
Geolabs Sample Id : 479155

Remarks : -

Prepared by

Kristian Jovanov
Senior Geologist
Head of Department

Reviewed by





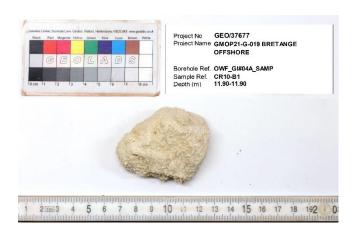
Date	03/04/23
Project No	GEO/37677
Reference	37677/479155

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light grey / cream colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 1.2 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (53%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (28%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.



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Matrix (17%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Lir	nestone
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	53	2.2-0.01
Calcite	28	0.2-0.01
Matrix	17	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (53%), calcite (28%), matrix (17%) and opaque mineral (2%).



 Date
 03/04/23

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APPENDIX A: MICROPHOTOGRAPHS

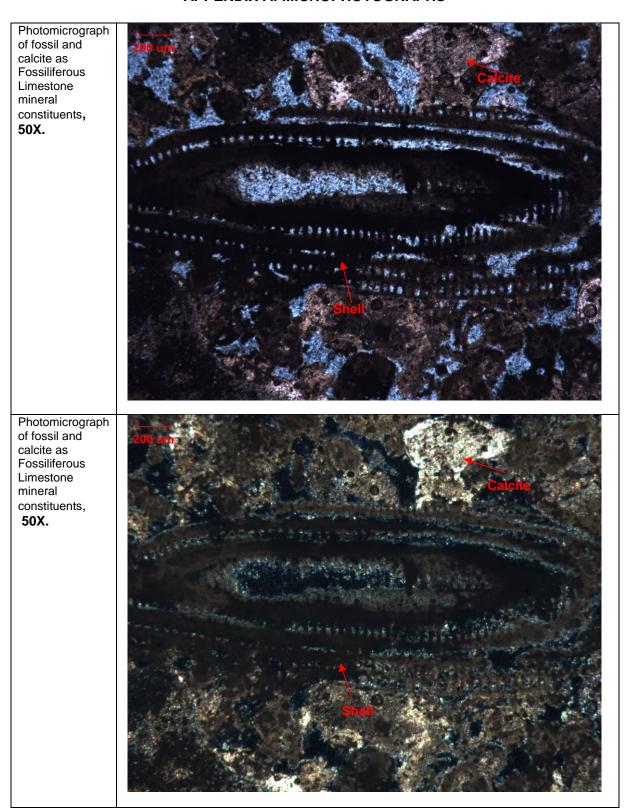


Figure 1. Plane and crossed polarized photos



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 Reference
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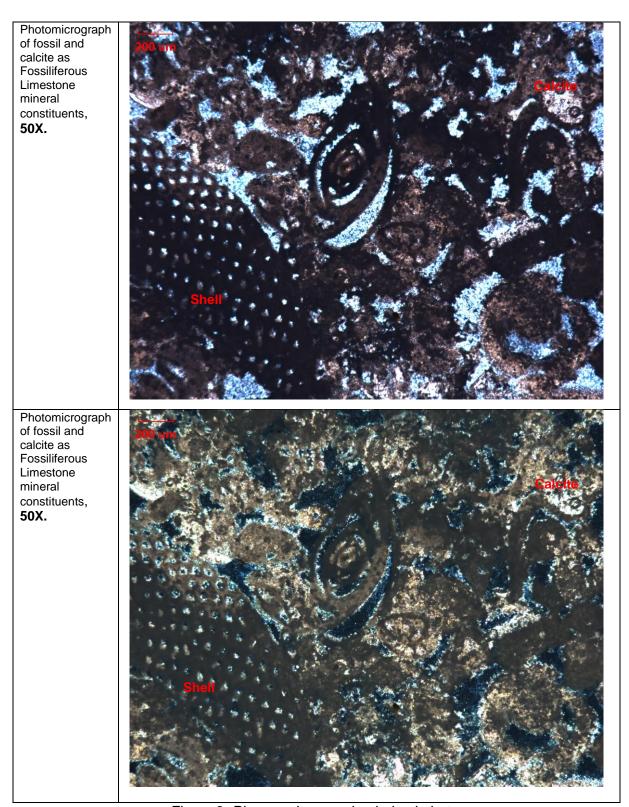


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#04A_SAMP

Sample ref : CR15-IS

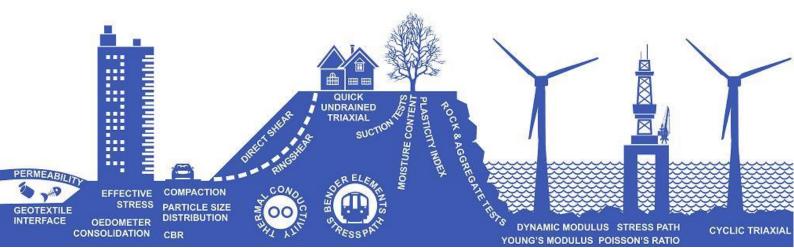
Depth (m) : 19.00 - 19.25

Geolabs Sample Id : 479156

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





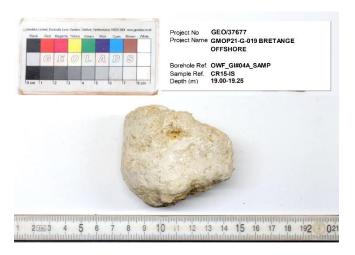
Date	03/04/23
Project No	GEO/37677
Reference	37677/479156

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light grey / cream colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 1.2 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (63%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (18%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.



Date	03/04/23
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Matrix (17%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Lir	nestone
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	63	2.5-0.01
Calcite	18	0.2-0.01
Matrix	17	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (63%), calcite (18%), matrix (17%) and opaque mineral (2%).



 Date
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 Reference
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APPENDIX A: MICROPHOTOGRAPHS

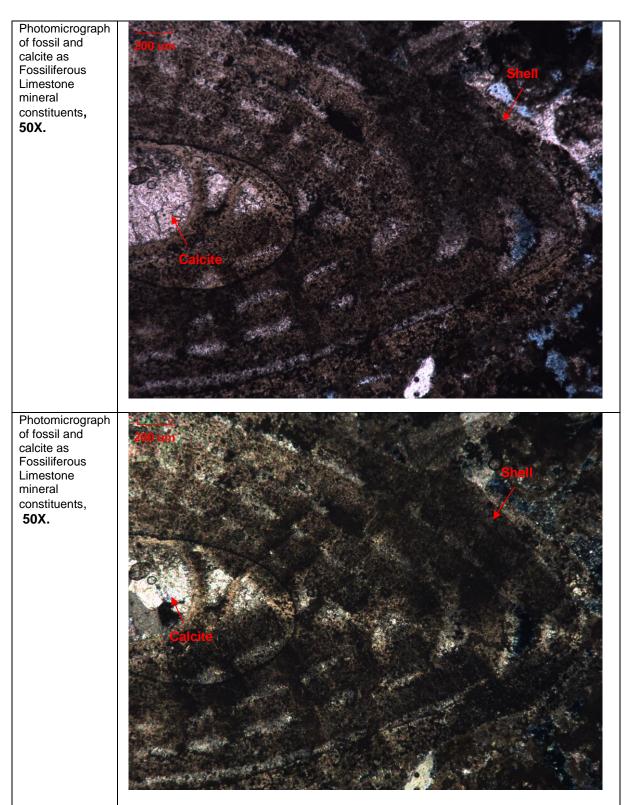


Figure 1. Plane and crossed polarized photos



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 Project No
 GEO/37677

 Reference
 37677/479156

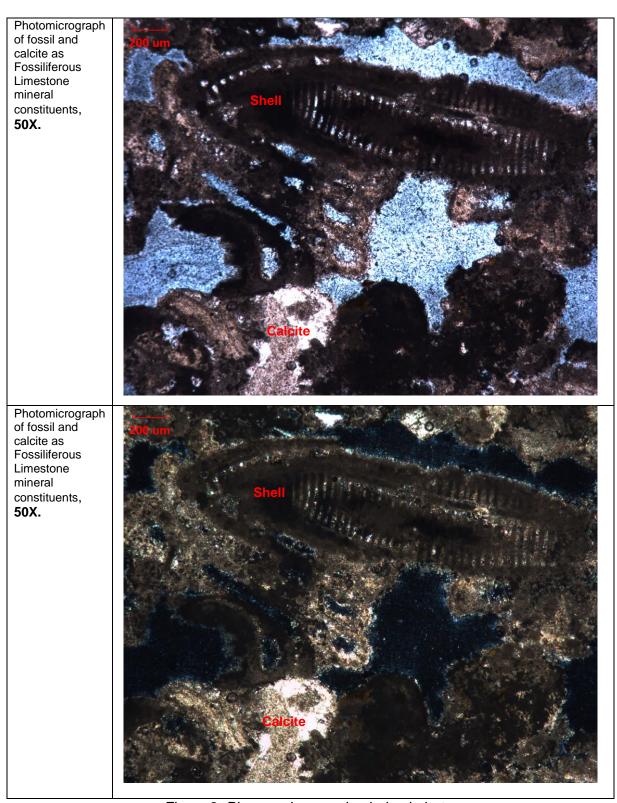


Figure 2. Plane and crossed polarized photos



Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#05A_SAMP

Sample ref : CR01-IS

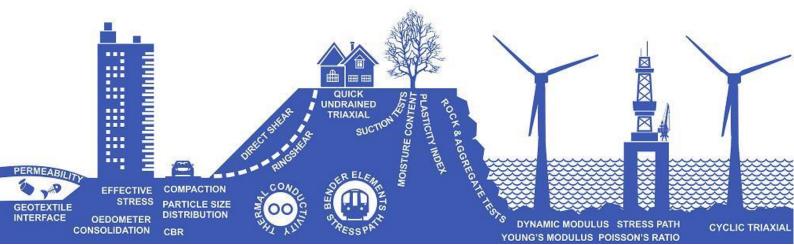
Depth (m) : 0.50 - 0.50

Geolabs Sample Id : 479192

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Christian Clergeaud
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479192

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light grey / cream colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

C. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 2.0 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (64%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (15%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.

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Date	03/04/23
Project No	GEO/37677
Reference	37677/479192

Matrix (19%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Lir	nestone
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	64	2.0-0.01
Calcite	15	0.2-0.01
Matrix	19	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

D. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (64%), calcite (15%), matrix (19%) and opaque mineral (2%).

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 Date
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 Project No
 GEO/37677

 Reference
 37677/479192

APPENDIX A: MICROPHOTOGRAPHS

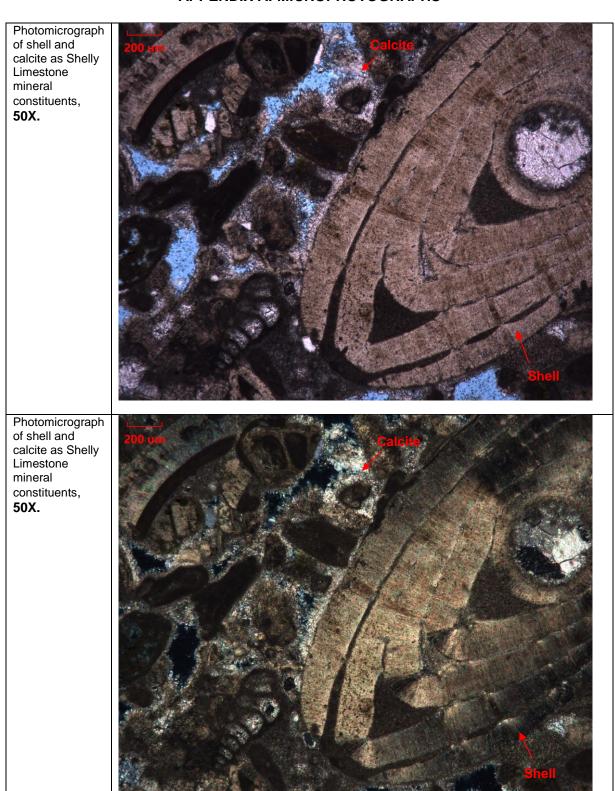


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479192

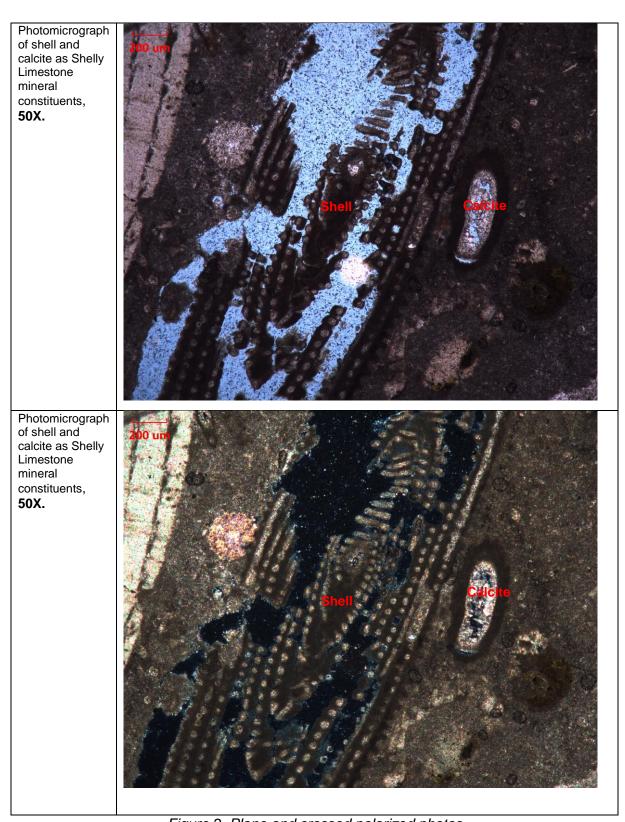


Figure 2. Plane and crossed polarized photos

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Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject: PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#05A_SAMP

Sample ref : CR03-IS

Depth (m) : 2.50 - 2.90

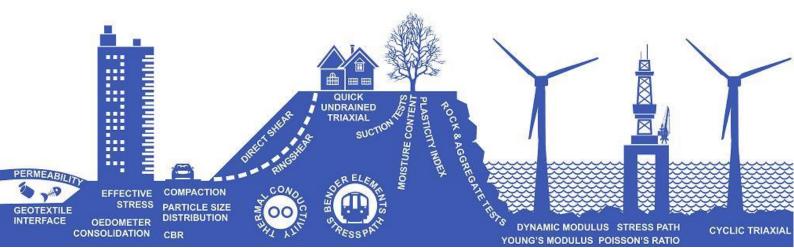
Geolabs Sample Id : 479193

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist

Christian Clergeaud
Head of Department





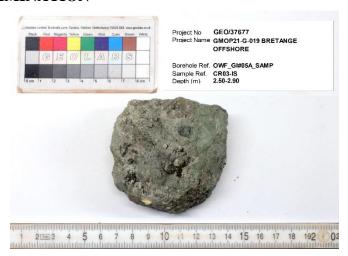
Date	03/04/23
Project No	GEO/37677
Reference	37677/479193

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light grey/ green colour. The grain size of rock is classified as medium-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of matrix minerals and opaque minerals. The sample is highly weathered.

MICRO EXAMINATION

Fossiliferous Glauconite Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 1.2 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms, glauconite and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (65%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (15%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.

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Date	03/04/23
Project No	GEO/37677
Reference	37677/479193

Glauconite (10%): Well-rounded to sub-rounded, highly spherical grains of moderately soft to soft iron-rich marine clay.

Matrix (9%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Limestone	
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	65	1.2-0.01
Calcite	15	0.2-0.01
Glauconite	10	0.4-0.01
Matrix	9	<0.003
Opaque Mineral	1	0.2-0.1
Total	100	-

A. FINDINGS & CONCLUSIONS

The submitted rock sample is *Fossiliferous Glauconite Limestone*. Mineral of the sample is predominantly fossil/shell (65%), calcite (15%), glauconite (10%), matrix (9%) and opaque mineral (1%).

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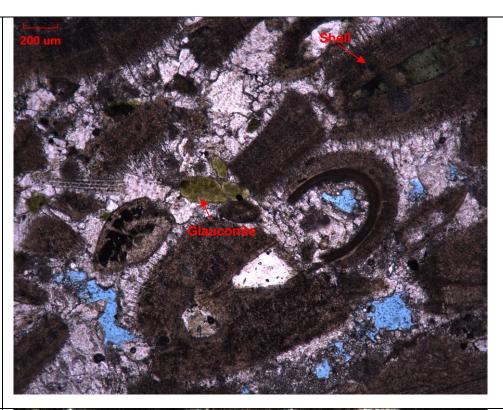
 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479193

APPENDIX A: MICROPHOTOGRAPHS

Photomicrograph of fossil and calcite as Fossiliferous Limestone mineral and glauconite constituents, **50X.**



Photomicrograph of fossil and calcite as Fossiliferous Limestone mineral and glauconite constituents, **50X.**



Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479193

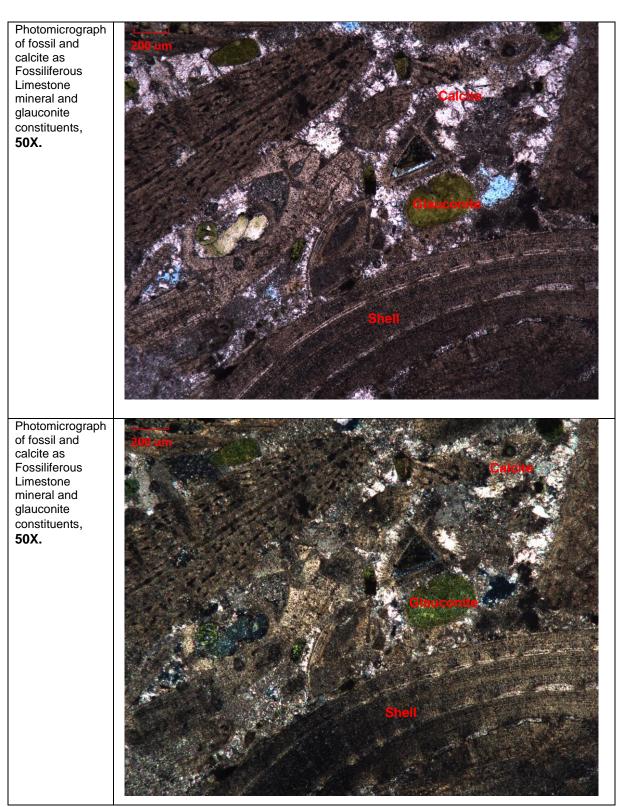


Figure 2. Plane and crossed polarized photos

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Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#05B_SAMP

Sample ref : CR01-IS

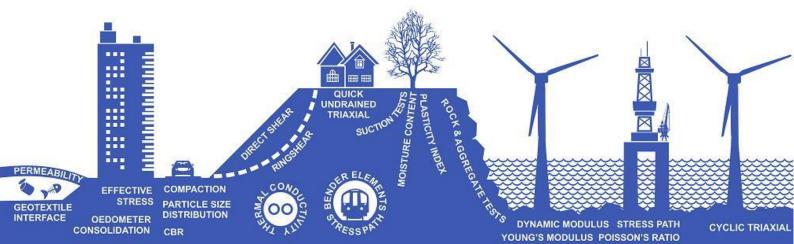
Depth (m) : 5.50 - 5.50

Geolabs Sample Id : 479191

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479191

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared grey/ green colour. The grain size of rock is classified as medium-coarse grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is highly weathered.

MICRO EXAMINATION

Glauconite Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.6 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals and glauconite. The descriptions of its mineral constituents are as follow:

Carbonate minerals (85%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

Geolabs Ltd Page 2 of 5



Date	03/04/23
Project No	GEO/37677
Reference	37677/479191

Glauconite (13%): Well-rounded to sub-rounded, highly spherical grains of moderately soft to soft iron-rich marine clay.

Clay (1%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock -	Doloi	nite
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	85	0.4-0.01
Glauconite	13	0.6-0.01
Clay	1	<0.003
Opaque Mineral	1	0.2-0.1
Total	100	-

FINDINGS & CONCLUSIONS

The submitted rock sample is *Glauconite Dolomite*. Mineral of the sample is predominantly carbonate minerals (85%), glauconite (13%), clay (1%) and opaque mineral (1%).

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479191

APPENDIX A: MICROPHOTOGRAPHS

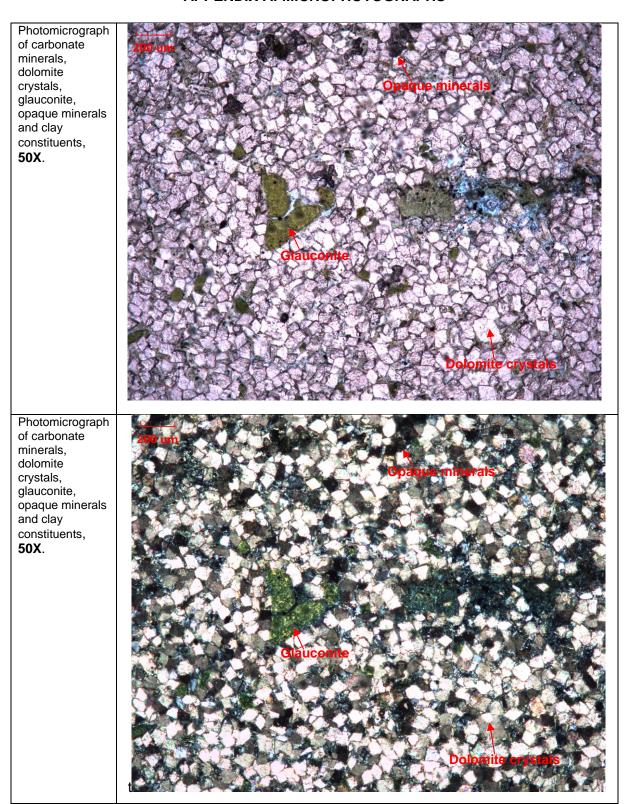


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479191

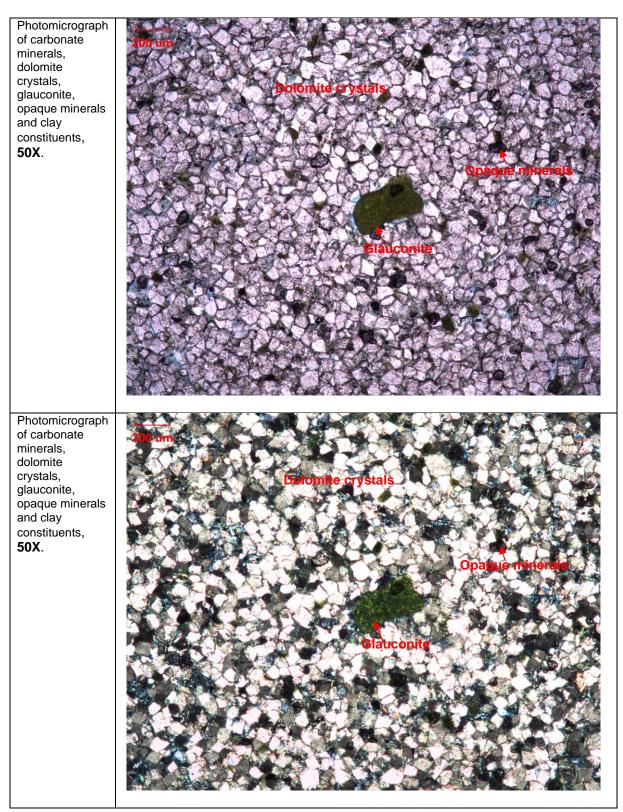


Figure 2. Plane and crossed polarized photos

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Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#14_SAMP

Sample ref : CR03-IS

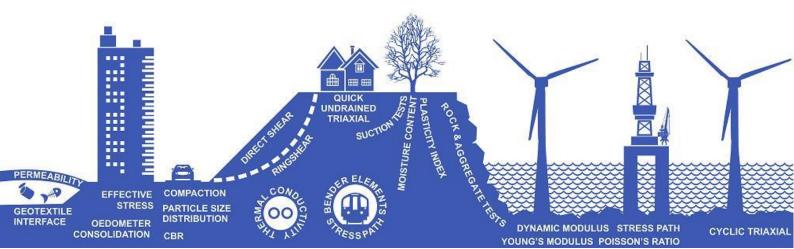
Depth (m) : 2.00 - 2.10

Geolabs Sample Id : 479148

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Christian Clergeaud
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479148

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared grey/ green colour. The grain size of rock is classified as medium-coarse grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is highly weathered.

MICRO EXAMINATION

Glauconite Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.6 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals and glauconite. The descriptions of its mineral constituents are as follow:

Carbonate minerals (92%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

Geolabs Ltd Page 2 of 5



Date	03/04/23
Project No	GEO/37677
Reference	37677/479148

Glauconite (5%): Well-rounded to sub-rounded, highly spherical grains of moderately soft to soft iron-rich marine clay.

Clay (1%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	nite
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	92	0.4-0.01
Glauconite	5	0.6-0.01
Clay	1	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

FINDINGS & CONCLUSIONS

The submitted rock sample is *Glauconite Dolomite*. Mineral of the sample is predominantly carbonate minerals (92%), glauconite (5%), clay (1%) and opaque mineral (2%).

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479148

APPENDIX A: MICROPHOTOGRAPHS

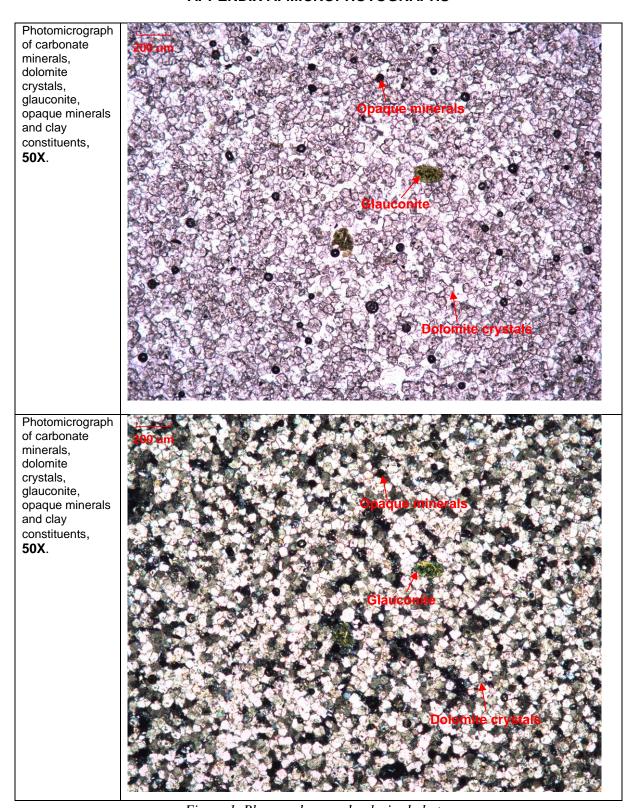


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479148

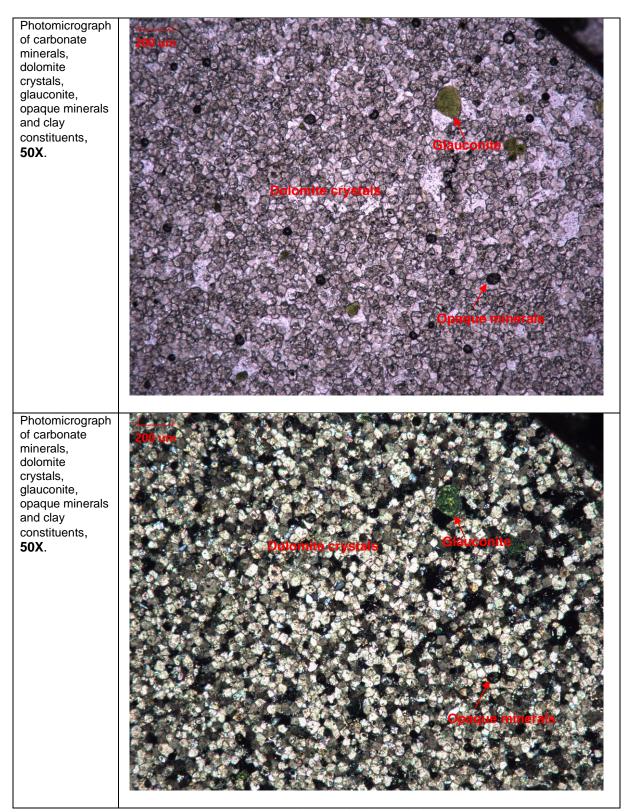


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#09_SAMP

Sample ref : CR01-IS

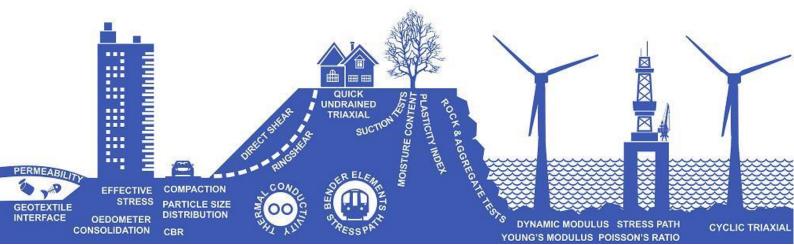
Depth (m) : 0.00 - 0.00

Geolabs Sample Id : 479173

Remarks : -

Prepared by Reviewed by

Kristian Jovanov Senior Geologist Christian Clergeaud Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479173

A. OBJECTIVE

Petrographic examination is made for the following purposes:

• To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

C. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (94.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

Geolabs Ltd Page 2 of 5



Date	03/04/23
Project No	GEO/37677
Reference	37677/479173

Clay (3%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolomite	
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	94.5	0.4-0.01
Clay	3	<0.003
Opaque Mineral	2.5	0.2-0.1
Total	100	-

D. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (94.5%), clay (3%) and opaque mineral (2.5%).

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479173

APPENDIX A: MICROPHOTOGRAPHS

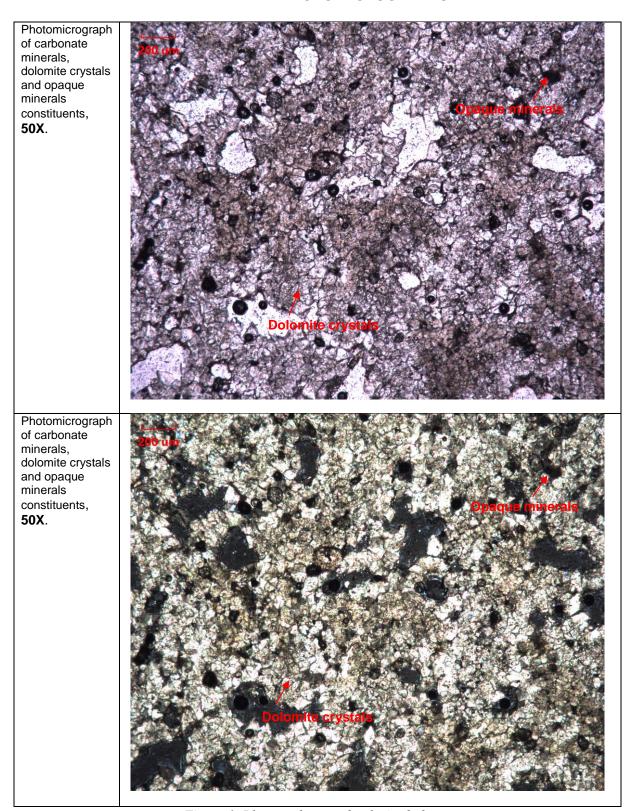


Figure 1. Plane and crossed polarized photos

Geolabs Ltd Page 4 of 5



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479173

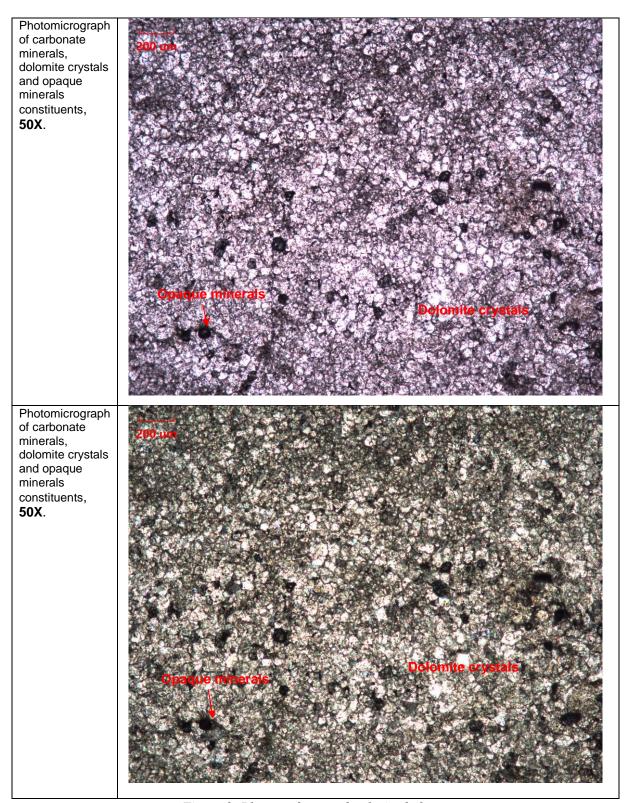


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page 5 of 5



Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#09_SAMP

Sample ref : CR05-IS

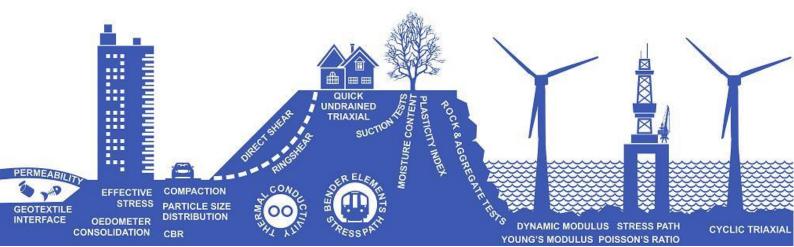
Depth (m) : 4.00 - 4.00

Geolabs Sample Id : 479176

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479176

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.2 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (95.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

Geolabs Ltd Page 2 of 5



Date	03/04/23
Project No	GEO/37677
Reference	37677/479176

Clay (2%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	nite	
Minerals	Average Percent (%)	Average Diameter (mm)	
Carbonate minerals	95.5	0.2-0.01	
Clay	2	<0.003	
Opaque Mineral	2.5	0.2-0.1	
Total	100	-	

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (95.5%), clay (2%) and opaque mineral (2.5%).

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479176

APPENDIX A: MICROPHOTOGRAPHS

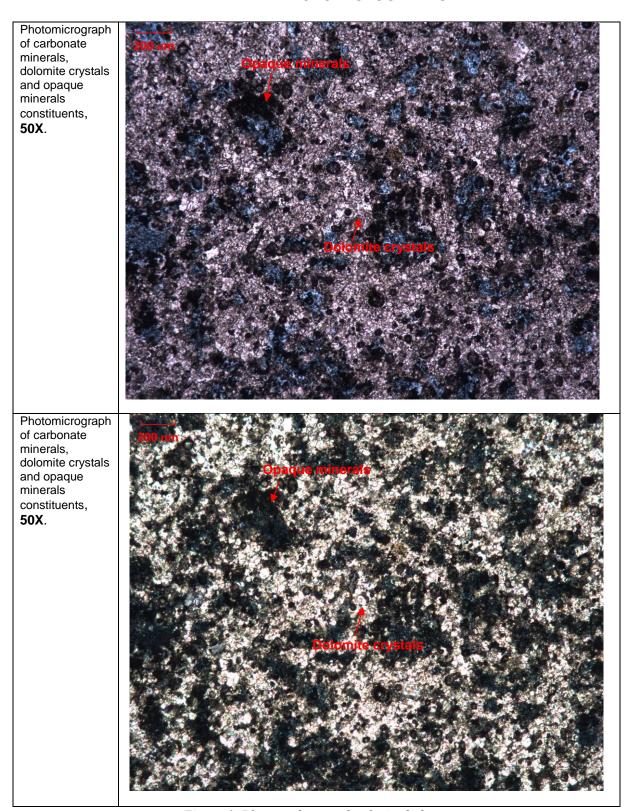


Figure 1. Plane and crossed polarized photos

Geolabs Ltd Page 4 of 5



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479176

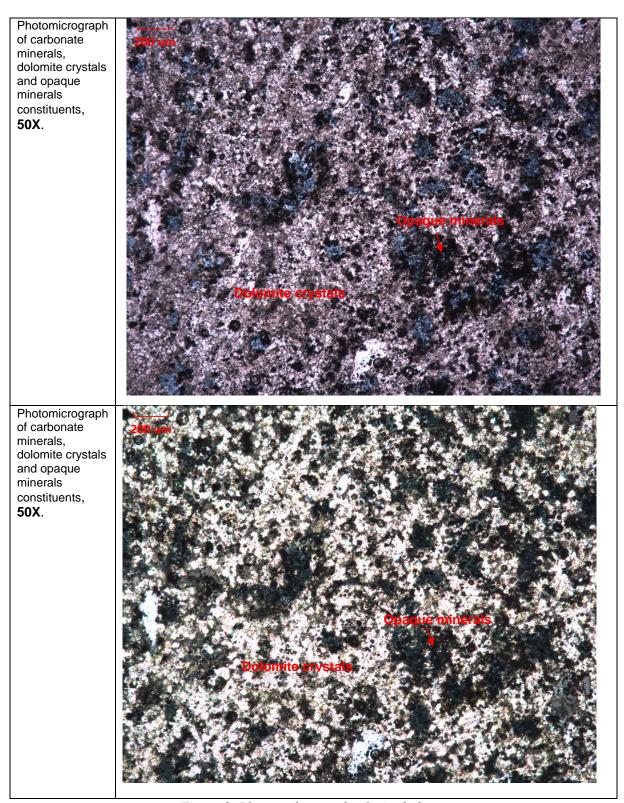


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#09_SAMP

Sample ref : CR12-IS

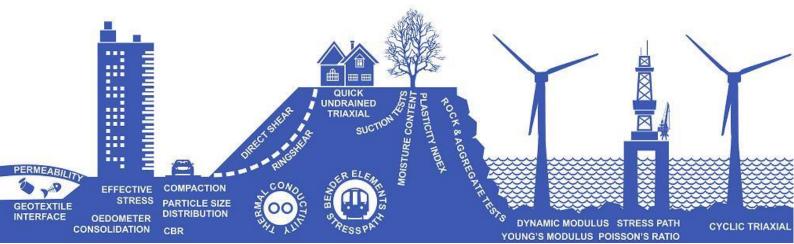
Depth (m) : 11.00 - 11.10

Geolabs Sample Id : 479172

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





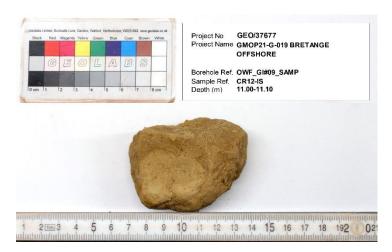
D-4-	00/04/00
Date	03/04/23
Project No	GEO/37677
Reference	37677/479172

A. OBJECTIVE

Petrographic examination is made for the following purposes:

• To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (93.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.

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Date	03/04/23
Project No	GEO/37677
Reference	37677/479172

Clay (4%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolomite	
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	93.5	0.4-0.01
Clay	4	<0.003
Opaque Mineral	2.5	0.2-0.1
Total	100	-

FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (93.5%), clay (4%) and opaque mineral (2.5%).

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479172

APPENDIX A: MICROPHOTOGRAPHS

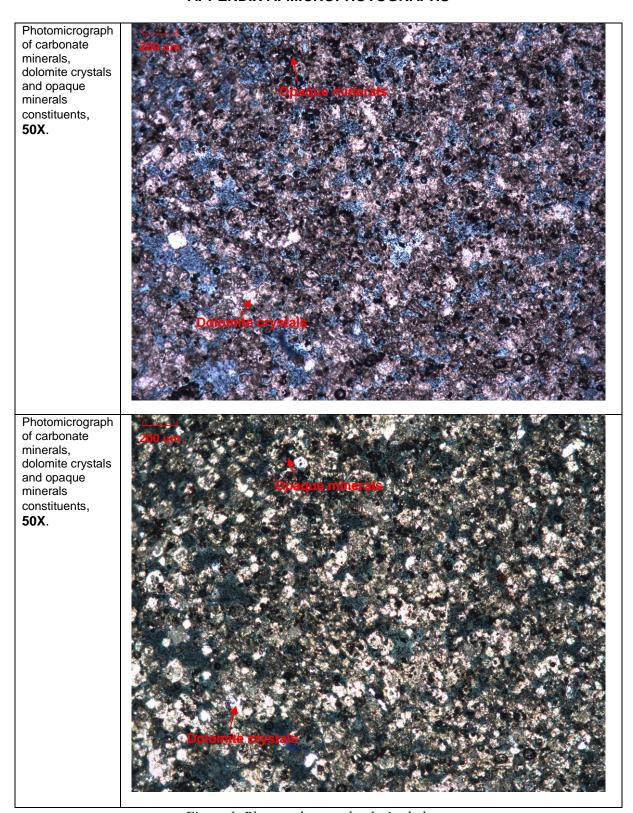


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479172

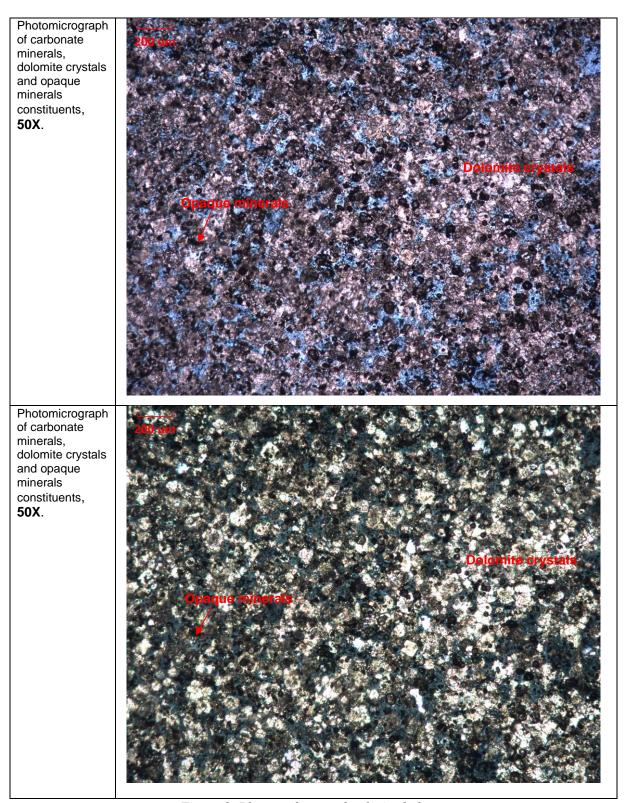


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name : GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#09_SAMP

Sample ref : CR14-IS

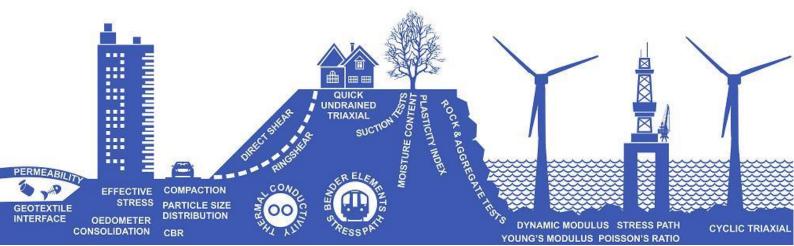
Depth (m) : 13.00 - 13.10

Geolabs Sample Id : 479174

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479174

A. OBJECTIVE

Petrographic examination is made for the following purposes:

• To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

C. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (94.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479174

Clay (3%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolomite	
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	94.5	0.4-0.01
Clay	3	<0.003
Opaque Mineral	2.5	0.2-0.1
Total	100	-

D. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (94.5%), clay (3%) and opaque mineral (2.5%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479174

APPENDIX A: MICROPHOTOGRAPHS

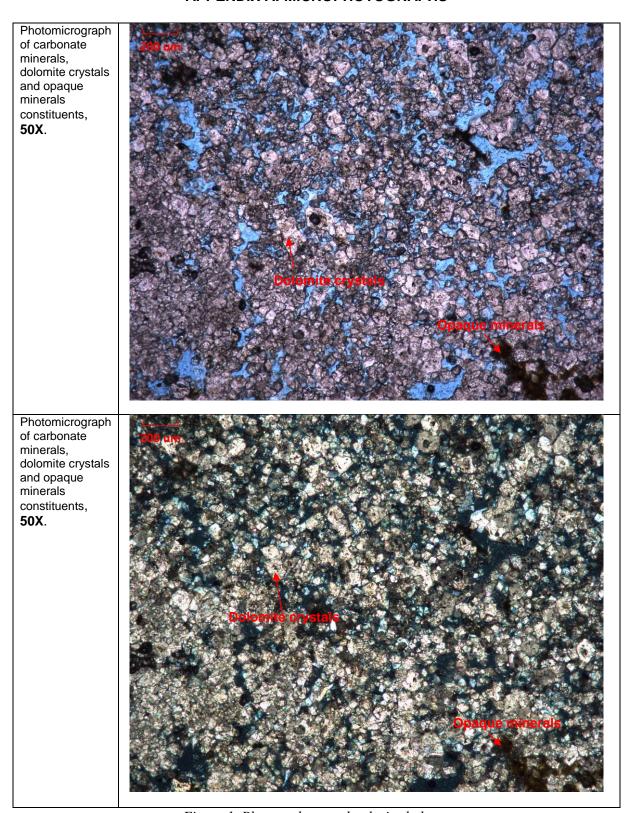


Figure 1. Plane and crossed polarized photos



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479174

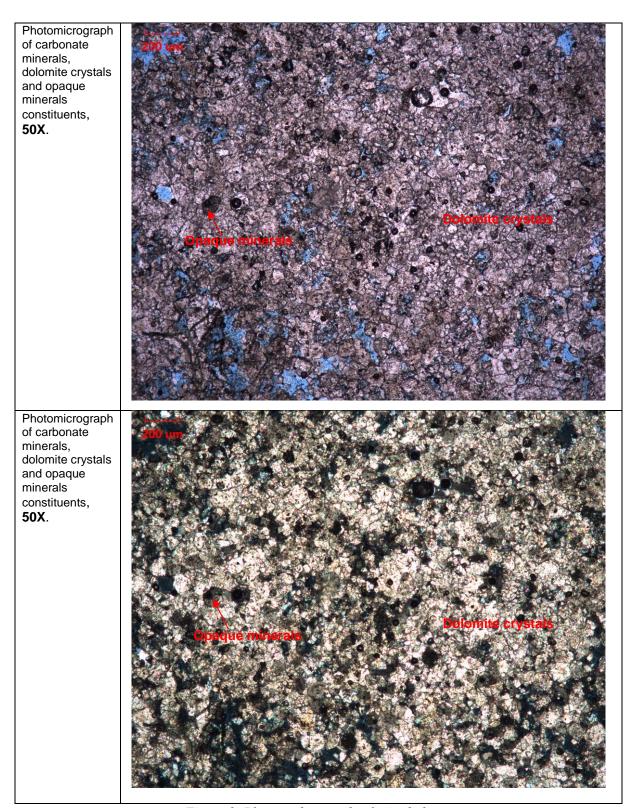


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#09_SAMP

Sample ref : CR15-IS

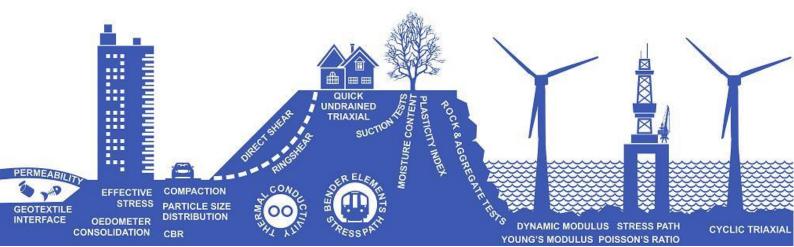
Depth (m) : 14.00 - 14.10

Geolabs Sample Id : 479175

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479175

A. OBJECTIVE

Petrographic examination is made for the following purposes:

• To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared dark brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

C. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (96.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479175

Clay (2%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolomite	
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	96.5	0.4-0.01
Clay	2	<0.003
Opaque Mineral	1.5	0.2-0.1
Total	100	-

D. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (96.5%), clay (2%) and opaque mineral (1.5%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479175

APPENDIX A: MICROPHOTOGRAPHS

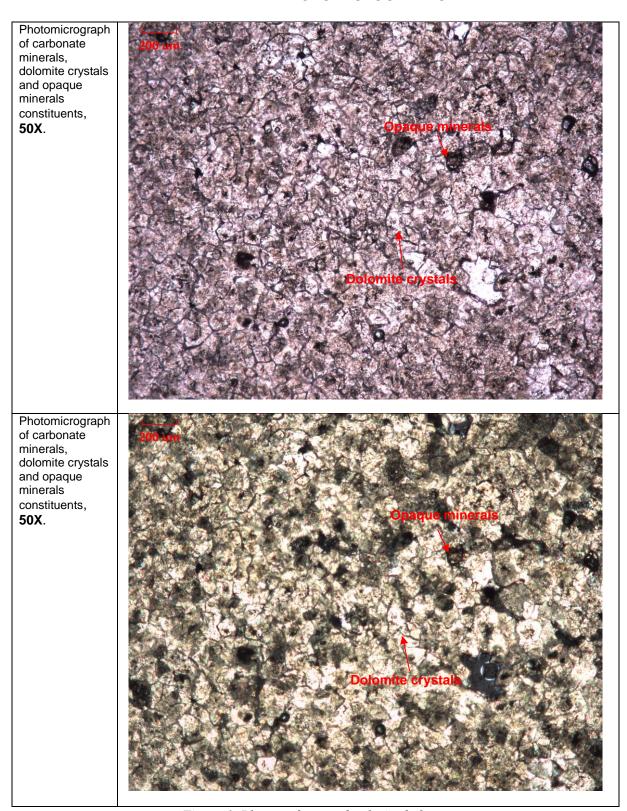


Figure 1. Plane and crossed polarized photos



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479175

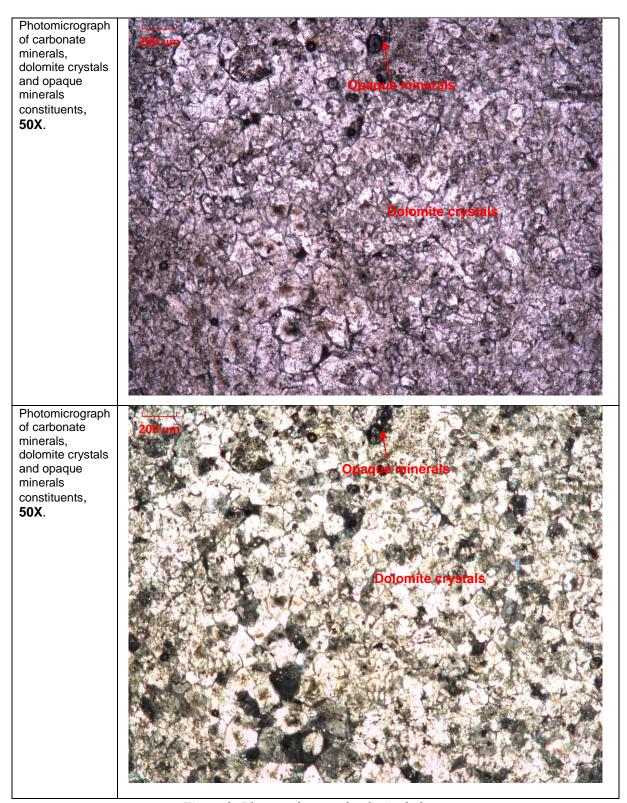


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#11_SAMP

Sample ref : CR04-IS

Depth (m) : 4.50 - 4.50

Geolabs Sample Id : 479194

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department



Date	03/04/23
Project No	GEO/37677
Reference	37677/479194

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared grey/ yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

A. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.2 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (94.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479194

Clay (2%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (3.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	nite
Minerals	Average Percent (%)	Average Diameter (mm)
Carbonate minerals	94.5	0.2-0.01
Clay	2	<0.003
Opaque Mineral	3.5	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (94.5%), clay (2%) and opaque mineral (3.5%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479194

APPENDIX A: MICROPHOTOGRAPHS

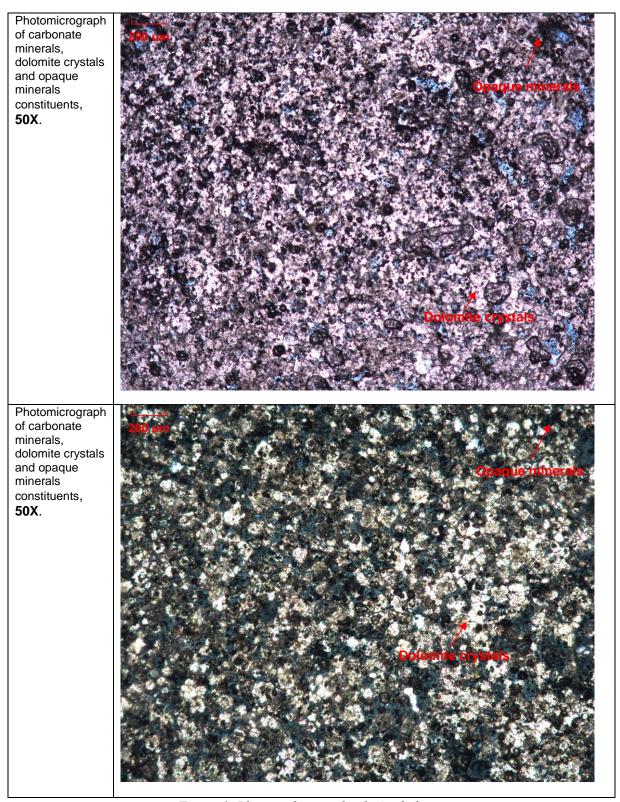


Figure 1. Plane and crossed polarized photos



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479194

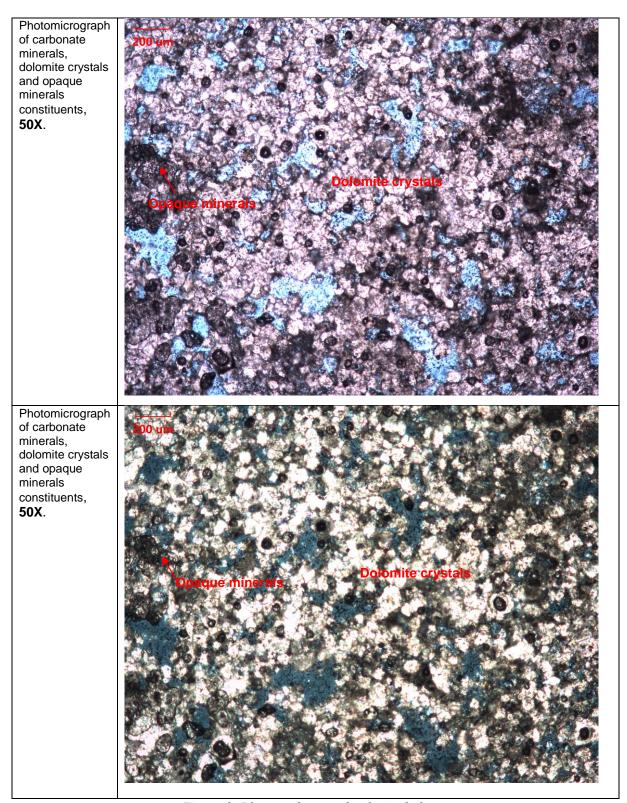


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#12_SAMP

Sample ref : CR06-IS

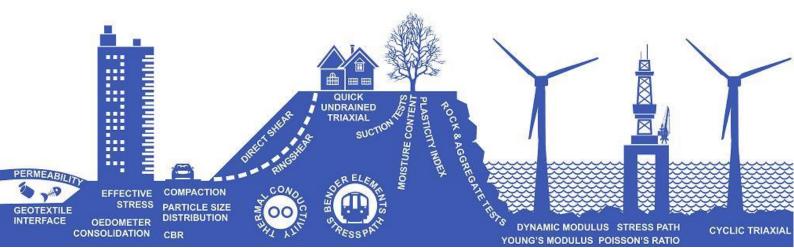
Depth (m) : 8.30 - 8.30

Geolabs Sample Id : 479203

Remarks : -

Prepared by Reviewed by

Kristian Jovanov Senior Geologist Christian Clergeaud Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479203

A. OBJECTIVE

Petrographic examination is made for the following purposes:

• To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared yellowish brown colour. The grain size of rock is classified as fine-medium grained. The stone has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. When the samples were dripped into dilute hydrochloric acid, parts of the samples had bubbles and others had no violent bubbles. The sample is moderately weathered.

C. MICRO EXAMINATION

Dolomite

A type of sedimentary rock has a non-clastic texture, meaning that the rock is formed from the skeletons of organisms or by chemical solution and precipitation. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the dolomite consists mainly of carbonate minerals. The descriptions of its mineral constituents are as follow:

Carbonate minerals (97.5%): The carbonate minerals have perfect rhombohedral cleavages. In the PPL view characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the cleavage.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479203

Clay (1%): Individual clay minerals are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1.5%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Dolor	mite	
Minerals	Average Percent (%)	Average Diameter (mm)	
Carbonate minerals	97.5	0.4-0.01	
Clay	1	<0.003	
Opaque Mineral	1.5	0.2-0.1	
Total	100	-	

D. FINDINGS & CONCLUSIONS

The submitted rock sample is **Dolomite**. Mineral of the sample is predominantly carbonate minerals (97.5%), clay (1%) and opaque mineral (1.5%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479203

APPENDIX A: MICROPHOTOGRAPHS

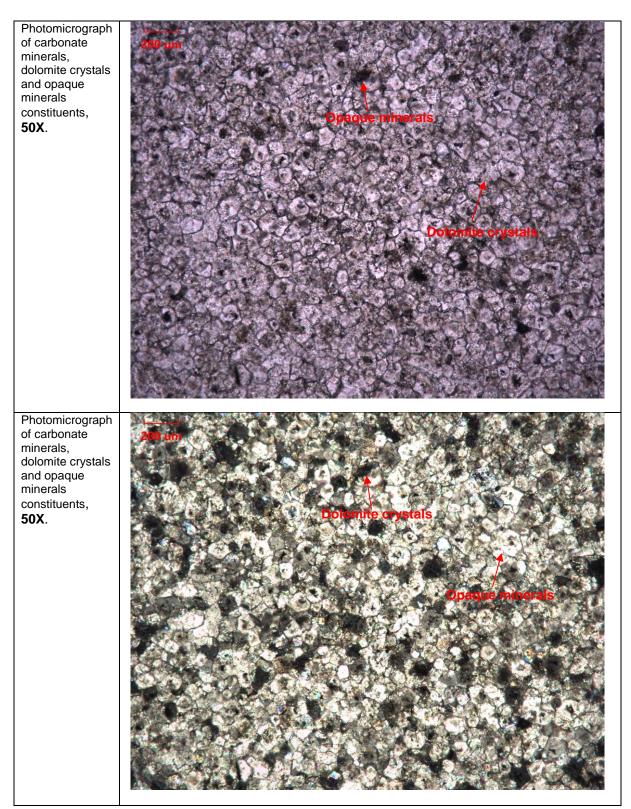


Figure 1. Plane and crossed polarized photos



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479203

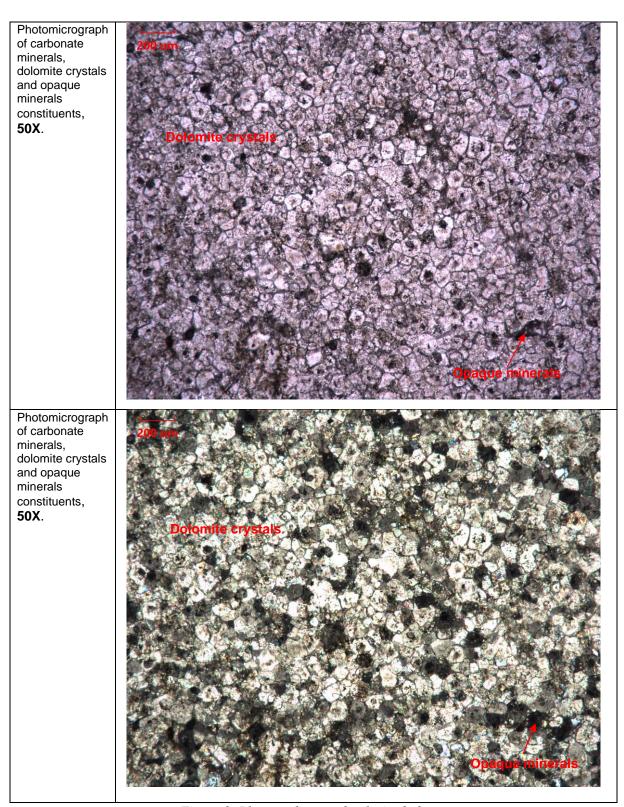


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#14A_SAMP

Sample ref : CR01-IS

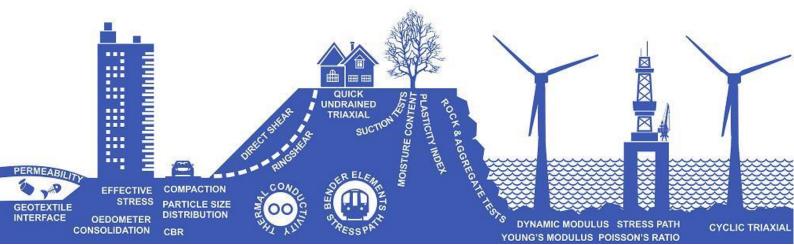
Depth (m) : 0.00 - 0.00

Geolabs Sample Id : 479182

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479182

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light cream colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 1.5 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (56%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (25%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.



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Matrix (17%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Limestone	
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	56	1.5-0.01
Calcite	25	0.4-0.01
Matrix	17	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (56%), calcite (25%), matrix (17%) and opaque mineral (2%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479182

APPENDIX A: MICROPHOTOGRAPHS

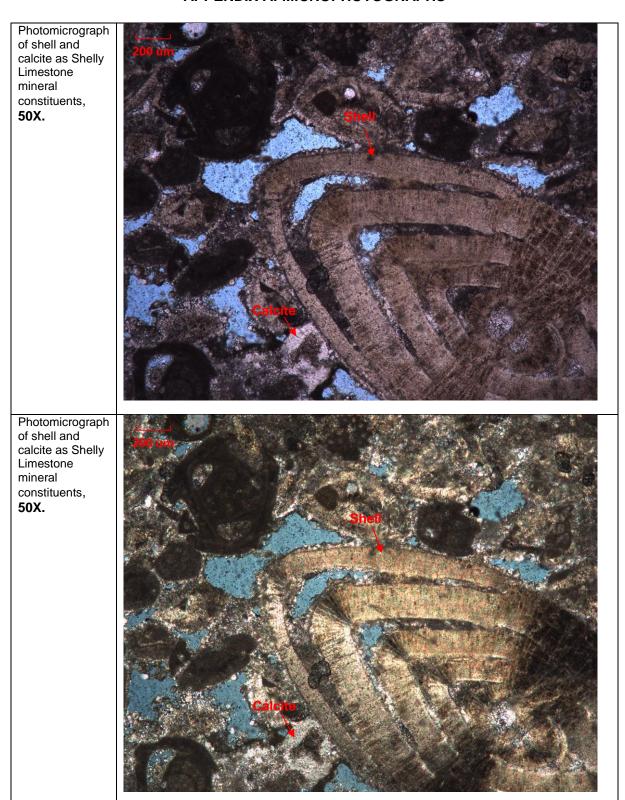


Figure 1. Plane and crossed polarized photos



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479182

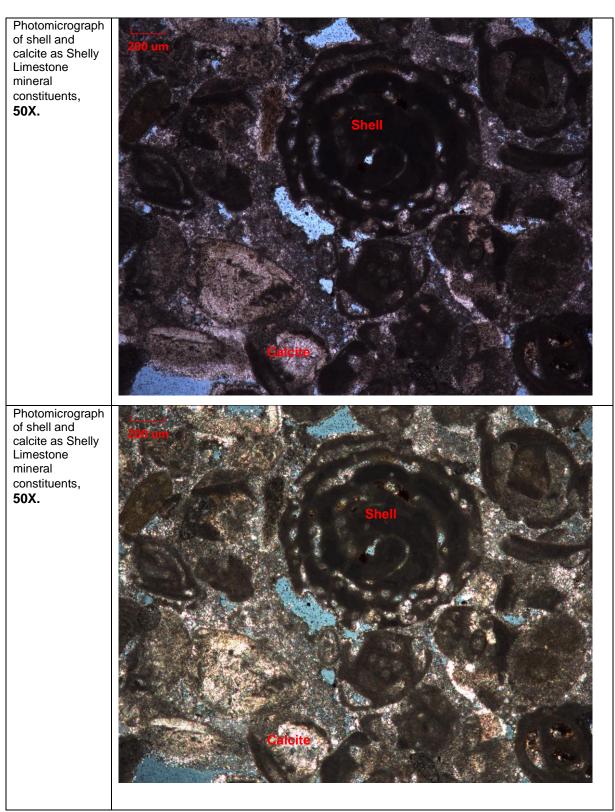


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#17_SAMP

Sample ref : CR03-IS

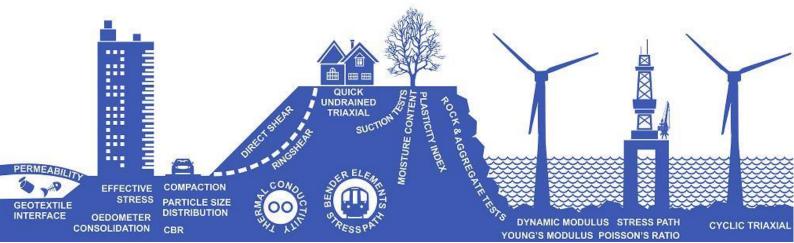
Depth (m) : 6.00 - 6.45

Geolabs Sample Id : 479167

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





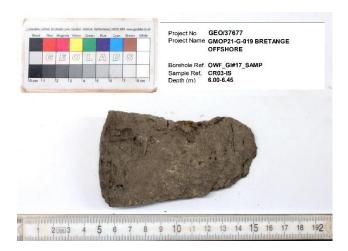
Date	03/04/23
Project No	GEO/37677
Reference	37677/479167

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared dark brown colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 0.8 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (54%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (20%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.



Date	03/04/23
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Reference	37677/479167

Matrix (24%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Limestone	
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	54	0.8-0.01
Calcite	20	0.2-0.01
Matrix	24	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (54%), calcite (20%), matrix (24%) and opaque mineral (2%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479167

APPENDIX A: MICROPHOTOGRAPHS

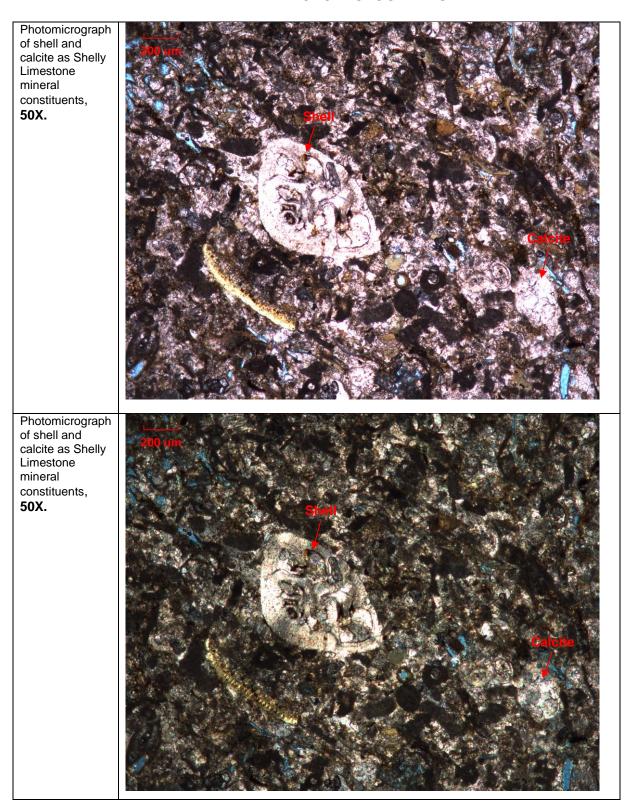


Figure 1. Plane and crossed polarized photos



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479167

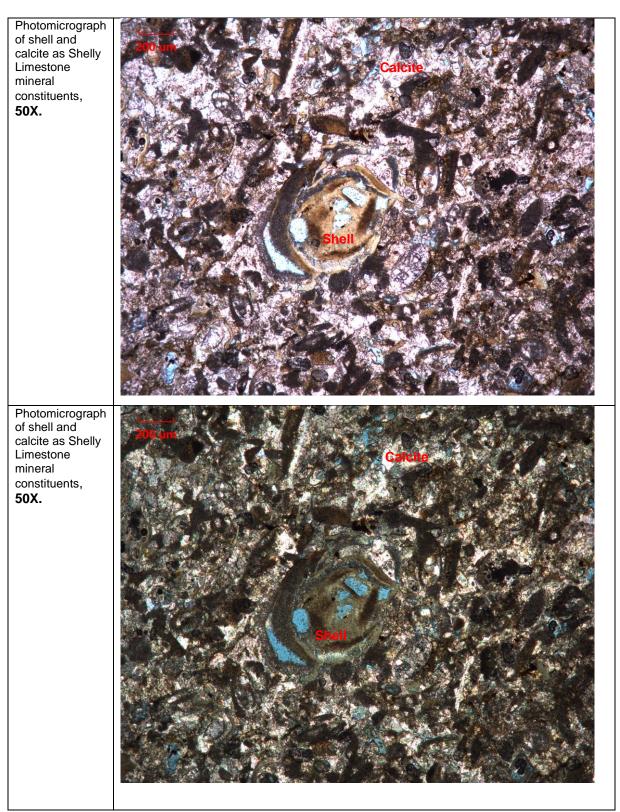


Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#17_SAMP

Sample ref : CR14-IS

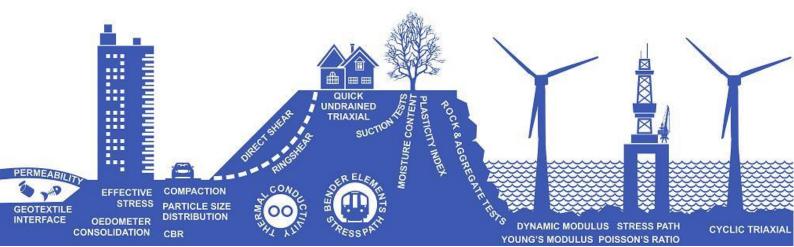
Depth (m) : 19.80 - 19.80

Geolabs Sample Id : 479165

Remarks : -

Prepared by Reviewed by

Kristian Jovanov Senior Geologist Christian Clergeaud Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479165

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light grey/ green colour. The grain size of rock is classified as medium-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of matrix minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Fossiliferous Glauconite Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 1.8 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms, glauconite and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (51%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (29%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479165

Glauconite (7%): Well-rounded to sub-rounded, highly spherical grains of moderately soft to soft iron-rich marine clay.

Matrix (12%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (1%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Lir	nestone
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	51	1.8-0.01
Calcite	29	0.2-0.01
Glauconite	7	0.2-0.01
Matrix	12	<0.003
Opaque Mineral	1	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is *Fossiliferous Glauconite Limestone*. Mineral of the sample is predominantly fossil/shell (51%), calcite (29%), glauconite (7%), matrix (12%) and opaque mineral (1%).



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479165

APPENDIX A: MICROPHOTOGRAPHS

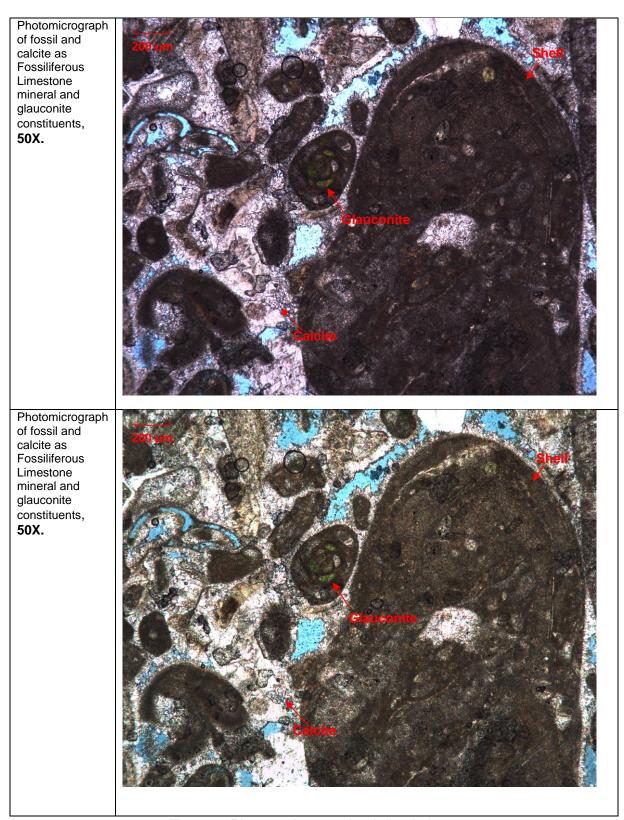


Figure 1. Plane and crossed polarized photos

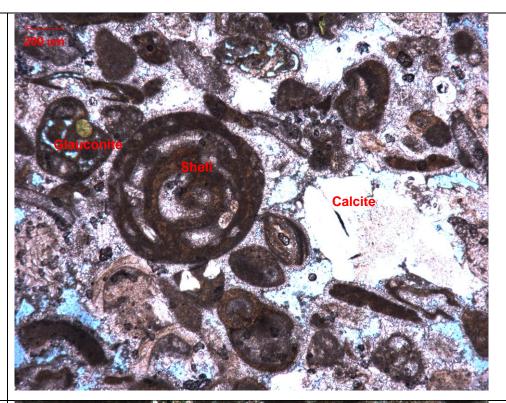


 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479165

Photomicrograph of fossil and calcite as Fossiliferous Limestone mineral and glauconite constituents, **50X.**



Photomicrograph of fossil and calcite as Fossiliferous Limestone mineral and glauconite constituents, **50X.**



Figure 2. Plane and crossed polarized photos



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#20_SAMP

Sample ref : CR03-IS

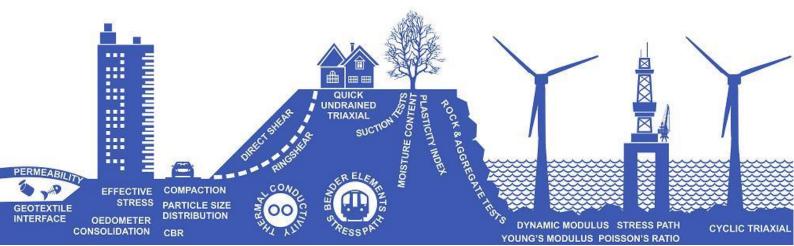
Depth (m) : 11.50 - 11.50

Geolabs Sample Id : 479146

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479146

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light cream colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 1.5 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (46%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (35%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.



Date	03/04/23
Project No	GEO/37677
Reference	37677/479146

Matrix (17%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Limestone	
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	56	1.5-0.01
Calcite	25	0.4-0.01
Matrix	17	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (56%), calcite (25%), matrix (17%) and opaque mineral (2%).

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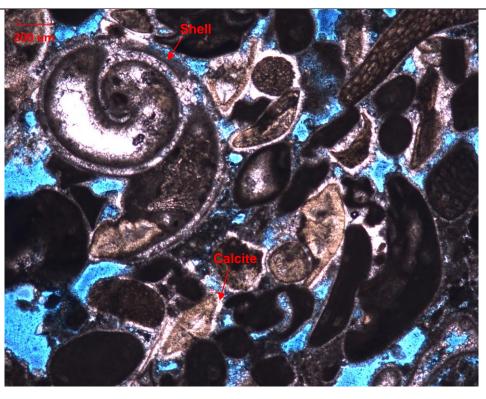
 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479146

APPENDIX A: MICROPHOTOGRAPHS

Photomicrograph of shell and calcite as Shelly Limestone mineral constituents, **50X.**



Photomicrograph of shell and calcite as Shelly Limestone mineral constituents, **50X.**

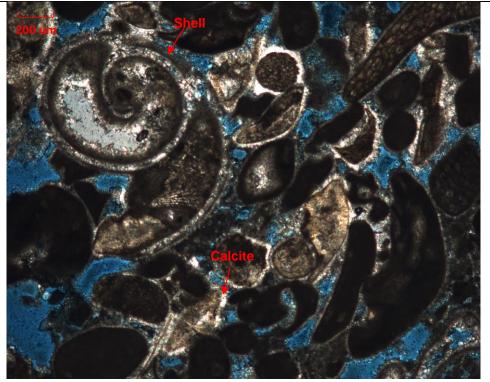


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479146

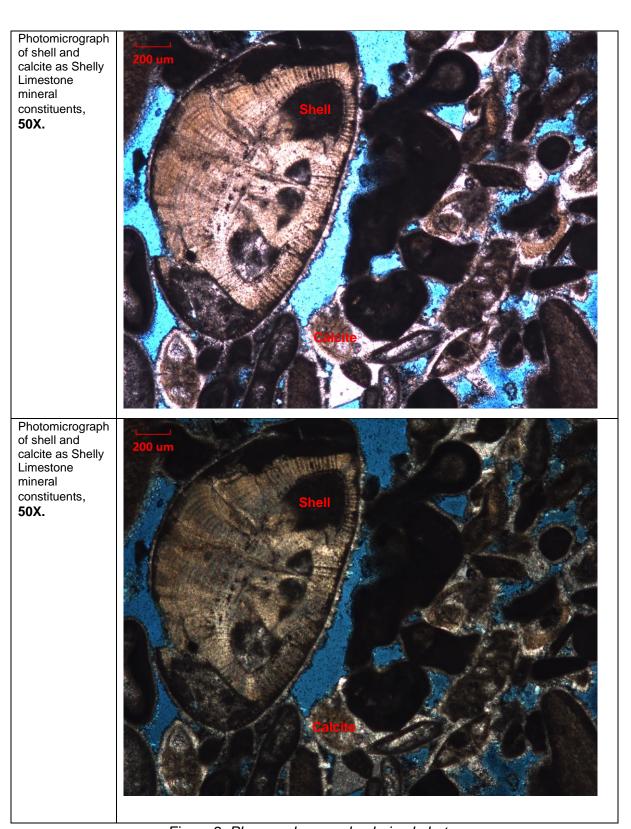


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#22_SAMP

Sample ref : CR08-B1

Depth (m) : 8.50 - 8.50

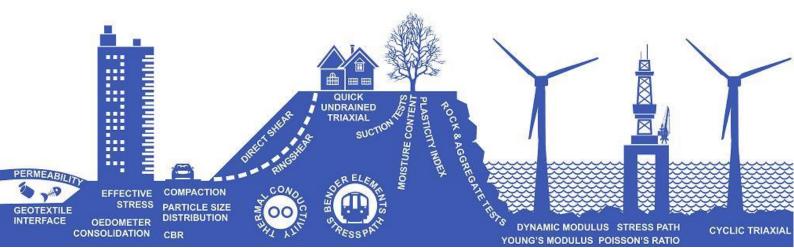
Geolabs Sample Id : 479171

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist

Christian Clergeaud
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479171

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared grey - brown colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 0.7 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (44%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (25%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.

Geolabs Ltd Page 2 of 5



Date	03/04/23
Project No	GEO/37677
Reference	37677/479171

Matrix (29%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Limestone	
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	44	0.7-0.01
Calcite	25	0.1-0.01
Matrix	29	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (44%), calcite (25%), matrix (29%) and opaque mineral (2%).

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479171

APPENDIX A: MICROPHOTOGRAPHS

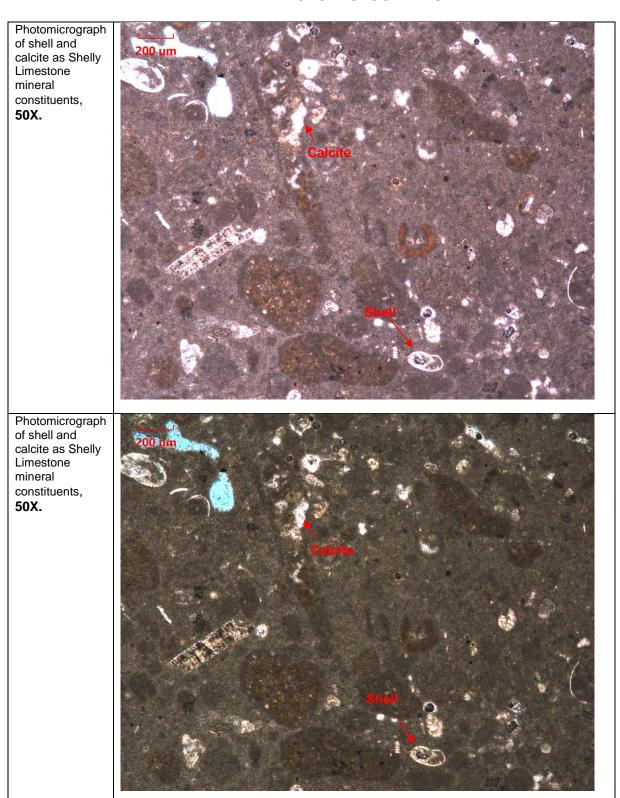


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479171

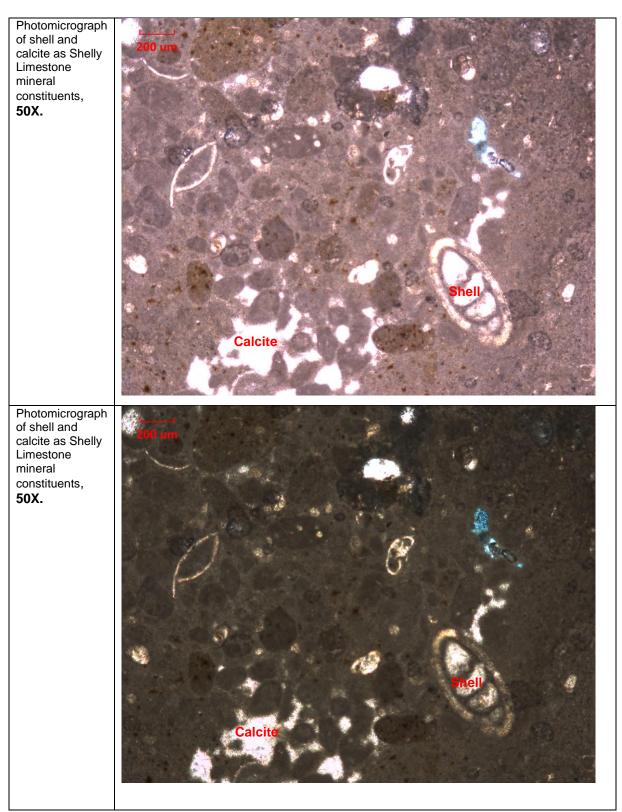


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject: PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#22_SAMP

Sample ref : CR12-IS

Depth (m) : 12.50 - 12.70

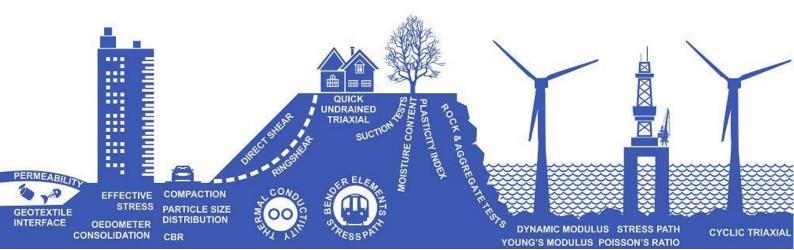
Geolabs Sample Id : 479170

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist

Christian Clergeaud
Head of Department





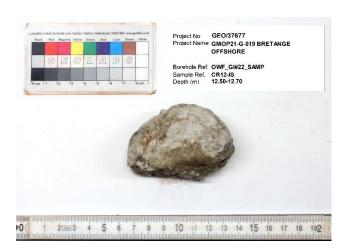
Date	03/04/23
Project No	GEO/37677
Reference	37677/479170

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared grey - brown colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 0.8 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (56%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (17%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.

Geolabs Ltd Page 2 of 5



Date	03/04/23
Project No	GEO/37677
Reference	37677/479170

Matrix (25%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Limestone	
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	56	0.8-0.01
Calcite	17	0.4-0.01
Matrix	25	<0.003
Opaque Mineral	2	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (56%), calcite (17%), matrix (25%) and opaque mineral (2%).

Geolabs Ltd Page 3 of 5



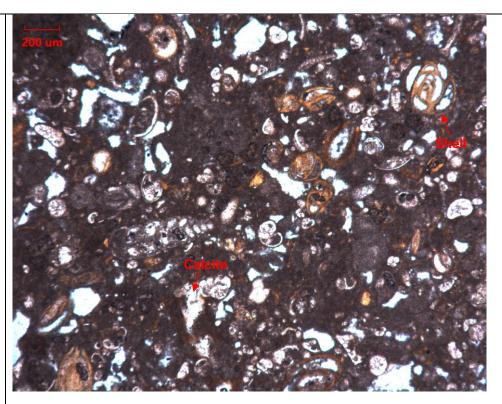
 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479170

APPENDIX A: MICROPHOTOGRAPHS

Photomicrograph of shell and calcite as Shelly Limestone mineral constituents, **50X.**



Photomicrograph of shell and calcite as Shelly Limestone mineral constituents, **50X.**

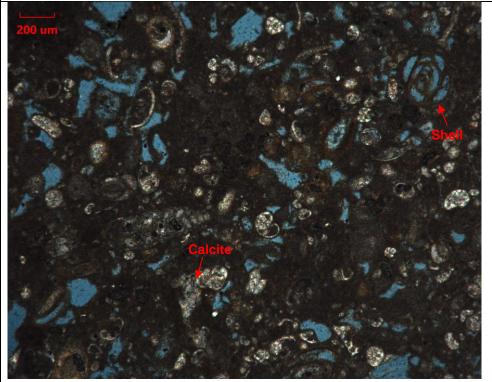


Figure 1. Plane and crossed polarized photos

Geolabs Ltd Page 4 of 5



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479170

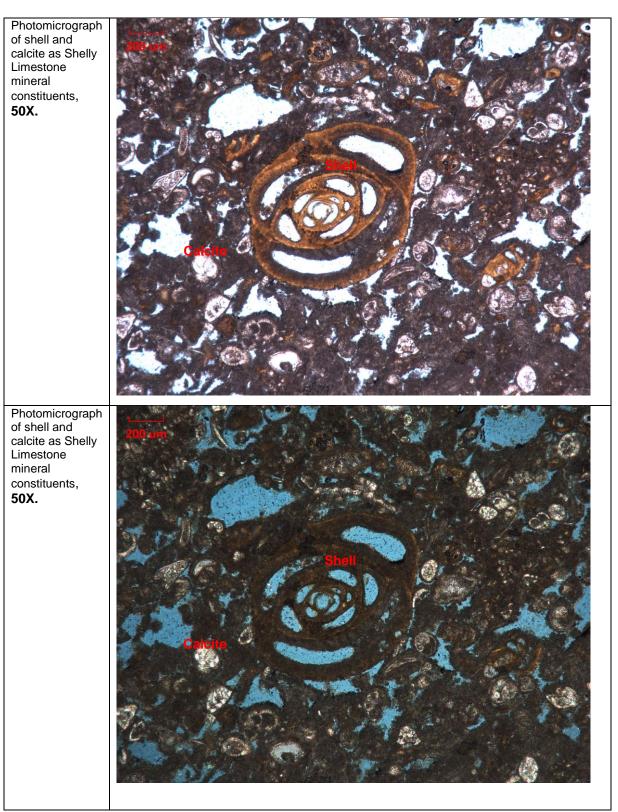


Figure 2. Plane and crossed polarized photos

Geolabs Ltd Page **5** of **5**



Petrographic Description

Client Geoquip Marine Limited

Project Number GEO/37677

Project Name GMOP21-G-019 Bretange Offshore

Subject PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard ISRM SUGGESTED METHODS

Bh No / TP OWF_GI#22_SAMP

Sample ref CR15-IS

Depth (m) 16.20 - 16.20

Geolabs Sample Id 479169

Remarks

Prepared by Reviewed by

Kristian Jovanov Senior Geologist

QUICK UNDRAINED EFFECTIVE STRESS PARTICLE SIZE DISTRIBUTION **OEDOMETER** DYNAMIC MODULUS STRESS PATH CYCLIC TRIAXIAL CONSOLIDATION CBR

Christian Clergeaud Head of Department

YOUNG'S MODULUS POISSON'S RATIO



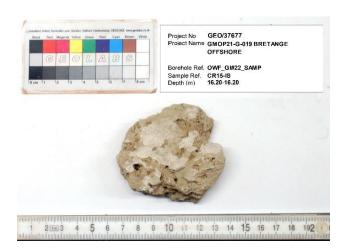
Date	03/04/23
Project No	GEO/37677
Reference	37677/479169

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light cream colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

A. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 0.4 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (52%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

Calcite (20%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.

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Matrix (24%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (4%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Limestone	
Minerals	Average Percent (%)	Average Diameter (mm)
Fossils/Shells	52	0.4-0.01
Calcite	20	0.2-0.01
Matrix	24	<0.003
Opaque Mineral	4	0.2-0.1
Total	100	-

B. FINDINGS & CONCLUSIONS

The submitted rock sample is **Shelly Limestone**. Mineral of the sample is predominantly fossil/shell (52%), calcite (20%), matrix (24%) and opaque mineral (4%).

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479169

APPENDIX A: MICROPHOTOGRAPHS

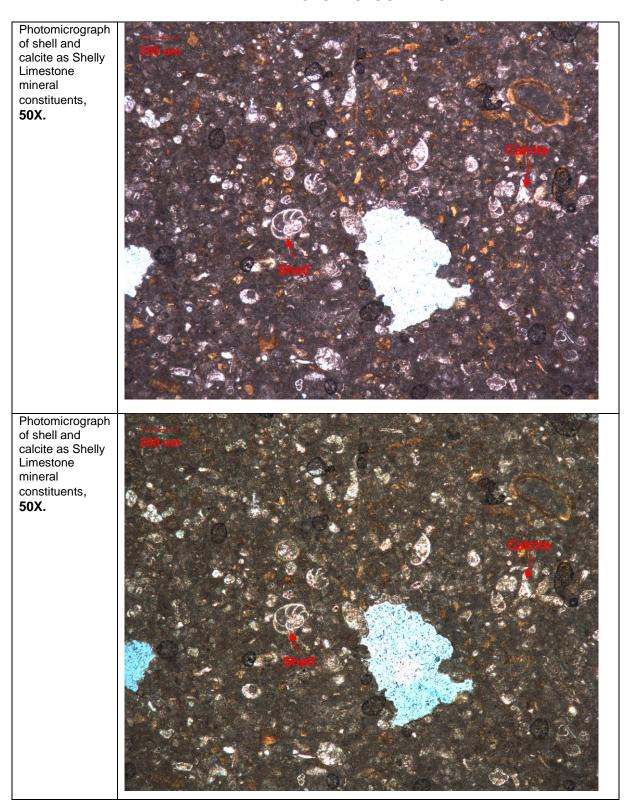


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479169

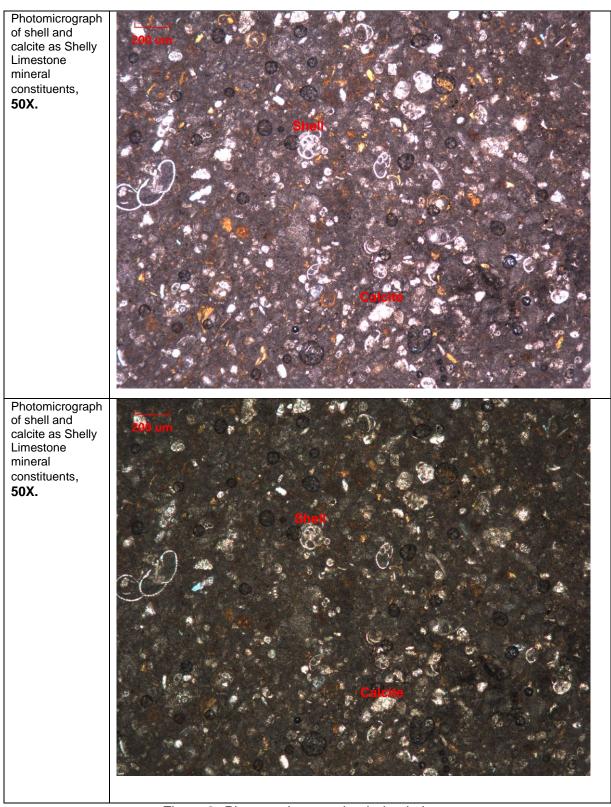


Figure 2. Plane and crossed polarized photos

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Petrographic Description

Client : Geoquip Marine Limited

Project Number : GEO/37677

Project Name: GMOP21-G-019 Bretange Offshore

Subject : PETROGRAPHIC DESCRIPTION OF ROCKS

Test Standard : ISRM SUGGESTED METHODS

Bh No / TP : OWF_GI#24_SAMP

Sample ref : CR03-IS

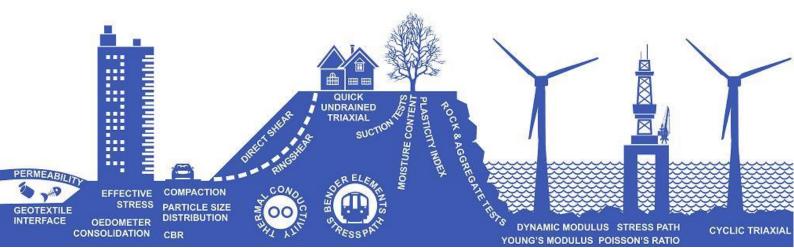
Depth (m) : 3.10 - 3.10

Geolabs Sample Id : 479188

Remarks : -

Prepared by Reviewed by

Kristian Jovanov
Senior Geologist
Christian Clergeaud
Head of Department





Date	03/04/23
Project No	GEO/37677
Reference	37677/479188

A. OBJECTIVE

Petrographic examination is made for the following purposes:

To describe and determine the classification of the rock and its constituents

B. MACRO EXAMINATION



The submitted sample is generally appeared light cream colour. The grain size of rock is classified as fine-grained. The rock has a non-clastic texture and consists of crystal of carbonate minerals which are appeared white, translucent and vitreous luster. Few dark speckles probably of clay minerals and opaque minerals. The sample is highly weathered.

C. MICRO EXAMINATION

Shelly Limestone

A sedimentary rock because it is made up of fragments. To be shelly, it is full of broken shells which are "glued" together with calcite. The grain size is varying from approximately 0.8 to 0.01 mm (majority to minority). From the photomicrographs in Appendix A it can be seen that the shelly limestone consists mainly of fossilized organisms and calcite. The descriptions of its mineral constituents are as follow:

Fossil/Shell (52%): Shell are almost always composed of Calcite (CaCO3) rather than Dolomite (CaMg(CO3)2). It usually can be seen mechanical twining that is observed with vigorous effervescence in cold dilute hydrochloric acid

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Date	03/04/23
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Reference	37677/479188

Calcite (18%): The calcite has perfect rhombohedral cleavages. In the PPL view calcites are characterized by colourless and twinkling. Taken under crossed polars, the interference colours extend up to high white. Sometimes, it can be seen mechanical twining of the calcite.

Matrix (28%): Individual clay or silt minerals which are usually too small to be resolved in the optical microscope. Clay minerals include Kaolin group, Smectite group, Illite group and Chlorite group etc. In this thin section, clay minerals usually filled in voids of fossil fragments.

Opaque Mineral (2%): Both in the PPL view and CPL view the opaque mineral show black colour.

Table I: Composition of Minerals in the Rock

Rock	Shelly Limestone			
Minerals	Average Percent (%)	Average Diameter (mm)		
Fossils/Shells	52	0.8-0.01		
Calcite	18	0.2-0.01		
Matrix	28	<0.003		
Opaque Mineral	2	0.2-0.1		
Total	100	-		

D. FINDINGS & CONCLUSIONS

The submitted rock sample is Shelly Limestone. Mineral of the sample is predominantly fossil/shell (52%), calcite (18%), matrix (28%) and opaque mineral (2%).

Geolabs Ltd Page 3 of 5



 Date
 03/04/23

 Project No
 GEO/37677

 Reference
 37677/479188

APPENDIX A: MICROPHOTOGRAPHS

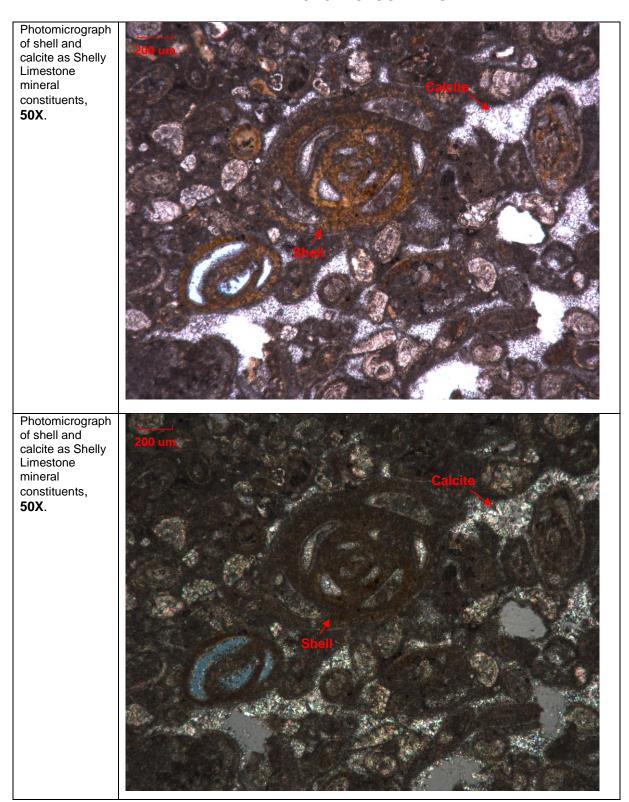


Figure 1. Plane and crossed polarized photos

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 Date
 03/04/23

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 Reference
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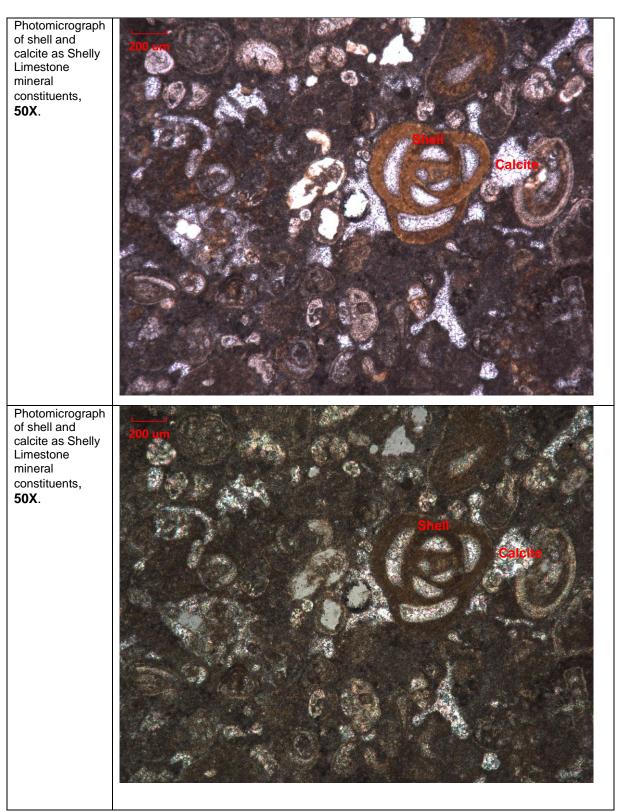
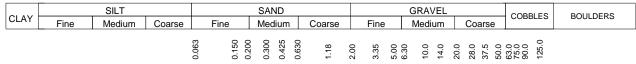
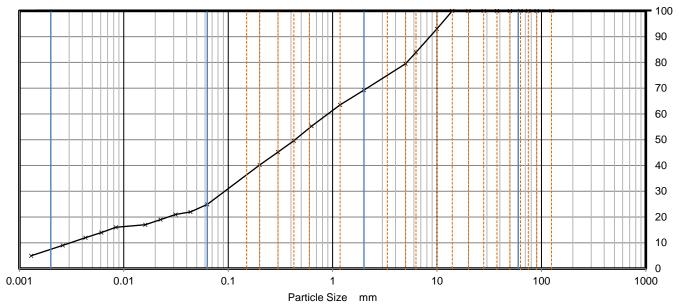


Figure 2. Plane and crossed polarized photos

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GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
G.	,011 10 4141 12			Borehole No.	OWF_GI#01A_SAMP
Site Name	A05 Bretagne O	Offshore GI		Sample No.	PU02A
Sample Description	Very pale yellow, v	ellow, white page 2.6y/2-9 silty, clayey, gravelly SAND		Depth, m	14.50
Specimen Reference	IS	Specimen 14.5 m		Sample Type	IS
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH012023022733	





Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0435	22	
		0.0313	21	
125	100	0.0225	19	
90	100	0.0161	17	
75	100	0.0084	16	
63	100	0.0061	14	
50	100	0.0043	12	
37.5	100	0.0026	9	
28	100	0.0013	5	
20	100			
14	100			
10	93			
6.3	84			
5	80			
2	69			
1.18	64	Particle density		
0.63	55	2.65	Mg/m3	
0.425	50			
0.300	45			
0.200	40			
0.063	25			

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	30.74
Sand	44.37
Silt	17.53
Clay	7.37

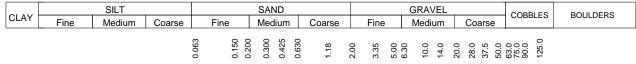
Grading Analysis		
D ₉₀	mm	8.566
D ₆₀	mm	0.902
D ₅₀	mm	0.436
D ₃₀	mm	0.093
D ₁₀	mm	0.003
Uniformity Coefficient		289.10
Curvature Coefficient		3.05

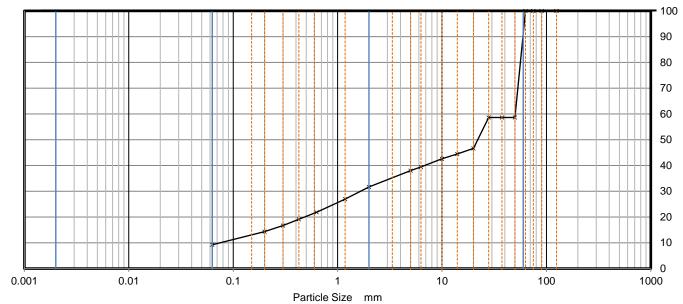
Remarks

Test Technician	Approved
J. Morgan	D.Smith

Sheet printed	Date tested
06/04/2023 11:14	16/03/2023

GEOO	ISO PARTICLE SIZE DISTRIBUTION			Job Ref	GMOP21-G-019
G.	,	(ISO 17892-4:2016)		Borehole No.	OWF_GI#01A_SAMP
Site Name	A05 Bretagne C	Offshore GI		Sample No.	PU03
Sample Description	White page 2.5y_including cemente	e 2.5y_/2-9/ Very pale yellow silty, sandy, GRAVEL cemented sand		Depth, m	15.00
Specimen Reference	IS	Specimen 15 m		Sample Type	IS
Test Method	ISO 17892 -4, by sieving on as received or wet sample		Unique ID	BH012023022734	





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	59		
37.5	59		
28	59		
20	47		
14	44		
10	43		
6.3	39		
5	38		
2	32		
1.18	27		
0.63	22		
0.425	19		
0.300	17		
0.200	14		
0.063	9		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	68.35
Sand	22.42
Fines <0.063mm	9.23

Grading Analysis		
D ₉₀	mm	59.579
D ₆₀	mm	50.391
D ₅₀	mm	21.976
D ₃₀	mm	1.660
D ₁₀	mm	0.075
Uniformity Coefficient		672.20
Curvature Coefficient		0.73

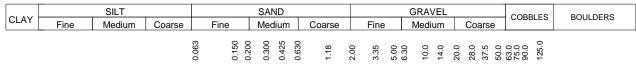
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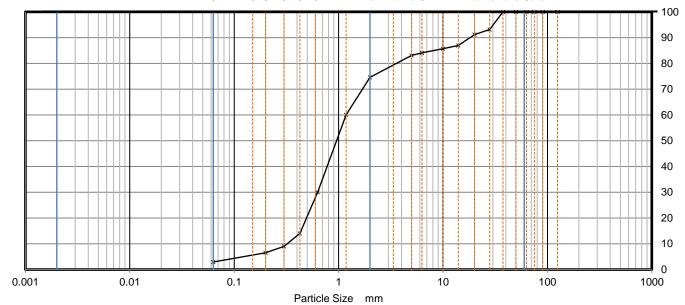
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Minimum soil mass used, test not to standard

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	18/04/2023 11:16	16/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
				Borehole No.	OWF_GI#04_SAMP	
Site Name	A05 Bretagne C	Offshore GI		Sample No.	PU01A	
Sample Description	10yR 5/6 Yellowis	5/6 Yellowish brown gravelly, SAND			Depth, m	0.00
Specimen Reference	B1	Specimen 0 m		Sample Type	B1	
Test Method	ISO 17892 -4, by	-4, by sieving on as received or wet sample			Unique ID	BH012023022746





Sie	ving	Sodime	entation
	VIII'9	-	
Particle Size	% Passing	Particle Size	% Passing
mm		mm	
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	93		
20	91		
14	87		
10	86		
6.3	84		
5	83		
2	75		
1.18	60	,	
0.63	30		
0.425	14		
0.300	9		
0.200	7		
0.063	3		

Sample Proportions	% dry mass		
Very coarse	0.00		
Gravel	25.38		
Sand	71.67		
Fines <0.063mm	2.95		

Grading Analysis		
D_{90}	mm	18.124
D ₆₀	mm	1.179
D ₅₀	mm	0.957
D ₃₀	mm	0.630
D ₁₀	mm	0.321
Uniformity Coefficient		3.67
Curvature Coefficient		1.05

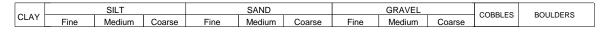
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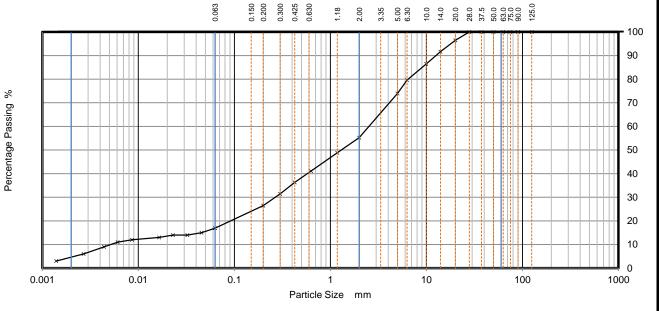
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 13:28	02/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
				Borehole No.	OWF_GI#04A_SAMP
Site Name	A05 Bretagne 0	Offshore GI		Sample No.	PU03
Sample Description	white page 2.5y 9	0/2 Very pale yellow silty	SAND with gravel and clay	Depth, m	8.30
Specimen Reference	B1	Specimen Depth	8.3 m	Sample Type	B1
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving and hydrometer sedimentation			BH012023022765





Sie	ving	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0456	15	
		0.0325	14	
125	100	0.0230	14	
90	100	0.0165	13	
75	100	0.0086	12	
63	100	0.0061	11	
50	100	0.0044	9	
37.5	100	0.0027	6	
28	100	0.0014	3	
20	96			
14	92			
10	87			
6.3	80			
5	74			
2	55			
1.18	49	Particle density	(assumed)	
0.63	41	2.65	Mg/m3	
0.425	36		<u> </u>	
0.300	31			
0.200	26			
0.063	17			

Sample Proportions	% dry mass		
Very coarse	0.00		
Gravel	44.71		
Sand	38.39		
Silt	12.49		
Clay	4.41		

Grading Analysis		
D ₉₀	mm	12.545
D ₆₀	mm	2.521
D ₅₀	mm	1.299
D ₃₀	mm	0.267
D ₁₀	mm	0.005
Uniformity Coefficient		506.40
Curvature Coefficient		5.66

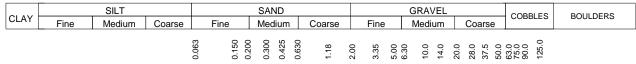
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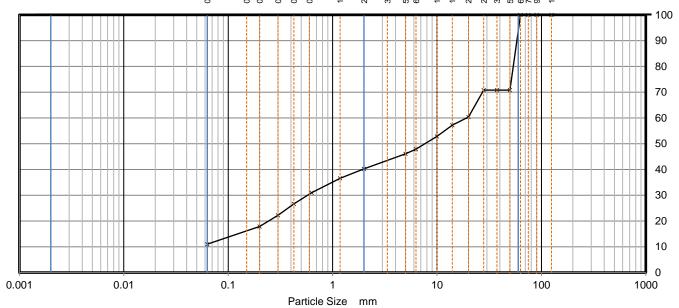
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Specimen mass not adequate - non-standard test

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	14/04/2023 12:54	15/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
				Borehole No.	OWF_GI#04A_SAMP	
Site Name	A05 Bretagne O	ffshore GI			Sample No.	PU05
Sample Description	2.5y 9/2 Very pale	2 Very pale yellow silty, sandy, GRAVEL			Depth, m	10.00
Specimen Reference	B1	Specimen 10 m		Sample Type	B1	
Test Method	ISO 17892 -4, by	D 17892 -4, by sieving on as received or wet sample			Unique ID	BH012023022769





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	71		
37.5	71		
28	71		
20	60		
14	57		
10	53		
6.3	48		
5	46		
2	40		
1.18	37		
0.63	31		
0.425	27		
0.300	22		
0.200	18		
0.063	11		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	59.73
Sand	29.24
Fines <0.063mm	11.02

Grading Analysis		
D ₉₀	mm	91.356
D ₆₀	mm	19.168
D ₅₀	mm	7.668
D ₃₀	mm	0.575
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

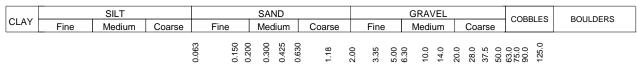
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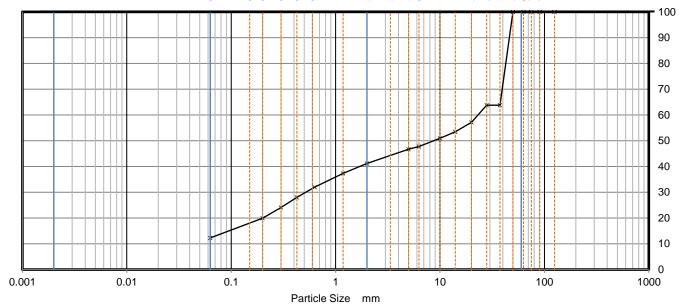
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non-standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 13:29	13/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019
G.		(ISO 17892-4:2016)		Borehole No.	OWF_GI#04A_SAMP
Site Name	A05 Bretagne Of	5 Bretagne Offshore GI			PU06
Sample Description	Very pale yellow white page 2.5y 9/2 silty, sandy, GRAVEL including cemented sand			Depth, m	11.30
Specimen Reference	B1	B1 Specimen 11.3 m			B1
Test Method	ISO 17892 -4, by sieving on as received or wet sample			Unique ID	BH012023022771





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	64		
28	64		
20	57		
14	53		
10	51		
6.3	48		
5	47		
2	41		
1.18	37		
0.63	32		
0.425	28		
0.300	24		
0.200	20		
0.063	12		

Sample Proportions	% dry mass	
Very coarse	0.00	
Gravel	58.79	
Sand	28.92	
Fines <0.063mm	12.28	

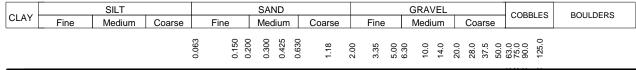
Grading Analysis		
D ₉₀	mm	89.660
D ₆₀	mm	23.123
D ₅₀	mm	8.745
D ₃₀	mm	0.517
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

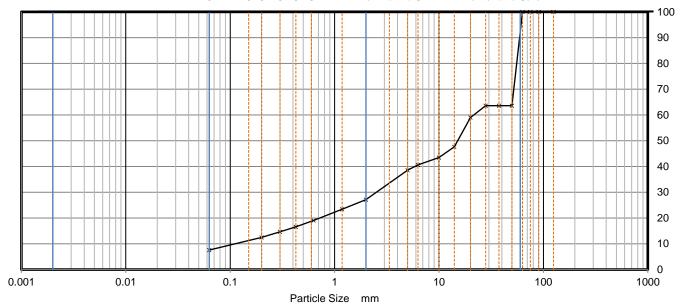
Remarks

Test Technician	Approved
J. Morgan	D.Smith

Sheet printed	Date tested
06/04/2023 13:33	16/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019
6			Borehole No.	OWF_GI#04A_SAMP	
Site Name	A05 Bretagne O	Offshore GI		Sample No.	PU09
Sample Description		Very pale yellow, white page 2.5y 9/2 silty sandy, GRAVEL including shell fragments and cemented sand			14.20
Specimen Reference	IS	Specimen Depth	14.2 m	Sample Type	IS
Test Method	ISO 17892 -4, by sieving on as received or wet sample			Unique ID	BH012023022776





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	64		
37.5	64		
28	64		
20	59		
14	48		
10	43		
6.3	41		
5	39		
2	27		
1.18	23		
0.63	19		
0.425	17		
0.300	15		
0.200	12		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	72.84
Sand	19.57
Fines <0.063mm	7.58

Grading Analysis		
D ₉₀	mm	97.178
D ₆₀	mm	21.524
D ₅₀	mm	15.070
D ₃₀	mm	2.514
D ₁₀	mm	0.111
Uniformity Coefficient		193.60
Curvature Coefficient		2.64

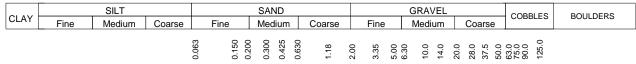
Remarks

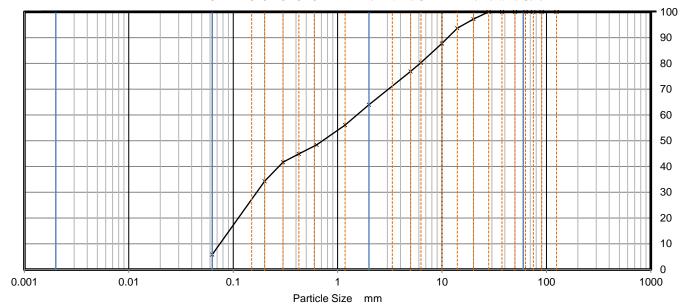
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 13:30	13/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019	
G.	G C		(ISO 17892-4:2016)		Borehole No.	OWF_GI#05A_SAMP
Site Name	A05 Bretagne C	Offshore GI		Sample No.	PU01A	
Sample Description	5y 4/2 Olive grey fine SAND with gravel and shell fragments		Depth, m	0.00		
Specimen Reference	B1	B1 Specimen 0 m		Sample Type	B1	
Test Method ISO 17892 -4, by sieving on as received or wet sample				Unique ID	BH012023022798	





Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	94		
10	88		
6.3	80		
5	77		
2	64		
1.18	56		•
0.63	48		
0.425	45		
0.300	42		
0.200	34]	
0.063	6		

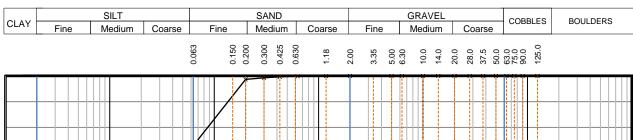
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	36.00
Sand	58.15
Fines <0.063mm	5.84

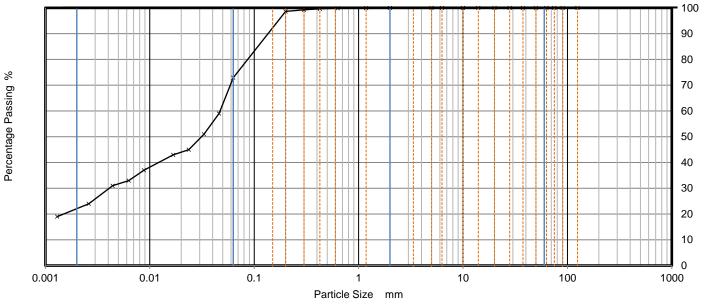
Grading Analysis		
D ₉₀	mm	11.351
D ₆₀	mm	1.530
D ₅₀	mm	0.719
D ₃₀	mm	0.168
D ₁₀	mm	0.075
Uniformity Coefficient		20.52
Curvature Coefficient		0.25

Remarks

Date tested	
02/03/2023	

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
G Caro				Borehole No.	OWF_GI#05A_SAMP
Site Name	A05 Bretagne O	Offshore GI		Sample No.	CR04
Sample Description	Green sandy, silty	andy, silty, CLAY		Depth, m	3.90
Specimen Reference	Q1	Specimen 3.9 m		Sample Type	Q1
Test Method ISO 17892 -4, by sieving and hydrometer sedimentation				Unique ID	BH0120230227112





Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0460	59
		0.0331	51
125	100	0.0236	45
90	100	0.0168	43
75	100	0.0088	37
63	100	0.0063	33
50	100	0.0044	31
37.5	100	0.0026	24
28	100	0.0013	19
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	100		
1.18	100	Particle density	(assumed)
0.63	100	2.65	Mg/m3
0.425	100	Test sample mass (g)	298.13
0.300	99		
0.200	99		
0.063	73	ĺ	

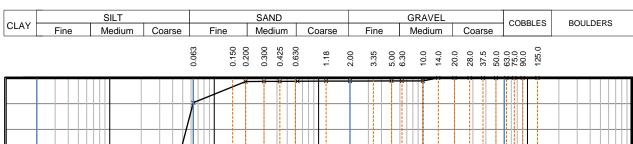
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.00
Sand	27.09
Silt	50.89
Clay	22.02

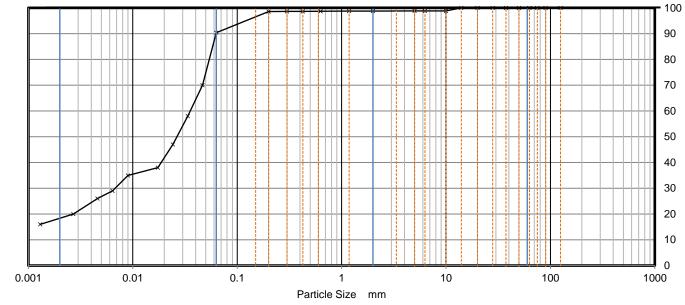
Grading Analysis		
D ₉₀	mm	0.136
D ₆₀	mm	0.047
D ₅₀	mm	0.032
D ₃₀	mm	0.004
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
E Allan.Edward	D.Smith	27/06/2023 10:07	04/05/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019	
ac.		_	892-4:2016)		Borehole No.	OWF_GI#05A_SAMP
Site Name	A05 Bretagne C	Offshore GI			Sample No.	PU02
Sample Description	10y-5Gy 6/2 10y l	ight greyish olive sand	y, gravelly silty CLAY		Depth, m	5.50
Specimen Reference	B1	Specimen Depth	5.5	m	Sample Type	B1
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH0120230227117	





Siev	Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing		
		0.0465	70		
		0.0336	58		
125	100	0.0242	47		
90	100	0.0174	38		
75	100	0.0090	35		
63	100	0.0064	29		
50	100	0.0046	26		
37.5	100	0.0027	20		
28	100	0.0013	16		
20	100				
14	100				
10	99				
6.3	99				
5	99				
2	99				
1.18	99	Particle density	(assumed)		
0.63	99	2.65	Mg/m3		
0.425	99				
0.300	99				
0.200	99]			
0.063	90	1			

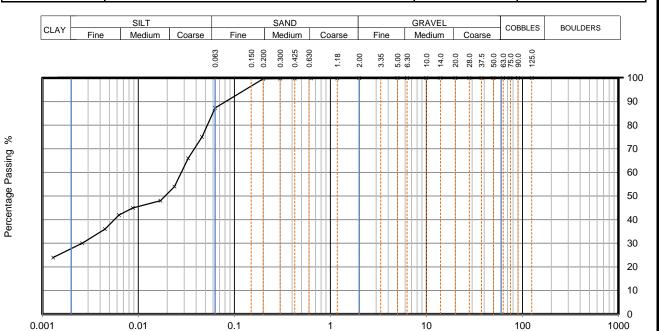
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	1.24
Sand	8.41
Silt	71.61
Clay	18.74

Grading Analysis		
D ₉₀	mm	0.063
D ₆₀	mm	0.035
D ₅₀	mm	0.027
D ₃₀	mm	0.007
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 11:21	15/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
6	OII FIZAKINE			Borehole No.	OWF_GI#05A_SAMP
Site Name	A05 Bretagne C	Offshore GI		Sample No.	CR05
Sample Description	GLEY 1 5GY 2.5/	1 Greenish black slightly	y gravelly, sandy, clayey SIL	Depth, m	4.50
Specimen Reference	B1	Specimen Depth	4.5 m	Sample Type	B1
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH0120230227114



Particle Size mm

Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0460	75
		0.0330	66
125	100	0.0238	54
90	100	0.0170	48
75	100	0.0088	45
63	100	0.0063	42
50	100	0.0045	36
37.5	100	0.0026	30
28	100	0.0013	24
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	100		
1.18	100		
0.63	100		
0.425	100		
0.300	100		
0.200	100	1	
		1	
0.063	87		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.08
Sand	12.65
Silt	59.67
Clay	27.59

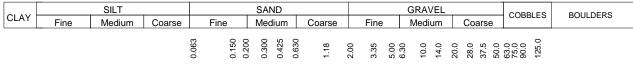
Grading Analysis		
D ₉₀	mm	0.081
D ₆₀	mm	0.028
D ₅₀	mm	0.019
D ₃₀	mm	0.003
D ₁₀	mm	0.000
Uniformity Coefficient	·	
Curvature Coefficient		

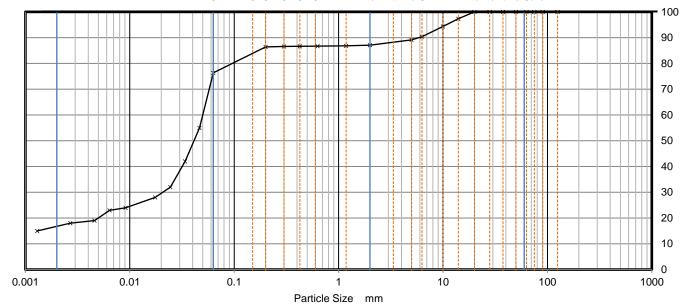
Remarks

Test Technician	Approved
J. Morgan	U. Mazhar

Sheet printed	Date tested
04/04/2023 13:05	02/03/2023

GEOO	UIPMARINE	DISTRIBUTION -		Job Ref	GMOP21-G-019
G.	,011,111,111,12			Borehole No.	OWF_GI#05B_SAMP
Site Name	A05 Bretagne Of	5 Bretagne Offshore GI			CR02
Sample Description	10y 3/2 Very dark g shell fragments	/2 Very dark greyish olive gravelly, sandy, clayey, SILT with fragments			6.50
Specimen Reference	IS	Specimen Depth	6.5 m	Sample Type	IS
Test Method	ISO 17892 -4, by si	O 17892 -4, by sieving and hydrometer sedimentation			BH0120230227121





Siev	/ing	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0465	55	
		0.0339	42	
125	100	0.0245	32	
90	100	0.0175	28	
75	100	0.0091	24	
63	100	0.0064	23	
50	100	0.0046	19	
37.5	100	0.0027	18	
28	100	0.0013	15	
20	100			
14	97			
10	94			
6.3	90			
5	89			
2	87			
1.18	87	Particle density	•	
0.63	87	2.65	Mg/m3	
0.425	87			
0.300	87			
0.200	86]		
0.063	76			

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	12.93
Sand	10.73
Silt	59.92
Clay	16.41

Grading Analysis		
D ₉₀	mm	5.884
D ₆₀	mm	0.050
D ₅₀	mm	0.041
D ₃₀	mm	0.021
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

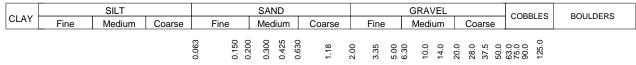
Remarks

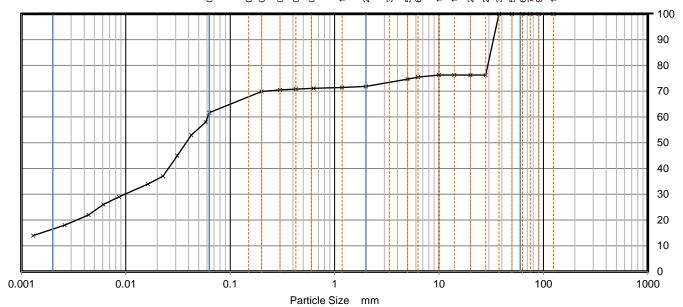
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 13:45	15/03/2023

ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)				Job Ref	GMOP21-G-019	
			Borehole No.	OWF_GI#05B_SAMP		
Site Name	A05 Bretagne O	A05 Bretagne Offshore GI			Sample No.	CR03
Sample Description	10y 4/2 Dark greying fragments	0y 4/2 Dark greyish olive gravelly, sandy, clayey,SILT with shell ragments			Depth, m	7.60
Specimen Reference	IS	Specimen 7.6 m			Sample Type	IS
Test Method	ISO 17892 -4, by s	O 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227125





Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0584	58	
		0.0424	53	
125	100	0.0311	45	
90	100	0.0227	37	
75	100	0.0163	34	
63	100	0.0086	29	
50	100	0.0061	26	
37.5	100	0.0044	22	
28	76	0.0026	18	
20	76	0.0013	14	
14	76			
10	76			
6.3	75			
5	75			
2	72			
1.18	71	Particle density		
0.63	71	2.65	Mg/m3	
0.425	71			
0.300	71			
0.200	70			
0.063	62			

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	28.12
Sand	10.20
Silt	45.06
Clay	16.61

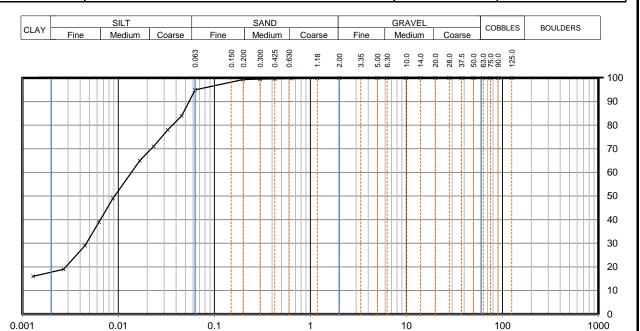
Grading Analysis		
D ₉₀	mm	66.492
D ₆₀	mm	0.061
D ₅₀	mm	0.038
D ₃₀	mm	0.010
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below cemented large particles present-Insufficient material for compliant test-non standard completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 11:24	13/03/2023

ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019		
		Borehole No.	OWF_GI#05B_SAMP		
Site Name	A05 Bretagne C	ffshore GI		Sample No.	CR04
Sample Description	5Gy 6/2 Light greyish green very stiff, clayey SILT			Depth, m	8.50
Specimen Reference	IS	Specimen Depth	8.5 m	Sample Type	IS
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH0120230227128	



Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0457	84	
		0.0327	78	
125	100	0.0233	71	
90	100	0.0167	65	
75	100	0.0088	49	
63	100	0.0063	39	
50	100	0.0045	29	
37.5	100	0.0027	19	
28	100	0.0013	16	
20	100			
14	100			
10	100			
6.3	100			
5	100			
2	100			
1.18	100			
0.63	100			
0.425	100			
0.300	100			
0.200	99]		
0.063	95			

Sample Proportions	% dry mass	
Very coarse	0.00	
Gravel	0.00	
Sand	5.02	
Silt	77.17	
Clay	17.81	

Grading Analysis		
D ₉₀	mm	0.054
D ₆₀	mm	0.014
D ₅₀	mm	0.009
D ₃₀	mm	0.005
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

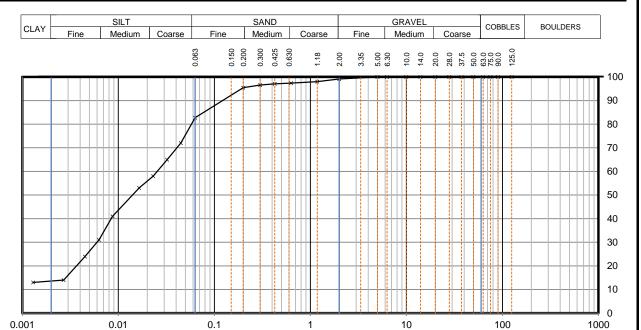
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Test Technician	Approved
J. Morgan	U. Mazhar

Percentage Passing %

Sheet printed	Date tested
04/04/2023 13:01	02/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019
GEOG	(ISO 17892-4:2016)		Borehole No.	OWF_GI#05B_SAMP	
Site Name	A05 Bretagne C	ffshore GI		Sample No.	CR05
Sample Description	5Gy 6/2 Light gre stones	Gy 6/2 Light greyish green silty CLAY with few shell fragments and ones			9.50
Specimen Reference	IS	Specimen Depth	9.5 m	Sample Type	IS
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH0120230227131	



Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0447	72	
		0.0322	65	
125	100	0.0231	58	
90	100	0.0165	53	
75	100	0.0087	41	
63	100	0.0063	31	
50	100	0.0045	24	
37.5	100	0.0027	14	
28	100	0.0013	13	
20	100			
14	100			
10	100			
6.3	100			
5	100			
2	99			
1.18	98			
0.63	97			
0.425	97			
0.300	97			
0.200	95			
0.063	83			

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.85
Sand	16.41
Silt	68.87
Clay	13.87

Grading Analysis		
D ₉₀	mm	0.122
D ₆₀	mm	0.025
D ₅₀	mm	0.014
D ₃₀	mm	0.006
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

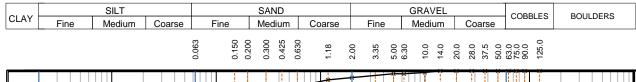
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

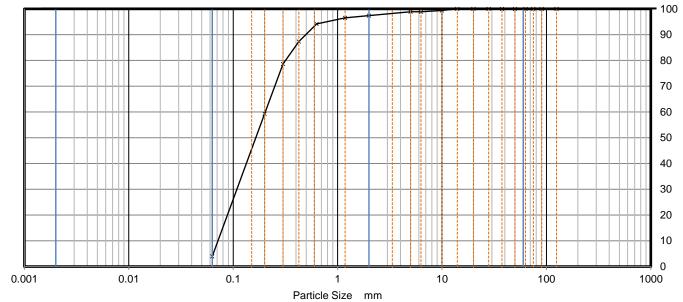
Test Technician	Approved
J. Morgan	U. Mazhar

Percentage Passing %

Sheet printed	Date tested
04/04/2023 12:55	02/03/2023

GEOO	ISO PARTICLE SIZE GEOQUIPMARINE DISTRIBUTION		Job Ref	GMOP21-G-019		
GEOGOTI I MATTE		(ISO 17892-4:2016)		Borehole No.	OWF_GI#11_SAMP	
Site Name	A05 Bretagne O	A05 Bretagne Offshore GI			Sample No.	PU01B
Sample Description	Dark grey 2.5y 4/1 slightly gravelly, SAND			Depth, m	0.00	
Specimen Reference	B1	B1 Specimen 0 m			Sample Type	B1
Test Method	ISO 17892 -4, by s	SO 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227173





Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
2	97		
1.18	97		
0.63	94		
0.425	87		
0.300	79		
0.200	59		
0.063	4		

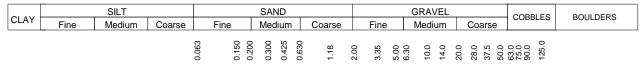
Sample Proportions	% dry mass		
Very coarse	0.00		
Gravel	2.61		
Sand	93.43		
Fines <0.063mm	3.96		

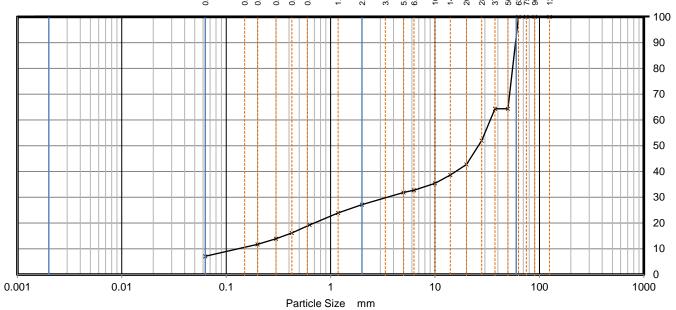
Grading Analysis		
D_{90}	mm	0.496
D ₆₀	mm	0.203
D ₅₀	mm	0.165
D ₃₀	mm	0.108
D ₁₀	mm	0.071
Uniformity Coefficient		2.84
Curvature Coefficient		0.81

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 13:35	02/03/2023

GEOO	ISO PARTICLE SIZ			Job Ref	GMOP21-G-019
GEOGOII I PARINE		(ISO 17892-4:2016)		Borehole No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	PU08
Sample Description	Very pale yellow, white page 2.5y 9/2 silty, very sandy, GRAVEL including cemented sand			Depth, m	12.25
Specimen Reference	B2	B2 Specimen 12.25 m			B2
Test Method	ISO 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227193





Siev	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	64		
37.5	64		
28	52		
20	43		
14	39		
10	35		
6.3	33		
5	32		
2	27		
1.18	24		
0.63	19		
0.425	16		_
0.300	14		
0.200	12		
0.063	7		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	72.85
Sand	20.05
Fines < 0.063mm	7.11

Grading Analysis		
D ₉₀	mm	59.045
D ₆₀	mm	33.825
D ₅₀	mm	26.024
D ₃₀	mm	3.484
D ₁₀	mm	0.129
Uniformity Coefficient		261.50
Curvature Coefficient		2.77

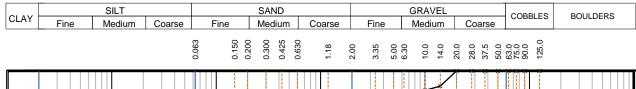
Remarks

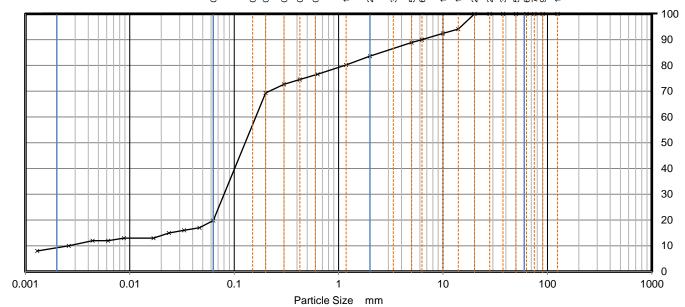
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant tet-non standard test completed

Т	Test Technician	Approved	Sheet printed	Date tested
J. M	organ	D.Smith	06/04/2023 13:37	16/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019
CES CONTINUE		(ISO 17892-4:2016)		Borehole No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR16
Sample Description	5GY 4/2 Dark greyish green silty wet gravelly, silty, clayey, SAND			Depth, m	17.85
Specimen Reference	B1	B1 Specimen 17.85 m			B1
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227207





Siev	ving	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0465	17	
		0.0332	16	
125	100	0.0237	15	
90	100	0.0169	13	
75	100	0.0088	13	
63	100	0.0062	12	
50	100	0.0044	12	
37.5	100	0.0026	10	
28	100	0.0013	8	
20	100			
14	94			
10	92			
6.3	90			
5	89			
2	84			
1.18	80	Particle density		
0.63	77	2.65	Mg/m3	
0.425	75			
0.300	73			
0.200	69			
0.063	20			

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	16.37
Sand	63.80
Silt	10.60
Clay	9.23

Grading Analysis		
D ₉₀	mm	6.268
D ₆₀	mm	0.161
D ₅₀	mm	0.127
D ₃₀	mm	0.080
D ₁₀	mm	0.002
Uniformity Coefficient		64.89
Curvature Coefficient		15.98

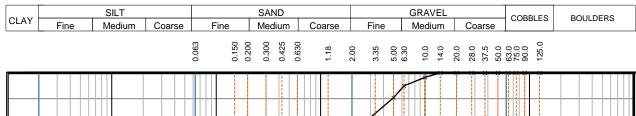
Remarks

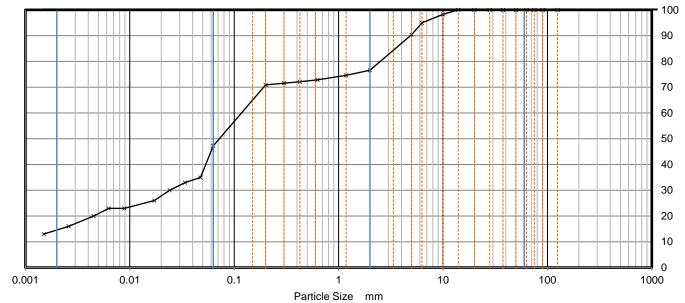
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Not enough sample to MC

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 11:31	09/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
G.				Borehole No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR17
Sample Description	5GY 6/2 Light grey fragments	t greyish gravelly, sandy, clayey, SILT with shell		Depth, m	18.75
Specimen Reference	B1	Specimen 18.75 m		Sample Type	B1
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH0120230227210	





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0476	35
		0.0339	33
125	100	0.0241	30
90	100	0.0172	26
75	100	0.0089	23
63	100	0.0063	23
50	100	0.0045	20
37.5	100	0.0026	16
28	100	0.0015	13
20	100		
14	100		
10	98		
6.3	95		
5	90		
2	77		
1.18	75	Particle density	
0.63	73	2.65	Mg/m3
0.425	72		
0.300	72		
0.200	71		
0.063	47		

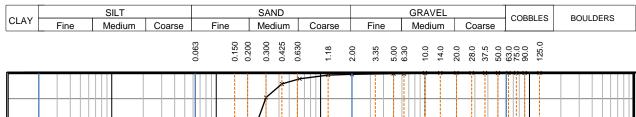
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	23.43
Sand	29.28
Silt	32.50
Clay	14.79

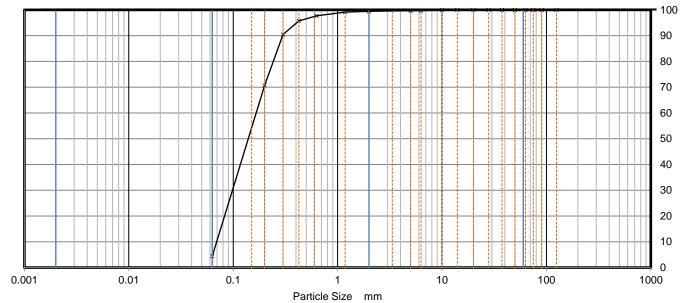
Grading Analysis		
D ₉₀	mm	4.881
D ₆₀	mm	0.117
D ₅₀	mm	0.072
D ₃₀	mm	0.024
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 11:31	02/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
G.				Borehole No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Of	ffshore GI		Sample No.	P01
Sample Description	2.5y 4/4 Olive brov	prown silty SAND with shell fragments		Depth, m	0.00
Specimen Reference	B1	Specimen 0 m		Sample Type	B1
Test Method	ISO 17892 -4, by sieving on as received or wet sample		Unique ID	BH0120230227214	





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	99		
1.18	99		
0.63	98		
0.425	96		
0.300	90		
0.200	71		
0.063	4		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.55
Sand	95.03
Fines <0.063mm	4.42

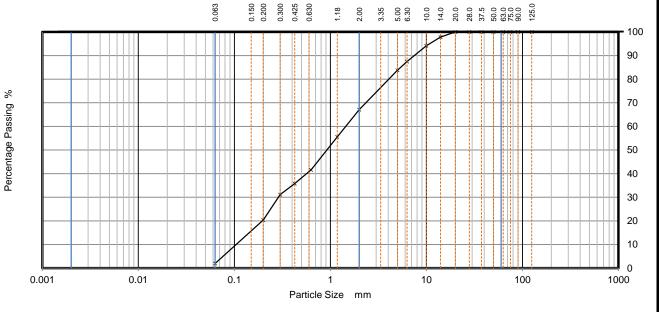
Grading Analysis		
D_{90}	mm	0.297
D ₆₀	mm	0.166
D ₅₀	mm	0.139
D ₃₀	mm	0.098
D ₁₀	mm	0.069
Uniformity Coefficient		2.39
Curvature Coefficient		0.84

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 11:35	13/03/2023

GEOO	GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION		GMOP21-G-019
GEOG	OILLIAMINE	(ISO 17892-4:2016)		Borehole No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne 0	Offshore GI		Sample No.	PU02
Sample Description	2.5y 4/3 Olive bro	own SAND with shell frag	gments	Depth, m	1.20
Specimen Reference	B2	Specimen Depth	1.2 m	Sample Type	B2
Test Method	ISO 17892 -4, by	17892 -4, by sieving on as received or wet sample			BH0120230227218





Sie	ving	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100			
90	100			
75	100			
63	100			
50	100			
37.5	100			
28	100			
20	100			
14	98			
10	94			
6.3	87			
5	84			
2	67			
1.18	56			
0.63	42			
0.425	36			
0.300	31			
0.200	20			
0.063	2			

Sample Proportions	% dry mass		
Very coarse	0.00		
Gravel	32.91		
Sand	65.13		
Fines <0.063mm	1.96		

Grading Analysis		
D ₉₀	mm	7.497
D ₆₀	mm	1.445
D ₅₀	mm	0.918
D ₃₀	mm	0.288
D ₁₀	mm	0.104
Uniformity Coefficient		13.85
Curvature Coefficient		0.55

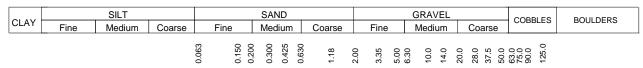
Remarks

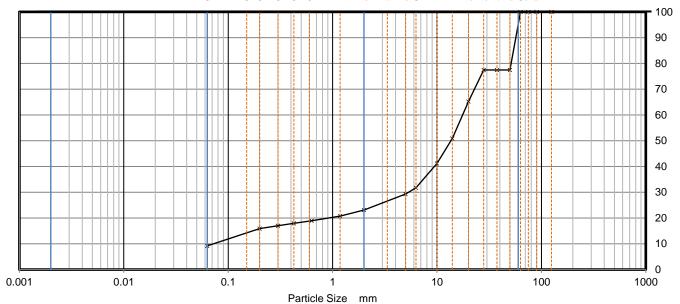
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient mass for standard test - non standard test done

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	14/04/2023 13:31	15/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019	
6	OIITIANIVE	(ISO 17892-4:2016)		Borehole No.	OWF_GI#12_SAMP	
Site Name	A05 Bretagne Of	e Offshore GI B , sandy, GRAVEL including cemented sand			Sample No.	PU07
Sample Description	Yellow 2.5y 7/8 , sa				Depth, m	3.90
Specimen Reference	B2	Specimen 3.9 m		Sample Type	B2	
Test Method	ISO 17892 -4, by s	ieving on as received or wet sample		Unique ID	BH0120230227225	





Sie	Sieving		entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	77		
37.5	77		
28	77		
20	65		
14	51		
10	41		
6.3	32		
5	29		
2	23		
1.18	21		•
0.63	19		
0.425	18		
0.300	17		
0.200	16		
0.063	9		

Sample Proportions	% dry mass		
Very coarse	0.00		
Gravel	76.92		
Sand	13.87		
Fines <0.063mm	9.21		

Grading Analysis		
D ₉₀	mm	56.867
D ₆₀	mm	17.576
D ₅₀	mm	13.593
D ₃₀	mm	5.327
D ₁₀	mm	0.072
Uniformity Coefficient		243.50
Curvature Coefficient		22.37

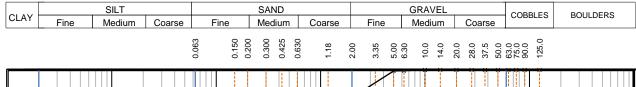
Remarks

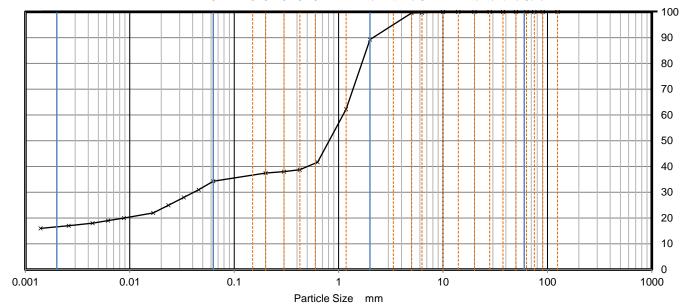
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	06/04/2023 13:47	02/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019
GC.	(ISO 17892-4:2016)		Borehole No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR04
Sample Description	10y 5/2 greyish oli	ve silty, clayey wet CL	AY including shell fragment	s Depth, m	4.60
Specimen Reference	B2	Specimen Depth	4.6 n	Sample Type	B2
Test Method	ISO 17892 -4, by s	sieving and hydrometer	r sedimentation	Unique ID	BH0120230227290





Siev	ving	Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0458	31
		0.0329	28
125	100	0.0235	25
90	100	0.0168	22
75	100	0.0088	20
63	100	0.0062	19
50	100	0.0044	18
37.5	100	0.0026	17
28	100	0.0014	16
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	89		
1.18	62	Particle density	•
0.63	42	2.65	Mg/m3
0.425	39		
0.300	38		
0.200	37		
0.063	34		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	10.73
Sand	55.00
Silt	17.74
Clay	16.53

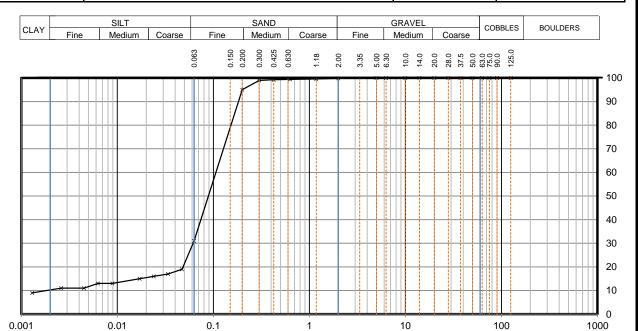
Grading Analysis		
D ₉₀	mm	2.135
D ₆₀	mm	1.102
D ₅₀	mm	0.812
D ₃₀	mm	0.040
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:48	02/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
GCGEOG	OII FIZAKINE			Borehole No.	OWF_GI#14A_SAMP
Site Name	A05 Bretagne C	Offshore GI		Sample No.	CR08
Sample Description	iption 5Gy 3/2 Very dark greyish green slightly gravelly, clayey, silty SAND.			Depth, m	8.50
Specimen Reference	B1	Specimen Depth	8.5 m	Sample Type	B1
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227300



Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0472	19
		0.0338	17
125	100	0.0240	16
90	100	0.0171	15
75	100	0.0089	13
63	100	0.0063	13
50	100	0.0045	11
37.5	100	0.0026	11
28	100	0.0013	9
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	100		
1.18	100		
0.63	99		
0.425	99		
0.300	99	1	
0.200	95	1	
		1	
0.063	31	1	

Percentage Passing %

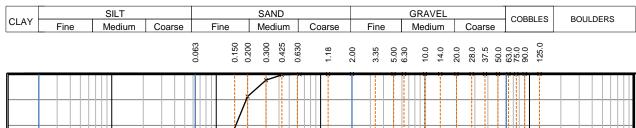
Sample Proportions	% dry mass		
Very coarse	0.00		
Gravel	0.15		
Sand	68.84		
Silt	20.78		
Clay	10.23		

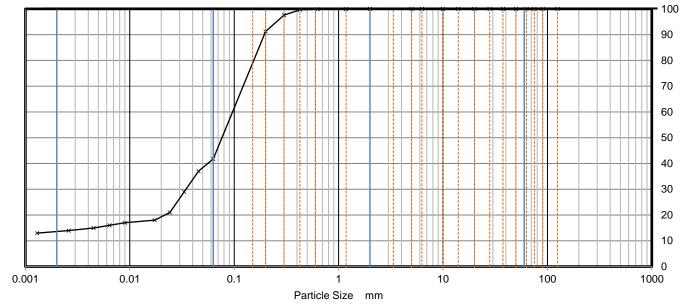
Grading Analysis		
D ₉₀	mm	0.183
D ₆₀	mm	0.106
D ₅₀	mm	0.089
D ₃₀	mm	0.061
D ₁₀	mm	0.002
Uniformity Coefficient		58.29
Curvature Coefficient		19.47

Remarks

Sheet printed	Date tested	
04/04/2023 12:42	09/03/2023	

ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019			
G Caro		(ISO 17892-4:2016)		Borehole No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Of	Offshore GI		Sample No.	PU02	
Sample Description	GLEY 1 10Gy 2.5/1 Greenish black clayey, silty, SAND			Depth, m	9.60	
Specimen Reference	B1	Specimen 9.6 m		Sample Type	B1	
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation				Unique ID	BH0120230227304





Siev	/ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0455	37
		0.0332	29
125	100	0.0242	21
90	100	0.0173	18
75	100	0.0090	17
63	100	0.0064	16
50	100	0.0045	15
37.5	100	0.0026	14
28	100	0.0013	13
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	100		
1.18	100	Particle density	
0.63	100	2.65	Mg/m3
0.425	100		
0.300	98	1	
0.200	91		
		1	
0.063	42		

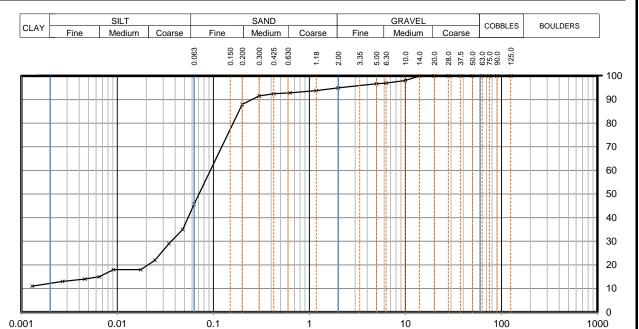
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.01
Sand	58.21
Silt	28.43
Clay	13.36

Grading Analysis		
D ₉₀	mm	0.194
D ₆₀	mm	0.096
D ₅₀	mm	0.076
D ₃₀	mm	0.035
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

	Test Technician	Approved	Sheet printed	Date tested
J.	Morgan	D.Smith	13/04/2023 09:48	15/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
GEOG	OILLIAMINE			Borehole No.	OWF_GI#14A_SAMP
Site Name	A05 Bretagne C	Offshore GI		Sample No.	CR10
Sample Description		Gy 3/2 Very dark greyish green, gravelly, very sandy, clayey SILT th sparse shell fragments		Depth, m	11.35
Specimen Reference	B2	Specimen 11.35 m		Sample Type	B2
Test Method ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227314	



Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0481	35
		0.0345	29
125	100	0.0247	22
90	100	0.0176	18
75	100	0.0091	18
63	100	0.0065	15
50	100	0.0046	14
37.5	100	0.0027	13
28	100	0.0013	11
20	100		
14	100		
10	98		
6.3	97		
5	97		
2	95		
1.18	94		
0.63	93		
0.425	92		
0.300	92		
0.200	88		
0.063	46		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	5.05
Sand	49.22
Silt	33.28
Clay	12.45

Grading Analysis		
D ₉₀	mm	0.251
D ₆₀	mm	0.093
D ₅₀	mm	0.071
D ₃₀	mm	0.037
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

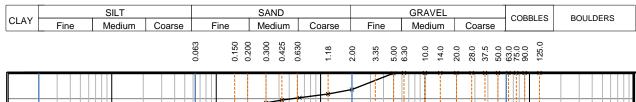
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

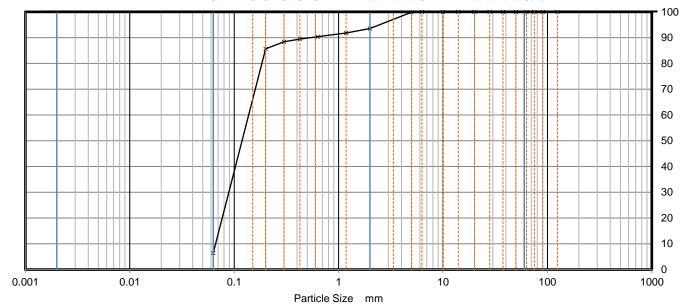
Test Technician	Approved	
J. Morgan	U. Mazhar	

Percentage Passing %

Sheet printed	Date tested
04/04/2023 12:39	02/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
G.	,011,111,111			Borehole No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne O	Offshore GI			Sample No.	PU08
Sample Description	10y 6/2 Light grey	yish olive silty SAND with small shell fragments			Depth, m	18.70
Specimen Reference	B1	Specimen Depth	18.7 n	n	Sample Type	B1
Test Method	od ISO 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227328	





Sie	Sieving		entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	94		
1.18	92		•
0.63	90		
0.425	89		
0.300	88		
0.200	86		
0.063	6		

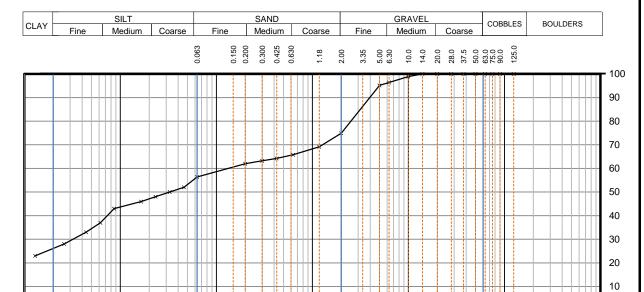
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	6.46
Sand	87.13
Fines <0.063mm	6.42

Grading Analysis		
D ₉₀	mm	0.538
D ₆₀	mm	0.138
D ₅₀	mm	0.119
D ₃₀	mm	0.089
D ₁₀	mm	0.066
Uniformity Coefficient	·	2.07
Curvature Coefficient	·	0.86

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:48	09/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
6	OII TIZIKIINE			Borehole No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne C	Offshore GI	fshore GI		PU02
Sample Description	Light brown, sand	Light brown, sandy and gravelly, CLAY with frequent shell fragments			2.00
Specimen Reference	B1	Specimen 2 m		Sample Type	B1
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving and hydrometer sedimentation			BH012023030711



Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0461	52
		0.0327	50
125	100	0.0233	48
90	100	0.0165	46
75	100	0.0086	43
63	100	0.0062	37
50	100	0.0044	33
37.5	100	0.0026	28
28	100	0.0013	23
20	100		
14	100		
10	99		
6.3	96		
5	95		
2	75		
1.18	69	Particle density	(assumed)
0.63	66	2.65	Mg/m3
0.425	64		<u> </u>
0.300	63		
0.200	62		
	_		
0.063	56		

0.01

0.1

Percentage Passing %

0.001

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	25.09
Sand	18.54
Silt	30.22
Clay	26.15

100

10

0

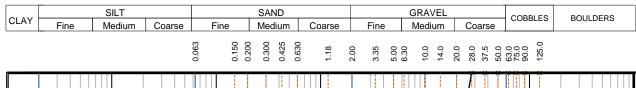
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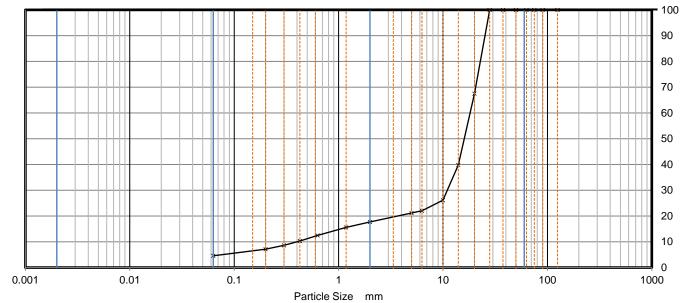
Grading Analysis		
D ₉₀	mm	3.961
D ₆₀	mm	0.133
D ₅₀	mm	0.031
D ₃₀	mm	0.003
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	05/04/2023 10:08	13/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
G.	,011 10 4141 12			Borehole No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR04	
Sample Description	5Y 8/2 Pale yellow, slightly silty, sandy GRAVEL			Depth, m	4.00	
Specimen Reference	IS	IS Specimen 4 m		Sample Type	IS	
Test Method	ISO 17892 -4, by s	SO 17892 -4, by sieving on as received or wet sample			Unique ID	BH012023030717





Sie	ving	Sodime	entation
	l		
Particle Size	% Passing	Particle Size	% Passing
mm		mm	
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	68		
14	40		
10	26		
6.3	22		
5	21		
2	18		
1.18	16		
0.63	12		
0.425	10		
0.300	9		
0.200	7		
0.063	5		

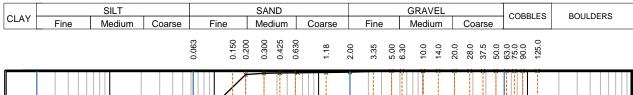
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	82.27
Sand	13.15
Fines <0.063mm	4.58

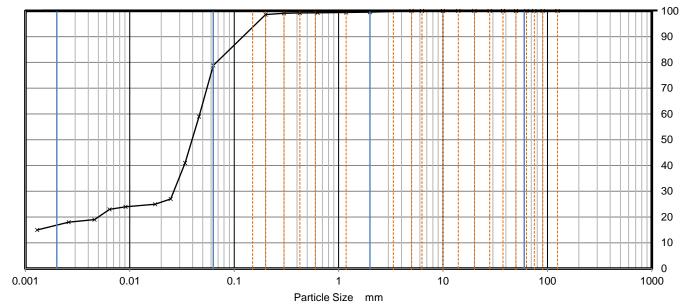
Grading Analysis		
D ₉₀	mm	25.245
D ₆₀	mm	18.155
D ₅₀	mm	15.962
D ₃₀	mm	10.989
D ₁₀	mm	0.398
Uniformity Coefficient		45.61
Curvature Coefficient		16.71

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	17/04/2023 14:18	15/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019
G.	,011,111,111			Borehole No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne Off	Bretagne Offshore GI		Sample No.	CR06
Sample Description	GLEY 1 4/1 Dark gr shell fragments	SLEY 1 4/1 Dark greyish green very stiff sandy, clayey, SILT with hell fragments		Depth, m	7.00
Specimen Reference	IS	Specimen 7 m		Sample Type	IS
Test Method	ISO 17892 -4, by si	6O 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH012023030724





Sie	ving	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0460	59	
		0.0339	41	
125	100	0.0247	27	
90	100	0.0175	25	
75	100	0.0091	24	
63	100	0.0064	23	
50	100	0.0046	19	
37.5	100	0.0026	18	
28	100	0.0013	15	
20	100			
14	100			
10	100			
6.3	100			
5	100			
2	99			
1.18	99	Particle density		
0.63	99	2.65	Mg/m3	
0.425	99			
0.300	99			
0.200	99			
0.063	79			

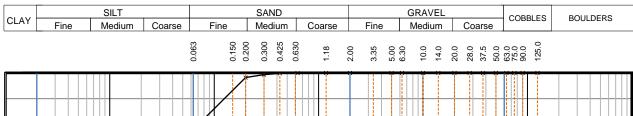
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.52
Sand	20.64
Silt	61.98
Clay	16.86

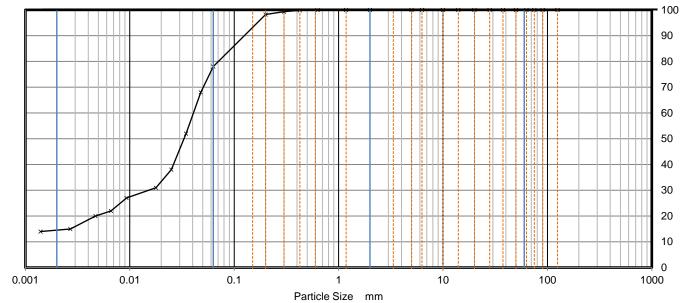
Grading Analysis		
D ₉₀	mm	0.121
D ₆₀	mm	0.047
D ₅₀	mm	0.039
D ₃₀	mm	0.026
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 11:19	15/03/2023

GEOQUIPMARINE DISTRIB		ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019	
		892-4:2016)		Borehole No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne C	offshore GI		Sample No.	CR07	
Sample Description	Dark brown sandy	Dark brown sandy, clayey, SILT		Depth, m	8.60	
Specimen Reference	Q1	Specimen 8.6 m		Sample Type	Q1	
Test Method	ISO 17892 -4, by	7892 -4, by sieving and hydrometer sedimentation			Unique ID	BH012023030730





Siev	ving	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0479	68	
		0.0346	52	
125	100	0.0250	38	
90	100	0.0178	31	
75	100	0.0093	27	
63	100	0.0066	22	
50	100	0.0047	20	
37.5	100	0.0027	15	
28	100	0.0014	14	
20	100			
14	100			
10	100			
6.3	100			
5	100			
2	100			
1.18	100	Particle density	(assumed)	
0.63	100	2.65	Mg/m3	
0.425	100			
0.300	99			
0.200	98]		
0.063	78	1		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.02
Sand	21.98
Silt	63.66
Clay	14.34

Grading Analysis		
D ₉₀	mm	0.125
D ₆₀	mm	0.041
D ₅₀	mm	0.033
D ₃₀	mm	0.015
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

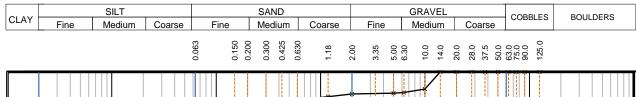
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

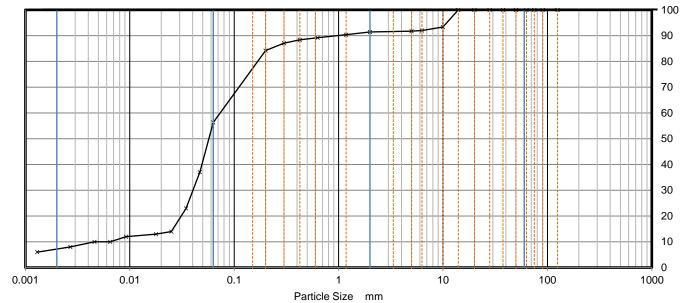
Test Technician	Approved
E Allan.Edward	D.Smith

Percentage Passing %

Sheet printed	Date tested
24/05/2023 16:22	28/04/2023

GEOQUIPMARINE ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)				Job Ref	GMOP21-G-019
		Borehole No.	OWF_GI#15A_SAMP		
Site Name	A05 Bretagne O	A05 Bretagne Offshore GI		Sample No.	CR08
Sample Description		GLEY 1 3/1 Very dark greenish grey gravelly, sandy, clayey, SILT including cemented sand		Depth, m	9.30
Specimen Reference	B1	Specimen 9.3 m		Sample Type	B1
Test Method	ISO 17892 -4, by	O 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH012023030733





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0468	37
		0.0346	23
125	100	0.0250	14
90	100	0.0178	13
75	100	0.0092	12
63	100	0.0065	10
50	100	0.0046	10
37.5	100	0.0027	8
28	100	0.0013	6
20	100		
14	100		
10	93		
6.3	92		
5	92		
2	91		
1.18	90	Particle density	
0.63	89	2.65	Mg/m3
0.425	88		
0.300	87		
0.200	84		
0.063	56		

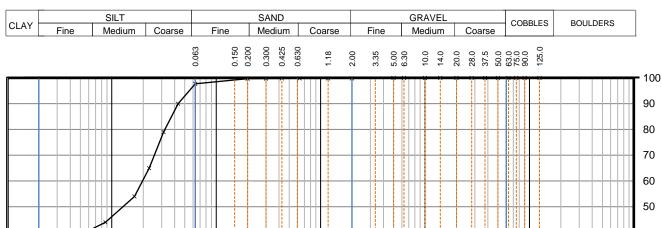
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	8.57
Sand	35.07
Silt	48.99
Clay	7.38

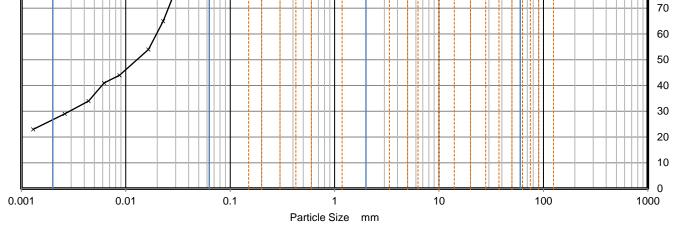
Grading Analysis		
D ₉₀	mm	0.969
D ₆₀	mm	0.073
D ₅₀	mm	0.057
D ₃₀	mm	0.040
D ₁₀	mm	0.006
Uniformity Coefficient		13.16
Curvature Coefficient		4.01

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 11:19	15/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
G Caro				Borehole No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne C	Offshore GI		Sample No.	PU06	
Sample Description	2.5y 4/1 Dark grey	grey, slightly gravelly, slightly sandy, CLAY		Depth, m	10.00	
Specimen Reference	UU1	Specimen Depth	10	m	Sample Type	UU1
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH012023030735		





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0432	90
		0.0313	79
125	100	0.0228	65
90	100	0.0165	54
75	100	0.0087	44
63	100	0.0062	41
50	100	0.0044	34
37.5	100	0.0026	29
28	100	0.0013	23
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	100		
1.18	100	Particle density	•
0.63	100	2.65	Mg/m3
0.425	100		
0.300	100		
0.200	100		
0.063	98		

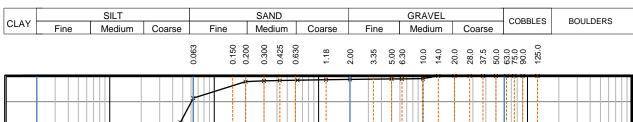
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.16
Sand	2.12
Silt	71.14
Clay	26.59

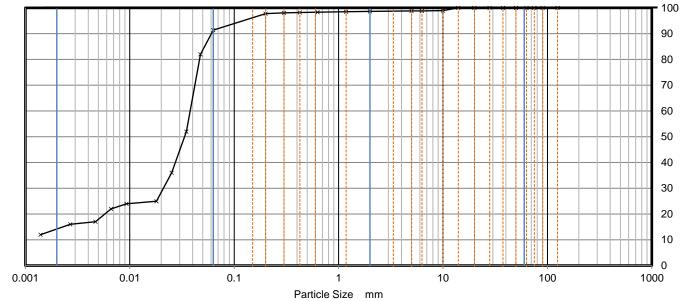
Grading Analysis		
D ₉₀	mm	0.044
D ₆₀	mm	0.019
D ₅₀	mm	0.013
D ₃₀	mm	0.003
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	17/04/2023 14:18	04/04/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
Gen				Borehole No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne O	Offshore GI		Sample No.	CR09	
Sample Description	Greenish grey mo sparse shell fragm	ottled greenish brown sandy, clayey, SILT with ments (<5mm)		Depth, m	12.10	
Specimen Reference	IS	Specimen Depth	12.1	m	Sample Type	IS
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH012023030744		





Sie	Sieving		entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0475	82
		0.0349	52
125	100	0.0252	36
90	100	0.0180	25
75	100	0.0093	24
63	100	0.0066	22
50	100	0.0047	17
37.5	100	0.0027	16
28	100	0.0014	12
20	100		
14	100		
10	99		
6.3	99		
5	99		
2	99		
1.18	98	Particle density	(assumed)
0.63	98	2.65	Mg/m3
0.425	98		
0.300	98		
0.200	98		
0.063	91	1	

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	1.39
Sand	7.27
Silt	76.92
Clay	14.42

Grading Analysis		
D ₉₀	mm	0.060
D ₆₀	mm	0.038
D ₅₀	mm	0.033
D ₃₀	mm	0.021
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

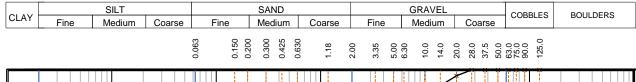
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

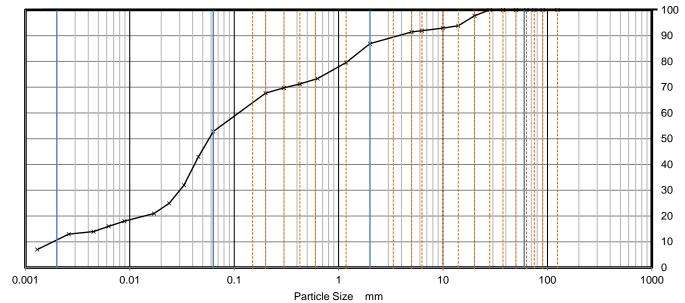
Test Technician	Approved	
E Allan.Edward	D.Smith	

Percentage Passing %

Sheet printed	Date tested
24/05/2023 16:23	27/04/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
GEOG	OIFTIAKINE			Borehole No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne C	offshore GI		Sample No.	CR10	
Sample Description	Greyish green gra	avelly, sandy, clayey, SILT		Depth, m	13.40	
Specimen Reference	IS	Specimen 13.4 m		Sample Type	IS	
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH012023030749	





Siev	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0454	43
		0.0331	32
125	100	0.0239	25
90	100	0.0171	21
75	100	0.0089	18
63	100	0.0063	16
50	100	0.0045	14
37.5	100	0.0026	13
28	100	0.0013	7
20	98		
14	94		
10	93		
6.3	92		
5	91		
2	87		
1.18	80	Particle density	(assumed)
0.63	73	2.65	Mg/m3
0.425	71	Test sample mass (g)	383.8
0.300	70		
0.200	68	1	
0.063	53	1	

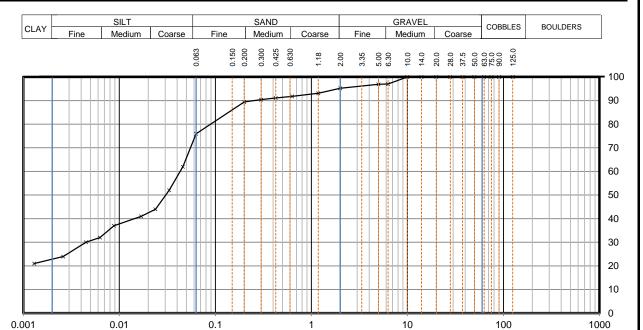
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	13.11
Sand	34.11
Silt	42.21
Clay	10.57

Grading Analysis		
D ₉₀	mm	3.733
D ₆₀	mm	0.110
D ₅₀	mm	0.058
D ₃₀	mm	0.031
D ₁₀	mm	0.002
Uniformity Coefficient	·	59.10
Curvature Coefficient	·	4.53

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	04/07/2023 16:47	21/06/2023

GEOG	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
Grand	OIFTIANINE			Borehole No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne C	ffshore GI		Sample No.	CR12
Sample Description	GLEY 1 4/1 Dark	4/1 Dark greyish green, slightly gravelly, slightly sandy, CLAY		Depth, m	15.00
Specimen Reference	IS	Specimen 15 m		Sample Type	IS
Test Method	t Method ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH012023030753



Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0459	62
		0.0331	52
125	100	0.0238	44
90	100	0.0169	41
75	100	0.0088	37
63	100	0.0063	32
50	100	0.0045	30
37.5	100	0.0026	24
28	100	0.0013	21
20	100		
14	100		
10	100		
6.3	97		
5	97		
2	95		
1.18	93		
0.63	92		
0.425	91		•
0.300	90		
0.200	89		
0.063	76		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	4.80
Sand	19.27
Silt	52.84
Clay	23.09

Grading Analysis		
D ₉₀	mm	0.254
D ₆₀	mm	0.043
D ₅₀	mm	0.030
D ₃₀	mm	0.005
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

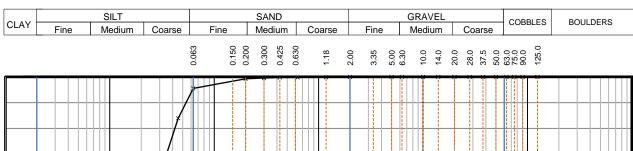
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

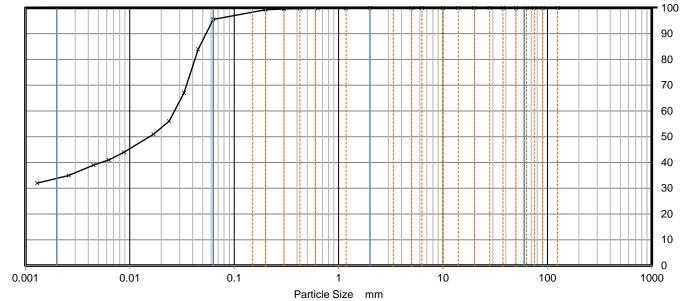
Test Technician	Approved	
J. Morgan	U. Mazhar	

Percentage Passing %

Sheet printed	Date tested
04/04/2023 12:50	09/03/2023

GEOO	UIPMARINE	DISTRIBUTION		Job Ref	GMOP21-G-019	
GEOGRA	OHTIAKINE			Borehole No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR13	
Sample Description	5y 4/2 Olive grey,	y 4/2 Olive grey, slightly sandy CLAY			Depth, m	16.25
Specimen Reference	IS	Specimen 16.25 m		Sample Type	IS	
Test Method	SO 17892 -4, by sieving and hydrometer sedimentation		Unique ID	BH012023030760		





Siev	ving	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0453	84	
		0.0330	67	
125	100	0.0238	56	
90	100	0.0169	51	
75	100	0.0088	44	
63	100	0.0063	41	
50	100	0.0045	39	
37.5	100	0.0026	35	
28	100	0.0013	32	
20	100			
14	100			
10	100			
6.3	100			
5	100			
2	100			
1.18	100	Particle density	•	
0.63	100	2.65	Mg/m3	
0.425	100			
0.300	100			
0.200	99			
0.063	06			
0.063	96	1		

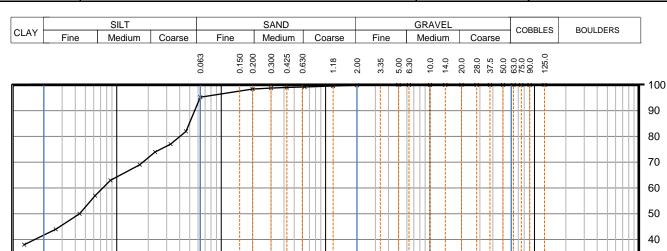
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.02
Sand	4.46
Silt	61.71
Clay	33.81

Grading Analysis		
D ₉₀	mm	0.054
D ₆₀	mm	0.027
D ₅₀	mm	0.015
D ₃₀	mm	0.000
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	17/04/2023 14:18	13/03/2023

GEOO	UIPMARINE	DISTRIBUTION -		Job Ref	GMOP21-G-019	
Gen				Borehole No.	OWF_GI#15A_SAMP	
Site Name	A05 Bretagne O	ffshore GI		Sample No.	PU12	
Sample Description	GLEY 1 5/1 Greer	LEY 1 5/1 Greenish grey sandy, clayey, SILT			Depth, m	18.00
Specimen Reference	B1	Specimen 18 m		Sample Type	B1	
Test Method	ISO 17892 -4, by	892 -4, by sieving and hydrometer sedimentation			Unique ID	BH012023030767



Sieving		Sedimo	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0460	82
		0.0328	77
125	100	0.0233	74
90	100	0.0166	69
75	100	0.0087	63
63	100	0.0062	57
50	100	0.0044	50
37.5	100	0.0026	44
28	100	0.0013	38
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	100		
1.18	100	Particle density	•
0.63	99	2.65	Mg/m3
0.425	99		
0.300	99		
0.200	98		
0.063	95		

0.01

0.1

Percentage Passing %

0.001

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.14
Sand	4.63
Silt	53.60
Clay	41.63

100

10

3020100

1000

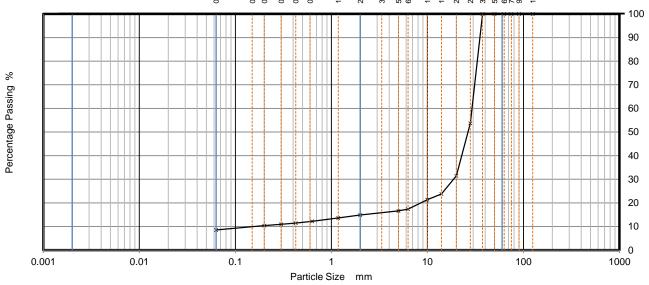
Grading Analysis		
D ₉₀	mm	0.056
D ₆₀	mm	0.007
D ₅₀	mm	0.004
D ₃₀	mm	0.000
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 11:19	15/03/2023

GEOQUIPMARINE		ISO PARTICLE	SIZE DISTRIBUTION	Job Ref	GMOP21-G-019
		(ISO 17892-4:2016)		Borehole No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne 0	Offshore GI		Sample No.	CR15
Sample Description	GLEY 1 6/1 Gree	Y 1 6/1 Greenish grey, clayey and sandy GRAVEL			18.60
Specimen Reference	IS	Specimen Depth	18.6 m	Sample Type	IS
Test Method ISO 17892 -4, by sieving on as received or wet sample			Unique ID	BH012023030770	

0. 4)/		SILT			SAND			GRAVEL	COBBLES	BOULDERS
CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium Coarse	COBBLES	BOOLDERS
				63	3 22 00 60	8 &	0 2 0	0 0 0 0 0 9	0000	
				0.0	6.0		3.3	6.3 10. 14. 14. 28. 37.	90.	



Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	54		
20	31		
14	24		
10	21		
6.3	17		
5	17		
2	15		
1.18	14		
0.63	12		
0.425	11		
0.300	11		
0.200	10		
0.063	9		

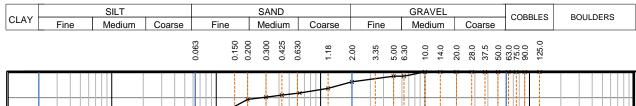
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	85.12
Sand	6.34
Fines <0.063mm	8.54

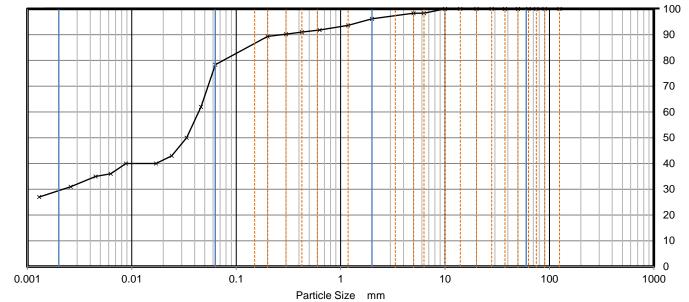
Grading Analysis		
D ₉₀	mm	35.207
D ₆₀	mm	29.136
D ₅₀	mm	26.477
D ₃₀	mm	18.693
D ₁₀	mm	0.157
Uniformity Coefficient		185.90
Curvature Coefficient		76.52

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	05/04/2023 10:42	15/03/2023

GEOQUIPMARINE			RTICLE SIZE	Job Ref	GMOP21-G-019
		(ISO 17892-4:2016)		Borehole No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne Of	fshore GI		Sample No.	CR16
Sample Description	GLEY 1 4/1 Dark g	GLEY 1 4/1 Dark greenish grey, slightly gravelly, sandy, silty, CLAY			19.50
Specimen Reference	IS	IS Specimen 19.5 m			IS
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH012023030773





Sie	ving	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0461	62	
		0.0335	50	
125	100	0.0241	43	
90	100	0.0171	40	
75	100	0.0088	40	
63	100	0.0063	36	
50	100	0.0045	35	
37.5	100	0.0026	31	
28	100	0.0013	27	
20	100			
14	100			
10	100			
6.3	98			
5	98			
2	96			
1.18	94	Particle density		
0.63	92	2.65	Mg/m3	
0.425	91			
0.300	90			
0.200	89			
0.063	78			

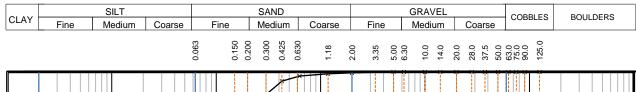
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	3.88
Sand	17.79
Silt	48.95
Clay	29.38

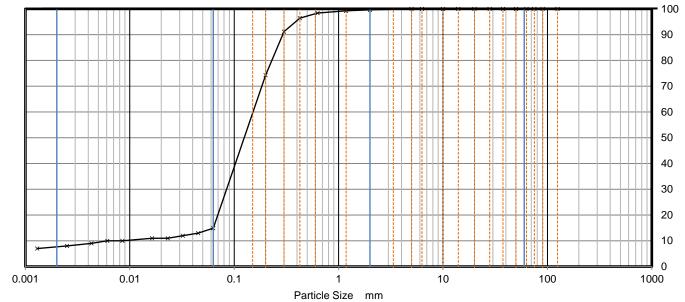
Grading Analysis		
D ₉₀	mm	0.275
D ₆₀	mm	0.043
D ₅₀	mm	0.033
D ₃₀	mm	0.002
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	17/04/2023 14:18	13/03/2023

GEOQUIPMARINE			RTICLE SIZE		Job Ref	GMOP21-G-019
		(ISO 17892-4:2016)		Borehole No.	OWF_GI#17_SAMP	
Site Name	A05 Bretagne O	ffshore GI			Sample No.	PU01
Sample Description	5Y 4/2 Olive grey	4/2 Olive grey silty wet SAND			Depth, m	0.00
Specimen Reference	B1	Specimen 0 m			Sample Type	B1
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation				Unique ID	BH0120230227332





Siev	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0452	13
		0.0323	12
125	100	0.0231	11
90	100	0.0164	11
75	100	0.0085	10
63	100	0.0061	10
50	100	0.0043	9
37.5	100	0.0025	8
28	100	0.0013	7
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	100		
1.18	99	Particle density	
0.63	98	2.65	Mg/m3
0.425	96		
0.300	91	1	
0.200	74		
		1	
0.063	15		

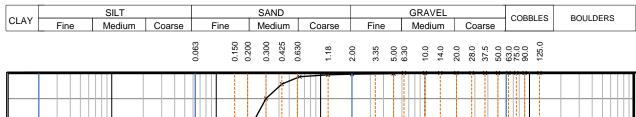
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.38
Sand	84.74
Silt	7.59
Clay	7.30

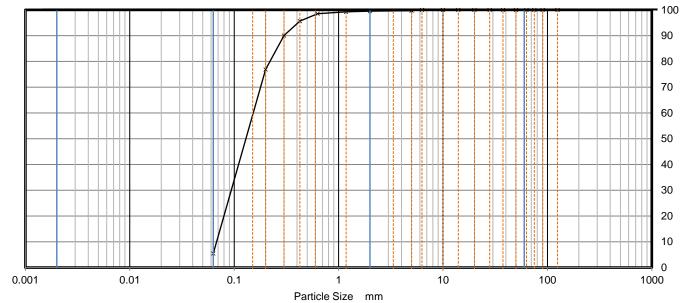
Grading Analysis		
D_{90}	mm	0.292
D ₆₀	mm	0.151
D ₅₀	mm	0.125
D ₃₀	mm	0.085
D ₁₀	mm	0.008
Uniformity Coefficient		17.96
Curvature Coefficient		5.59

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:54	09/03/2023

		RTICLE SIZE		Job Ref	GMOP21-G-019	
6	OHTIAKINE	DISTRIBUTION - (ISO 17892-4:2016)		Borehole No.	OWF_GI#17_SAMP	
Site Name	A05 Bretagne O	offshore GI		Sample No.	PU04	
Sample Description	5y 4/2 Olive grey s	silty wet SAND		Depth, m	2.50	
Specimen Reference	B1	Specimen 2.5 m		Sample Type	B1	
Test Method	ISO 17892 -4, by	y sieving on as received or wet sample			Unique ID	BH0120230227336





Sie	ving	Sodime	entation
	l	-	illation
Particle Size mm	% Passing	Particle Size	% Passing
111111		mm	
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	99		
1.18	99	,	
0.63	98		
0.425	96		
0.300	90		
0.200	77		
0.063	5		

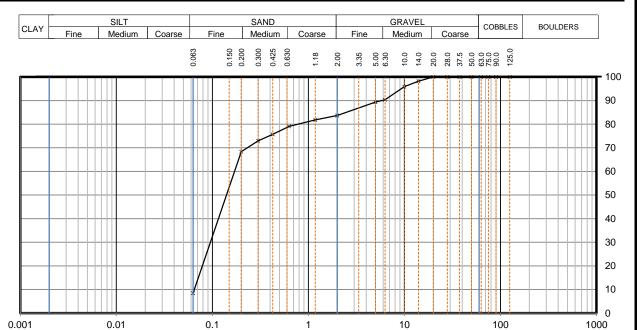
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.50
Sand	94.05
Fines <0.063mm	5.44

Grading Analysis		
D_{90}	mm	0.299
D ₆₀	mm	0.152
D ₅₀	mm	0.129
D ₃₀	mm	0.094
D ₁₀	mm	0.068
Uniformity Coefficient		2.24
Curvature Coefficient		0.85

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:54	09/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
GEOG	OILLIAMINE			Borehole No.	OWF_GI#17_SAMP
Site Name	A05 Bretagne 0	Offshore GI	ffshore GI		PU06A
Sample Description	5y 4/2 Olive grey	silty, gravelly SAND with shell fragments		Depth, m	3.50
Specimen Reference	B1	Specimen 3.5 m		Sample Type	B1
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving on as received or wet sample			BH0120230227338



Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	98		
10	96		
6.3	90		
5	89		
2	84		
1.18	82		
0.63	79		
0.425	76		
0.300	73		
0.200	68		
0.063	8		

Percentage Passing %

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	16.33
Sand	75.21
Fines <0.063mm	8.45

Grading Analysis		
D ₉₀	mm	5.828
D ₆₀	mm	0.170
D ₅₀	mm	0.140
D ₃₀	mm	0.095
D ₁₀	mm	0.065
Uniformity Coefficient		2.62
Curvature Coefficient		0.82

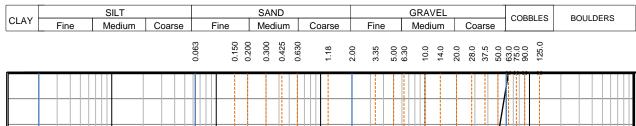
Remarks

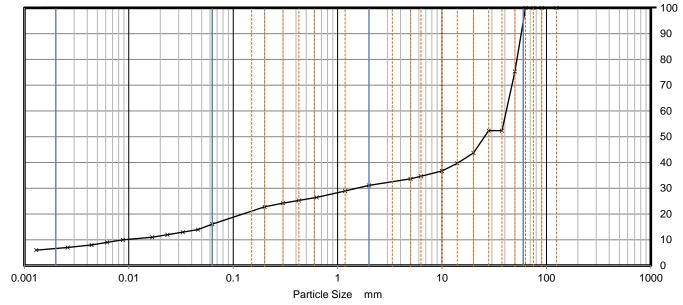
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Minimum specimen mass not adequate - non-standard test

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	14/04/2023 12:52	02/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019	
G GEORGE	(ISO 17892-4:2016)			Borehole No.	OWF_GI#17_SAMP	
Site Name	A05 Bretagne Of	retagne Offshore GI			Sample No.	CR02
Sample Description	5Y 6/2 Light olive g cemented sand	5Y 6/2 Light olive grey wet clayey, silty, sandy GRAVEL including cemented sand			Depth, m	5.80
Specimen Reference	B1	B1 Specimen 5.8 m			Sample Type	B1
Test Method	SO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227342	





Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
		0.0460	14	
		0.0329	13	
125	100	0.0235	12	
90	100	0.0168	11	
75	100	0.0088	10	
63	100	0.0062	9	
50	75	0.0044	8	
37.5	52	0.0026	7	
28	52	0.0013	6	
20	44			
14	40			
10	37			
6.3	35			
5	34			
2	31			
1.18	29	Particle density		
0.63	26	2.65	Mg/m3	
0.425	25			
0.300	24			
0.200	23			
0.063	16			

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	68.87
Sand	15.03
Silt	9.54
Clay	6.55

Grading Analysis		
D ₉₀	mm	57.362
D ₆₀	mm	41.260
D ₅₀	mm	25.530
D ₃₀	mm	1.520
D ₁₀	mm	0.009
Uniformity Coefficient		4530.00
Curvature Coefficient		6.15

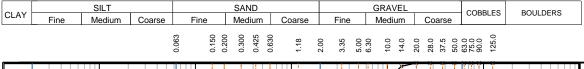
Remarks

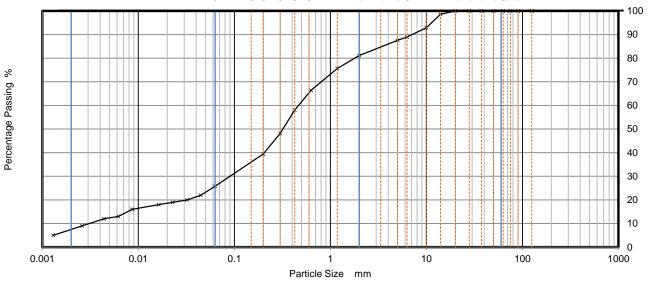
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:55	09/03/2023

CEOO!	JIP MARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
GEOÓ!	DIPMARINE			Borehole No.	OWF_GI#17_SAMP
Site Name	A05 Bretagne (Offshore GI	fshore GI		PU10
Sample Description	2.5y 7/3 Pale bro	wn, clayey, silty and gra	velly, SAND	Depth, m	10.60
Specimen Reference	IS	Specimen Depth	10.6 m	Sample Type	IS
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving and hydrometer sedimentation			BH0120230227353





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0447	22
		0.0322	20
125	100	0.0229	19
90	100	0.0163	18
75	100	0.0086	16
63	100	0.0062	13
50	100	0.0044	12
37.5	100	0.0026	9
28	100	0.0013	5
20	100		
14	99		
10	93		
6.3	89		
5	88		
2	81		
1.18	76		
0.63	66		
0.425	58		
0.300	48	Ī	
0.200	39	1	
		1	
0.063	26		

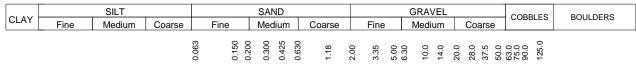
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	18.89
Sand	55.31
Silt	18.48
Clay	7.32

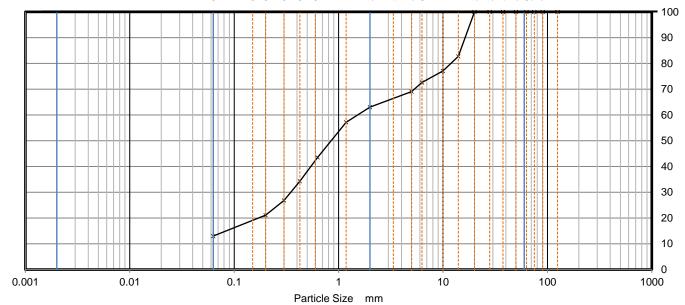
Grading Analysis		
D90	mm	7.104
D60	mm	0.465
D50	mm	0.320
D30	mm	0.090
D10	mm	0.003
Uniformity Coefficient		149.10
Curvature Coefficient		5.57

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	04/04/2023 12:47	02/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
				Borehole No.	OWF_GI#17_SAMP	
Site Name	A05 Bretagne O	offshore GI			Sample No.	PU13
Sample Description	white page 2.5y 8/	white page 2.5y 8/1 White cemented silty SAND			Depth, m	16.70
Specimen Reference	B1	Specimen Depth	16.7	m	Sample Type	B1
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227369





		11	
Siev	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	83		
10	77		
6.3	73		
5	69		
2	63		
1.18	57		
0.63	44		
0.425	34		
0.300	27	1	
0.200	21		
0.063	13		

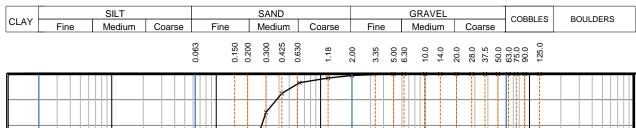
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	36.94
Sand	50.04
Fines <0.063mm	13.01

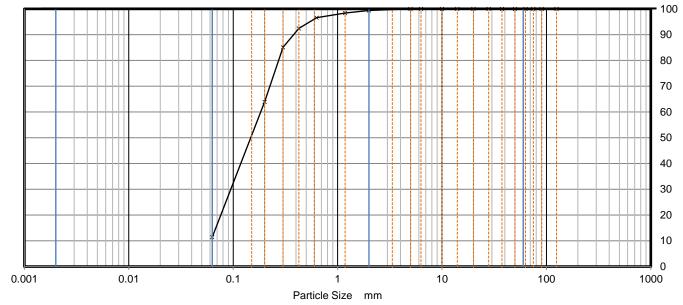
Grading Analysis		
D_{90}	mm	16.266
D ₆₀	mm	1.524
D ₅₀	mm	0.849
D ₃₀	mm	0.348
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:55	13/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
				Borehole No.	OWF_GI#20_SAMP	
Site Name	A05 Bretagne O	Offshore GI			Sample No.	PU01
Sample Description	2.5y 4/3 Olive bro	2.5y 4/3 Olive brown silty SAND with small shell fragments			Depth, m	0.00
Specimen Reference	B1	Specimen Depth	0	m	Sample Type	B1
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227378





<u> </u>	A	0- "	
	ving	d) -	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	99		
1.18	98		
0.63	97		
0.425	92		
0.300	85		
0.200	64		
0.063	11		

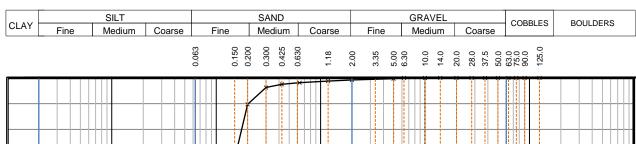
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.64
Sand	87.94
Fines <0.063mm	11.42

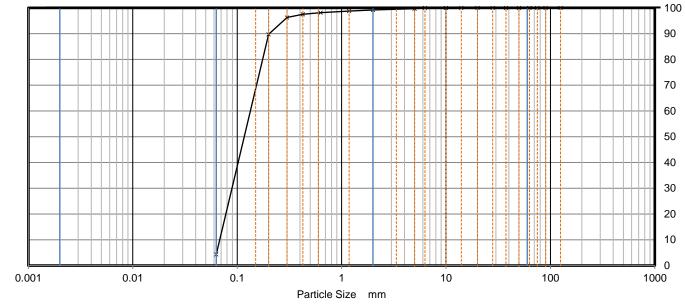
Grading Analysis		
D_{90}	mm	0.379
D ₆₀	mm	0.184
D ₅₀	mm	0.147
D ₃₀	mm	0.095
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:59	02/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION			Job Ref	GMOP21-G-019
		(ISO 17892-4:2016)		Borehole No.	OWF_GI#20_SAMP	
Site Name	A05 Bretagne O	offshore GI			Sample No.	PU07
Sample Description	2.5y 3/1 Very dark	2.5y 3/1 Very dark grey silty SAND			Depth, m	3.20
Specimen Reference	B1	Specimen Depth	3.2	m	Sample Type	B1
Test Method	ISO 17892 -4, by s	O 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227387





Siev	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	99		
1.18	99		
0.63	98		
0.425	97		
0.300	96		
0.200	90		
0.063	4		

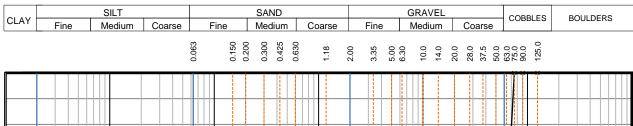
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.81
Sand	94.86
Fines <0.063mm	4.33

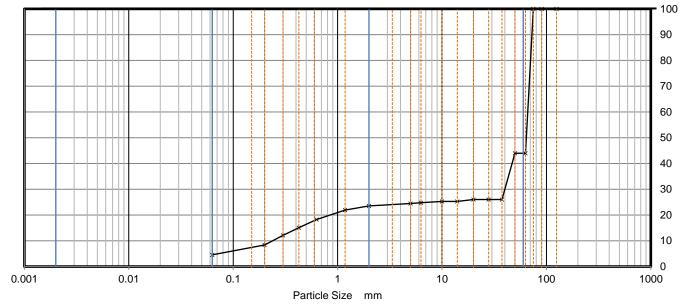
Grading Analysis		
D ₉₀	mm	0.203
D ₆₀	mm	0.134
D ₅₀	mm	0.117
D ₃₀	mm	0.089
D ₁₀	mm	0.068
Uniformity Coefficient		1.97
Curvature Coefficient		0.87

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:59	13/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019	
	(ISO 17892-4:2016)		Borehole No.	OWF_GI#20_SAMP		
Site Name	A05 Bretagne O	agne Offshore GI			Sample No.	PU11
Sample Description	mple Description 2.5y 7/3 pale brown cemented SAND			Depth, m	6.70	
Specimen Reference	IS	Specimen Depth	6.7	m	Sample Type	IS
Test Method ISO 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227391		





Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100			
90	100			
75	100			
63	44			
50	44			
37.5	26			
28	26			
20	26			
14	25			
10	25			
6.3	25			
5	24			
2	24			
1.18	22			
0.63	18			
0.425	15			
0.300	12			
0.200	8			
0.063	5			

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	76.47
Sand	18.96
Fines <0.063mm	4.56

Grading Analysis		
D ₉₀	mm	72.701
D ₆₀	mm	66.219
D ₅₀	mm	64.189
D ₃₀	mm	39.967
D ₁₀	mm	0.238
Uniformity Coefficient	·	278.20
Curvature Coefficient		101.30

Remarks

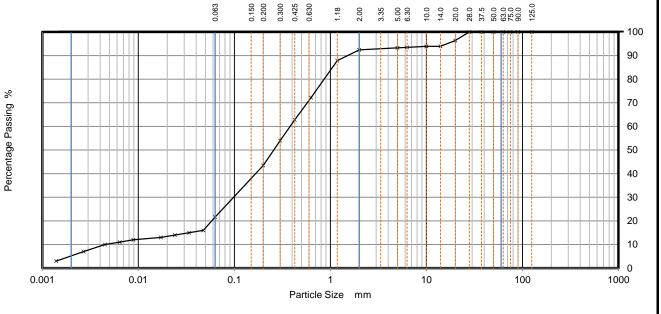
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:59	16/03/2023

GEOQUIPMARINE		ISO PARTICLE	SIZE DISTRIBUTION	Job Ref	GMOP21-G-019
		(ISO 17	892-4:2016)	Borehole No.	OWF_GI#20_SAMP
Site Name	A05 Bretagne (Offshore GI		Sample No.	PU14
Sample Description	2.5y 7/3 Pale bro	5y 7/3 Pale brown, clayey, silty, gravelly, SAND			9.70
Specimen Reference	IS	IS Specimen 9.7 m			IS
Test Method ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227394	





Sie	ving	Sedimentation				
Particle Size mm	% Passing	Particle Size mm	% Passing			
		0.0476	16			
		0.0339	15			
125	100	0.0241	14			
90	100	0.0172	13			
75	100	0.0089	12			
63	100	0.0064	11			
50	100	0.0045	10			
37.5	100	0.0027	7			
28	100	0.0014	3			
20	96					
14	94					
10	94					
6.3	93					
5	93					
2	92					
1.18	88	Particle density	(assumed)			
0.63	72	2.65	Mg/m3			
0.425	63					
0.300	54	1				
0.200	43]				
0.063	22					

Sample Proportions	% dry mass		
Very coarse	0.00		
Gravel	7.60		
Sand	70.78		
Silt	16.52		
Clay	5.10		

Grading Analysis		
D ₉₀	mm	1.512
D ₆₀	mm	0.380
D ₅₀	mm	0.257
D ₃₀	mm	0.098
D ₁₀	mm	0.004
Uniformity Coefficient		87.36
Curvature Coefficient		5.81

Remarks

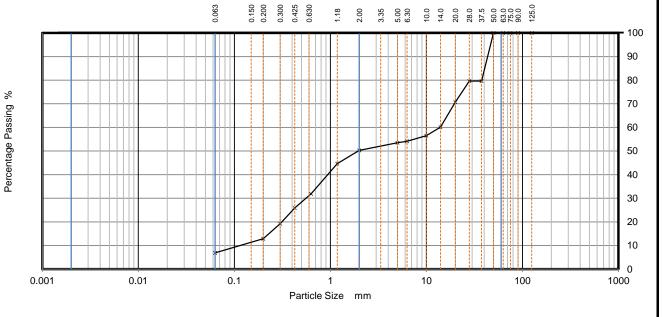
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Minimum dry mass not adequate - Non-standard test

Test Technician	Approved	Sheet printed	Date tested
O Atitebi	U. Mazhar	14/04/2023 13:02	16/03/2023

GEOQUIPMARINE		ISO PARTICLE	SIZE DISTRIBUTION	Job Ref	GMOP21-G-019
		(ISO 17	892-4:2016)	Borehole No.	OWF_GI#20_SAMP
Site Name	A05 Bretagne 0	.05 Bretagne Offshore GI			PU17
Sample Description	ption 2.5y 7/3 Pale brown stiff silty SAND			Depth, m	13.00
Specimen Reference	IS Specimen 13 m			Sample Type	IS
Test Method	t Method ISO 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227400

		SILT SAND GRAVEL		SAND		GRAVEL		COBBLES	BOULDERS		
CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS



Sie	ving	Sedimentation			
Particle Size mm	% Passing	Particle Size mm	% Passing		
125	100				
90	100				
75	100				
63	100				
50	100				
37.5	80				
28	80				
20	71				
14	60				
10	56				
6.3	54				
5	53				
2	50				
1.18	45				
0.63	32				
0.425	26		_		
0.300	19				
0.200	13				
0.063	7				

Sample Proportions	% dry mass			
Very coarse	0.00			
Gravel	49.70			
Sand	43.42			
Fines <0.063mm	6.88			

Grading Analysis		
D ₉₀	mm	43.418
D ₆₀	mm	13.808
D ₅₀	mm	1.945
D ₃₀	mm	0.556
D ₁₀	mm	0.115
Uniformity Coefficient		119.80
Curvature Coefficient		0.19

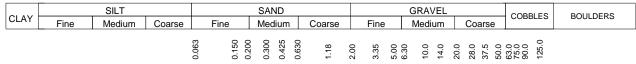
Remarks

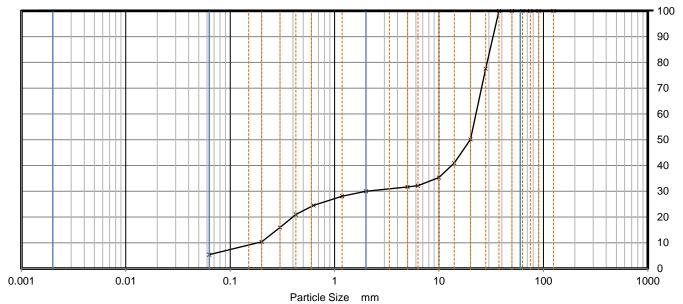
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test - test is non standard

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	13/04/2023 14:28	16/03/2023

GEOQUIPMARINE			RTICLE SIZE		Job Ref	GMOP21-G-019
		(ISO 17892-4:2016)		Borehole No.	OWF_GI#20_SAMP	
Site Name	A05 Bretagne O	Offshore GI			Sample No.	PU18
Sample Description	on 2.5y 7/3 Pale brown cemented SAND			Depth, m	13.80	
Specimen Reference	IS	Specimen 13.8 m		Sample Type	IS	
Test Method	Test Method ISO 17892 -4, by sieving on as received or wet sample			Unique ID	BH0120230227403	





Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	78		
20	50		
14	41		
10	35		
6.3	32		
5	32		
2	30		
1.18	28		
0.63	25		
0.425	21		
0.300	16		
0.200	10		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	70.00
Sand	24.59
Fines <0.063mm	5.41

Grading Analysis		
D_{90}	mm	32.921
D ₆₀	mm	22.576
D ₅₀	mm	19.913
D ₃₀	mm	2.004
D ₁₀	mm	0.182
Uniformity Coefficient		123.90
Curvature Coefficient		0.98

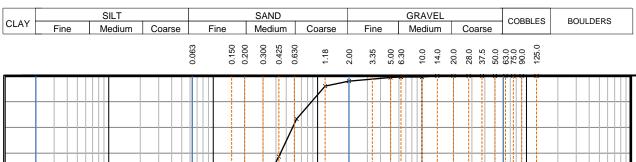
Remarks

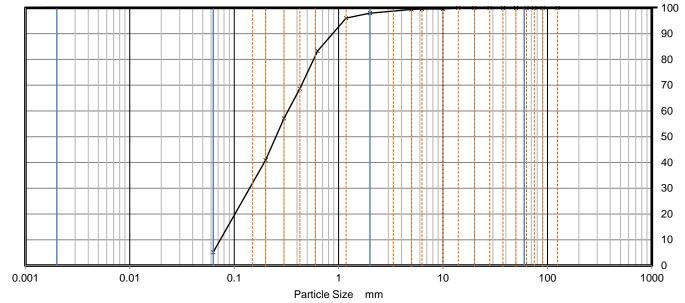
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 09:59	09/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
G GEORGE	OII TIAKINE			Borehole No.	OWF_GI#22_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	PU01
Sample Description	2.5y 4/1 Dark grey	y 4/1 Dark grey wet slightly silty, SAND with small shell fragments		Depth, m	0.00
Specimen Reference	B1	Specimen B1 m		Sample Type	B1
Test Method	ISO 17892 -4, by sieving on as received or wet sample		Unique ID	BH0120230227421	





Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	99		
2	98		
1.18	96		•
0.63	83		
0.425	69		
0.300	57		
0.200	41]	
]	
0.063	5		

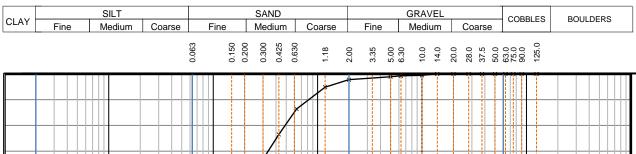
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	2.04
Sand	92.73
Fines <0.063mm	5.24

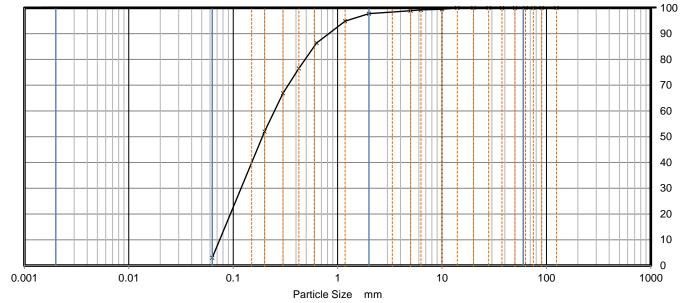
Grading Analysis		
D_{90}	mm	0.878
D ₆₀	mm	0.327
D ₅₀	mm	0.251
D ₃₀	mm	0.140
D ₁₀	mm	0.073
Uniformity Coefficient		4.45
Curvature Coefficient		0.82

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 10:06	02/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
6	OII I IAKII VE			Borehole No.	OWF_GI#22_SAMP
Site Name	A05 Bretagne O	offshore GI		Sample No.	PU06
Sample Description	2.5y 4/2 Dark grey	reyish brown SAND including sparse shell fragments		Depth, m	2.70
Specimen Reference	B1	Specimen 2.7 m		Sample Type	B1
Test Method	ISO 17892 -4, by sieving on pre-dried or dry sample		Unique ID	BH0120230227425	





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	99		
6.3	99		
5	99		
2	98		
1.18	95		
0.63	86		
0.425	77		
0.300	67		
0.200	52		
0.063	3		

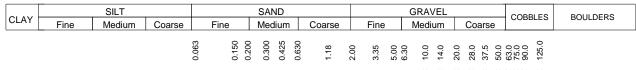
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	2.25
Sand	94.71
Fines <0.063mm	3.03

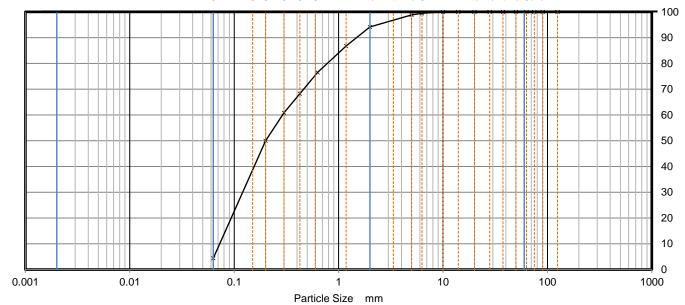
Grading Analysis		
D ₉₀	mm	0.824
D ₆₀	mm	0.248
D ₅₀	mm	0.190
D ₃₀	mm	0.119
D ₁₀	mm	0.074
Uniformity Coefficient		3.35
Curvature Coefficient		0.77

Remarks

Test Technician	Approved	Sheet printed	Date tested
E Allan.Edward	D.Smith	24/05/2023 16:10	28/04/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
G.				Borehole No.	OWF_GI#22_SAMP	
Site Name	A05 Bretagne O	Offshore GI		Sample No.	PU07	
Sample Description	2.5y 4/2 Dark grey	yish brown slightly gravelly, slightly silty, SAND		Depth, m	3.30	
Specimen Reference	B1	Specimen Depth	3.3	m	Sample Type	B1
Test Method	ISO 17892 -4, by s	sieving on as received or wet sample			Unique ID	BH0120230227426





Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	99		
5	99		
2	94		
1.18	87		
0.63	77		
0.425	68		
0.300	61	1	
0.200	50	1	
		1	
0.063	4		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	5.82
Sand	89.80
Fines <0.063mm	4.38

Grading Analysis		
D ₉₀	mm	1.486
D ₆₀	mm	0.291
D ₅₀	mm	0.200
D ₃₀	mm	0.120
D ₁₀	mm	0.073
Uniformity Coefficient		4.00
Curvature Coefficient		0.69

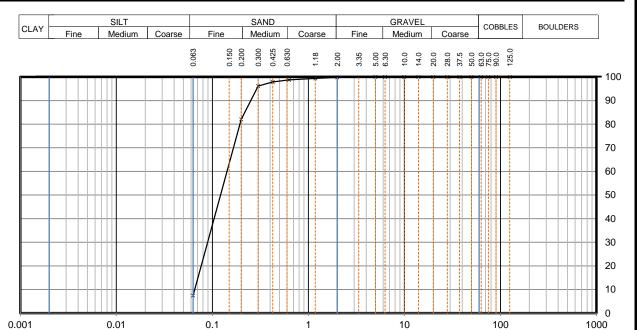
Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Date tested

02/03/2023

GEOG	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
C SECOND	OII I IZIKII VE			Borehole No.	OWF_GI#22_SAMP
Site Name	A05 Bretagne (Offshore GI		Sample No.	PU08
Sample Description	2.5y 5/2 Greyish	brown silty SAND		Depth, m	4.10
Specimen Reference	B2	Specimen Depth	4.1 m	Sample Type	B2
Test Method ISO 17892 -4, by sieving on as received or wet sample		Unique ID	BH0120230227429		



Particle Size mm

Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	100		
1.18	99		
0.63	99		
0.425	98		
0.300	96		
0.200	82		
0.063	7		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	0.20
Sand	92.36
Fines <0.063mm	7.45

Grading Analysis		
D ₉₀	mm	0.251
D ₆₀	mm	0.142
D ₅₀	mm	0.122
D ₃₀	mm	0.089
D ₁₀	mm	0.066
Uniformity Coefficient		2.17
Curvature Coefficient		0.86

Remarks

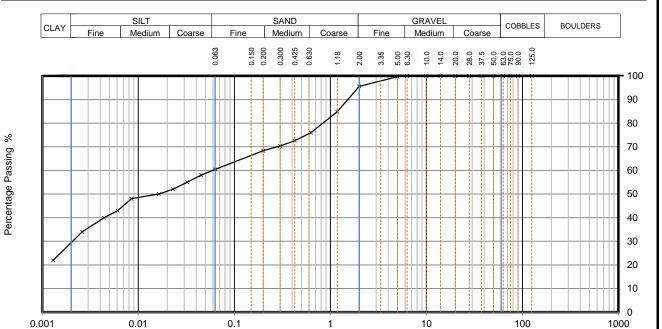
Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Test Technician	Approved
J. Morgan	U. Mazhar

Percentage Passing %

Sheet printed	Date tested
04/04/2023 12:28	13/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
				Borehole No.	OWF_GI#22_SAMP
Site Name	A05 Bretagne (Offshore GI		Sample No.	PU13
Sample Description	2.5y 8/4 Pale brown, slightly gravelly, sandy, SILT			Depth, m	13.50
Specimen Reference	B1 Specimen 13.5 m			Sample Type	B1
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227443



Particle Size mm

Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0452	58
		0.0323	55
125	100	0.0230	52
90	100	0.0164	50
75	100	0.0085	48
63	100	0.0061	43
50	100	0.0044	40
37.5	100	0.0026	34
28	100	0.0013	22
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	96		
1.18	85	Particle density	(assumed)
0.63	76	2.65	Mg/m3
0.425	73		
0.300	70		
0.200	68	1	
0.063	60		

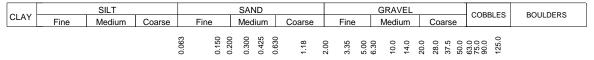
Sample Proportions % dry mass		
Very coarse	0.00	
Gravel	4.40	
Sand	35.19	
Silt	31.30	
Clay	29.10	

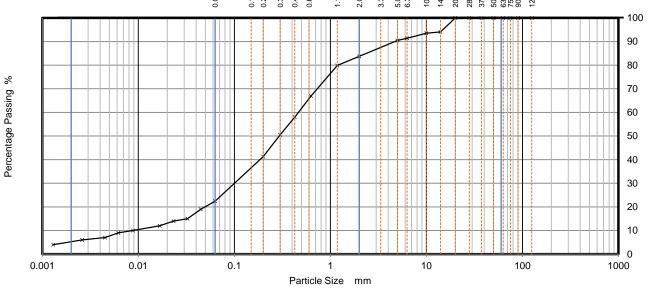
Grading Analysis		
D ₉₀	mm	1.520
D ₆₀	mm	0.059
D ₅₀	mm	0.015
D ₃₀	mm	0.002
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	14/04/2023 11:34	15/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
				Borehole No.	OWF_GI#22_SAMP
Site Name	A05 Bretagne (Offshore GI		Sample No.	PU15
Sample Description	2.5y 8/3 Pale brown, slightly clayey, silty, gravelly, SAND			Depth, m	18.40
Specimen Reference	B1 Specimen 18.4 m			Sample Type	B1
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227452





Sie	ving	Sedime	entation
Particle Size	% Passing	Particle Size	% Passing
mm	70 T Gooing	mm	70 T G00H1g
		0.0448	19
		0.0325	15
125	100	0.0233	14
90	100	0.0167	12
75	100	0.0088	10
63	100	0.0062	9
50	100	0.0045	7
37.5	100	0.0026	6
28	100	0.0013	4
20	100		
14	94		
10	94		
6.3	91		
5	90		
2	84		
1.18	80	Particle density	(assumed)
0.63	67	2.65	Mg/m3
0.425	58		
0.300	51		
0.200	41	1	
		1	
0.063	22		

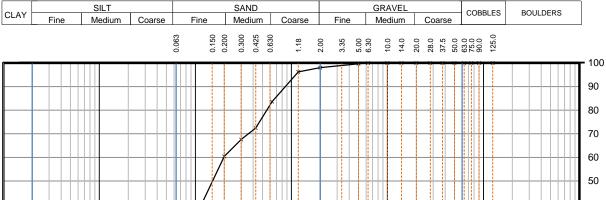
Sample Proportions % dry mass		
Very coarse	0.00	
Gravel	16.27	
Sand	61.34	
Silt	17.58	
Clay	4.81	

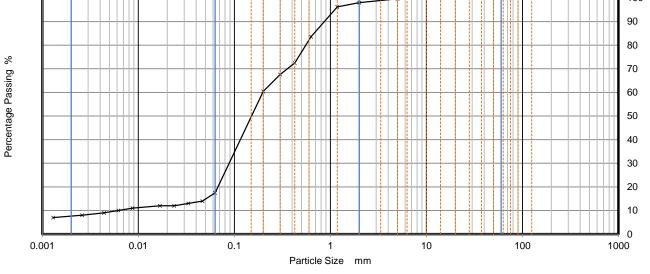
Grading Analysis		
D ₉₀	mm	4.684
D ₆₀	mm	0.464
D ₅₀	mm	0.293
D ₃₀	mm	0.100
D ₁₀	mm	0.010
Uniformity Coefficient		48.26
Curvature Coefficient		2.26

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	04/04/2023 12:28	09/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
				Borehole No.	OWF_GI#24_SAMP
Site Name	A05 Bretagne (Offshore GI		Sample No.	PU01
Sample Description	5y 4/3 Olive, slightly gravelly, clayey and silty, SAND.			Depth, m	0.00
Specimen Reference	B1	B1 Specimen 0 m			B1
Test Method	ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227458





Sie	Sieving		entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0465	14
		0.0332	13
125	100	0.0236	12
90	100	0.0168	12
75	100	0.0087	11
63	100	0.0062	10
50	100	0.0044	9
37.5	100	0.0026	8
28	100	0.0013	7
20	100		
14	100		
10	100		
6.3	100		
5	100		
2	98		
1.18	96	Particle density	(assumed)
0.63	84	2.65	Mg/m3
0.425	72		
0.300	68	1	
0.200	60	1	
]	
0.063	17		

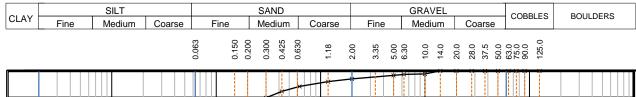
Sample Proportions	% dry mass	
Very coarse	0.00	
Gravel	1.97	
Sand	80.55	
Silt	9.61	
Clay	7.87	

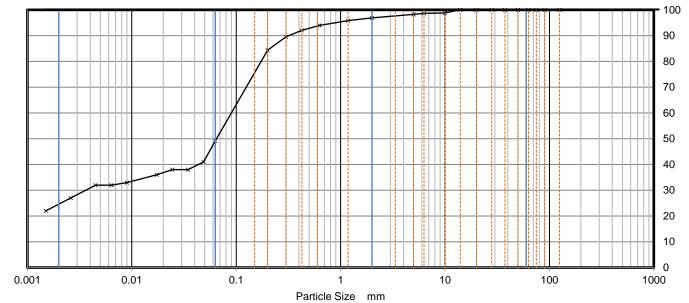
Grading Analysis		
D ₉₀	mm	0.867
D ₆₀	mm	0.198
D ₅₀	mm	0.151
D ₃₀	mm	0.088
D ₁₀	mm	0.006
Uniformity Coefficient		34.93
Curvature Coefficient		6.95

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	U. Mazhar	14/04/2023 11:16	13/03/2023

GEOQUIPMARINE			ISO PARTICLE SIZE DISTRIBUTION		Job Ref	GMOP21-G-019
6	OHTIAKINE	(ISO 17892-4:2016)		Borehole No.	OWF_GI#24_SAMP	
Site Name	A05 Bretagne O	Offshore GI		Sample No.	PU01	
Sample Description	5y 4/2 Olive grey clayey, silty, SAND		Depth, m	0.40		
Specimen Reference	В3	Specimen Depth	0.4	m	Sample Type	В3
Test Method ISO 17892 -4, by sieving and hydrometer sedimentation			Unique ID	BH0120230227460		





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0487	41
		0.0346	38
125	100	0.0245	38
90	100	0.0174	36
75	100	0.0090	33
63	100	0.0064	32
50	100	0.0045	32
37.5	100	0.0026	27
28	100	0.0015	22
20	100		
14	100		
10	99		
6.3	99		
5	98		
2	97		
1.18	96	Particle density	
0.63	94	2.65	Mg/m3
0.425	92		
0.300	90		
0.200	84		
0.063	49		

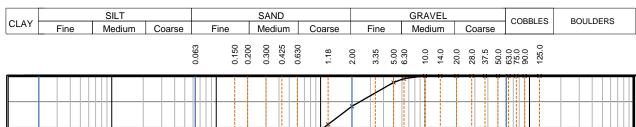
Sample Proportions	% dry mass	
Very coarse	0.00	
Gravel	3.08	
Sand	47.72	
Silt	24.58	
Clay	24.61	

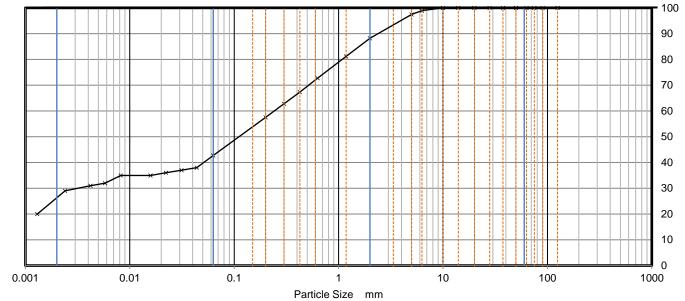
Grading Analysis		
D ₉₀	mm	0.319
D ₆₀	mm	0.090
D ₅₀	mm	0.065
D ₃₀	mm	0.004
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 11:05	02/03/2023

GEOO	UIPMARINE	ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019	
G.	, - 11 , 11 , 11 , 11			Borehole No.	OWF_GI#24_SAMP	
Site Name	A05 Bretagne C	offshore GI		Sample No.	CR01	
Sample Description	Greyish white slightly gravelly, clayey, silty, SAND		Depth, m	1.10		
Specimen Reference	Q1	Specimen 1.1 m		Sample Type	Q1	
Test Method	Test Method ISO 17892 -4, by sieving and hydrometer sedimentation			·	Unique ID	BH0120230227462





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0439	38
		0.0313	37
125	100	0.0222	36
90	100	0.0158	35
75	100	0.0082	35
63	100	0.0058	32
50	100	0.0042	31
37.5	100	0.0024	29
28	100	0.0013	20
20	100		
14	100		
10	100		
6.3	99		
5	97		
2	88		
1.18	81	Particle density	(assumed)
0.63	73	2.65	Mg/m3
0.425	67		
0.300	63		
0.200	58		
0.063	43	1	

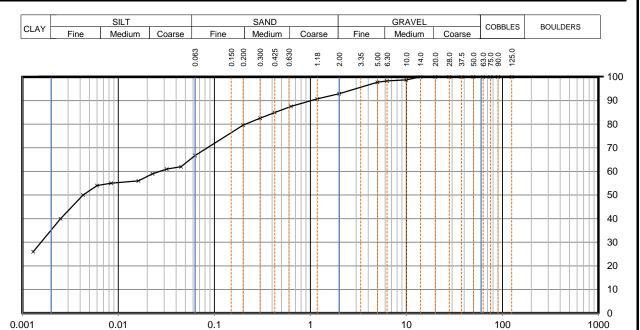
Sample Proportions	% dry mass	
Very coarse	0.00	
Gravel	11.80	
Sand	45.48	
Silt	16.69	
Clay	26.03	

Grading Analysis		
D_{90}	mm	2.389
D ₆₀	mm	0.242
D ₅₀	mm	0.111
D ₃₀	mm	0.004
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Date tested
E Allan.Edward	D.Smith	24/05/2023 15:55	28/04/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
				Borehole No.	OWF_GI#24_SAMP
Site Name	A05 Bretagne 0	Offshore GI		Sample No.	CR07
Sample Description	white page 2.5y 9 CLAY	nite page 2.5y 9/2 Pale yellow, slightly gravelly, slightly sandy, silty LAY			7.00
Specimen Reference	IS	Specimen Depth	7 m	Sample Type	IS
Test Method	ISO 17892 -4, by	SO 17892 -4, by sieving and hydrometer sedimentation			BH0120230227470



Particle Size mm

Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
		0.0450	62
		0.0319	61
125	100	0.0227	59
90	100	0.0162	56
75	100	0.0084	55
63	100	0.0060	54
50	100	0.0043	50
37.5	100	0.0025	40
28	100	0.0013	26
20	100		
14	100		
10	99		
6.3	98		
5	98		
2	93		
1.18	91	Particle density	(assumed)
0.63	88	2.65	Mg/m3
0.425	85		
0.300	83]	
0.200	80	1	
		1	
0.063	67	1	

Percentage Passing %

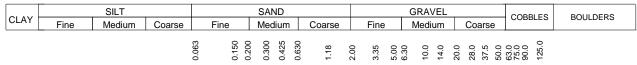
Sample Proportions	% dry mass
Very coarse	0.00
Gravel	7.11
Sand	26.17
Silt	31.60
Clay	35.13

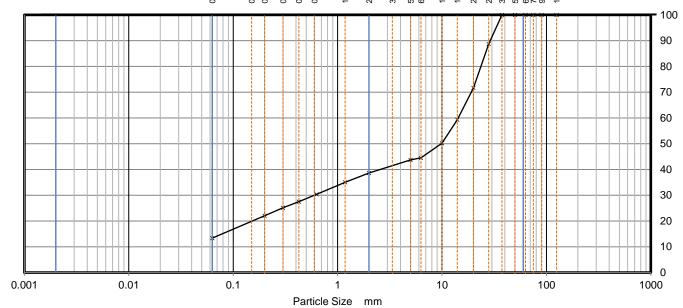
Grading Analysis		
D ₉₀	mm	1.021
D ₆₀	mm	0.026
D ₅₀	mm	0.004
D ₃₀	mm	0.002
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Test Technician	Approved	Sheet printed	Sheet printed	Date tested
J. Morgan	U. Mazhar	14/04/2023 11:45		16/03/2023

GEOQUIPMARINE		ISO PARTICLE SIZE DISTRIBUTION (ISO 17892-4:2016)		Job Ref	GMOP21-G-019
				Borehole No.	OWF_GI#24_SAMP
Site Name	A05 Bretagne Off	5 Bretagne Offshore GI			PU06
Sample Description	white page 2.5y 8/2 sand	nite page 2.5y 8/2 pale yellow sandy, GRAVEL including cemented nd			18.00
Specimen Reference	IS	Specimen 18 m		Sample Type	IS
Test Method	ISO 17892 -4, by si	SO 17892 -4, by sieving on as received or wet sample			BH0120230227485





Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	89		
20	72		
14	59		
10	50		
6.3	45		
5	44		
2	39		
1.18	35		
0.63	30		
0.425	28		
0.300	25		
0.200	22		
0.063	13		

Sample Proportions	% dry mass
Very coarse	0.00
Gravel	61.38
Sand	25.25
Fines <0.063mm	13.37

Grading Analysis		
D ₉₀	mm	33.380
D ₆₀	mm	14.288
D ₅₀	mm	9.853
D ₃₀	mm	0.600
D ₁₀	mm	0.000
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing performed to BS EN ISO 17892-4 unless noted below

Insufficient material for compliant test-non standard test completed

Test Technician	Approved	Sheet printed	Date tested
J. Morgan	D.Smith	13/04/2023 11:05	02/03/2023

Appendix B.4 Chemical and Other Test Results



Certificate Number 23-08466 Issued: 20-Apr-23

Client Geoquip Marine

Floor 6

Vintry Building Wine Street Bristol BS1 2BD

Our Reference 23-08466

Client Reference GMOP21-G-019

Order No (not supplied)

Contract Title A05 Brittany Offshore

Description 3 Soil samples.

Date Received 11-Apr-23

Date Started 11-Apr-23

Date Completed 20-Apr-23

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood General Manager

Colmond







Our Ref 23-08466
Client Ref GMOP21-G-019
Contract Title A05 Brittany Offshore

Lab No	2153706	2153707	2153708
	OWF_GI#09	OWF_GI#09	OWF_GI#09
.Sample ID	_SAMP	_SAMP	_SAMP
Depth	0.40	5.00	10.00
Other ID	CR01 IS	CR06 IS	CR11 IS
Sample Type	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s

Test	Method	LOD	Units			
Inorganics						
Carbonate (as CO2)	DETSC 2005	1	%	37	39	41
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	550	1700	1800

Key: n/s -not supplied. Page 2 of 2



Issued:

Certificate Number 23-07829-1

11-May-23

Client Geoquip Marine

Floor 6

Vintry Building Wine Street Bristol BS1 2BD

Our Reference 23-07829-1

Client Reference GMP021-G-019

Order No PO-006657

Contract Title A05 Brittany Offshore

Description 62 Soil samples.

Date Received 03-Apr-23

Date Started 03-Apr-23

Date Completed 11-May-23

Test Procedures Identified by prefix DETSn (details on request).

Notes This report supersedes 23-07829, testing added.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

Kirk Bridgewood General Manager







Our Ref 23-07829-1
Client Ref GMP021-G-019
Contract Title A05 Brittany Offshore

Lab No	2150170	2150171	2150172	2150173	2150174	2150175	2150176	2150177	2150178	2150179	2150180
	OWF_GI#01	OWF_GI#01	OWF_GI#01	OWF_GI#01	OWF_GI#01	OWF_GI#01	OWF_GI#01	OWF_GI#04	OWF_GI#04	OWF_GI#04	OWF_GI#04
.Sample ID	_SAMP	A_SAMP	A_SAMP	A_SAMP	A_SAMP	A_SAMP	A_SAMP	_SAMP	A_SAMP	A_SAMP	A_SAMP
Depth	1.00	0.70	5.40	10.15	12.50	16.15	17.35	0.70	1.50	9.30	14.90
Other ID	CR02 IS	CR02 IS	CR07 IS	CR11 IS	CR13 IS	CR15 IS	CR16 B1	PU02 B1	CR02 B1	PU04 B1	PU10 B1
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units											
Inorganics														
Carbonate (as CO2)	DETSC 2005	1	%	28	30	30	32	38	35	32	31	32	32	31
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	1100	540	280	850	2400	1200	1600	820	570	1000	1700

Key: n/s -not supplied. Page 2 of 7



Our Ref 23-07829-1
Client Ref GMP021-G-019
Contract Title A05 Brittany Offshore

Lab No	2150181	2150182	2150183	2150184	2150185	2150186	2150187	2150188	2150189	2150190	2150191
	OWF_GI#04	OWF_GI#05	OWF_GI#05	OWF_GI#05	OWF_GI#09	OWF_GI#09	OWF_GI#11	OWF_GI#11	OWF_GI#11	OWF_GI#11	OWF_GI#11
.Sample ID	A_SAMP	A_SAMP	A_SAMP	B_SAMP	_SAMP						
Depth	16.55	1.10	4.70	6.10	15.30	17.00	1.00	6.50	7.50	9.05	14.50
Other ID	CR12 IS	CR01 IS	CR05 Q1	CR01 IS	CR16 IS	CR18 IS	PU02A B1	CR06 IS	CR07 B1	CR08 Q1	CR13 IS
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units											
Inorganics														
Carbonate (as CO2)	DETSC 2005	1	%	30	42	41	40	35	35	16	32	33	46	48
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	1100	680	1800	1800	410	1400	23	720	460	1700	1300

Key: n/s -not supplied. Page 3 of 7



Our Ref 23-07829-1
Client Ref GMP021-G-019
Contract Title A05 Brittany Offshore

Lab No	2150192	2150193	2150194	2150195	2150196	2150197	2150198	2150199	2150200	2150201	2150202
	OWF_GI#11	OWF_GI#12	OWF_GI#12	OWF_GI#12	OWF_GI#12	OWF_GI#12	OWF_GI#12	OWF_GI#14	OWF_GI#14	OWF_GI#14	OWF_GI#14
.Sample ID	_SAMP	A_SAMP	A_SAMP								
Depth	17.50	1.00	3.80	9.30	12.08	18.30	19.45	1.30	3.80	0.00	4.15
Other ID	CR16 IS	PU02 B1	PU07 B1	CR07 IS	CR09 B1	PU11 B1	PU17 B1	CR02 B1	CR04 B2	CR01 IS	CR03 IS
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units											
Inorganics														
Carbonate (as CO2)	DETSC 2005	1	%	19	10	38	35	43	43	31	41	6.8	45	15
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	1600	1800	1100	870	1200	1200	2400	940	1600	1000	680

Key: n/s -not supplied. Page 4 of 7



Our Ref 23-07829-1
Client Ref GMP021-G-019
Contract Title A05 Brittany Offshore

Lab No	2150203	2150204	2150205	2150206	2150207	2150208	2150209	2150210	2150211	2150212	2150213
	OWF_GI#14	OWF_GI#14	OWF_GI#14	OWF_GI#14	OWF_GI#17	OWF_GI#17	OWF_GI#17	OWF_GI#17	OWF_GI#20	OWF_GI#20	OWF_GI#20
.Sample ID	A_SAMP	A_SAMP	A_SAMP	A_SAMP	_SAMP						
Depth	8.75	12.10	14.50	19.20	0.30	6.45	11.30	16.70	1.10	7.70	11.70
Other ID	CR08 B2	CR11 Q1	CR13 B1	PU09 B1	PU01 B2	CR03 IS	PU11 IS	PU13 B1	PU02 B2	PU12 IS	CR03 B1
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s

lest	Method	LOD	Units											
Inorganics														
Carbonate (as CO2)	DETSC 2005	1	%	8.4	17	18	4.5	14	31	39	42	9.4	41	41
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	1700	640	2200	< 20.00	1900	2900	2000	1800	2400	2900	1600

Key: n/s -not supplied. Page 5 of 7



Our Ref 23-07829-1
Client Ref GMP021-G-019
Contract Title A05 Brittany Offshore

Lab No	2150214	2150215	2150216	2150217	2150218	2150219	2150220	2150221	2150222	2150223	2150224
	OWF_GI#20	OWF_GI#20	OWF_GI#22	OWF_GI#22	OWF_GI#22	OWF_GI#22	OWF_GI#22	OWF_GI#24	OWF_GI#24	OWF_GI#24	OWF_GI#24
.Sample ID	_SAMP										
Depth	15.05	18.80		5.50	11.80	13.60	14.20	0.40	1.10	5.20	6.15
Other ID	CR05 IS	CR08 IS	PU01 B1	CR03 B1	CR11 IS	PU13 Q1	CR13 IS	PU01 B3	CR01 Q1	CR05 IS	CR06 B1
Sample Type	SOIL										
Sampling Date	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s	n/s
Sampling Time	n/s										

lest	Method	LOD	Units											
Inorganics														
Carbonate (as CO2)	DETSC 2005	1	%	40	43	8.5	18	42	40	40	9.1	30	40	39
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	2200	2400	< 20.00	1700	1100	1000	12000	2600	1100	380	710

Key: n/s -not supplied. Page 6 of 7



Our Ref 23-07829-1
Client Ref GMP021-G-019
Contract Title A05 Brittany Offshore

Lab No	2150225	2150226	2150227	2150228	2150229	2150230	2150231
	OWF_GI#24	OWF_GI#24	OWF_GI#15	OWF_GI#15	OWF_GI#15	OWF_GI#15	OWF_GI#15
.Sample ID	_SAMP	_SAMP	_SAMP	A_SAMP	A_SAMP	A_SAMP	A_SAMP
Depth	12.00	18.75	1.00	1.2	6.00	11.00	14.2
Other ID	CR12 IS	CR18 IS	CR02 IS	CR02 IS	CR05 B1	PU08 B1	CR11 IS
Sample Type	SOIL						
Sampling Date	n/s						
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units							
Inorganics										
Carbonate (as CO2)	DETSC 2005	1	%	41	42	42	42	41	8.2	13
Chloride Aqueous Extract (2:1)	DETSC 2055	1	mg/l	1400	790	280	210	990	2000	750

Key: n/s -not supplied. Page 7 of 7

Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#04A_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) SRB/mL: <10⁴ SRB/mL: ≤10⁴ SRB/mL: ≤101

Sample Number: PU01A

Depth: 0.00m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#04_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) SRB/mL: <10⁴ SRB/mL: <10⁴ SRB/mL: <10⁴ SRB/mL: <10⁴ SRB/mL: <10⁴

Sample Number: PU02

Depth: 0.70m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#05A_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) OWF-GITHOSA-SAMP OWF-GITHOSA-SAMP OWF- GITHOSA-SAMP PUOI A PUOI A PUOI A 0- In 0- la ()- In 3M™ Rapid SRB Detection Pouch Interpretation Guide | Observation | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control | Lighter than A A Between A and B B Darker than B <10⁴ 10⁴ ≥10⁵ ≤10¹ 10² ≥10³ SRB/mL: <104 SRB/mL: <104 SRB/mL: $\leq 10^{1}$

Sample Number: PU01A

Depth: 0.1m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: AO5 BRITTANY OFFSHORE GI

Project Number: GMOP21-G-019

Location: AO5 OWF

Borehole No.: OWF_GI#11_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) OWF_GHEALSLAND PUOL 6 O. Sm. 15:40 2/3/12 OWF_GHEALSLAND PUOL 6 O. Sm. 15:40 2/3/12

3M A B B Signary SRB Detection Pouch Interpretation Guide
Observation
Inter after
144 - 347

42-50 hrs signary SRB Detection Pouch Interpretation Guide
Appearance at Observation
10 signary SRB Concentrations And B Observation
42-50 hrs signary SRB Concentrations in CPU/m
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SM* Rapid SRB Detection Pouch Interpretation G
Observation
Time after
Incodation
24-32 hrs 410° 10° 210°
42-50 hrs SRB Concentrations in CFU/mL

SDD/ml·102

 $SRB/mL: <10^4 \qquad \qquad SRB/mL: 10^4 \qquad \qquad SRB/mL: 10^2$

Sample Number: PU01B_SRB01

Depth: 0.5 m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: AO5 BRITTANY OFFSHORE GI

Project Number: GMOP21-G-019

Location: AO5 OWF

Borehole No.: OWF_GI#11_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) SFB/mL: <10⁴ SRB/mL: ≤10⁴ SRB/mL: ≤10⁴ SRB/mL: ≤10¹

Sample Number: PU02A_SRB01

Depth: 1.0 m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: AO5 BRITTANY OFFSHORE GI

Project Number: GMOP21-G-019

Location: AO5 OWF

Borehole No.: OWF_GI#11_SAMP



Day 0 (0 hrs)

Day 1 (24-32 hrs)

Day 2 (43-50 hrs)







SRB/mL: <104

SRB/mL: <104

SRB/mL: ≤10¹

Sample Number: PU03_SRB01

Depth: 2.0 m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: AO5 BRITTANY OFFSHORE GI

Project Number: GMOP21-G-019

Location: AO5 OWF

Borehole No.: OWF_GI#11_SAMP



Day 0 (0 hrs)

3M A B 3M* Rapid SRB Detection Pouch Interpretation Guide Appearance at Chemistry Appearance

Day 1 (24-32 hrs)



Day 2 (43-50 hrs)



SRB/mL: <104

SRB/mL: <10⁴

SRB/mL: ≤10¹

Sample Number: PU06_SRB01

Depth: 4.0 m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: RTE/DGEC

Project Name: A05 BRITTANY OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#08_CPT



Day 0 (0 hrs)

3M Rapid SBB Detection Pouch Interpretation Guide Observation They after Incodebon SBB Concernstoon in CHUNK SBB Concernstoon in CHUNK SBB Concernstoon in CHUNK

Day 1 (24-32 hrs)



Day 2 (43-50 hrs)



SRB/mL: <10⁴

SRB/mL: <10⁴

SRB/mL: ≤10¹

Sample Number: P01 SRB01

Depth: 0.00m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: RTE/DGEC

Project Name: A05 BRITTANY OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#08_CPT



Day 0 (0 hrs)

Day 1 (24-32 hrs)

Day 2 (43-50 hrs)







SRB/mL: <10⁴

SRB/mL: <10⁴

SRB/mL: ≤10¹

Sample Number: PU02_SRB01

Depth: 1.00m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: RTE/DGEC

Project Name: A05 BRITTANY OFFSHORE GI

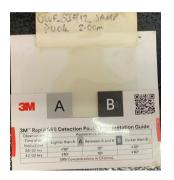
Project Number: GMOP21-G-019 Location: A05 OWF

Borehole No.: OWF GI#08 CPT



Day 0 (0 hrs)

Day 1 (24-32 hrs)



Day 2 (43-50 hrs)



SRB/mL: <10⁴

Sample Number: PU04 SRB01

SRB/mL: <10⁴

SRB/mL: ≤10¹

Depth: 2.00m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: RTE/DGEC

Project Name: A05 BRITTANY OFFSHORE GI

Project Number: GMOP21-G-019 Location: A05 OWF

Borehole No.: OWF GI#08 CPT



Day 0 (0 hrs)

Day 1 (24-32 hrs)



Day 2 (43-50 hrs)



SRB/mL: <10⁴

SRB/mL: <10⁴

SRB/mL: ≤10¹

Sample Number: PU07_SRB01

Depth: 3.80m

SRB PHOTO LOG

Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#17_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Out on the state of the state o

Sample Number: PU01

Depth: 0.00

SRB PHOTO LOG

Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#17_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) SM A B SM Rept SRB Detection Pouch interpretation Guide The state of the state of

Sample Number: PU02

Depth: 0.80m

SRB PHOTO LOG

Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#17_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) MAB B MA

Sample Number: PU04

Depth: 2.50m

SRB PHOTO LOG

Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#17_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 3 (43-50 hrs) SM Bajid 588 Detection Pouch Interpretation Guide SRB/mL:<10⁴ SRB/mL:<10⁴ SRB/mL:<10⁴ SRB/mL:<10⁴ SRB/mL:<10⁴ SRB/mL:<10¹ SRB/mL:<10

Sample Number: PU05

Depth: 2.90m

SRB PHOTO LOG

Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#17_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 3 (43-50 hrs) M A B M Rapid SRB Detection Pouch Interpretation Guide

Sample Number: PU06A

Depth: 3.50m

SRB PHOTO LOG

Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#17_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) M A B M Rapid SRB Detection Pouch interpretation Guide

Sample Number: PU07

Depth: 3.90m

SRB PHOTO LOG

Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#17_SAMP



Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) M By Sept Section Pouch Interpretation Guide SRB/mL:<10⁴ SRB/mL:≤10⁴ SRB/mL:≤10⁴ SRB/mL:≤10⁴ SRB/mL:≤10⁴ SRB/mL:≤10⁴ SRB/mL:≤10⁴

Sample Number: PU08

Depth: 4.50m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#20_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) M A B M Byold SR Detection Pouch Interpretation Guide M Byold SR Detect

Sample Number: PU01

Depth: 0.1m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#20_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) SRB/mL: <10⁴ SRB/mL: ≤10

Sample Number: PU03

Depth: 1.5m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#20_SAMP



<u>Day 0 (0 hrs)</u>	Day 1 (24-32 hrs)	<u>Day 2 (43-50 hrs)</u>
OUF_GITH20 SAMP 2.7A B 3M* Rapid SRB Detection Pouch Interpretation Guide Observation Time after Updater than A A Serveen A and B Darker than B Interpretation Structure (1974) 42 50 hrs 190' 190' 190' 190' SRB Concentrations in CFU/rist.	OUF GI#20 SAMP 2.7A B 3M*Rapid SRB Detection Pouch Interpretation Guida Contravation Trins after Incolation Declaration St 32 brs 4107 50 199 GE 50 brs 150 Concentrations in CPU/mt.	2.7a 3M A B 3M Rapid SR8 Detection Pouch Interpretation Guide Observation The after Proceedation Proceedat
SRB/mL: <10 ⁴	SRB/mL: <10 ⁴	SRB/mL: ≤10

Sample Number: PU05

Depth: 2.7m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#20_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 3 (43-50 hrs) Day 3 (43-50 hrs) N A B N Repid S8B Detection Pouch Interpretation Guide SRB/mL: <10⁴ SRB/mL: ≤10 SRB/mL: ≤10

Sample Number: PU07

Depth: 3.6m

SRB PHOTO LOG



Form No. 5-39-G

SRB Photo Log

Client: DGEC

Project Name: A05 BRETAGNE OFFSHORE GI

Project Number: GMOP21-G-019

Location: A05 OWF

Borehole No.: OWF_GI#24_SAMP



Day 0 (0 hrs) Day 1 (24-32 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) Day 2 (43-50 hrs) OUF - GI #/H SMF OUF - GI

Sample Number: PU01

Depth: 0.1m

SRB PHOTO LOG

Appendix B.5 Strength Test Results

GEOQUIPMARINE		Shear Wave Velocity by Bender				Job Ref	GMOP21-G-019
			Element			Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offsho		ne Offshore GI			Sample No.	BH0120230227178
Soil Description	2.5y 4/1 Da	ark grey sil	ırk grey silty SAND			Depth m	2.00
Specimen Reference	PU	O3 Specimen 2.00 m			Sample Type	B1	
Specimen Description	2.5y 4/1 Da	Dark grey silty SAND				Unique ID	PU03
Test Method	ASTM D82	D8295-19				Date started	24/04/2023
Preparation	Isotropicall	pically consolidatd 50kPa					

Testing Conditions

Capture Time	5	ms
Burst Count	1	
Amplitude	10	V
No. of Runs	10	
Interval between		
Runs	5	seconds

Sample Information

•		
Moisture Content	22	
Bulk Density	1.79	Μg
Dry Density	1.45	Μg
Height	139.69	n
Diameter	70	n
Mass	958.83	
Bender Element		
Length	7	n

%
Mg/m3
Mg/m3
mm
g
mm

Results

S-wave Vertical: Peak to Peak

Frequency		5 kHz	6 kHz	7 kHz	8 kHz	
Time, ms		0.000887	0.000886	0.000875	0.000875	
Shear Wave Velocity	, m/s	149.93	148.99	151.55	151.20	
Shear Modulus, Gmax	MPa	40.24	39.73	41.11	40.92	

S-wave Vertical: Start to Start

Frequency		5 kHz	6 kHz	7 kHz	8 kHz	
Time, ms						
Shear Wave Velocity	, m/s					
Shear Modulus, Gmax	MPa					

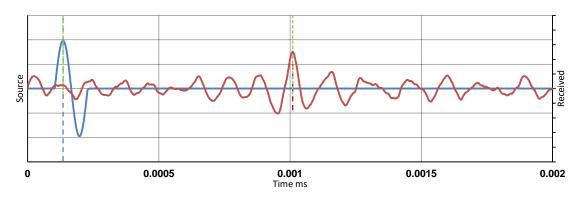
Remarks: Sample information is Post-Consolidation Calculated values, All Gmaxs are derived from Post Consolidation Densities, Bender Element taken from Height of sample

Approved	Date
D.Smith	23/05/2023 10:34

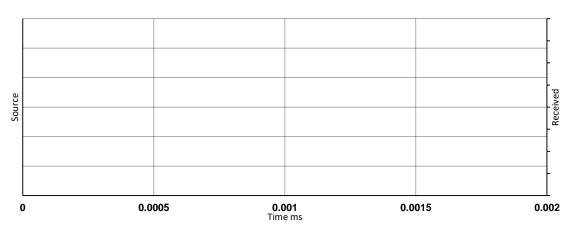
Q	GEOQUIPMARINE	s	hear W		y by Be al Results	nder Eleme	nt	
Job Ref	GMOP21-G-019	Sample No.	BH012	20230227178	Sample '	Туре	B1	
Borehole/Pit No.	OWF_GI#11_SAMP	Depth m		2.00	Unique	ID	PU03	
v _s Fred	quency 5 kHz ——— Source - · - · - Tf	Source		- – – Received	d Max - · -	· - T0 — Received		
Source					~		Received	
0	0.0005		0.00 1 Time n		0.	0015	0.002	2
- -	nuonov Cl-L-		i iii le li					
V _s Fred	quency 6 kHz							
Source							ived	:
Sou	V		-				Received	
0	0.0005		0.001 Time m		0.0	0015	0.002	!
v _s Fred	quency 7 kHz							
0	0.0005		0.001		0.0	0015	0.002	2
Source		~~			\		Received	ָּחַרְהַיּ
	V							•
	1		Time m	ns				
				Approved	t	Date		
				D.Smith	23	/05/2023 10:34		

GEOQUIPMARINE		Shear Wave Velocity by Bender Element Graphical Results					
Job Ref	GMOP21-G-019	Sample No.	BH0120230227178	Sample Type	B1		
Borehole/Pit No.	OWF_GI#11_SAMP	Depth m	2.00	Unique ID	PU03		

v_s Frequency 8 kHz



v_{s} Frequency



Approved	Date
D.Smith	23/05/2023 10:34

Shear Wave Velocity b Element		Shear Wave Velocity by Bender				Job Ref	GMOP21-G-019
		nent		Borehole/Pit No.	OWF_GI#12_SAMP		
Site Name	A05 Bretag	ne Offshore GI			Sample No.	BH0120230227222	
Soil Description	2.5y 4/3 Ol	ive brown SAND			Depth m	2.30	
Specimen Reference	В	Specimen 2.30 m			Sample Type	B1	
Specimen Description	Green grey	rey sand with gravels and shell fragments				Unique ID	PU05
Test Method	ASTM D82	ГМ D8295-19				Date started	22/05/2023
Preparation							_

Testing Conditions

Capture Time	5
Burst Count	1
Amplitude	10
No. of Runs	10
Interval between	
Runs	5

ms V

seconds

Sample Information

Moisture Content	25.8
Bulk Density	1.81
Dry Density	1.45
Height	132.77
Diameter	70
Mass	975.66
Bender Element Length	7

% Mg/m3 Mg/m3 mm mm g

Results

S-wave Vertical: Peak to Peak

Frequency		3 kHz	4 kHz	5 kHz	
Time, ms		0.000953	0.000933	0.000907	
Shear Wave Velocity	, m/s	138.51	141.48	145.54	
Shear Modulus, Gmax	MPa	34.73	36.23	38.34	

S-wave Vertical: Start to Start

Frequency		3 kHz	4 kHz	5 kHz	
Time, ms					
Shear Wave Velocity, m/s					
Shear Modulus, Gmax	MPa				

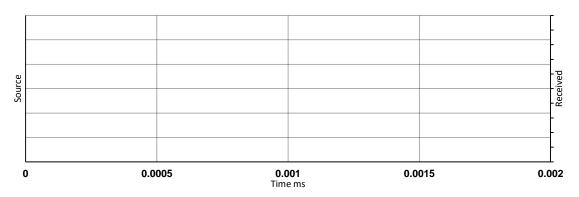
Remarks: Sample information is Post-Consolidation Calculated values, All Gmaxs are derived from Post Consolidation Densities, Bender Element taken from Height of sample

Approved	Date
D.Smith	23/05/2023 12:09

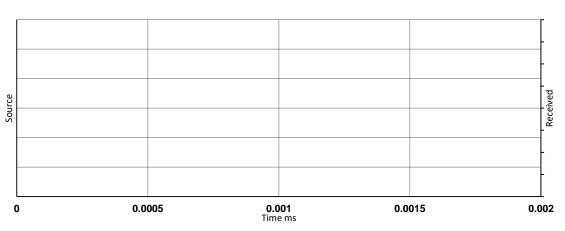
Q	GEOQUIPMARINE	hear W	ave Velocity by Bender Element Graphical Results				
Job Ref	GMOP21-G-019	Sample No.	BH012	20230227222	Sample Ty	/pe	B1
orehole/Pit No.	OWF_GI#12_SAMP	Depth m		2.30	Unique II	D	PU05
v _s Fred	quency 3 kHz ——— Source ——— Tf	Source		Received		- T0 - Received	
							Réceived
0	0.0005		0.00 1 Time n		0.00)15	0.002
v _s Fred							Received
0			0.001 Time m		0.00	15	0.002
V _S 1160	quency 3 km2						
0	0.0005		0.001		0.00	015	0.002
	1		Time m	ns	1		
				Approved	d	Date	

Q	EOQUIPMARINE	Shear Wave Velocity by Bender Element Graphical Results				
Job Ref	GMOP21-G-019	Sample No.	BH0120230227222	Sample Type	B1	
Borehole/Pit No.	OWF_GI#12_SAMP	Depth m	2.30	Unique ID	PU05	

v_s Frequency



v_{s} Frequency



Approved	Date
D.Smith	23/05/2023 12:09

Shear		Shear Wave Velocity by Bender				Job Ref	GMOP21-G-019
		Eler	Element			OWF_GI#15A_SAMP	
Site Name	A05 Bretag	gne Offsho	re GI		Sample No.	BH012023030741	
Soil Description	Grey brown	brown silty CLAY				Depth m	11.30
Specimen Reference	Q	1	Specimen 11.30 m		Sample Type	Q1	
Specimen Description	Grey brown silty CLAY					Unique ID	PU08
Test Method	ASTM D82	95-19			Date started	03/05/2023	
Preparation	Isotropicall	Isotropically Consolidated to 115kPa					_

Testing Conditions

Capture Time	5	
Burst Count	1	
Amplitude	10	
No. of Runs	10	
Interval between		
Runs	5	,

ms V

seconds

Sample Information

oumpro imormation							
Moisture Content	20.4						
Bulk Density	2.18						
Dry Density	1.81						
Height	139.97						
Diameter	70						
Mass	1169.55						
Bender Element Length	7						

% Mg/m3 Mg/m3 mm mm g

Results

S-wave Vertical: Peak to Peak

Frequency		2 kHz	3 kHz	4 kHz	5 kHz	6 kHz
Time, ms		0.000499	0.000492	0.000491	0.000495	0.000477
Shear Wave Velocity	, m/s	264.46	268.34	268.58	266.74	276.71
Shear Modulus, Gmax	MPa	152.47	156.98	157.25	155.10	166.92

S-wave Vertical: Start to Start

Frequency		2 kHz	3 kHz	4 kHz	5 kHz	6 kHz
Time, ms						
Shear Wave Velocity, m/s						
Shear Modulus, Gmax	MPa					

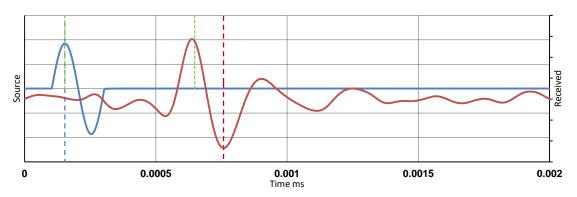
Remarks: Sample information is Post-Consolidation Calculated values, All Gmaxs are derived from Post Consolidation Densities, Bender Element taken from Height of sample

Approved	Date
D.Smith	19/05/2023 16:53

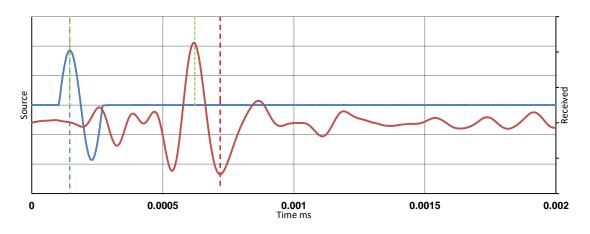
Q	GEOQUIPMARINE	S	hear W	ave Velocit	ty by E	Bender Eleme	nt
Job Ref	GMOP21-G-019	Sample No.	BH0 ²	12023030741	Samp	le Type	Q1
Borehole/Pit No.	OWF_GI#15A_SAMP	Depth m		11.30	Unic	ue ID	PU08
v _s Free	uency 2 kHz Source Tf	P0		Received	d Max -	Received	Réceived
0	0.0005		0.00 Time r			0.0015	0.002
v _s Fred	quency 3 kHz						
Source							Received
0 v _s Fred	0.0005 Juency 4 kHz		0.00 ⁻ Time r			0.0015	0.002
0	0.0005		0.00	•		0.0015	0.002
Source	0.005		Time n			0.0013	Received
				Approved	d	Date	
				D.Smith	1	19/05/2023 16:53	

GEOQUIPMARINE			Shear Wave Velocity by Bender Element Graphical Results				
Job Ref	GMOP21-G-019	Sample No.	BH012023030741	Sample Type	Q1		
Borehole/Pit No.	OWF_GI#15A_SAMP	Depth m	11.30	Unique ID	PU08		

v_s Frequency 5 kHz



v_s Frequency 6 kHz



Approved	Date
D.Smith	19/05/2023 16:53

Shear Wave Velocity by Bender Element		Shea	ar Wave Vel	ocity by Bend	Job Ref	GMOP21-G-019	
		Borehole/Pit No.	OWF_GI#20_SAMP				
Site Name	A05 Bretag	retagne Offshore GI				Sample No.	PU02
Soil Description	2.5y 4/2 D	2.5y 4/2 Dark greyish brown silty SAND				Depth m	0.80
Specimen Reference	PU	102	Specimen 0.80 m		Sample Type	B1	
Specimen Description	2.5y 4/2 D	2.5y 4/2 Dark greyish brown silty SAND					BH0120230227381
Test Method	ASTM D82	TM D8295-19				Date started	04/05/2023
Preparation	50 kPa Iso	0 kPa Isotropically consolidated					

Testing Conditions

Capture Time	5	
Burst Count	1	
Amplitude	10	
No. of Runs	10	
Interval between		
Runs	5	se

ms V

seconds

Sample Information

Moisture Content	27.8				
Bulk Density	1.95				
Dry Density	1.54				
Height	140.4				
Diameter	70.1				
Mass	1053.47				
Bender Element					
Length	7				
Length	/				

% Mg/m3 Mg/m3 mm mm g

Results

S-wave Vertical: Peak to Peak

Frequency		6 kHz	7 kHz	8 kHz	
Time, ms		0.000823	0.000822	0.000817	
Shear Wave Velocity	, m/s	160.39	160.59	161.57	
Shear Modulus, Gmax	MPa	50.16	50.29	50.90	

S-wave Vertical: Start to Start

Frequency		6 kHz	7 kHz	8 kHz	
Time, ms					
Shear Wave Velocity	, m/s				
Shear Modulus, Gmax	MPa				

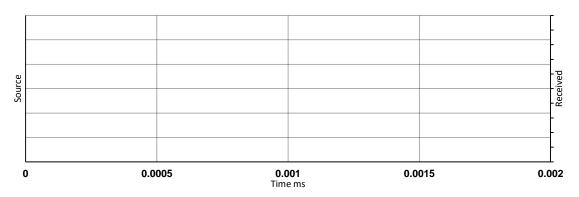
Remarks: Sample information is Post-Consolidation Calculated values, All Gmaxs are derived from Post Consolidation Densities, Bender Element taken from Height of sample

Approved	Date
D.Smith	27/07/2023 12:43

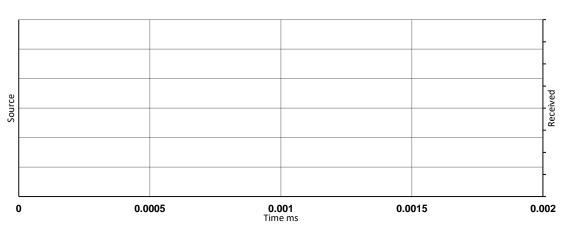
Q	GEOQUIPMARINE	Shear Wave Velocity by Bender Element Graphical Results						
Job Ref	GMOP21-G-019	Sample No.		PU02	Sample	Туре	B1	
orehole/Pit No.	OWF_GI#20_SAMP	Depth m		0.80	Unique	e ID	BH0120230227	'381
v _s Free	quency 6 kHz							
	Source	Source	Max -	Receive	ed Max - · -	· - T0		
	-·-·- Tf	P0	-	PR		— Recei	ved	
								-
Source	1			<u> </u>				Received
,	V							
0	0.0005		0.001		0	.0015		0.002
			Time n	15				
v _s Free	quency 7 kHz							
Source		\sim		$\wedge \wedge$	<u>~~</u>	<u> </u>		Received
"	\bigvee							
İ								-
0	0.0005		0.001 Time m		0.	0015		0.002
v _s Free	quency 8 kHz							
0	0.0005		0.001		0.	.0015		0.002
								-
ų //				- ^				pə
A Proposition of the state of t				\sim \				Received
	V							-
				IS .				
			Time m					
			Time m					
			Time m					
			I ime m	Approv	red	Date		

Q	EOQUIPMARINE	Shear Wave Velocity by Bender Element Graphical Results					
Job Ref	GMOP21-G-019	Sample No.	PU02	Sample Type	B1		
Borehole/Pit No.	OWF_GI#20_SAMP	Depth m	0.80	Unique ID	BH0120230227381		

v_s Frequency



v_{s} Frequency



Approved	Date
D.Smith	27/07/2023 12:43

GEOOLIII	Shear Wave Velocity by Bender				Job Ref	GMOP21-G-019	
Grada	TIANINE		Eler	nent		Borehole/Pit No.	OWF_GI#22_SAMP
Site Name	A05 Bretag	A05 Bretagne Offshore GI					PU06
Soil Description	2.5y 4/2 Da fragments	2.5y 4/2 Dark greyish brown SAND including sparse shell ragments				Depth m	2.70
Specimen Reference	PU	PU06 Specimen 2.70 m			Sample Type	B1	
Specimen Description	2.5y 4/2 Da fragments	0,	brown SAND in	cluding sparse shell	Unique ID	BH0120230227425	
Test Method	ASTM D82	M D8295-19				Date started	04/05/2023
Preparation	50kPa Isot	tropic Cons	olidation				

Testing Conditions

Capture Time	5	ı
Burst Count	1	
Amplitude	10	
No. of Runs	10	
Interval between		
Runs	5	sec

ms V

seconds

Sample Information

Campio imorini	
Moisture Content	25.7
Bulk Density	1.99
Dry Density	1.62
Height	140.1
Diameter	70.01
Mass	1070.10
Bender Element Length	7

% Mg/m3 Mg/m3 mm mm g

Results

S-wave Vertical: Peak to Peak

Frequency		4 kHz	5 kHz	7 kHz	
Time, ms		0.008364	0.008262	0.000804	
Shear Wave Velocity	, m/s	157.82	159.78	164.18	
Shear Modulus, Gmax	MPa	49.57	50.80	53.64	

S-wave Vertical: Start to Start

Frequency		4 kHz	5 kHz	7 kHz	
Time, ms					
Shear Wave Velocity, m/s					
Shear Modulus, Gmax	MPa				

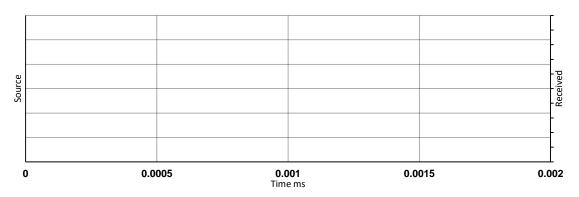
Remarks: Sample information is Post-Consolidation Calculated values, All Gmaxs are derived from Post Consolidation Densities, Bender Element taken from Height of sample

Approved Date
D.Smith 27/07/2023 12:42

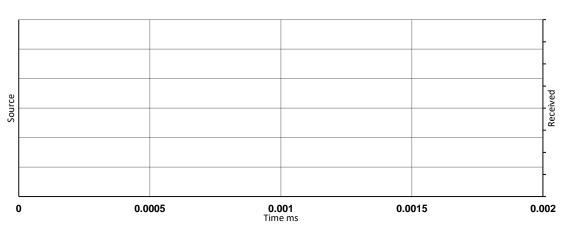
Q	GEOQUIPMARINE	S	hear W	/ave Velocit	y by Ben	der Elemei	nt
Job Ref	GMOP21-G-019	Sample No.		PU06	Sample Ty	уре	B1
Borehole/Pit No.	OWF_GI#22_SAMP	Depth m		2.70	Unique I	D BH012	0230227425
v _s Fred	Source	Source		– – Received		- T0 - Received	1
Source	0.0005		0.00	1	0.00	015	0.002
U	0.0005		Time		0.00	við	0.002
v _s Fred	quency 5 kHz						
	1						-
Source							Received
0	0.0005		0.00 Time r		0.00)15	0.002
v _s Fred	quency 7 kHz						
0	0.0005		0.00	1	0.00)15	0.002
							-
Source	V						Received
!			Time r	ns			
				Approve	d I	Date	
				D.Smith		07/2023 12:42	

Q	EOQUIPMARINE	Shear Wave Velocity by Bender Element Graphical Results					
Job Ref	GMOP21-G-019	Sample No.	PU06	Sample Type	B1		
Borehole/Pit No.	OWF_GI#22_SAMP	Depth m	2.70	Unique ID	BH0120230227425		

v_s Frequency



v_{s} Frequency



Approved	Date	
D.Smith	27/07/2023 12:42	

Consolidated Drained

Summary Report

Sample Details sketch showing specimen location in original sample								
Depth 0.70m								
Description	Brown slightly	gravelly course SAND.			; ;	,	;	
Туре	Recompact	ed to 1.64 DD, 10% moistu	re content.					
					Spm. 1	2	3	
Initial Sample Len			Lo	(mm)	76.0	76.0	76.0	
Initial Sample Diar			Do	(mm)	38.0	38.0	38.0	
Initial Sample Wei Initial Bulk Density	•		Wο ρο	(gr) (Mg/m3)	155.5	155.5	155.5	
Particle Density	•		ρs	(Mg/m3)	1.80 2.66	1.80 2.66	1.80 2.66	
					2.00	2.00	2.00	
Initial Condition	ns				Spm. 1	2	3	
Initial Cell Press	sure		σ3i	(kPa)	1075	1150	1300	
Initial Back Pres	ssure		U bi	(kPa)	1050	1100	1200	
Membrane Thick	kness		mь	(mm)	0.400	0.400	0.400	
Displacement In	nput		LIP	(mm)	CH 2	CH 2	CH 2	
Load Input	•		N IP	(N)	CH 1	CH 1	CH 1	
Pore Water Pres	ssure Input		U pwp	(kPa)	CH 3	CH 3	CH 3	
Sample Volume			٧	(cc)	CH 6	CH 6	CH 6	
Initial Moisture			ωį	(%)	9.89	9.97	9.74	
Initial Dry Densit	tv		ρdi	(Mg/m3)	1.64	1.64	1.64	
Initial Voids Rati	•		e;	(g,)	0.620	0.622	0.618	
Initial Degree of			Si	(%)	42	43	42	
B Value			В		0.96	0.95	0.95	
Final Condition	ıs					_	_	
Final Moisture			ωf	(%)	Spm. 1 26	2 25	3 24	
Final Dry Density			ρdf	(Mg/m3)	1.64	1.64	1.66	
Final Voids Ratio			e f	(IVIG/III3)	0.619	0.619	0.607	
Final Degree of S			Sf	(%)	100.0	100.0	100.0	
i mai begiee oi v	Cataration		0,	(70)	Max. Dev.	Max. Dev.	Max. Dev.	
Failure Criteria					Stress	Stress	Stress	
Strain At Failure			εf	(%)	11.15	5.68	3.31	
Stress At Failure	•		(σ1-σ3)f	(kPa)	97.9	186.0	343.6	
Minor Stress At I	Failure		σ3'	(kPa)	25.0	50.0	100.3	
Major Stress At I	Failure		σ1'	(kPa)	122.9	236.0	443.9	
Principal Stress	Ratio At Failure		σ1'/σ3'		4.915	4.720	4.427	
PwP At Failure C	Criteria		u f	(kPa)	1050.0	1100.0	1198.0	
Notes								







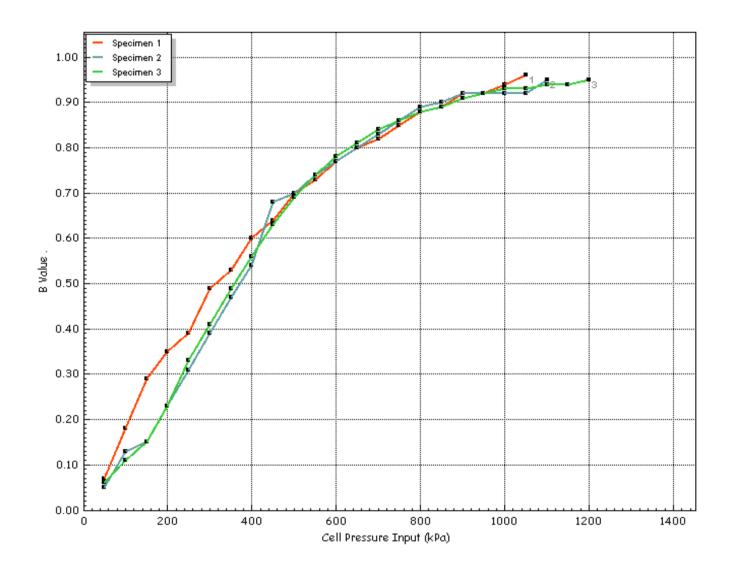
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ODCI	Test Method	BS EN ISO 178	92-9:2018		Test Name	OWF_GI-0	04_Samp 0.70m P02 B1		
WP5L					Test Date	19/04/2023			
PROFESSIONAL SOILS LABORATORY A PHIRMA GROUP COMPANY		GMOP21-G-019 A05 Bretagne off			Borehole	OWF_GI-04	OWF_GI-04_Samp		
	Jobfile	shore			Sample	0.70m P02	B1		
UKAS TETIMO	Client	Geoquip Marine	е		Depth	0.70m			
4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle		

Consolidated Drained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	1050	1100	1200
Pore Water Pressure Input	и рюр	(kPa)	1043	1075	1186
B Value	В		0.96	0.95	0.95

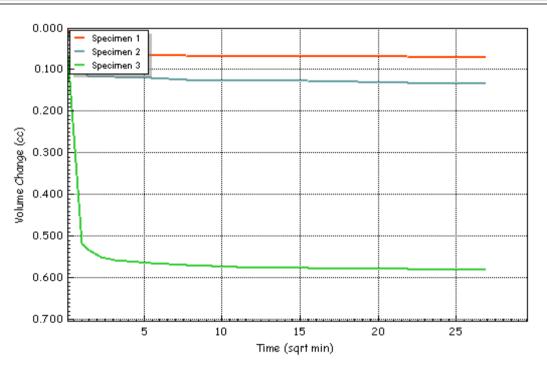


OPSL	Test Method BS EN ISO 17892			Test Name Test Date	OWFGI-04_ 19/04/2023	Samp 0.70m P02 B1	
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-019	9 A05 Bretagne off	Borehole	OWF_GI-04_Samp		
UKAS	Jobfile	shore		Sample	0.70m P02 B1		
UKAS	Client	Geoquip Marine		Depth	0.70m		
TESTING 4043	Operator	D.Burton	Checked S.F	loyle	Approved	S.Royle	

Consolidated Drained

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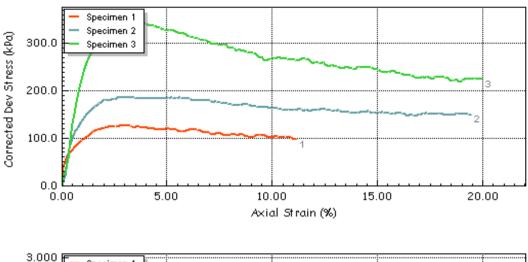
Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σз	(kPa)	1075	1150	1300
Initial Back Pressure	и ы	(kPa)	1050	1100	1200
Pore Water Pressure Input	ս բաբ	(kPa)	1058	1128	1257
Drainage Method			From One End	From One End	From One End
Final Conditions			_		
			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	8٧%	(%)	0.08	0.16	0.67
Corrected Length	Lc	(mm)	76.0	76.0	75.8
Corrected Area	Αc	(cm2)	11.34	11.33	11.29
Corrected Volume	٧c	(cc)	86.123	86.059	85.612
t100	t 100	(min)	6.25	5.03	2.65
Consolidation	cv	(m2/year	3.815	4.738	8.961
Compressibility	mγ	(m2/MN)	0.101	0.055	0.119
Test Time	t F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	dг	(mm/min	0.03166	0.03165	0.03160
Notes					

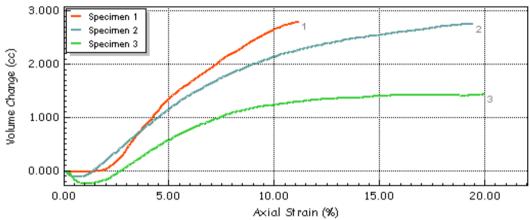


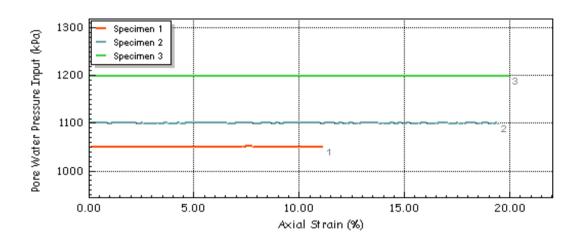
ODCI	Test Method	BS EN ISO 17892	-9:2018	Test Name	OWFGI-04_Samp 0.70m P02 B1		
WP5L				Test Date	19/04/2023		
PROFESSIONAL SOILS LABORATORY A PHENRA GROUP COMPANY		GMOP21-G-01	9 A05 Bretagne off	Borehole	OWF_GI-04_Samp		
# # T	Jobfile	S	hore	Sample	0.70m P02 B1		
UKAS	Jobfile short Geoquip Marine			Depth	0.70m		
4043	Operator	D.Burton	Checked S.R	oyle	Approved S.Royle		

Consolidated Drained

Shear Stage Plots



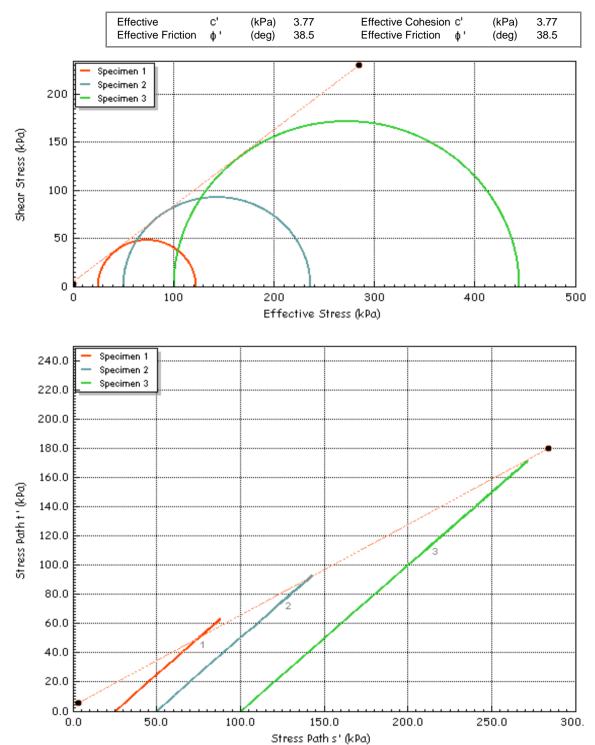




OPSL	Test Method BS EN IS				Test Name OWF_GI-04_Samp Test Date 19/04/2023		1_Samp 0.70m P02 B1	
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-019 A05 Bretagne off			Borehole	OWF_GI-04_Samp		
# # T	Jobfile	shore		Sample	0.70m P02 B	1		
UKAS TESTING	Client	Geoquip Marine			Depth	0.70m		
4043	Operator	D.Burton	Checked	s.R	oyle	Approved	S.Royle	

Consolidated Drained

Shear Stage Plots



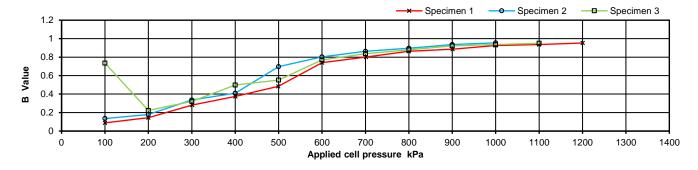
	PSL	Test Method	BS EN ISO 17892	Test Name Test Date	OWFGI-04_Samp 0.70m P02 B1 19/04/2023			
PRO	FESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-01	9 A05 Bretagne off	Borehole	OWF_GI-04_Samp		
		Jobfile	S	hore	Sample	0.70m P02 B	1	
	UKAS TESTING	Client	Geoquip Marine		Depth	0.70m		
	4043	Operator	D.Burton	Checked S.R	oyle	Approved	S.Royle	

GEOQUIPMARINE	Consolidated Is Compression T	•	ed Triaxial surement of volume	Job Ref	GMOP21-G-019
	change		Borehole	OWF_GI#04A_SAMP	
Site Name	A05 Bretagne Offsho	ore GI	Sample No.	PU01A	
Soil Description	2.5y 5/6 Light olive b	rown SAND with s	Depth m	0.00	
Specimen Reference	PU01A	PU01A Specimen 0.0		Sample Type	B1
Specimen Description	2.5y 5/6 Light olive b	rown SAND includ	ling shell fragments	KeyLAB ID	BH012023022753
Test Method	BS EN ISO 17892 P	art 9: Consolidated	d Trixial Compression Tests	-	-

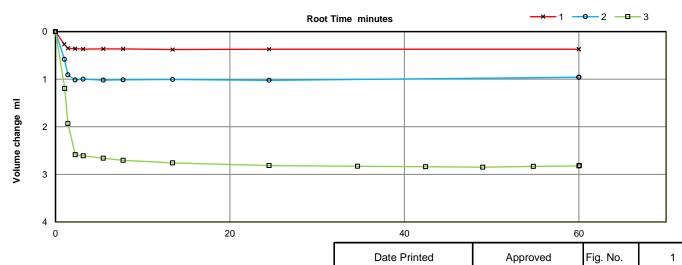
Оре	есинен турел тере	iration	KLWOOLL	7.52DD	23/30/100 KI a
Specimen Details			1	2	3
	Height	mm	99.9	100.0	100.0
	Diameter	mm	50.0	50.0	50.0
Initial	Bulk Density	Mg/m³	1.46	1.46	1.48
=	Water Content	%	10.0	10.0	10.0
	Dry density	Mg/m³	1.33	1.33	1.35
=	Bulk Density	Mg/m³	1.64	1.68	1.70
Final	Water Content	%	23.0	19.9	21.7
	Dry density	Ma/m³	1.32	1.32	1.35

Lab Sheet Reference : GM-L-TSR-46

Saturation Details	1	2	3	
Method			Back pressure method	Back pressure method
Cell pressure increments kPa		100	100	100
Differential Pressure	kPa	10	10	10
Final Cell Pressure	kPa	1400	1400	1100
Final pore water pressure kPa		1291	1290	990
Final B Value		0.96	0.96	0.95
Time Taken to saturate	Day	2.00	2.00	2.00



	Specimen No.	1	2	3	<u> </u>	
	Time Taken to consolidate	1	1	1	Days	
	Drainage Conditions	One end	One end	One end		
O P. Ladia	Cell Pressure applied	1225	1050	1200	kPa	
Consolidation Details	Back Pressure applied		1000	1100	kPa	
Johns	Effective Pressure	25	50	100	kPa	
	Pore pressure at start of consolidation	1212	1037	1181	kPa	
	Pore pressure at end of consolidation	1203	1004	1101	kPa	
	Pore pressure dissipation at end of consolidation	72	89	99	%	



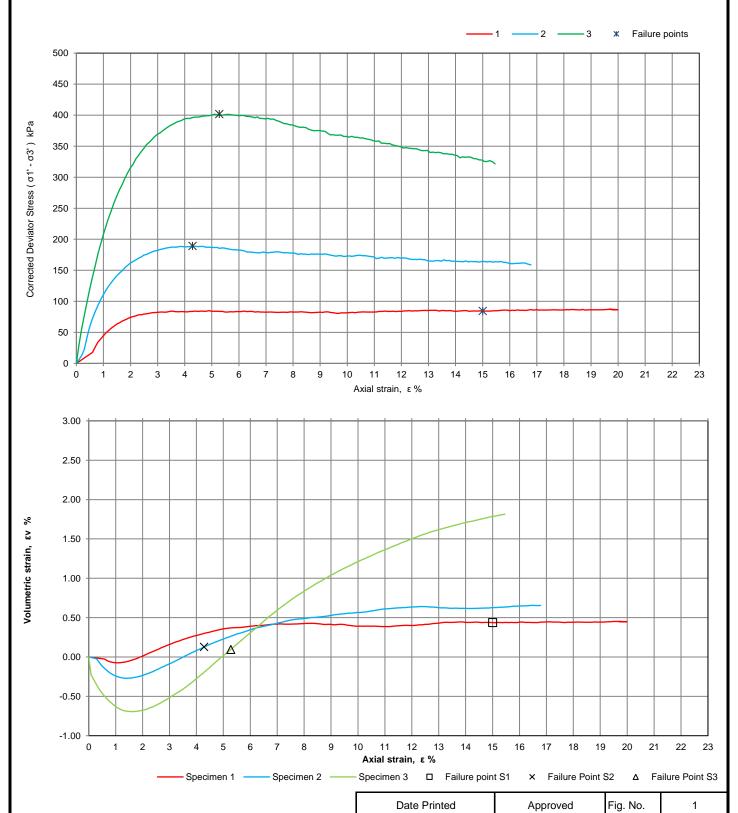
27/07/2023 10:54

D.Smith

1 of 3

Sheet No.

	Consolidated	Drained Triaxia	al Compression Te	Job Ref	GMOP21-G-019	
with measurement of volume change				Borehole	OWF_GI#04A_SAMP	
Site Name	A05 Bretagne Offs	hore GI		Sample No.	PU01A	
Specimen Reference	PU01A	PU01A Specimen 0.00 m				0.00
Compression stages	graphical data	Sample Type	B1			
Compression stages - graphical data					KeyLAB ID	BH012023022753



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 $\mathsf{D}.\mathsf{Smith}$

Sheet No.

2 of 3

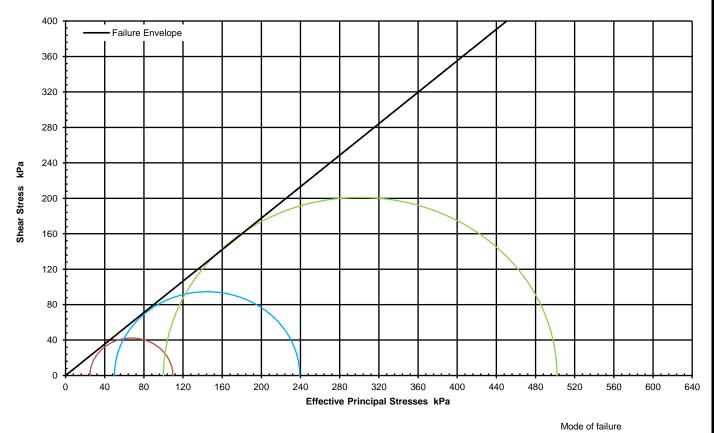
Lab Sheet Reference: GM-L-TSR-46

	Consolidated	Drained Triaxi	al Compression T	Job Ref	GMOP21-G-019	
with measurement of volume change				Borehole	OWF_GI#04A_SAMP	
Site Name	A05 Bretagne Offs	shore GI		Sample No.	PU01A	
Specimen Reference	PU01A	Specimen Depth	0.00	Depth m	0.00	
Compression stores	table of regults and		Sample Type	B1		
Compression stages - table of results and interpretation					KeyLAB ID	BH012023022753

At maximum deviator stress (failure)

Specimen	Cell pressure	Initial pwp	Initial σ ₃ '	Rate of strain	Axial strain, ε _f	(σ_1 ' - σ_3 ') f	Volumetric strain, ϵ_v	σ ₃ ' _f	σ ₁ ' _f	Specimen Remarks
	kPa	kPa	kPa	%/hr	%	kPa	% per hr	kPa	kPa	
1	1225	1200	25	2.00	15.0	85	0.4	25	110	
2	1050	1000	50	2.00	4.3	189	0.1	50	239	
3	1200	1100	100	2.00	5.3	402	0.1	100	502	

Mohr Circles



Shear Strength Parameters			Linear regression	Manual re-assessment
	с'	kPa	[-4.8]	0
	ø'	degrees	[42.8]	41.6

General Remarks

Deviator stresses corrected for area change, and up to 0.25 mm thick rubber membrane/

_	Donator of occord for a car or angly and up to other minutes about monoral and							
Total Time of test:	4.00	4.00	4.00	12.00	Days			
Total Tille of test.	4.00	4.00	4.00	12.00	Days			
	S1	S2	S3	All spec	Date Printed	Approved	Fig. No.	1
f Denotes at failure					Date 1 filled	Apploved	1 ig. 140.	1
Positive volume changes indicate water out of specimen (consolidation) Lab Sheet Reference : GM-L-TSR-46					27/07/2023 10:54	D.Smith	Sheet No.	3 of 3

Spec 2

Compound 1

Spec 1

Compound 1 Spec 3

Compound 1

Consolidated Drained

Summary Report

Sample Details	ails sketch showing specimen location in original sample					
Depth 1.15m					<i>j</i> ,	
Description Brown slig	htly gravelly fine SAND.			,		
Гуре Recom	pacted at 1.58 DD, 10% moistu				<u></u>	
				Spm. 1	2	3
nitial Sample Length		Lo	(mm)	76.0	76.0	76.0
nitial Sample Diameter nitial Sample Weight		Do Wo	(mm)	38.0	38.0	38.0
nitial Bulk Density		ρO	(gr) (Mg/m3)	150.0 1.74	150.0 1.74	150.0 1.74
Particle Density		ρs	(Mg/m3)	2.66	2.66	2.66
Initial Conditions				Spm. 1	2	3
Initial Cell Pressure		σ3i	(kPa)	1275	1300	1350
Initial Back Pressure		U bi	(kPa)	1250	1250	1250
Membrane Thickness		m ь	(mm)	0.400	0.400	0.400
Displacement Input		L IP	(mm)	CH 2	CH 2	CH 2
Load Input		N IP	(N)	CH 4	CH 4	CH 4
Pore Water Pressure Input		и рмр	(kPa)	CH 3	CH 3	CH 3
Sample Volume		٧	(cc)	CH 6	CH 6	CH 6
Initial Moisture		ωi	(%)	11	10	10
Initial Dry Density		ρdi	(Mg/m3)	1.57	1.58	1.58
Initial Voids Ratio		e i		0.689	0.687	0.688
Initial Degree of Saturation		Si	(%)	41	40	40
B Value		В		0.98	0.99	0.99
Final Conditions				Spm. 1	2	3
Final Moisture		Øf	(%)	31	28	28
Final Dry Density		ρdf	(Mg/m3)	1.58	1.58	1.59
Final Voids Ratio		ef		0.686	0.682	0.677
Final Degree of Saturation		Sf	(%)	100.0	100.0	100.0
-			•	Max. Dev.	Max. Dev.	Max. Dev.
Failure Criteria				Stress	Stress	Stress
Strain At Failure		ξf	(%)	2.61	4.03	3.34
Stress At Failure		(σ1-σ3)f		87.0	156.2	307.7
Minor Stress At Failure		σ3'	(kPa)	25.0	50.0	100.1
Major Stress At Failure		σ1'	(kPa)	112.0	206.2	407.9
Principal Stress Ratio At Faile	ıre	σ1'/σ3'		4.482	4.125	4.073
PwP At Failure Criteria		u f	(kPa)	1246.0	1245.1	1251.8
Notes						

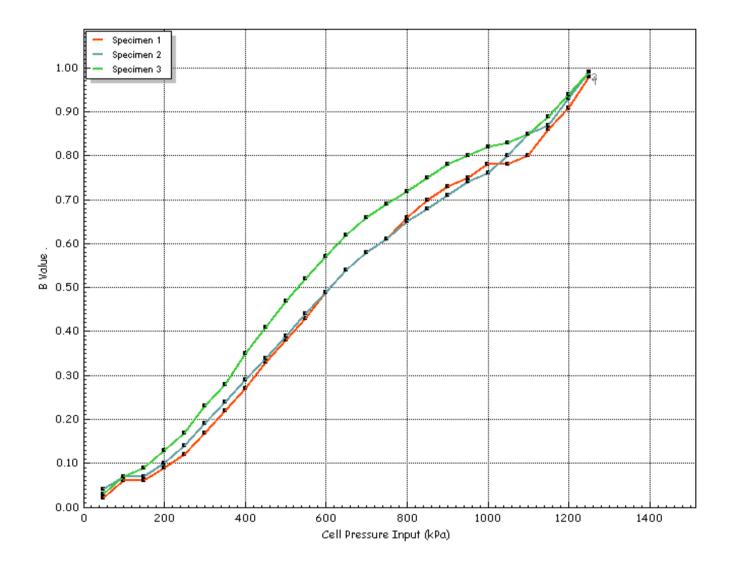
Compound

OPSL	Test Method	BS EN ISO 178	92-9:2018		Test Name Test Date	OWF_GI-1 ²	1_Samp 1.15m PU02A	
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	Jobfile	GMOP21-G-019 A05 Bretagne offshore			Borehole Sample	OWF_GI-11_Samp 1.15m PU02A B2		
UKAS TESTRAG	Client	Geoquip Marin	e		Depth	1.15m		
4043	Operator	D.Burton	Checked	S.R	ovle	Approved	S.Royle	

Consolidated Drained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	1249	1250	1250
Pore Water Pressure Input	u pwp	(kPa)	1234	1235	1242
B Value	В	•	0.98	0.99	0.99

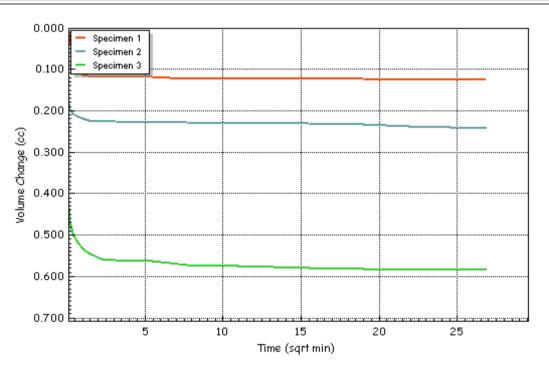


OPSL	Test Method	BS EN ISO 17892-9:2018		Test Name Test Date	OWF_GI-11 19/04/2023	_Samp 1.15m PU02A	
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-0	119 A05 Bretagne		Borehole	OWF_GI-11	_Samp
UKAS	Jobfile	off	shore		Sample	1.15m PU02	2A B2
UKAS	Client	Geoquip Marine			Depth	1.15m	
TESTING 4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle

Consolidated Drained

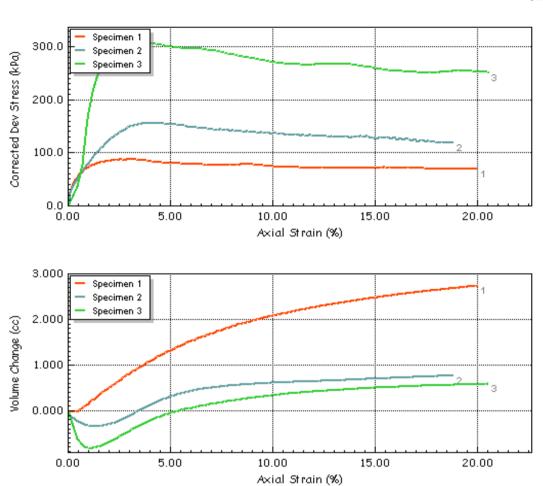
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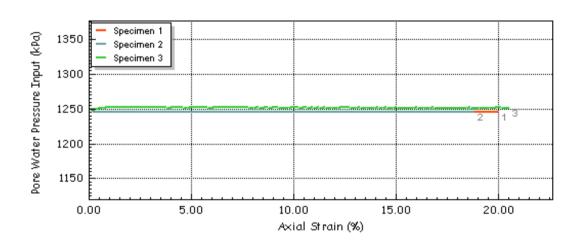
Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σз	(kPa)	1275	1300	1350
Initial Back Pressure	и ы	(kPa)	1250	1250	1250
Pore Water Pressure Input	и рмр	(kPa)	1260	1278	1330
Drainage Method			From One End	From One End	From One End
Final Conditions					
			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	8٧%	(%)	0.15	0.28	0.68
Corrected Length	Lc	(mm)	76.0	75.9	75.8
Corrected Area	Αc	(cm2)	11.33	11.32	11.29
Corrected Volume	٧c	(cc)	86.068	85.952	85.610
t100	t 100	(min)	0.85	2.93	2.68
Consolidation	cv	(m2/year	28.037	8.126	8.861
Compressibility	mγ	(m2/MN)	0.145	0.100	0.085
Test Time	t F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d r	(mm/min	0.03165	0.03164	0.03160



OBCI	Test Method BS EN ISO 17892-9:2018			Test Name	OWF_GI-11_Samp 1.15m PU02A	
YPSL				Test Date	19/04/2023	
PROFESSIONAL SOILS LABORATORY A PHENRA GROUP COMPANY		GMOP21-G-0	119 A05 Bretagne	Borehole	OWF_GI-11_Samp	
UKAS	Jobfile	off	shore	Sample	1.15m PU02A B2	
UKAS	Client	Geoquip Marine			1.15m	
TESTING 4043	Operator	D.Burton	Checked S	.Royle	Approved S.Royle	

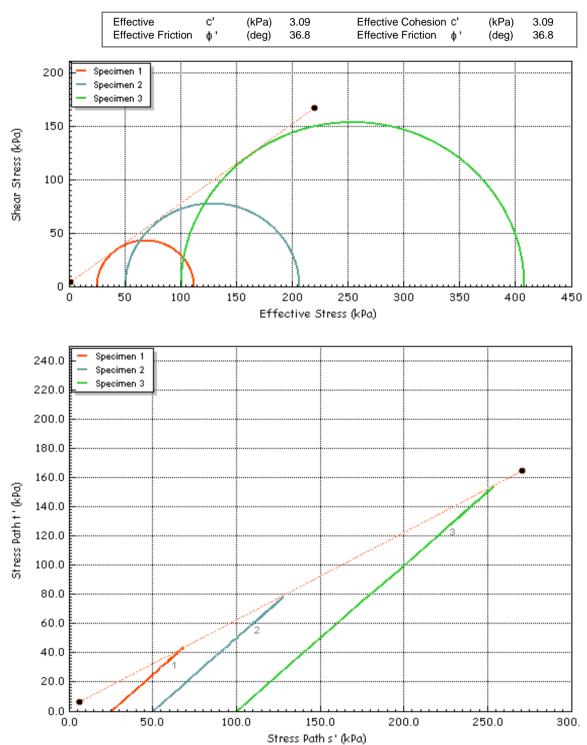
Consolidated Drained





	DCI	Test Method	BS EN ISO 17892-	BS EN ISO 17892-9:2018			OWF_GI-11	_Samp 1.15m PU02A B2
	YPSL				Test Date	19/04/2023		
PR	OFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-019 A05 Bretagne			Borehole	OWF_GI-11	_Samp
	UKAS	Jobfile	off	shore		Sample	1.15m PU02	2A B2
	UKAS	Client	Geoquip Marine			Depth	1.15m	
	TESTING 4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle

Consolidated Drained



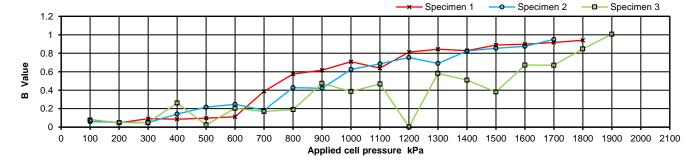
OPSL	Test Method	BS EN ISO 17892	2-9:2018	Test Name Test Date	OWF_GI-11 19/04/2023	_Samp 1.15m PU02A
PROFESSIONAL SOILS LABORATORY A PHENSA GROUP COMPANY	Jobfile		019 A05 Bretagne fshore	Borehole Sample	OWF_GI-11 1.15m PU02	- '
UKAS TESTING	Client	Geoquip Marine	_	Depth	1.15m	
4043	Operator	D.Burton	Checked S	.Royle	Approved	S.Royle

GEOOL IIPMARINE	Consolidated Drained Triaxial Compression Test with measurement of volume change			Job Ref	GMOP21-G-019
G SESSION PARISE				Borehole	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offsho	ore GI		Sample No.	PU03
Soil Description	2.5y 4/1 Dark grey si	Ity SAND		Depth m	2.00
Specimen Reference	B1	Specimen Depth	2.00 m	Sample Type	B1
Specimen Description	2.5y 4/1 Dark grey si	Ity SAND		KeyLAB ID	BH0120230227178
Test Method	BS EN ISO 17892 Pa	art 9: Consolidate	d Trixial Compression Tests	-	

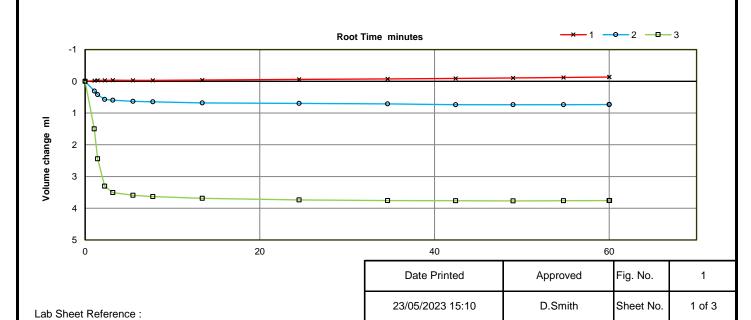
Specimen Type/Preparation REMOULDED 1.46DD 25/50/100 kPa 10% MC

Spec	Specimen Details		1	2	3
	Height	mm	100.0	139.9	100.0
-	Diameter	mm	50.0	70.0	50.0
Initial	Bulk Density	Mg/m³	1.61	1.60	1.61
_	Water Content	%	9.7	10.0	10.0
	Dry density	Mg/m³	1.47	1.46	1.46
ı,	Bulk Density	Mg/m³	1.70	1.78	1.82
Final	Water Content	%	23.5	22.0	24.6
4	Dry density	Mg/m³	1.46	1.45	1.47

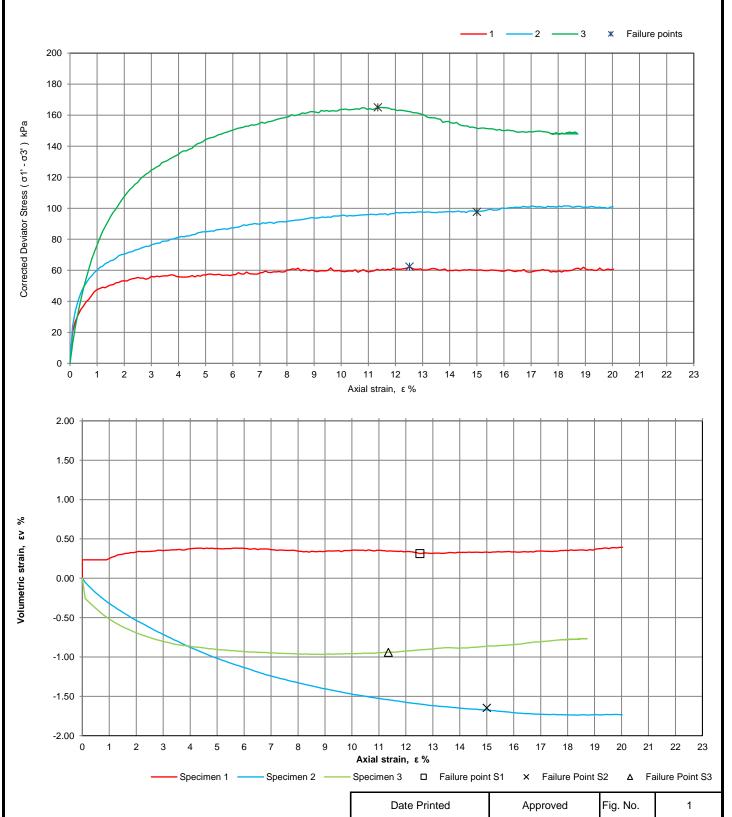
Saturation Details		1	2	3
Method		Back pressure method	Back pressure method	Back pressure method
Cell pressure increments	kPa	100	100	100
Differential Pressure	kPa	20	20	20
Final Cell Pressure	kPa	1800	1700	1900
Final pore water pressure	kPa	1680	1581	1853
Final B Value		0.94	0.95	1.01



	Specimen No.	1	2	3	
	Drainage Conditions	One end	One end	One end	
	Cell Pressure applied	1825	1750	2050	kPa
Consolidation	Back Pressure applied	1800	1701	1950	kPa
Details	Effective Pressure	25	50	100	kPa
	Pore pressure at start of consolidation	1799	1723	2060	kPa
	Pore pressure at end of consolidation	1803	1701	1961	kPa
	Pore pressure dissipation at end of consolidation	478	100	90	%



	Consolidated Drained Triaxial Compression Test				Job Ref	GMOP21-G-019
GEOQUIPMARINE	with measuren	measurement of volume change				OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore GI				Sample No.	PU03
Specimen Reference	B1	Specimen Depth	2.00	m	Depth m	2.00
Compression stages	graphical data				Sample Type	B1
Compression stages	ession stages - graphical data					BH0120230227178



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 $\mathsf{D}.\mathsf{Smith}$

Sheet No.

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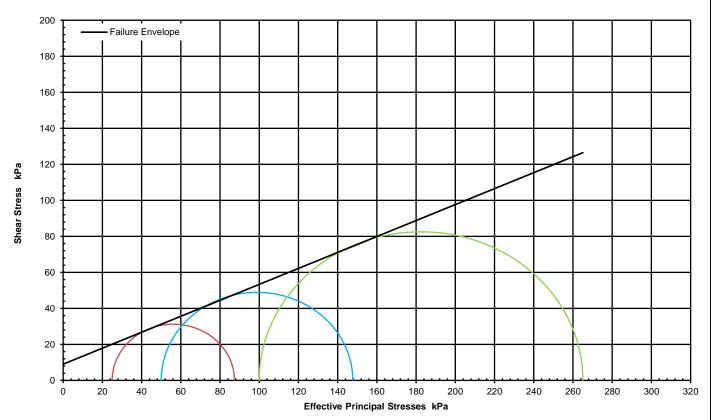
Lab Sheet Reference:

	Consolidated	I Drained Triaxia	al Compression Te	est	Job Ref	GMOP21-G-019
GEOQUIPMARINE	with measure	ement of volume	e change		Borehole	OWF_GI#11_SAMP
Site Name	A05 Bretagne Off	shore GI		Sample No.	PU03	
Specimen Reference	B1	B1 Specimen 2.00 m		Depth m	2.00	
Compression stages	table of regults an	Sample Type	B1			
Compression stages	Compression stages - table of results and interpretation					BH0120230227178

At maximum deviator stress (failure)

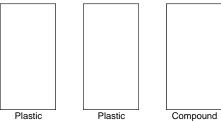
Specimen	Cell pressure	Initial pwp	Initial σ ₃ '	Rate of strain	Axial strain, ϵ_f	(σ_1 ' - σ_3 ') f	Volumetric strain, ϵ_v	σ ₃ ' _f	σ ₁ ' _f	Specimen Remarks
	kPa	kPa	kPa	%/hr	%	kPa	% per hr	kPa	kPa	
1	1825	1800	25	1.00	12.5	62	0.3	25	87	
2	1750	1701	50	1.00	15.0	98	-1.6	50	148	
3	2050	1950	100	1.00	11.4	165	-0.9	100	265	

Mohr Circles



Mode of failure

c' kPa 9.3 -	Shear Strength Parameters			Linear regression	Manual re-assessment	
00.0		с'	kPa	9.3	-	
Ø degrees 23.9 -		Ø'	degrees	23.9	-	



General Remarks

Lab Sheet Reference :

Deviator stresses corrected for area change, and up to 0.25 mm thick rubber membrane/Specimen 1 Swelled

f Denotes at failure
Positive volume changes indicate water out of specimen (consolidation) $\\$

Date Printed	Approved	Fig. No.	1
23/05/2023 15:10	D.Smith	Sheet No.	3 of 3

Consolidated Drained

Summary Report

Sample Details	sketch showing specimen location in or	iginal sample			
Depth 1.20m					
Description Brown slightly gra	avelly SAND.		*		:
	I at 1.59 DD, 10% moisture content.				
			Spm. 1	2	3
Initial Sample Length	_ _	(mm)	76.0	76.0	76.0
Initial Sample Diameter		(mm)	38.0	38.0	38.0
Initial Sample Weight		(gr)	151.0	151.0	151.0
Initial Bulk Density Particle Density		(Mg/m3) (Mg/m3)	1.75	1.75	1.75
- article Density	P 5	(IVIG/III3)	2.66	2.66	2.66
Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σ3i	(kPa)	1225	950	1150
Initial Back Pressure	Uы	(kPa)	1200	900	1050
Membrane Thickness	m b	(mm)	0.400	0.400	0.400
Displacement Input	LIP	(mm)	CH 2	CH 2	CH 2
Load Input		(N)	CH 4	CH 4	CH 4
Pore Water Pressure Input		(kPa)	CH 3	CH 3	CH 3
Sample Volume		(cc)	CH 6	CH 6	CH 6
Initial Moisture	ωį	(%)	10	10	10
Initial Dry Density		(Mg/m3)	1.59	1.59	1.59
Initial Voids Ratio	e i	(ivig/iiio)	0.674	0.674	0.674
Initial Degree of Saturation		(%)	40	40	40
mila Degree of Calaration		(70)	40	40	40
B Value	В		0.98	1.07	0.98
Final Conditions			Spm. 1	2	3
Final Moisture	ωf	(%)	22	21	21
Final Dry Density	ρdf	(Mg/m3)	1.59	1.60	1.60
Final Voids Ratio	e f		0.670	0.664	0.659
Final Degree of Saturation	Sf	(%)	88.4	85.6	83.1
-			Max. Dev.	Max. Dev.	Max. Dev.
Failure Criteria			Stress	Stress	Stress
Strain At Failure		(%)	6.21	7.31	2.59
Stress At Failure	(σ1-σ3)f		91.0	168.7	313.1
Minor Stress At Failure	-	(kPa)	25.3	50.0	100.0
Major Stress At Failure		(kPa)	116.3	218.7	413.1
Principal Stress Ratio At Failure	σ1'/σ3'		4.597	4.373	4.131
PwP At Failure Criteria	u f	(kPa)	1201.5	900.0	1047.0
Notes					

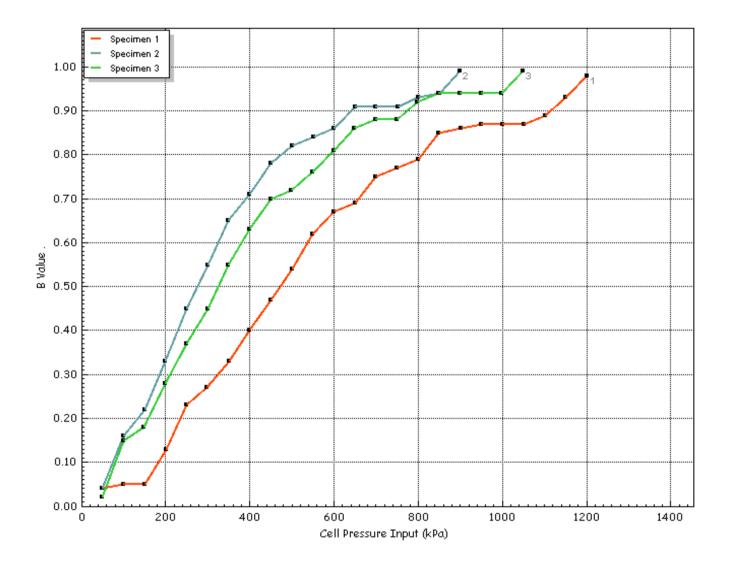


OPSL	Test Method	BS EN ISO 1789	92-9:2018		Test Name	OWF_GI-12	2_Samp 1.20m PU02 B2
PSL					Test Date	19/04/2023	
PROFESSIONAL SOILS LABORATORY A PHINNA GROUP COMPANY		GMOP21-G	-019 A05 Bretagne		Borehole	OWF_GI-1	2_Samp
UKAS	Jobfile	(offshore		Sample	1.20m PU0	2 B2
UKAS	Client	Geoquip Marine	•		Depth	1.20m	
TESTING 4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle

Consolidated Drained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	1201	900	1049
Pore Water Pressure Input	и рюр	(kPa)	1176	895	1029
B Value	В	•	0.98	0.99	0.99

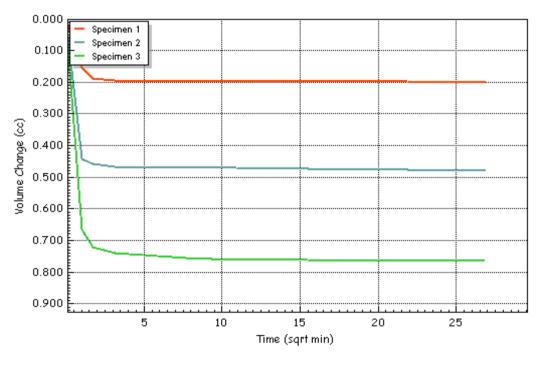


OPSL	Test Method	BS EN ISO 17892	-9:2018		Test Name Test Date	OWF_GI-12 19/04/2023	_Samp 1.20m PU02 B2
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY			19 A05 Bretagne		Borehole	OWF_GI-12	_Samp
	Jobfile	off	shore		Sample	1.20m PU02	? B2
UKAS	Client	Geoquip Marine			Depth	1.20m	
TESTING 4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle

Consolidated Drained

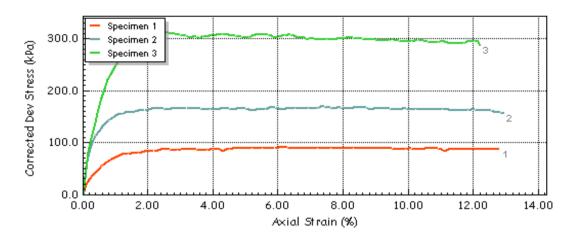
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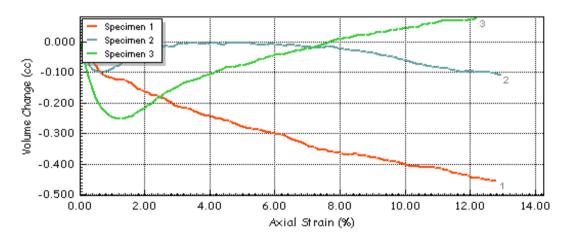
Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σз	(kPa)	1225	950	1150
Initial Back Pressure	и ы	(kPa)	1200	900	1050
Pore Water Pressure Input	и рмр	(kPa)	1209	938	1122
Drainage Method			From One End	From One End	From One End
Final Conditions					
			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	εν%	(%)	0.23	0.55	0.89
Corrected Length	Lc	(mm)	75.9	75.9	75.8
Corrected Area	Αc	(cm2)	11.32	11.30	11.27
Corrected Volume	٧c	(cc)	85.994	85.714	85.428
t100	t 100	(min)	3.37	2.81	4.18
Consolidation	cv	(m2/year	7.068	8.458	5.673
Compressibility	m v	(m2/MN)	0.257	0.145	0.123
Test Time	t F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	dг	(mm/min	0.03164	0.03161	0.03157
Notes					

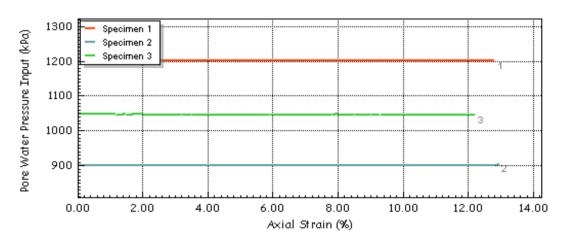


Opci	Test Method	BS EN ISO 17892	-9:2018	Test Name	OWF_GI-12	2_Samp 1.20m PU02 B2
YPSL				Test Date	19/04/2023	
PROFESSIONAL SOILS LABORATORY A PHENKA GROUP COMPANY		GMOP21-G-0	119 A05 Bretagne	Borehole	OWF_GI-12	2_Samp
UKAS	Jobfile	offshore		Sample	1.20m PU0	2 B2
UKAS	Client	Geoquip Marine	_	Depth	1.20m	
TESTING 4043	Operator	D.Burton	Checked S	.Royle	Approved	S.Royle

Consolidated Drained

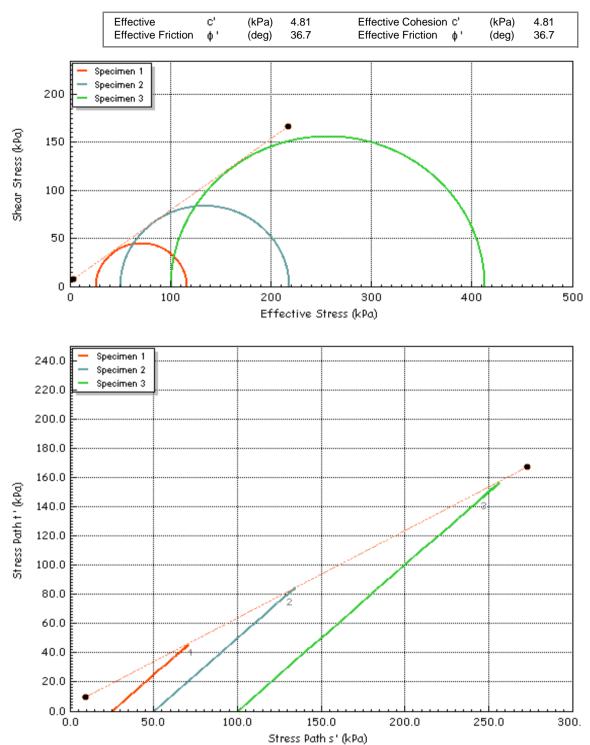






ODCI	Test Method	BS EN ISO 17892	-9:2018	Test Name	OWF_GI-12_S	Samp 1.20m PU02 B2
WP3L				Test Date	19/04/2023	
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-0	19 A05 Bretagne	Borehole	OWF_GI-12_S	Samp
UKAS	Jobfile	off	shore	Sample	1.20m PU02 B	2
UKAS	Client	Geoquip Marine		Depth	1.20m	
7ESTING 4043	Operator	D.Burton	Checked S	S.R ['] oyle	Approved	S.Royle

Consolidated Drained

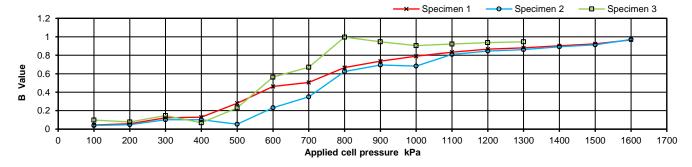


OPSL	Test Method	BS EN ISO 17892	2-9:2018		Test Name Test Date	OWF_GI-12_Samp 1.20m PU02 B2 19/04/2023			
PROFESSIONAL SOILS LABORATORY A PRIEMMA GROUP COMPANY			019 A05 Bretagne		Borehole	OWF_GI-12	- '		
	Jobfile	Of	fshore		Sample	1.20m PU02	: B2		
UKAS TESTING	Client	Geoquip Marine			Depth	1.20m			
4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle		

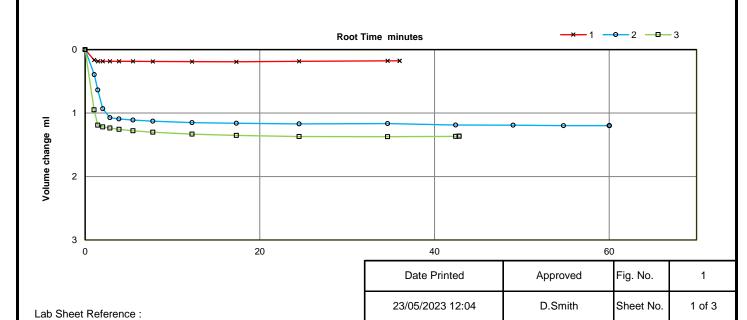
GEOQUIPMARINE	Consolidated D	Job Ref	GMOP21-G-019			
GEOGRIFIANIAE	with measurem	ent of volume	e change	Borehole	OWF_GI#12_SAMP	
Site Name	A05 Bretagne Offsho	ore GI		Sample No. PU05		
Soil Description	2.5y 4/3 Olive brown	SAND		Depth m	2.30	
Specimen Reference	B1	Specimen Depth	2.30 m	Sample Type	B1	
Specimen Description	2.5y 4/3 Olive brown	SAND		KeyLAB ID	BH0120230227222	
Test Method	BS EN ISO 17892 Pa	art 9: Consolidate	ed Trixial Compression Tests	-	-	

Spec	imen Details		1	2	3
	Height	mm	100.0	140.0	100.0
-	Diameter	mm	50.0	70.0	50.0
Initial	Bulk Density	Mg/m³	1.62	1.61	1.62
_	Water Content	%	10.1	10.0	10.0
	Dry density	Mg/m³	1.47	1.47	1.47
-	Bulk Density	Mg/m³	1.73	1.81	1.84
Final	Water Content	%	24.9	25.8	25.6
1	Dry density	Mg/m³	1.45	1.45	1.47

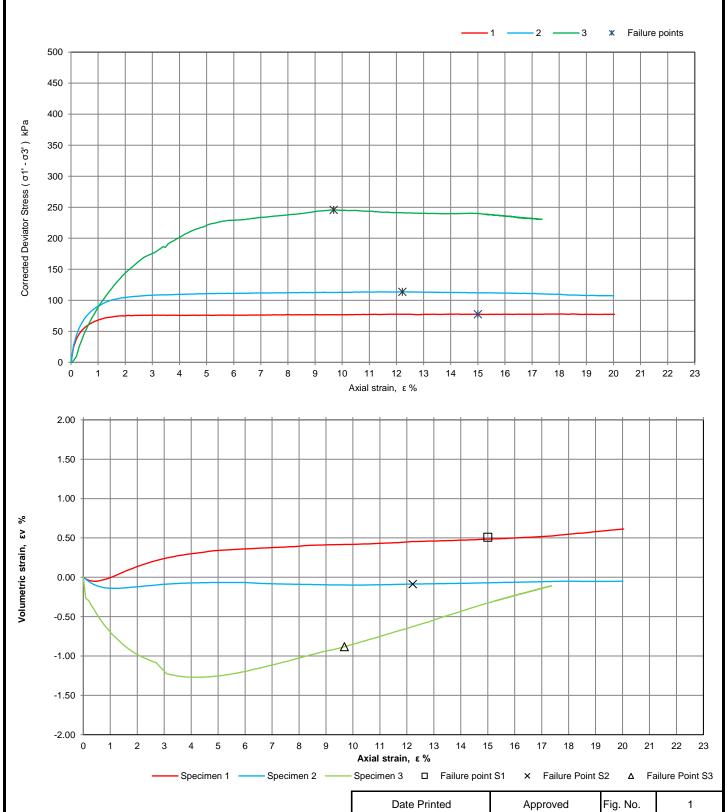
Saturation Details		1	2	3
Method		Back pressure method	Back pressure method	Back pressure method
Cell pressure increments	kPa	100	100	100
Differential Pressure	kPa	20	20	20
Final Cell Pressure	kPa	1600	1600	1300
Final pore water pressure	kPa	1490	1490	1189
Final B Value		0.97	0.97	0.95



	Specimen No.	1	2	3	
	Drainage Conditions	One end			
	Cell Pressure applied	1625	1650	1500	kPa
Consolidation	Back Pressure applied	1600	1600	1400	kPa
Details	Effective Pressure	25	50	100	kPa
	Pore pressure at start of consolidation	1605	1642	1475	kPa
	Pore pressure at end of consolidation	1595	1606	1401	kPa
	Pore pressure dissipation at end of consolidation	198	86	98	%



	Consolidated	Drained Triaxia	al Compression Te	Job Ref	GMOP21-G-019		
GEOQUIPMARINE	with measure	ement of volume	: change	Borehole	OWF_GI#12_SAMP		
Site Name	A05 Bretagne Offs	shore GI		Sample No.	PU05		
Specimen Reference	B1	Specimen Depth	2.30	m	Depth m	2.30	
Compression stages	graphical data				Sample Type	B1	
Compression stages	- grapnicai data	KeyLAB ID	BH0120230227222				



23/05/2023 12:04

 $\mathsf{D}.\mathsf{Smith}$

Sheet No.

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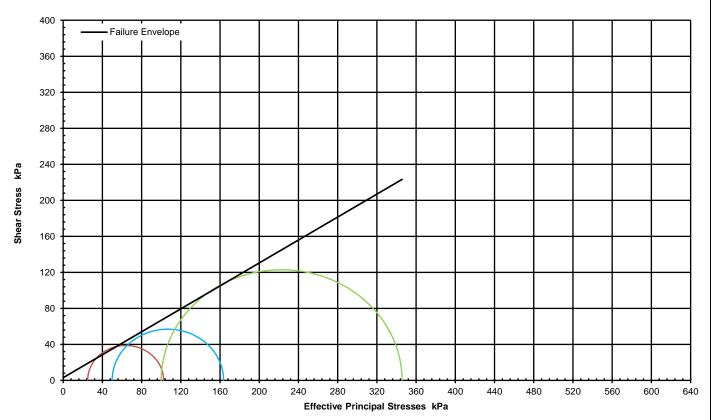
Lab Sheet Reference:

	Consolidated	est	Job Ref	GMOP21-G-019		
with measurement of volume change					Borehole	OWF_GI#12_SAMP
Site Name	A05 Bretagne Off	shore GI		Sample No.	PU05	
Specimen Reference	B1	Specimen Depth	2.30	m	Depth m	2.30
Compression stages	table of recults an	Sample Type	B1			
Compression stages - table of results and interpretation					KeyLAB ID	BH0120230227222

At maximum deviator stress (failure)

Specimen	Cell pressure	Initial pwp	Initial σ ₃ '	Rate of strain	Axial strain, ϵ_f	(σ_1 ' - σ_3 ') f	Volumetric strain, ϵ_v	σ ₃ ' _f	σ ₁ ' _f	Specimen Remarks
	kPa	kPa	kPa	%/hr	%	kPa	% per hr	kPa	kPa	
1	1625	1600	25	1.00	15.0	78	0.5	25	103	
2	1650	1600	50	1.00	12.2	114	-0.1	50	164	
3	1500	1400	100	1.00	9.7	246	-0.9	100	346	

Mohr Circles



Mode of failure

Shear Strength Parameters			Linear regression	Manual re-assessment	0			
	с'	kPa	2.8	-				
	ø'	degrees	32.5	-				
General Remarks						Plastic	Compound	Plastic

General Remarks

Deviator stresses corrected for area change, and up to 0.25 mm thick rubber membrane/

f Denotes at failure
Positive volume changes indicate water out of specimen (consolidation)
Lab Sheet Reference :

Date Printed	Approved	Fig. No.	1
23/05/2023 12:04	D.Smith	Sheet No.	3 of 3

Consolidated Drained

Summary Report

Sample Details		sketch showing specime	en location in o				
Depth	0.80m						
Description	Greyish brown sl	ightly gravelly SAND.			"		,
Туре	Recompacted	l at 1.47 DD, 10% moistu	re content.				
					Spm. 1	2	3
Initial Sample Length			Lo	(mm)	76.0	76.0	76.0
Initial Sample Diame			Do	(mm)	38.0	38.0	38.0
Initial Sample Weigh	t		Wo	(gr)	139.5	139.5	139.5
Initial Bulk Density Particle Density			ρο ρs	(Mg/m3) (Mg/m3)	1.62	1.62	1.62
- article Bensity			P 2	(Wig/1113)	2.66	2.66	2.66
Initial Conditions					Spm. 1	2	3
Initial Cell Pressur	e		σ3i	(kPa)	1425	1450	1500
Initial Back Pressu	ire		U bi	(kPa)	1400	1400	1400
Membrane Thickn	ess		m ь	(mm)	0.400	0.400	0.400
Displacement Inpu	ıt		L IP	(mm)	CH 2	CH 2	CH 2
Load Input	-		N IP	(N)	CH 1	CH 1	CH 1
Pore Water Press	ire Input		U pwp	(kPa)	CH 3	CH 3	CH 3
Sample Volume			V	(cc)	CH 2	CH 2	CH 2
·				` ,			
Initial Moisture			ωi	(%)	10	10	10
Initial Dry Density			ρdi	(Mg/m3)	1.47	1.47	1.47
Initial Voids Ratio			ei	•	0.812	0.812	0.812
Initial Degree of S	aturation		Si	(%)	34	34	34
B Value			В		0.98	0.98	0.97
Final Conditions					Spm. 1	2	3
Final Moisture			ωf	(%)	32	30	27
Final Dry Density			ρdf	(Mg/m3)	1.47	1.47	1.48
Final Voids Ratio			e f	(g,)	0.811	0.807	0.801
Final Degree of Sa	turation		Sf	(%)	100.0	97.5	89.3
· · · · · · · · · · · · · · · · · · ·				(7-7)	Max. Dev.	Max. Dev.	Max. Dev.
Failure Criteria					Stress	Stress	Stress
Strain At Failure			εf	(%)	3.20	1.55	3.32
Stress At Failure			(σ1-σ3)f		99.9	184.8	359.4
Minor Stress At Fa	ilure		σ3'	(kPa)	25.0	50.0	100.0
Major Stress At Fa	ilure		σ1'	(kPa)	124.9	234.8	459.4
Principal Stress Ra	tio At Failure		σ1'/σ3'		4.995	4.696	4.594
	teria			(kPa)	1400.0	1399.0	1402.0







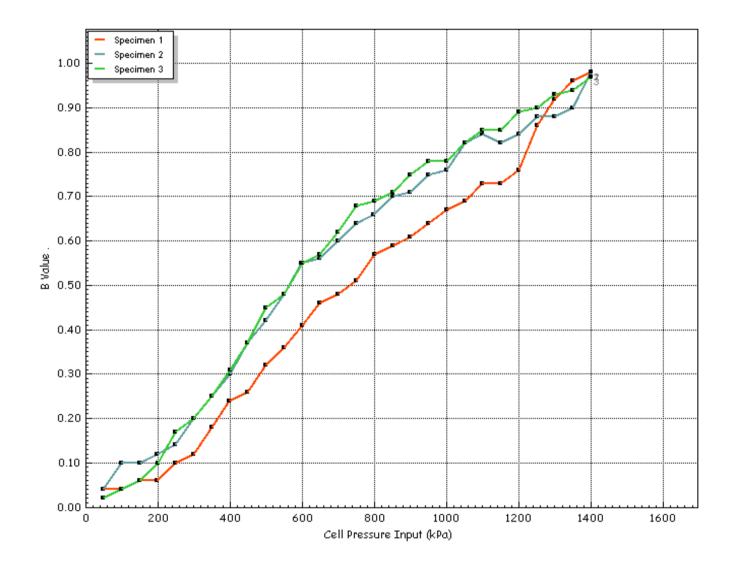
Coi	тр	ou	n

OBCI	Test Method	BS EN ISO 17	7892-9:2018		Test Name	OWF_GI-17	7_samp 0.80m PU02 B1
WP5L					Test Date	19/04/2023	
PROFESSIONAL SOILS LABORATORY A PHIRMA GROUP COMPANY		GMOP21-	-G-019 A05 Bretagr	ne	Borehole	OWF_GI-17	7_samp
	Jobfile		offshore		Sample	0.80m PU0	2 B1
UKAS TESTING	Client	Geoquip Mari	ne		Depth	0.80m	
4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle

Consolidated Drained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	1400	1400	1400
Pore Water Pressure Input	u _{քա} ք	(kPa)	1371	1384	1382
B Value	В		0.98	0.98	0.97

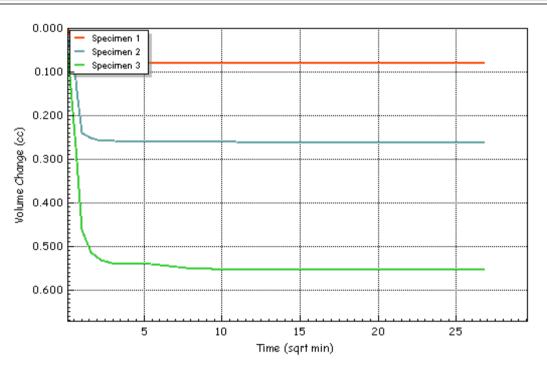


	OPSL	Test Method	BS EN ISO 17892	-9:2018	Test Name Test Date	OWF_GI-17_samp 0.80m PU02 B1 19/04/2023		
P	A PRINT ROOF COMPANY UKAS	Jobfile		19 A05 Bretagne shore	Borehole Sample	OWF_GI-17_samp 0.80m PU02 B1		
	UKAS	Client	Geoquip Marine		Depth	0.80m		
L	TESTING 4043	Operator	D.Burton	Checked S.F	Royle	Approved S.Royle		

Consolidated Drained

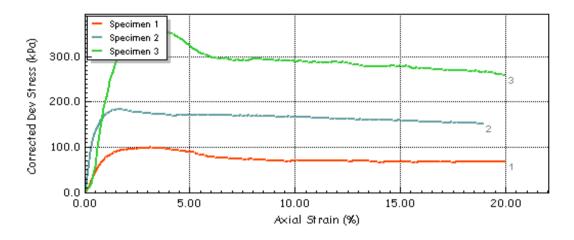
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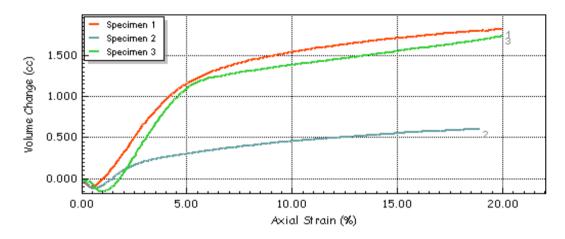
Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σз	(kPa)	1425	1450	1500
Initial Back Pressure	и ы	(kPa)	1400	1400	1400
Pore Water Pressure Input	и рмр	(kPa)	1408	1431	1477
Drainage Method			From One End	From One End	From One End
Final Conditions					
			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	εν%	(%)	0.10	0.31	0.64
Corrected Length	Lc	(mm)	76.0	75.9	75.8
Corrected Area	Αc	(cm2)	11.33	11.32	11.29
Corrected Volume	٧c	(cc)	86.111	85.929	85.639
t100	t 100	(min)	1.47	1.27	1.63
Consolidation	cv	(m2/year	16.218	18.745	14.572
Compressibility	m v	(m2/MN)	0.119	0.099	0.083
Test Time	t F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	ε%	(%)	5.0	5.0	5.0
Shear Machine Speed	d r	(mm/min	0.03166	0.03163	0.03160

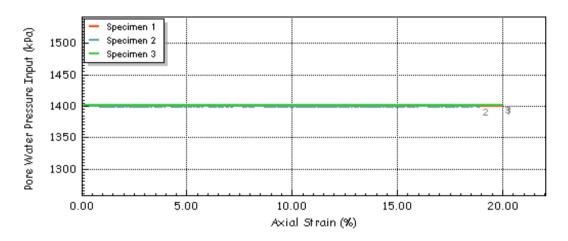


OBCI	Test Method	BS EN ISO 17892	-9:2018	Test Name	OWF_GI-17_samp 0.80m PU02	2 B1	
WP5L				Test Date	19/04/2023		
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-0	119 A05 Bretagne	Borehole	OWF_GI-17_samp		
UKAS	Jobfile	off	shore	Sample	0.80m PU02 B1		
UKAS	Client	Geoquip Marine		Depth	0.80m		
4043	Operator	D.Burton	Checked S.I	Royle	Approved S.Royle		

Consolidated Drained

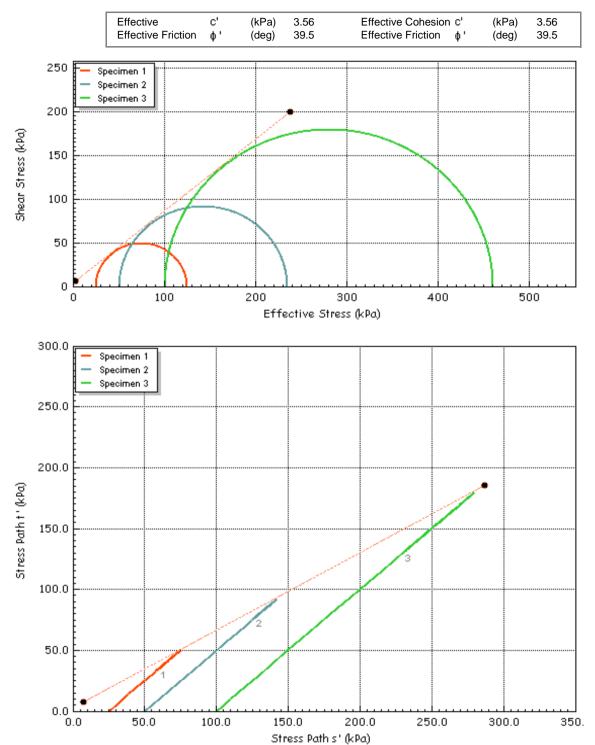






OPSL	Test Method	BS EN ISO 17892	-9:2018		Test Name Test Date	OWF_GI-17 19/04/2023	_samp 0.80m PU02 B1
PROFESSIONAL SOILS LABORATORY A PHINNA GROUP COMPANY			19 A05 Bretagne		Borehole	OWF_GI-17	_samp
	Jobfile	off	shore		Sample	0.80m PU02	2 B1
UKAS TESTRIC	Client	Geoquip Marine			Depth	0.80m	
4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle

Consolidated Drained



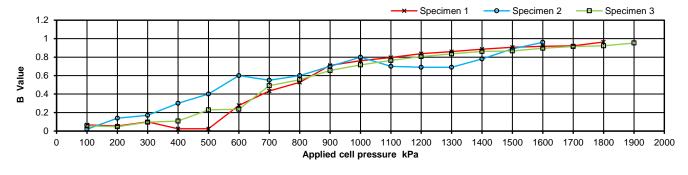
© I	PSL	Test Method	BS EN ISO 17892	-9:2018		Test Name Test Date	OWF_GI-17_ 19/04/2023	_samp 0.80m PU02 B1	
PROFESSIONAL	A PHENNA GROUP COMPANY		GMOP21-G-019 A05 Bretagne			Borehole	OWF_GI-17_samp		
	KAS TESTING	Jobfile	of	fshore		Sample	0.80m PU02	B1	
U	IKAS	Client	Geoquip Marine	_		Depth	0.80m		
	4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle	

GEOQUIPMARINE			otropic C est with r		Triaxial ement of volum	е	Job Ref		GMC)P21-G-019	
	change	•					Borehole		OWF_	GI#20_SAMP	
Site Name	A05 Breta	.05 Bretagne Offshore GI						No.	PU02		
Soil Description	2.5y 4/2 [2.5y 4/2 Dark greyish brown silty SAND						Depth m		0.80	
Specimen Reference	PL	102	Specimen 0.80 m			Sample 7	уре	B1			
Specimen Description	2.5y 4/2 [Dark greyish	n brown silty	SAND			KeyLAB	D	BH012	20230227381	
Test Method	BS EN IS	O 17892 P	art 9: Conso	lidated Tri	xial Compression Te	ests					
Specimen Type/	Preparation	REMOULD	DED 25/50/10	0 kPa 1.56	DD @ 10% MC						
Specimen Details 1 2 3 Saturation Details				etails		1	2	3			

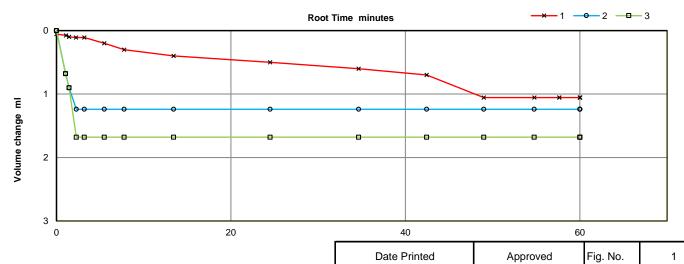
Spec	imen Details		1	2	3
	Height	mm	100.0	140.0	100.0
=	Diameter n		50.0	70.1	50.0
Initial	Bulk Density Mg/m ³		1.70	1.70	1.71
=	Water Content	Water Content %		10.0	10.0
	Dry density	Mg/m³	1.55	1.55	1.55
_	Bulk Density	Mg/m³	1.91	1.95	1.98
Final	Water Content	%	23.6	27.8	26.0
ш	Dry density	Mg/m³	1.54	1.54	1.55

Lab Sheet Reference : GM-L-TSR-46

Saturation Details		1	2	3	
Method			Back pressure method	Back pressure method	
Cell pressure increments	Cell pressure increments kPa		100	100	
Differential Pressure	kPa	20	20	20	
Final Cell Pressure	kPa	1800	1600	1900	
Final pore water pressure kPa		1680	1580	1781	
Final B Value	0.96	0.96	0.95		
Time Taken to saturate	Day	2.00	2.00	2.00	



	Specimen No.	1	2	3	<u> </u>	
	Time Taken to consolidate	1	1	1	Days	
	Drainage Conditions	One end	One end	One end		
O a ma a listati a m	Cell Pressure applied	1800	1650	2000	kPa	
Consolidation Details	Back Pressure applied	1775	1600	1900	kPa	
Johns	Effective Pressure	25	50	100	kPa	
	Pore pressure at start of consolidation	1802	1644	1964	kPa	
	Pore pressure at end of consolidation	1706	1602	1895	kPa	
	Pore pressure dissipation at end of consolidation	355	95	108	%	



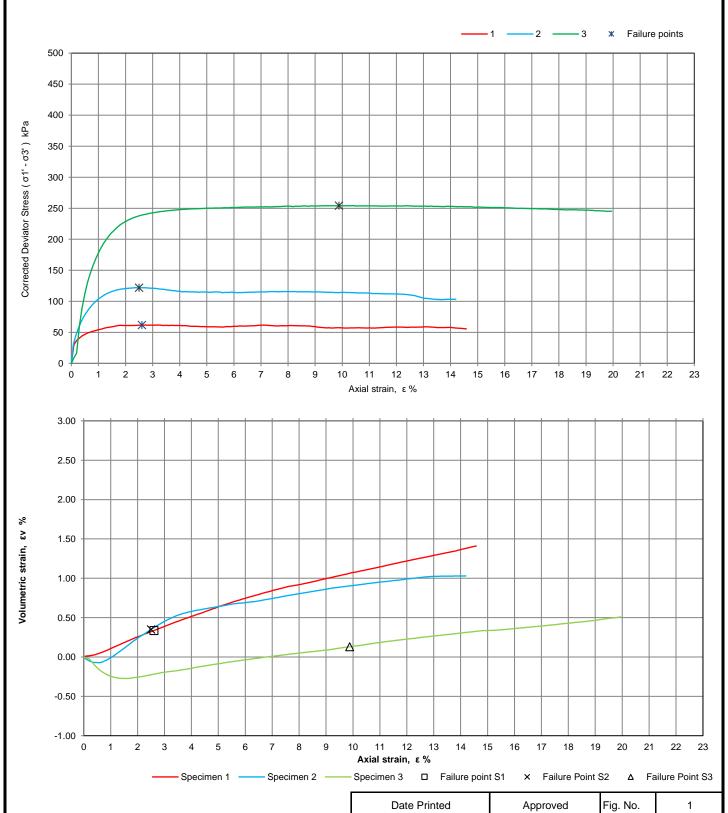
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GEOQUIPMARINE	with measurem	ent of volume	: change		Borehole	OWF_GI#20_SAMP	
Site Name	A05 Bretagne Offsho	ore GI			Sample No.	PU02	
Specimen Reference	PU02	Specimen Depth	I ' I 0.80 I m I			0.80	
Compression stages	graphical data				Sample Type	B1	
Compression stages	- grapnicai data				KeyLAB ID	BH0120230227381	



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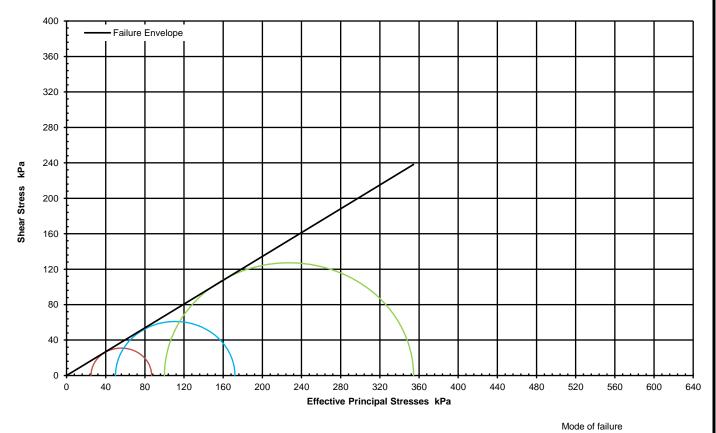
Lab Sheet Reference: GM-L-TSR-46

	Consolidated	Drained Triaxia	al Compression To	est	Job Ref	GMOP21-G-019
GEOQUIPMARINE	with measure	ment of volume	e change		Borehole	OWF_GI#20_SAMP
Site Name	A05 Bretagne Offs	shore GI		Sample No.	PU02	
Specimen Reference	PU02	Specimen Depth	0.80	m	Depth m	0.80
Compression stages	table of regults and		Sample Type	B1		
Compression stages	- table of results and	KeyLAB ID	BH0120230227381			

At maximum deviator stress (failure)

Specimen	Cell pressure	Initial pwp	Initial σ ₃ '	Rate of strain	Axial strain, ε _f	(σ_1 ' - σ_3 ') f	Volumetric strain, ϵ_v	σ ₃ ' _f	σ ₁ ' _f	Specimen Remarks
	kPa	kPa	kPa	%/hr	%	kPa	% per hr	kPa	kPa	
1	1800	1775	25	2.00	2.6	62	0.3	25	87	
2	1650	1600	50	2.00	2.5	122	0.3	50	172	
3	2000	1900	100	2.00	9.9	254	0.1	100	354	

Mohr Circles



Shear Strength Parameters	Shear Strength Parameters		Linear regression	Manual re-assessment
	с'	kPa	[-1.2]	0
	ø'	degrees	[34.3]	33.9

General Remarks

Deviator stresses corrected for area change, and up to 0.3 mm thick rubber membrane/Specimen 1 Back tap was left shut during consolidation , rapid loss of PWP caused by the opening $% \left\{ 1,2,\ldots ,n\right\}$

left shut during consolida	ation , rapid lo	ss of PWP caus	sed by the open	ning	· · · · · · · · · · · · · · · · · · ·	Time taken to shear (days)				
Total Time of test:	of test: 4.00 4.00		4.00 1	12.00	Days					
	S1	S2	S 3	All spec	Date Printed	Approved	Fig. No.	1		
f Denotes at failure					Date I fillion	Αρριονοα	1 ig. 140.	'		
Positive volume changes indicat Lab Sheet Reference : 0			solidation)		27/07/2023 11:00	D.Smith	Sheet No.	3 of 3		

Spec 2

Plastic

Spec 3

Plastic 1

Spec 1

Plastic 1

Consolidated Drained

Summary Report

Sample Details	sketch showing specimen location in				
Depth 2.20m					
Description Brownish grey	slightly gravelly SAND.		,	; ;	,
Type Recompact	ed at 1.40 DD, 10% moisture content.				
			Spm. 1	2	3
Initial Sample Length	Lo	(mm)	76.0	76.0	76.0
Initial Sample Diameter	Do	(mm)	38.0	38.0	38.0
Initial Sample Weight	W o	(gr)	133.0	133.0	133.0
Initial Bulk Density Particle Density	PO O-	(Mg/m3) (Mg/m3)	1.54	1.54	1.54
	ρs	(IVIG/TITS)	2.66	2.66	2.66
Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σ3i	(kPa)	1525	1550	1550
Initial Back Pressure	Uы	(kPa)	1500	1500	1450
Membrane Thickness	m ь	(mm)	0.400	0.400	0.400
Displacement Input	L IP	(mm)	CH 2	CH 2	CH 2
Load Input	N IP	(N)	CH 4	CH 4	CH 4
Pore Water Pressure Input	и рмр	(kPa)	CH 3	CH 5	CH 3
Sample Volume	ν	(cc)	CH 6	CH 6	CH 6
Initial Moisture	ωi	(%)	10	9.92	9.92
Initial Dry Density	ρdi	(Mg/m3)	1.40	1.40	1.40
Initial Voids Ratio	e i		0.903	0.895	0.895
Initial Degree of Saturation	Si	(%)	31	29	29
B Value	В		0.96	0.96	0.96
Final Conditions			Spm. 1	2	3
Final Moisture	ωf	(%)	35	34	33
Final Dry Density	ρdf	(Mg/m3)	1.40	1.41	1.41
Final Voids Ratio	e f		0.900	0.889	0.885
Final Degree of Saturation	Sf	(%)	100.0	100.0	99.9
•	•	. ,	Max. Dev.	Max. Dev.	Max. Dev.
Failure Criteria			Stress	Stress	Stress
Strain At Failure	εf	(%)	2.01	1.41	3.46
Stress At Failure	(01-03)	f (kPa)	59.2	121.0	241.4
Minor Stress At Failure	σ3'	(kPa)	25.0	50.0	100.0
Major Stress At Failure	σ1'	(kPa)	84.2	171.0	341.4
Principal Stress Ratio At Failure	σ1'/σ3'		3.368	3.421	3.414
PwP At Failure Criteria	u f	(kPa)	1500.0	1500.0	1450.0
Notes					

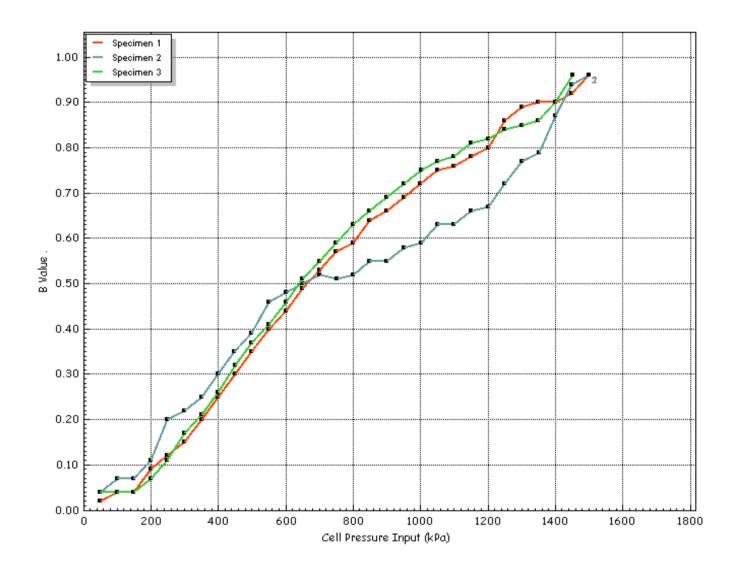
Compound

ODCI	Test Method	BS EN ISO 1	7892-9:2018		Test Name	OWF_GI-20	0_samp 2.20m PU05		
WP3L					Test Date	19/04/2023			
PROFESSIONAL SOILS LABORATOR	Y	GMOP2	1-G-019 A05 Bretag	ne	Borehole	OWF_GI-20	OWF_GI-20_samp		
a	Jobfile	offshore			Sample	2.20m PU0	2.20m PU05 B1		
UKAS TESTAG	Client	Geoquip Marine			Depth	2.20m	2.20m		
4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle		

Consolidated Drained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Ramped
Cell Pressure Input	σ	(kPa)	1500	1500	1451
Pore Water Pressure Input	U pwp	(kPa)	1478	1498	1431
B Value	В		0.96	0.96	0.96

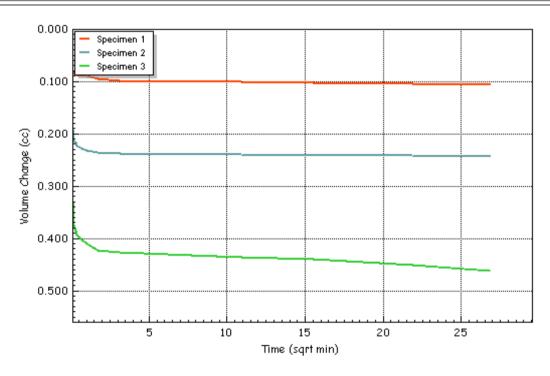


OPSL	Test Method				Test Name Test Date	OWF_GI-20_samp 2.20m PU05 19/04/2023		
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	lahtila	GMOP21-G-019 A05 Bretagne offshore			Borehole	OWF_GI-20_samp		
UKAS	Client Geoquip Marine		SHOLE		Sample Depth	2.20m PU05 2.20m) B.I	
TESTING 4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle	

Consolidated Drained

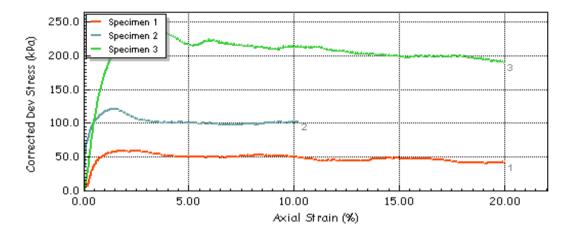
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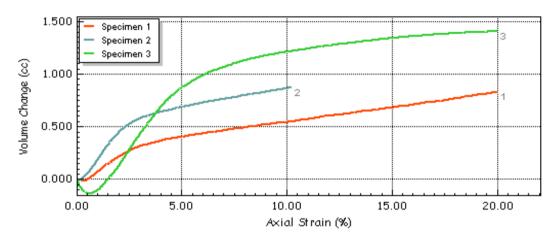
Initial Back Pressure u bi (kPa) 1500 Pore Water Pressure Input u pwp (kPa) 1506 Drainage Method From C Final Conditions PWP Dissipation % U% (%) 100.00 Volumetric Strain 5 v % (%) 0.12 Corrected Length L c (mm) 76.0 Corrected Area A c (cm2) 11.33 Corrected Volume V c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c ∨ (m2/year 8.543 Compressibility m ∨ (m2/MN) 0.205		
Initial Back Pressure	pm. 1 2 3	
Pore Water Pressure Input u pwp (kPa) 1506 Drainage Method From O Final Conditions Spm. 1 PWP Dissipation % U% (%) 100.00 Volumetric Strain ε ν % (%) 0.12 Corrected Length L c (mm) 76.0 Corrected Area A c (cm2) 11.33 Corrected Volume V c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c v (m2/year 8.543 Compressibility m v (m2/MN) 0.205	525 1550 1550	
From Compressibility Final Conditions Spm. 1 PWP Dissipation % U% (%) 100.00 Volumetric Strain ε ν % (%) 0.12 Corrected Length L c (mm) 76.0 Corrected Area A c (cm2) 11.33 Corrected Volume ∀ c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c ∨ (m2/year 8.543 Compressibility m ∨ (m2/MN) 0.205	500 1500 1450	
Final Conditions Spm. 1 PWP Dissipation % U% (%) 100.00 Volumetric Strain € v % (%) 0.12 Corrected Length L c (mm) 76.0 Corrected Area A c (cm2) 11.33 Corrected Volume ∀ c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c ∨ (m2/year 8.543 Compressibility m ∨ (m2/MN) 0.205	506 1524 1521	
PWP Dissipation % U% (%) 100.00 Volumetric Strain ε ν % (%) 0.12 Corrected Length L c (mm) 76.0 Corrected Area A c (cm2) 11.33 Corrected Volume V c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c v (m2/year 8.543 Compressibility m v (m2/MN) 0.205	rom One End From One End From One End	
PWP Dissipation % U% (%) 100.00 Volumetric Strain ε ν % (%) 0.12 Corrected Length L c (mm) 76.0 Corrected Area A c (cm2) 11.33 Corrected Volume V c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c v (m2/year 8.543 Compressibility m v (m2/MN) 0.205		
Volumetric Strain εν% (%) 0.12 Corrected Length L c (mm) 76.0 Corrected Area A c (cm2) 11.33 Corrected Volume V c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c v (m2/year 8.543 Compressibility m v (m2/MN) 0.205	•	
Corrected Length L c (mm) 76.0 Corrected Area A c (cm2) 11.33 Corrected Volume V c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c v (m2/year 8.543 Compressibility m v (m2/MN) 0.205	00.00 100.00 100.00	
Corrected Area A c (cm2) 11.33 Corrected Volume V c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c v (m2/year 8.543 Compressibility m v (m2/MN) 0.205	.12 0.28 0.54	
Corrected Volume V c (cc) 86.087 t100 t 100 (min) 2.79 Consolidation c v (m2/year 8.543 Compressibility m v (m2/MN) 0.205	6.0 75.9 75.9	
t100 t 100 (min) 2.79 Consolidation c v (m2/year 8.543 Compressibility m v (m2/MN) 0.205	1.33 11.32 11.30	
Consolidation C V (m2/year 8.543 Compressibility m V (m2/MN) 0.205	6.087 85.949 85.731	
Compressibility m v (m2/MN) 0.205	.79 0.50 1.59	
	.543 47.620 14.949	
T	.205 0.118 0.075	
Test Time t F (h:m:s) 02:00:	2:00:00 02:00:00 02:00:00	
Estimated Strain to Failure ε % (%) 5.0	.0 5.0 5.0	
Shear Machine Speed d _r (mm/min 0.0316	.03165 0.03164 0.03161	

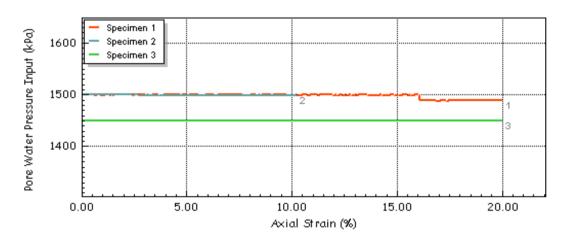


ODCI	Test Method	BS EN ISO 17892	Test Name	OWF_GI-20_samp 2.20m PU05			
WP5L				Test Date	19/04/2023		
PROFESSIONAL SOILS LABORATORY A PHENKA GROUP COMPANY		GMOP21-G-0	119 A05 Bretagne	Borehole	OWF_GI-20_samp		
UKAS	Jobfile	off	shore	Sample	2.20m PU05 B1		
UKAS	Client	Geoquip Marine	Geoquip Marine		2.20m		
TESTING 4043	Operator	D.Burton	Checked S.F	Royle	Approved S.Royle		

Consolidated Drained

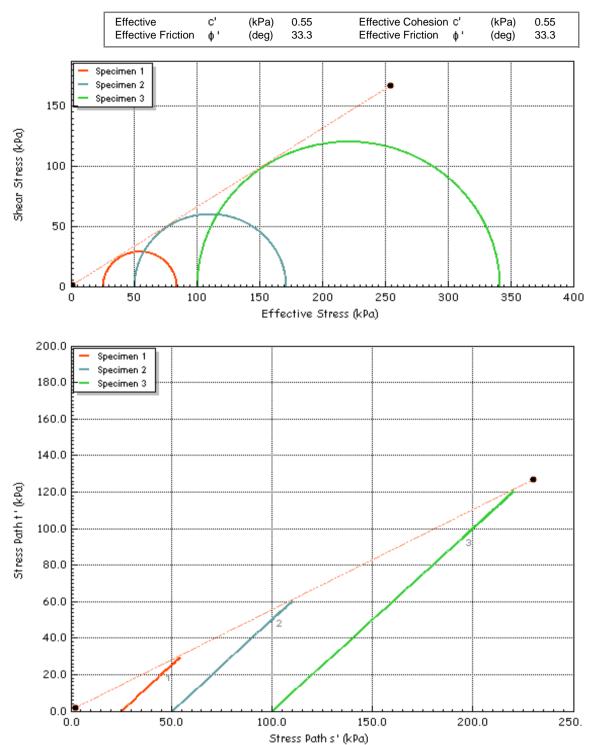






	DCI	Test Method	Test Method BS EN ISO 17892-9:2018				OWF_GI-20	_samp 2.20m PU05	
	YPSL					Test Date	e 19/04/2023		
PF	OFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-019 A05 Bretagne			Borehole	OWF_GI-20_samp		
	UKAS	Jobfile	off	shore		Sample	2.20m PU05	5 B1	
	UKAS	Client	Geoquip Marine			Depth	2.20m		
L	TESTING 4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle	

Consolidated Drained



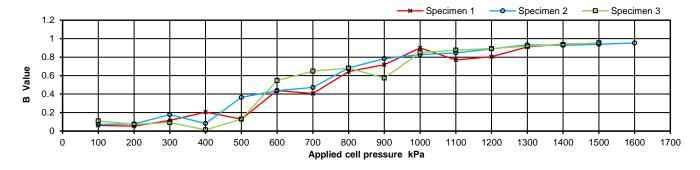
6	PSL	Test Method	BS EN ISO 17892	-9:2018		Test Name Test Date	OWF_GI-20_samp 2.20m PU05 19/04/2023		
PROFE	SSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-019 A05 Bretagne			Borehole	OWF_GI-20_samp		
		Jobfile	off	fshore		Sample	2.20m PU05	B1	
	UKAS TESTING	Client	Geoquip Marine	_		Depth	2.20m		
	4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle	

GEOQUIPMARINE	Consolidated Is	-	ned Triaxial surement of volume	Job Ref	GMOP21-G-019
<u>GC</u>	change	Jot With meas	sarchient of volume	Borehole	OWF_GI#22_SAMP
Site Name	A05 Bretagne Offsho	ore GI		Sample No.	PU06
Soil Description	2.5y 4/2 Dark greyish fragments	n brown SAND inc	luding sparse shell	Depth m	2.70
Specimen Reference	B1	Specimen Depth	2.70 m	Sample Type	B1
Specimen Description	2.5y 4/2 Dark greyish fragments	ı brown SAND inc	luding sparse shell	KeyLAB ID	BH0120230227425
Test Method	BS EN ISO 17892 P	art 9: Consolidate	ed Trixial Compression Tests		

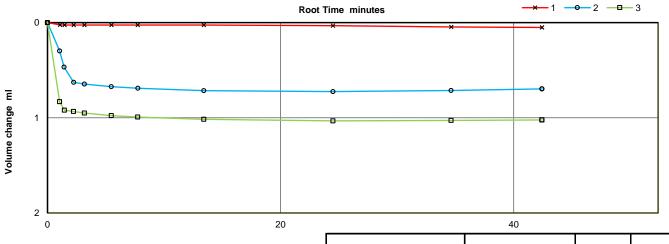
Spe	ecimen Type/Prepa	aration	REMOUL	DED 25/50/10	00 kPa 1.62DI	O @ 10% MC
					1	. —
Spec	cimen Details		1	2	3	Satur
	Height	mm	100.0	140.0	100.1]
	Diameter	mm	50.0	70.1	50.0	Metho
Initial	Bulk Density	Mg/m³	1.79	1.80	1.80	l L
<u> </u>	Water Content	%	10.0	10.0	10.0	Cell p
	Dry density	Mg/m³	1.63	1.64	1.64	Differe
_	Bulk Density	Mg/m³	1.97	1.99	2.06	Final (
Final	Water Content	%	21.8	25.7	26.2	Final
۳.	Dry density	Ma/m³	1 61	1 62	1 63	1

Lab Sheet Reference : GM-L-TSR-46

Saturation Details		1	2	3
Method			Back pressure method	Back pressure method
Cell pressure increments	100	100	100	
Differential Pressure	kPa	20	20	20
Final Cell Pressure	kPa	1500	1600	1500
Final pore water pressure	kPa	1381	1480	1380
Final B Value	0.95	0.95	0.95	
Time Taken to saturate	Day	2.00	2.00	2.00



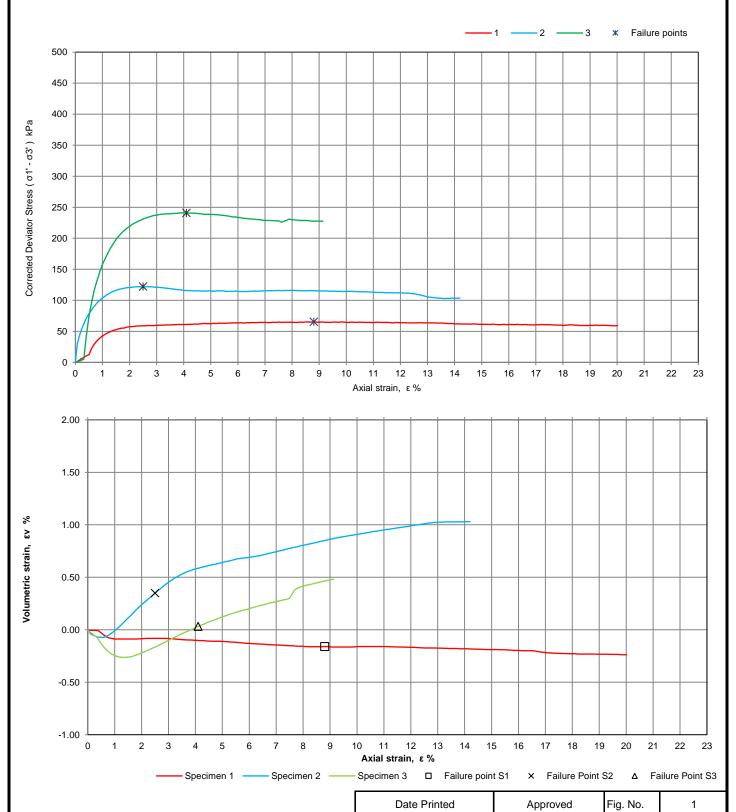
	Specimen No.	1	2	3	<u> </u>	
	Time Taken to consolidate	1	1	1	Days	
	Drainage Conditions	One end	One end	One end		
Composite desired	Cell Pressure applied	1500	1650	1600	kPa	
Consolidation Details	Back Pressure applied	1475	1600	1500	kPa	
Johns	Effective Pressure	25	50	100	kPa	
	Pore pressure at start of consolidation	1493	1630	1578	kPa	
	Pore pressure at end of consolidation	1485	1606	1503	kPa	
	Pore pressure dissipation at end of consolidation	44	79	97	%	



 Date Printed
 Approved
 Fig. No.
 1

 27/07/2023 10:48
 D.Smith
 Sheet No.
 1 of 3

	Consolidated [Orained Triaxia	al Compression Te	est	Job Ref	GMOP21-G-019
GEOQUIPMARINE	with measurem	ent of volume	• change		Borehole	OWF_GI#22_SAMP
Site Name	A05 Bretagne Offsho	ore GI			Sample No.	PU06
Specimen Reference	B1	Specimen 2.70 m			Depth m	2.70
Compression stages	graphical data				Sample Type	B1
Compression stages	- grapnicai data	KeyLAB ID	BH0120230227425			



27/07/2023 10:48

 $\mathsf{D}.\mathsf{Smith}$

Sheet No.

2 of 3

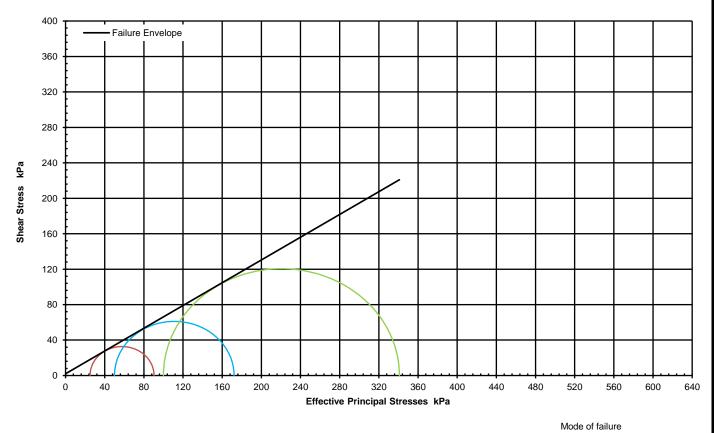
Lab Sheet Reference: GM-L-TSR-46

	Consolidated	l Drained Triaxia	al Compression To	est	Job Ref	GMOP21-G-019
with measurement of volume change					Borehole	OWF_GI#22_SAMP
Site Name	A05 Bretagne Of	fshore GI			Sample No.	PU06
Specimen Reference	B1	Specimen Depth	2.70	m	Depth m	2.70
Compression stages	table of requite on		Sample Type	B1		
Compression stages	- table of results an	KeyLAB ID	BH0120230227425			

At maximum deviator stress (failure)

Specimen	Cell pressure	Initial pwp	Initial σ ₃ '	Rate of strain	Axial strain, ε _f	(σ_1 ' - σ_3 ') f	Volumetric strain, ϵ_v	σ ₃ ' _f	σ ₁ ' _f	Specimen Remarks
	kPa	kPa	kPa	%/hr	%	kPa	% per hr	kPa	kPa	
1	1500	1475	25	2.00	8.8	65	-0.2	25	90	
2	1650	1600	50	2.00	2.5	122	0.4	50	172	
3	1600	1500	100	2.00	4.1	241	0.0	100	341	

Mohr Circles



Shear Strength Parameters	Shear Strength Parameters			Manual re-assessment	
	с'	kPa	1.6	-	
	ø'	degrees	32.7	-	

Ge

General Remark	s				Plastic		Plastic		Plastic			
Deviator stresses corrected for area change, and up to 0.3 mm thick rubber membrane/							ı	Time take	n to shear (c	l davs)		
]				(,		
Total Time of test:	4.00	4.00	4.00	12.00	Days							
	S1	S2	S3	All spec		Date Printed	Appr	oved	Fig. No		1	1
ntes at failure						Date i filited	Appi	ovcu	J. 19. 140	,.	'	

Spec 1

Spec 2

Spec 3

Positive volume changes indicate water out of specimen (consolidation) 27/07/2023 10:48 D.Smith Sheet No. 3 of 3 Lab Sheet Reference : GM-L-TSR-46

Consolidated Drained

Summary Report

Sample Details	sketch sho	wing specimen location in o	riginal sample				
Depth	3.90m					i	
Description	Brown slightly gravelly sandy	CLAY.		,			
Туре	Recompacted at 1.70 D	D, 10% moisture content.					
				Spm. 1	2	3	
Initial Sample Length		Lo	(mm)	76.0	76.0	76.0	
Initial Sample Diame		D o	(mm)	38.0	38.0	38.0	
Initial Sample Weigh Initial Bulk Density	t	W ο ρο	(gr) (Mg/m3)	161.4	161.4	161.4	
Particle Density		ρυ ρs	(Mg/m3)	1.87 2.66	1.87 2.66	1.87 2.66	
- article Bellotty		P 2	(mg/mo)	2.00	2.00	2.00	
Initial Conditions				Spm. 1	2	3	
Initial Cell Pressur	е	σ3i	(kPa)	875	900	950	
Initial Back Pressu	re	U bi	(kPa)	850	850	850	
Membrane Thickne	ess	m b	(mm)	0.400	0.400	0.400	
Displacement Inpu	t	LIP	(mm)	CH 2	CH 2	CH 2	
Load Input		N IP	(N)	CH 4	CH 4	CH 4	
Pore Water Pressu	ure Input	и рмр	(kPa)	CH 3	CH 3	CH 3	
Sample Volume		V	(cc)	CH 6	CH 6	CH 6	
·			` ,				
Initial Moisture		ωί	(%)	10	10	10	
Initial Dry Density		ρdi	(Mg/m3)	1.70	1.70	1.70	
Initial Voids Ratio		e i		0.568	0.568	0.568	
Initial Degree of Sa	aturation	Si	(%)	49	49	49	
B Value		В		0.96	0.95	0.95	
Final Conditions				Spm. 1	2	3	
Final Moisture		ωf	(%)	22	22	19	
Final Dry Density		ρdf	(Mg/m3)	1.70	1.72	1.77	
Final Voids Ratio		ef		0.564	0.544	0.501	
Final Degree of Sa	turation	Sf	(%)	100.0	100.0	100.0	
-			•	Max. Dev.	Max. Dev.	Max. Dev.	
Failure Criteria				Stress	Stress	Stress	
Strain At Failure		ξf	(%)	5.30	19.80	13.94	
Stress At Failure		(σ 1 - σ 3) f	` ,	73.4	124.2	225.4	
Minor Stress At Fa		σ3'	(kPa)	25.0	50.0	100.0	
Major Stress At Fa		σ1'	(kPa)	98.4	174.2	325.4	
Principal Stress Ra		σ1'/σ3'		3.938	3.484	3.255	
PwP At Failure Crit	eria	u f	(kPa)	847.0	849.0	844.2	
Notes							

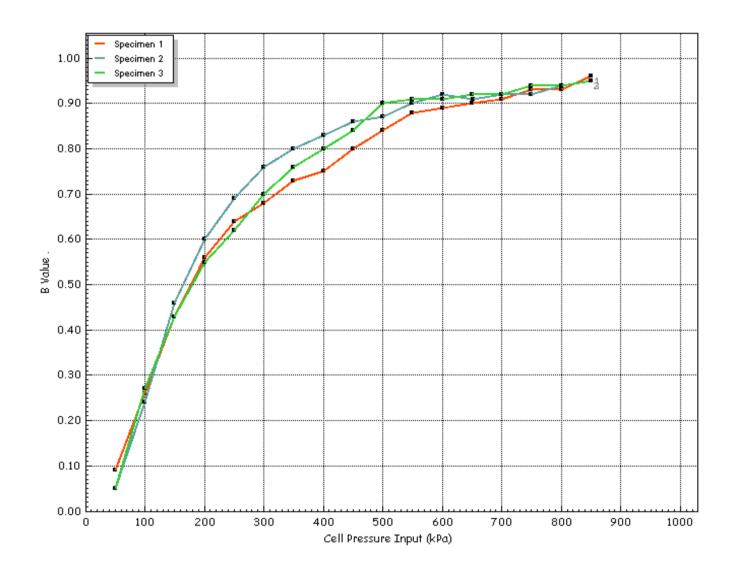
P	las	stic

⊘ DCI	Test Method	BS EN ISO 17892	2-9:2018		Test Name	_	2-Samp 3.90m PU08 Q1	
POL					Test Date	19/04/2023		
PROFESSIONAL SOILS LABORATORY A PHINNA GROUP COMPANY		GMOP21-G-019 A05 Bretagne			Borehole	OWF_GI-222-Samp		
UKAS	Jobfile	offshore			Sample	3.90m PU0	8 Q1	
UKAS TESTING	Client	Geoquip Marine			Depth	3.90m		
4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle	

Consolidated Drained

Saturation Plots

			Spm. 1	2	3
Saturation Method			Stepped	Stepped	Stepped
Cell Pressure Input	σ	(kPa)	850	850	850
Pore Water Pressure Input	и рюр	(kPa)	833	831	833
B Value	В	•	0.96	0.95	0.95

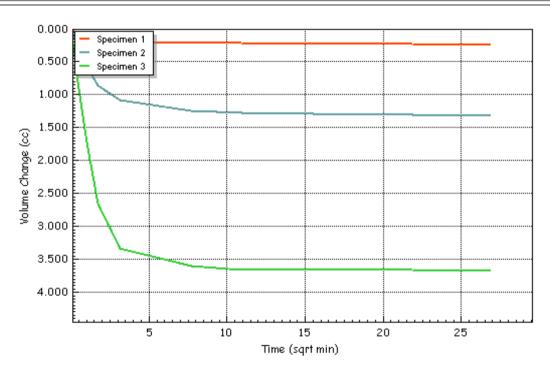


OPSL	Test Method	BS EN ISO 17892-9:2018			Test Name Test Date	OWF_GI-22 19/04/2023	-Samp 3.90m PU08 Q1
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY		GMOP21-G-019 A05 Bretagne			Borehole	OWF_GI-22	2-Samp
UKAS	Jobfile	offshore			Sample	3.90m PU08	Q1
UKAS	Client	Geoquip Marine			Depth	3.90m	
TESTING 4043	Operator	D.Burton	Checked	S.R	oyle	Approved	S.Royle

Consolidated Drained

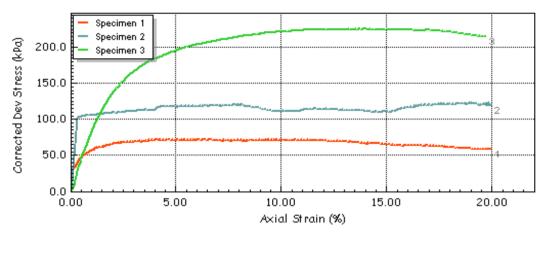
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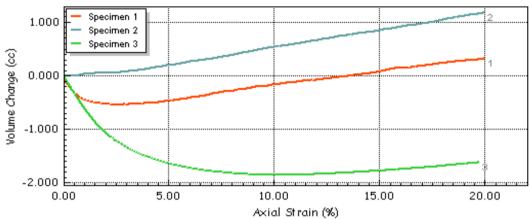
Initial Conditions			Spm. 1	2	3
Initial Cell Pressure	σз	(kPa)	875	900	950
Initial Back Pressure	и ы	(kPa)	850	850	850
Pore Water Pressure Input	U pwp	(kPa)	855	871	929
Drainage Method			From One End	From One End	From One End
Final Conditions					
			Spm. 1	2	3
PWP Dissipation %	U%	(%)	100.00	100.00	100.00
Volumetric Strain	εν%	(%)	0.28	1.53	4.26
Corrected Length	Lc	(mm)	75.9	75.6	74.9
Corrected Area	Αc	(cm2)	11.32	11.23	11.02
Corrected Volume	٧c	(cc)	85.956	84.878	82.517
t100	t 100	(min)	2.02	5.02	6.24
Consolidation	cv	(m2/year	11.788	4.704	3.714
Compressibility	m v	(m2/MN)	0.522	0.740	0.542
Test Time	t F	(h:m:s)	02:00:00	02:00:00	02:00:00
Estimated Strain to Failure	٤%	(%)	5.0	5.0	5.0
Shear Machine Speed	dι	(mm/min	0.03164	0.03151	0.03122
Notes					

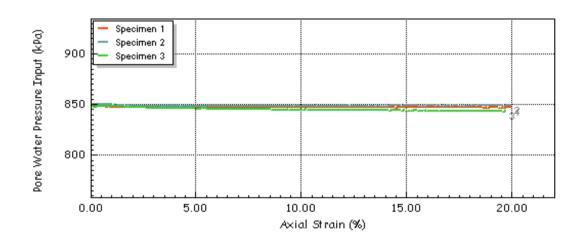


ODCI	Test Method	BS EN ISO 17892	-9:2018	Test Name	OWF_GI-22-Samp 3.90m PU08 Q1
YP5L				Test Date	19/04/2023
PROFESSIONAL SOILS LABORATORY A PHENEA GROUP COMPANY		GMOP21-G-0	119 A05 Bretagne	Borehole	OWF_GI-222-Samp
UKAS	Jobfile	off	shore	Sample	3.90m PU08 Q1
UKAS	Client	Geoquip Marine		Depth	3.90m
TESTING 4043	Operator	D.Burton	Checked S.F	Royle	Approved S.Royle

Consolidated Drained

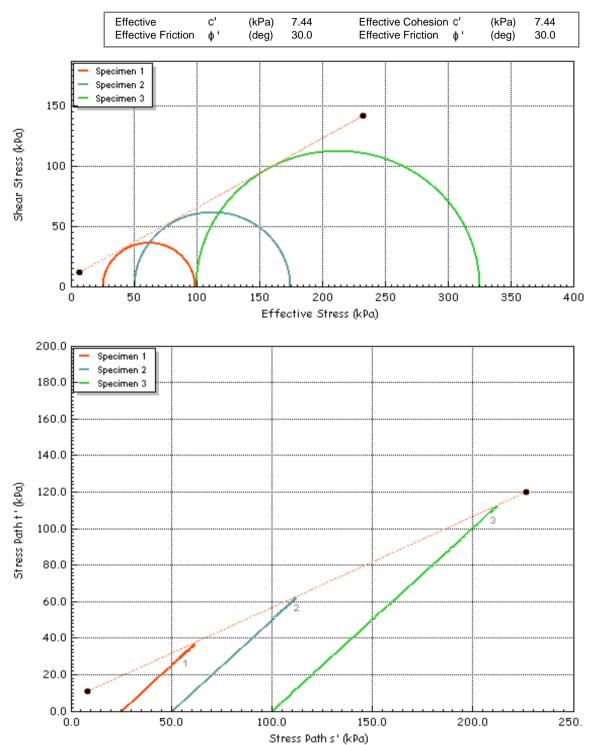






OPSL	Test Method	BS EN ISO 17892-9:2018			Test Name Test Date	OWF_GI-22 19/04/2023	2-Samp 3.90m PU08 Q1
PROFESSIONAL SOILS LABORATORY A PHENRA GROUP COMPANY		GMOP21-G-019 A05 Bretagne			Borehole	OWF_GI-22	22-Samp
# # T	Jobfile	offshore			Sample	3.90m PU08	8 Q1
UKAS	Client	Geoquip Marine			Depth	3.90m	
4043	Operator	D.Burton	Checked	S.R	Royle	Approved	S.Royle

Consolidated Drained



OPSL	Test Method	BS EN ISO 17892	Test Name Test Date	OWF_GI-22 19/04/2023	-Samp 3.90m PU08 Q1	
PROFESSIONAL SOILS LABORATORY A PHENNA GROUP COMPANY	Jobfile	GMOP21-G-(of	Borehole Sample	OWF_GI-22 3.90m PU08	•	
UKAS ESTING	Client	Geoquip Marine	_	Depth	3.90m	
4043	Operator	D.Burton	Checked S.	Royle	Approved	S.Royle

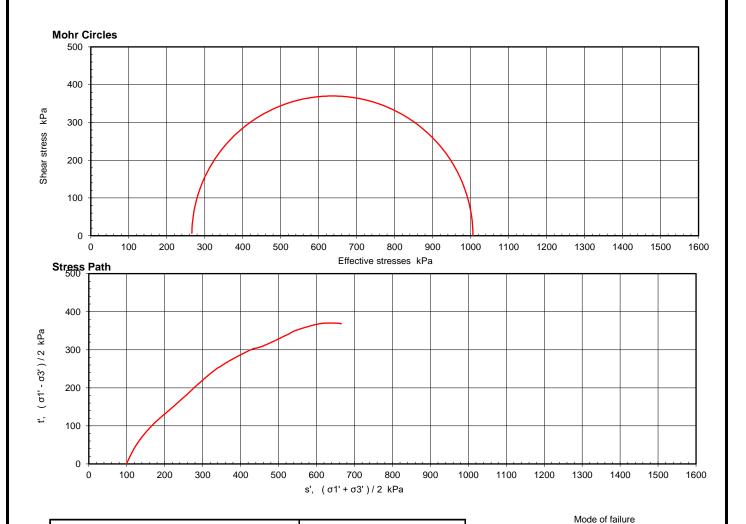
	GFO	QUIPMARINE	Consol						_		sion	J	ob Re	f			(GMOF	P21-G	G-019
0		- January C	Test wi	ith mea	suren	nent o	f po	re p	ressu	ıre		В	oreho	le			OW	VF_GI	I#15A	_SAM
Site	Nam	ne	A05 Breta	agne Offsl	nore GI							S	ample	No.				F	PU06	
Sar	nple I	Description	Extremely CLAY.	y high stre	ngth 10	OYR (3/	1) ver	ry dar	k greyi	sh bro	wn,	С	epth	m		\top		,	10.20	
													ample	е Туре	e	\top			Q1	
pec	ımen	Description	Extremely	nigh strer	ngth 10'	YK (3/1)) very	/ dark	greyis	n brov	vn, CLAY		(eyLAl	B ID		\top	В	H012	20230	30736
Tes	t Met	thod	BS EN IS	O 17892	PART 9	9: Cons	olidat	ed tri	xial cor	npres	sion tests	3								
	Spe	ecimen Type/F	Preparation	UNDIST	URBED	100kPa														
	Spec	imen Details		1	7		Satur	ation	Details		1									
		Height	mm	124.4				N 4 - 4 l	.		Incremen	ts of cel	.							
	Initial	Diameter Bulk Density	y Mg/m³	70.6 2.12				Metho	a		pressur	e only								
		Water Conte	ent %	19.7		Cell pr				kPa	50)								
		Dry density Bulk Density	Mg/m³ y Mg/m³	1.77 2.19		_		I Pres		kPa kPa	5 65									
	Final	Water Conte	ent %	19.5		Final p	ore wa	ater pr	essure	kPa	64									
		Dry density	Mg/m³	1.83		F	Final E	3 Value	е		1.1	3								
	4.0		<u> </u>		<u> </u>								ı		Spec	imen	1			
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alne	0.8								<u> </u>	_										
B Value	0.6			\perp		_				_										
	0.4																			
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	0.2			250 300) 350	S Drai	A Specim nage		cell pres				1 dial+1 er			0 10	00 10	50 11	00 11:	50 120
	0.2	Saturation R	emarks	250 300	350	S Drai Cell Back	Apecim nage Press	nen No Condit ure ap sure ap	o. tions plied				1 dial+1 er 750 650		kPa kPa	0 100	00 10	50 11	00 11:	50 120
	0.2	Saturation R	emarks	250 300		S Drai Cell Back Effe	Specim nage Press Press	nen No Condit ure ap sure ap Press	cell pres	ssure k			1 750 650 100		kPa kPa kPa	0 100	00 10	50 11	00 11:	50 120
	0.2	Saturation R	emarks	250 300	Pore	S Drai Cell Back	Appeciment Appeciation Appecia	nen No Condit ure ap sure ap Press	o. cions plied oplied ure consolid	ation			1 dial+1 er 750 650		kPa kPa	0 100	00 10	50 11	00 11:	50 120
	0.2	Saturation R	emarks		Pore	S Drai Cell Back Effe	Appecimenage Pressective eat st	nen No Condit ure ap sure ap Press art of o	o. cions plied oplied ure consolid consolid	ation	Pa		1 750 650 100 640		kPa kPa kPa kPa	0 100	00 10:	50 11	00 11:	50 120
	0.2	Saturation R	emarks		Pore	S Drai Cell Back Effe pressure	Appecimenage Pressective eat st	nen No Condit ure ap sure ap Press art of o	o. cions plied oplied ure consolid consolid	ation	Pa		1 750 650 100 640 650		kPa kPa kPa kPa kPa	0 100	00 10	50 11	00 11:	50 120
	0.2	Saturation R	emarks		Pore	S Drai Cell Back Effe pressure	Appecimenage Pressective eat st	nen No Condit ure ap sure ap Press art of o	o. cions plied oplied ure consolid consolid	ation	Pa		1 750 650 100 640 650		kPa kPa kPa kPa kPa	0 100	1	50 111	00 11:	50 120
	0.2	Saturation R	emarks		Pore	S Drai Cell Back Effe pressure	Appecimenage Pressective eat st	nen No Condit ure ap sure ap Press art of o	o. cions plied oplied ure consolid consolid	ation	Pa		1 750 650 100 640 650		kPa kPa kPa kPa kPa	0 100	1	50 111	00 11:	50 120
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hange (ml)	0.2 0.0 0.0 0.0 0.6 1.2	Saturation R	emarks		Pore	S Drai Cell Back Effe pressure	Appecimenage Pressective eat st	nen No Condit ure ap sure ap Press art of o	o. cions plied oplied ure consolid consolid	ation	Pa		1 750 650 100 640 650		kPa kPa kPa kPa kPa	0 100	1	50 111	00 11:	50 120
ume Change (ml)	0.2	Saturation R	emarks		Pore	S Drai Cell Back Effe pressure	Appecimenage Pressective eat st	nen No Condit ure ap sure ap Press art of o	o. cions plied oplied ure consolid consolid	ation	Pa		1 750 650 100 640 650		kPa kPa kPa kPa kPa	0 100	1	50 111	00 11:	50 120
Volume Change (ml)	0.2 0.0 0.0 0.0 0.6 1.2	Saturation R	emarks		Pore	S Drai Cell Back Effe pressure	Appecimenage Pressective eat st	nen No Condit ure ap sure ap Press art of o	o. cions plied oplied ure consolid consolid	ation	Pa		1 750 650 100 640 650		kPa kPa kPa kPa kPa	0 100	1	50 111	00 11:	50 120
Volume Change (ml)	0.2 0.0 0.0 0.6 1.2	Consolida Detail	emarks ation s		Pore	S Drai Cell Back Effe pressure	Appecimenage Pressective eat st	pplied men No Condition Condition Press art of or and of or and at er	cell pres	ation ation nsolida	tion		1 750 650 100 640 650		kPa kPa kPa kPa %	0 100	1	76	00 11:	84
Volume Change (ml)	0.2 0.0 0.0 0.6 1.2 1.8 2.4	Consolida Detail	emarks ation s	F	Pore Pore Pore pres	S Drai Cell Back Effe pressure	Appeciation Appeci	pplied men No Condition Condition Press art of or and of or and at er	o. cions plied oplied ure consolid consolid	lation ation msolida	tion 50		1 750 650 100 640 93	nd	kPa kPa kPa kPa kPa		1		00 11:	84
Volume Change (ml)	0.2 0.0 0.0 0.6 1.2 1.8 2.4	Consolida Detail	emarks ation s	F	Pore Pore Pore pres	S Drai Cell Back Effe pressure	Appeciation Appeci	pplied men No Condition Condition Press art of or and of or and at er	cell pres	ation tation insolidation insolidation.	tion	Rac	1 750 650 100 640 93	Ap	kPa kPa kPa kPa %	ed ed	1			

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5	GEOQU	JIPMARINE		st wit											Во	orehol	е			OWF	_GI#15 <i>F</i>	A_SAMP
Site	Name		A05	Breta	gne O	ffshor	e GI								Sa	ample	No.				PU06	
															De	epth i	m				10.20	
			C	Compre	ession	stage	s - gr	aphica	al data	a					Sa	ample	Туре				Q1	
															Ke	eyLAE	3 ID			ВН	0120230	30736
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GEOQUIPMARINE	Consolidated Undrained Triaxial Compression	Job Ref	GMOP21-G-019
GEOQUIPMARINE	Test with measurement of pore pressure	Borehole/Pit No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne Offshore GI	Sample No.	PU06
		Depth m	10.20
Com	pression stages - table of results and interpretation	Sample Type	Q1
		KeyLAB ID	BH012023030736

Failure criterion : Maximum deviator stress

Specimen	Cell pressure	Initial pwp	Initial σ ₃ '	Rate of strain	Axial strain, ε _f	(σ_1 ' / σ_3 ') f	(σ_1 ' - σ_3 ') f	u _f	σ ₃ ' _f	$\sigma_{1}'_{f}$	A_{f}
	kPa	kPa	kPa	%/hr	%		kPa	kPa	kPa	kPa	
1	750	650	100	2.00	18.3	3.78	740	484	266	1007	-0.23



Shear Strength Parameters			Shear Strength
At Maximum deviator stress	Su	kPa	370.00
Shear Strength	at 15%	kPa	359.67
Epsilon 50)	%	3.96

Remarks General Deviator stresses corrected for area change, spiral side drains and up to 0.3 mm thick rubber membrane/Swelled during consolidation/specimen deviating from standard due to being too short

Compound

Date Printed	Approved
23/05/2023 15:08	D.Smith

All symbols used above are defined in BS1377

Lab Sheet Reference : 23/05/2023 15:08 D.Smith Sheet No. 3 of 3

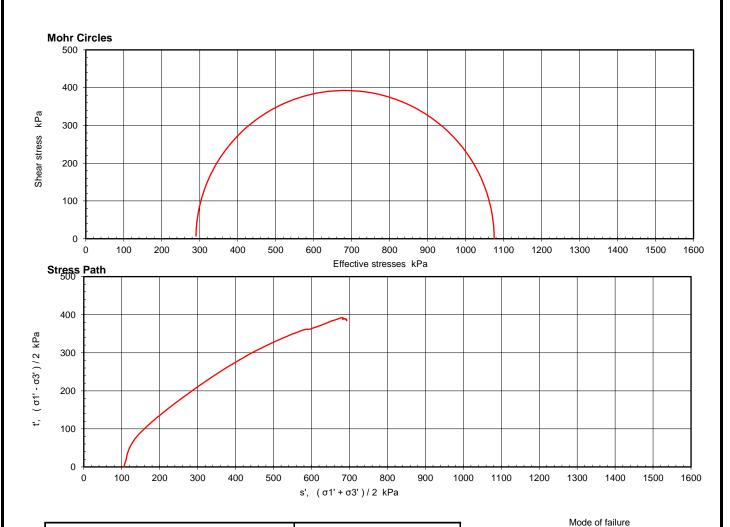
		DQUIP MARINE	Consol	idated l	Jndrai	ned	Tria	xial	Com	pres	sion		Job	Ref				GMO	P21-0	9-019
6	GEO	COPMAKINE	Test wi	th meas	urem	ent o	of po	re p	ress	ure			Bore	hole			OV	VF_G	I#15A	_SAMF
Site	e Nan	me	A05 Breta	agne Offsh	ore GI								Sam	ple No	Э.				PU08	
Sar	mple	Description	Grey brow	vn silty CL	AY								Dep	th m					11.30	
			Extremel	y high stre	ngth 10	YR (3,	/1) ve	ry dai	rk grev	ish br	own sil	ty	Sam	ple Ty	/ре				Q1	
spec	imen	Description				CLA		•				·	Keyl	AB ID)		E	3H012	20230	30741
Tes	st Me	thod	BS EN IS	O 17892 F	PART 9:	Cons	olidat	ed tri	xial co	mpres	sion te	sts				•				
	Sp	ecimen Type/P	reparation	UNDISTU	JRBED ⁻	115kPa	l													
	Spec	cimen Details		1	7 [Satur	ation I	Details			1								
	_	Height Diameter	mm mm	140.0 70.0	-			Metho	d		Incren	nents o								
	Initial	Bulk Density Water Conte		2.15 19.1		Cell p	ressur	e incre	ements	kPa		50								
		Dry density	Mg/m³	1.81]	Diffe	erentia	l Pres	sure	kPa		5								
	Final	Bulk Density Water Conte		2.18	<u> </u>			l Press ater pr	essure	kPa kPa		400 345								
		Dry density	Mg/m³	1.81] [Final E	3 Value	9			0.95			0					
	3.6 3.4														Spe	cimen				
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		0 50 100 Saturation Re		250 300	350	400 4						750	800	850	900 9	50 10	00 10	050 11	00 11	50 1200
				250 300	350	Ş	A	pplied	cell pre			750	1		900 9	50 10	00 10	050 11	00 11	50 1200
				250 300	350 4	S	A Speciminage	pplied nen No Condit	cell pre			750	1 Radial+	1 end			00 10	050 11	00 11	50 1200
			emarks	250 300	350	S Dra Cell	Speciminage Press	pplied	o. ions			750	1	1 end	900 9: kPa kPa		00 10	050 11	00 11	50 1200
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		Saturation Re	emarks		Pore p	Dra Cell Back Eff pressur	Speciminage Press Press ective e at st	nen No Condit ure ap sure ap Press art of c	o. ions plied oplied ure consolid	dation	(Pa	750	1 Radial+ 51: 400 11: 44(1 end 5 0 5 6 6 2	kPa kPa kPa kPa kPa		1	050 11	00 11	50 1200
	0.0	Saturation Re	emarks		Pore p	Dra Cell Back Eff pressur	Speciminage Press Press ective e at st	nen No Condit ure ap sure ap Press art of c	o. ions plied oplied ure consolid	dation	(Pa	750	1 Radial+ 51: 400 11: 44(1 end 5 0 5 6 6 2	kPa kPa kPa kPa kPa		1	050 11	00 11	50 1200
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Volume Change (ml)	0.0 1.0 2.0	Saturation Re	emarks		Pore p	Dra Cell Back Eff pressur	Speciminage Press Press ective e at st	nen No Condit ure ap sure ap Press art of c	o. ions plied oplied ure consolid	dation	(Pa	750	1 Radial+ 51: 400 11: 44(1 end 5 0 5 6 6 2	kPa kPa kPa kPa kPa		1	050 11	00 11	50 1200
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9	GEOQUIP	MARINE	Tes	st wit	h me	easu	rem	ent c	of po	re p	ress	ure			Во	orehol	е			OWI	F_GI#15 <i>F</i>	A_SAMP
Site	Name		A05	Bretag	gne Of	ffshor	e GI								Sa	ample	No.				PU08	
															De	epth r	n				11.30	1
			C	ompre	ssion	stage	s - gr	aphica	al dat	а					Sa	ample	Туре				Q1	
															Ke	eyLAE	ID			BH	H0120230	30741
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GEOQUIPMARINE	Consolidated Undrained Triaxial Compression	Job Ref	GMOP21-G-019
GEOGOIPMARINE	Test with measurement of pore pressure	Borehole/Pit No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne Offshore GI	Sample No.	PU08
		Depth m	11.30
Com	pression stages - table of results and interpretation	Sample Type	Q1
		KeyLAB ID	BH012023030741

Failure criterion : Maximum deviator stress

Specimen	Cell pressure	Initial pwp	Initial σ ₃ '	Rate of strain	Axial strain, ε _f	(σ_1 ' / σ_3 ') f	(σ_1 ' - σ_3 ') f	u _f	σ ₃ ' _f	$\sigma_{1}'_{f}$	A_{f}
	kPa	kPa	kPa	%/hr	%		kPa	kPa	kPa	kPa	
1	515	400	115	1.00	10.8	3.71	785	225	290	1074	-0.23



Shear Strength Parameters		Shear Strength
At Maximum deviator stress Su	kPa	392.50
Shear Strength at 15%	kPa	
Epsilon 50	%	2.85

Remarks General

Lab Sheet Reference :

Deviator stresses corrected for area change, spiral side drains and up to 0.3 mm thick rubber membrane/Sample Saturated, Final B-value is due to jump in PWP from previous stage

Compound

All symbols used above are defined in BS1377
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Date Printed	Approved		
19/05/2023 15:21	D.Smith	Sheet No.	3 of 3

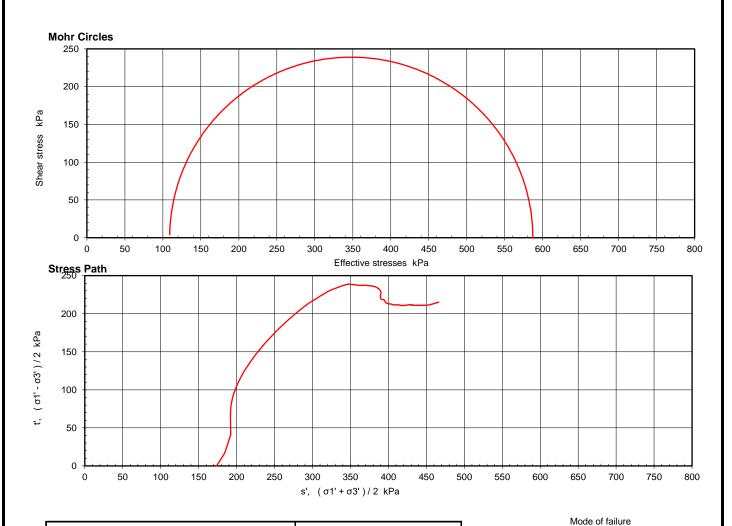
		OLUBATOR T	Consol	idated U	Indrai	ned	Tria	xial	Com	pres	sion		Jo	b Ref				9	MOF	P21-G	-019
6	GEO	OQUIPMARINE	Test wi	ith meas	urem	ent c	f pc	ore p	ress	ure			Вс	rehole	е			OW	F_GI	#15A_	_SAMI
Site	e Nan	ne	A05 Breta	agne Offsh	ore GI								Sa	mple	No.				F	PU12	
Sa	mple	Description	Very high	strength, (gley 1 (6/1) gr	eenis	sh gre	y CLA	λY.			De	epth n	n			18.10			
noc	imon	Description	Va	n, high otro	on ath	dov 1	(C/1)	aroon	ich ar	ov CL	۸٧		Sa	mple	Туре					Q1	
pec	шеп	Description	ve	ry riigir stre	engui, g	jiey i	(0/1)	6/1) greenish grey CLAY						KeyLAB ID				BH012023030768			
Tes	st Met	thod	BS EN IS	O 17892 P	ART 9:	Cons	olida	ted tri	ixial co	ompres	ssion t	ests									
	Spe	ecimen Type/P	reparation	UNDISTU	RBED	175 kpa	Cons	solidat	ion												
	Spec	cimen Details		1			Satur	ation	Details	5		1									
		Height Diameter	mm mm	140.4 70.5	}			Metho	od			ements									
	Initial	Bulk Density	Mg/m³	2.08]						pre	essure									
	_	Water Conte	ent % Mg/m³	24.7 1.67	┨			re incre al Pres	ements sure	kPa kPa		50 5									
		Bulk Density		2.11	j			l Pres		kPa		500		.]							
	Final	Water Conte		23.3	↓ 				ressure	kPa		445									
		Dry density	Mg/m³	1.71	ו נ		Final E	3 Valu	е			0.95		J		_					
	4.Q					_									;	Specin	nen 1	<u> </u>			
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	<u> </u>	Saturation Re	emarks	250 300	350	Dra Cell	Specir nage Press	men No Condi	o. tions			750	On	1 e end 625		kPa	100	00 105	50 110	00 115	50 1200
	<u> </u>		emarks	250 300	350	Dra Cell Back	Specir inage Press	men No	o. tions pplied			0 750	On (1 e end 625		kPa kPa	100	00 105	50 110	00 115	50 1200
	<u> </u>	Saturation Re	emarks	250 300		Dra Cell Back	Specir inage Press Press ective	men No Condi Sure ap sure ap	o. tions pplied pplied sure	essure k		750	On	1 e end 625		kPa	100	00 105	50 110	00 115	50 1200
	<u> </u>	Saturation Re	emarks		Pore	Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000	00 105	50 110	000 115	50 1200
	<u> </u>	Saturation Re	emarks		Pore (Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa) 750	On (1 e end 625 450 175		kPa kPa kPa kPa	1000	00 105	50 110	00 115	50 1200
	<u> </u>	Saturation Re	emarks		Pore	Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000	1	50 111	000 115	50 1200
	;	Saturation Re	emarks		Pore	Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 110	000 115	50 1200
	;	Saturation Re	emarks		Pore	Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 111	000 115	50 1200
	0.0	Saturation Re	emarks		Pore	Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 111	000 115	50 1200
m)	0.0	Saturation Re	emarks		Pore	Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 110	000 115	50 1200
(m) ago	0.0	Saturation Re	emarks		Pore	Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa) 750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 111	000 115	50 1200
Change (ml)	0.0	Saturation Re	emarks		Pore	Dra Cell Back Eff Dressur pressu	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 111	000 115	50 1200
ime Change (ml)	0.0 0.8 1.6	Saturation Re	emarks		Pore	Dra Cell Back Eff pressur	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 111	000 115	50 1200
Volume Change (ml)	0.0 0.8 1.6 2.4	Saturation Re	emarks		Pore	Dra Cell Back Eff pressur	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa) 750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 111	000 115	50 1200
Volume Change (ml)	0.0 0.8 1.6	Saturation Re	emarks		Pore	Dra Cell Back Eff pressur	Specirinage Press Press ective e at si	men No Condi sure ap sure a Press tart of end of	o. tions pplied pplied sure consoli	idation	«Pa	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa	1000		50 111	000 115	50 1200
Volume Change (ml)	0.0 0.8 1.6 2.4	Saturation Re Consolida Details	emarks		Pore	Dra Cell Back Eff pressur	Specirinage Press Press ective e at si	men No Condi isure ap sure ap Press tart of end of on at e	o. tions pplied pplied consoli nd of c	idation idation onsolida	ation	750	On (1 e end 625 450 175 450		kPa kPa kPa kPa kPa			28	000 115	31
Volume Change (ml)	0.0 0.8 1.6 2.4 3.2 4.0	Saturation Re Consolida Details	emarks	Po	Pore Pore press	Dra Cell Back Eff pressur	A A A A A A A A A A A A A A A A A A A	men No Condi isure ap sure ap Press tart of end of on at e	o. tions pplied pplied consoli nd of c	idation idation onsolidation on onsolidation	ation ation	19	On (1 e e end 6325 450 175 450 880		kPa kPa kPa kPa %				000 115	31
Volume Change (ml)	0.0 0.8 1.6 2.4 3.2 4.0	Saturation Re Consolida Details	emarks	Po	Pore Pore press	Dra Cell Back Eff pressur	A A A A A A A A A A A A A A A A A A A	men No Condi isure ap sure ap Press tart of end of on at e	o. tions pplied pplied consoli nd of c	idation idation onsolidation on onsolidation	ation	19	On (1 e e end 6325 450 175 450 880		kPa kPa kPa kPa kPa %				000 115	

GEOOL HEMADINE	Consolidated Undrained Triax Test with measurement of pol									Job Ref					GMOP21-G-019				
GEOOGIF MAKINE	Test wit	h measu	reme	nt of p	ore p	oress	ure			В	orehol	e			OWF	GI#15	A_SAN	ИP	
Site Name	A05 Bretag	ne Offshor	e GI							Sa	ample	No.				PU12	2		
										De	epth r	th m				18.10	_) 		
	Compre	ssion stage	s - gra	phical d	ata					Sample Type					Q1				
					KeyLAB ID						BH01202303				3				
600									_		- 1	_	ж	failure p	oints	_			
500		*																	
300 400 400 300 200 100 100 100 100 100 100 100 100 1			×	***********	****	*******	********	*******	******	********	********	*******	*******		*******	*			
5																			
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0 1	2 3	4 5	6 7	8	9	10 1	11 1	2 1	3 1	4 1	5 1	6 1	7	18	19 2	20 21	22: %	 6 23	
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					Axiai S	train, ε					1	Λ	nro: ::						
b Sheet Reference :					Date Printed Approv				μισνε	ŧu									

GEOQUIPMARINE	Consolidated Undrained Triaxial Compression	Job Ref	GMOP21-G-019		
GEOGOIPMARINE	Test with measurement of pore pressure	Borehole/Pit No.	OWF_GI#15A_SAMP		
Site Name	A05 Bretagne Offshore GI	Sample No.	PU12		
		Depth m	18.10		
Com	pression stages - table of results and interpretation	Sample Type	Q1		
		KeyLAB ID	BH012023030768		

Failure criterion : Maximum deviator stress

Specimen	Cell pressure	Initial pwp	Initial σ ₃ '	Rate of strain	Axial strain, ε _f	(σ_1 ' / σ_3 ') f	(σ_1 ' - σ_3 ') f	u _f	σ ₃ ' _f	$\sigma_1'_f$	A_{f}
	kPa	kPa	kPa	%/hr	%		kPa	kPa	kPa	kPa	
1	625	450	175	2.00	4.3	5.38	478	516	109	587	0.14



Shear Strength Parameters		Shear Strength
At Maximum deviator stress Su	kPa	239.00
Shear Strength at 15%	kPa	211.06
Epsilon 50	%	1.22

Remarks General

Lab Sheet Reference :

Deviator stresses corrected for area change, spiral side drains and up to 0.3 mm thick rubber membrane/effective pressure too low, sample swelled during consolidation

Compound

All symbols	used	above	are	defined in	n BS1377

Date Printed	Approved		
22/05/2023 15:39	D.Smith	Sheet No.	3 of 3



G GE	OQU	JIF M	AKIIN	IC	Projec	t Name	A05 Bretagne Offshore GI						
					Proje	ct No.			GM	OP21-G-	019		
		Sample		Deale									
Location	Ref	Top Depth	Туре	Rock to include orienta	ling	P (kN)	D (mm)	W (mm)	De2 (mm)	F	ls (Mpa)	Is50 (Mpa)	Test Type
OWF_GI#01A_SAMP	CR01	0.00	IS			25.80	75.30		71.08	1.17	5.1	6.0	D
OWF_GI#09_SAMP	CR01	0.00	IS			20.45	77.80		75.36	1.20	3.6	4.3	D
OWF_GI#14_SAMP	CR01	0.00	IS			15.90	56.00	76.00	69.56	1.16	3.3	3.8	Α
OWF_GI#15_SAMP	CR01	0.00	IS			14.35	53.00	60.00	58.63	1.07	4.2	4.5	Α
OWF_GI#01_SAMP	CR01	0.30	IS			24.10	60.00	79.00	70.92	1.17	4.8	5.6	Α
OWF_GI#01A_SAMP	CR02	0.70	IS			39.80	77.15		72.96	1.19	7.5	8.9	D
OWF_GI#05A_SAMP	CR01	0.80	IS			9.60	76.80		73.32	1.19	1.8	2.1	D
OWF_GI#05A_SAMP	CR01	0.80	IS			11.70	52.00	76.80	60.96	1.09	3.1	3.4	Α
OWF_GI#09_SAMP	CR02	1.00	IS			8.55	62.00	78.85	74.98	1.20	1.5	1.8	Α
OWF_GI#15A_SAMP	CR02	1.00	IS			29.30	72.00	78.00	82.24	1.25	4.3	5.4	Α
OWF_GI#14_SAMP	CR02	1.10	IS	LIMESTONE. Rand	lom orientation.	6.00	78.90		74.32	1.20	1.1	1.3	D
OWF_GI#01_SAMP	CR02	1.40	Q1			3.55	78.00		75.46	1.20	0.6	0.8	D
OWF_GI#01_SAMP	CR02	1.40	Q1			6.70	78.00		75.46	1.20	1.2	1.4	D
OWF_GI#01_SAMP	CR02	1.40	Q1			11.50	78.00		75.46	1.20	2.0	2.4	D
OWF_GI#14_SAMP	CR02	1.40	Q1			13.55	78.00		70.65	1.17	2.7	3.2	D
OWF_GI#14_SAMP	CR02	1.40	Q1			7.35	50.00	78.00	66.85	1.14	1.6	1.9	Α
OWF_GI#05A_SAMP	CR02	1.50	IS	SANDST	ONE	7.55	37.00	78.37	54.71	1.04	2.5	2.6	Α
OWF_GI#14A_SAMP	CR02	1.50	Q1			11.00	77.80		73.80	1.19	2.0	2.4	D
OWF_GI#14A_SAMP	CR02	1.50	Q1			9.00	40.00	77.80	58.88	1.08	2.6	2.8	Α
OWF_GI#14_SAMP	CR03	2.00	Q1			19.65	78.96		76.95	1.21	3.3	4.0	D
OWF_GI#14_SAMP	CR03	2.00	Q1			27.05	66.00	78.95	77.01	1.21	4.6	5.5	Α
OWF_GI#14A_SAMP	CR02	2.10	Q2			20.85	78.83		76.89	1.21	3.5	4.3	D
OWF_GI#14A_SAMP	CR02	2.10	Q2			18.65	78.83		75.86	1.21	3.2	3.9	D
OWF_GI#05A_SAMP	CR03	2.90	IS			0.80	76.00		74.48	1.20	0.1	0.2	D
OWF_GI#05A_SAMP	CR03	2.90	IS			0.30	52.00	76.00	67.44	1.14	0.1	0.1	Α
Notes Test type key		A Axial D Diametral			Test	ed by	Date Printed Approved By						
Sheet Reference:					S Ocio D.Smith								



(C)	OQU	JIF M	AKIIN	IC	Projec	t Name			A05 Bret	agne Off	shore G	I	
					Proje	ct No.			GM	OP21-G-	019		
		Sample		Daalid									
Location	Ref	Top Depth	Туре	Rock t includ orienta	ling	P (kN)	D (mm)	W (mm)	De2 (mm)	F	ls (Mpa)	Is50 (Mpa)	Test Type
OWF_GI#09_SAMP	CR04	3.00	IS			11.60	64.00	77.70	64.46	1.12	2.8	3.1	Α
OWF_GI#14_SAMP	CR04	3.15	Q1			2.00	45.00	75.50	60.44	1.09	0.5	0.6	Α
OWF_GI#01A_SAMP	CR05	3.20	IS			6.25	66.20	76.60	73.24	1.19	1.2	1.4	Α
OWF_GI#01_SAMP	CR04	3.50	Q1			34.20	78.80		74.27	1.19	6.2	7.4	D
OWF_GI#04A_SAMP	CR04	3.50	Q1			15.65	79.00		69.42	1.16	3.2	3.8	D
OWF_GI#04A_SAMP	CR04	3.50	Q1			17.60	79.00		74.36	1.20	3.2	3.8	D
OWF_GI#05A_SAMP	CR04	3.60	IS			4.35	47.89	75.75	65.88	1.13	1.0	1.1	Α
OWF_GI#04A_SAMP	CR04	3.70	IS			11.30	91.64		81.79	1.25	1.7	2.1	D
OWF_GI#04A_SAMP	CR04	3.70	IS			11.65	63.00	98.64	86.08	1.28	1.6	2.0	Α
OWF_GI#04_SAMP	CR03	3.80	IS			17.60	48.00	56.00	54.72	1.04	5.9	6.1	Α
OWF_GI#14A_SAMP	CR03	4.00	Q2			2.31	79.20		74.46	1.20	0.4	0.5	D
OWF_GI#24_SAMP	CR04	4.10	IS			0.65	75.50		71.12	1.17	0.1	0.2	D
OWF_GI#01A_SAMP	CR06	4.20	IS			3.10	75.00		67.08	1.14	0.7	0.8	D
OWF_GI#12_SAMP	CR02	4.40	IS			18.85	83.50		75.35	1.20	3.3	4.0	D
OWF_GI#12_SAMP	CR02	4.40	IS			11.75	54.00	83.30	70.60	1.17	2.4	2.8	Α
OWF_GI#11_SAMP	CR04	4.50	IS			16.25	77.43		73.09	1.19	3.0	3.6	D
OWF_GI#11_SAMP	CR04	4.50	IS			9.85	46.00	77.43	63.58	1.11	2.4	2.7	Α
OWF_GI#24_SAMP	CR05	5.20	IS			18.95	64.00	77.40	72.27	1.18	3.6	4.3	Α
OWF_GI#01A_SAMP	CR07	5.20	IS			4.10	76.00		67.53	1.14	0.9	1.0	D
OWF_GI#01A_SAMP	CR07	5.20	IS			3.00	55.10	76.00	68.86	1.15	0.6	0.7	Α
OWF_GI#17_SAMP	CR02	5.60	Q1	(CIUd	:)	9.70	77.00		73.42	1.19	1.8	2.1	D
OWF_GI#17_SAMP	CR02	5.60	Q1	(CIUd	:)	6.15	77.00		73.94	1.19	1.1	1.3	D
OWF_GI#17_SAMP	CR02	5.60	Q1	(CIUd	:)	4.30	77.00		73.42	1.19	0.8	0.9	D
OWF_GI#14A_SAMP	CR05	5.70	IS	Moderately weak ((5GY 4/1) MU	greenish grey DSTONE	12.25	80.00		74.83	1.20	2.2	2.6	D
OWF_GI#14A_SAMP	CR05	5.70	IS	Moderately weak ((5GY 4/1) MU	greenish grey DSTONE	9.10	42.00	80.00	61.39	1.10	2.4	2.6	Α
Notes Test type key			Axial Diamet	ral	Test	ed by		ate Prin		Ар	proved I	Ву	
Sheet Reference:		All tests completed at natural moisture content*			SC	Ocio	D.Smith					١	



	OQC		THE STATE OF THE S		Projec	ject Name A05 Bretagne Offshore GI							
					Proje	ct No.			GM	OP21-G-	019		
		Sample		Deale									
Location	Ref	Top Depth	Туре	Rock to include orienta	ling	P (kN)	D (mm)	W (mm)	De2 (mm)	F	Is (Mpa)	Is50 (Mpa)	Test Type
OWF_GI#17_SAMP	CR03	6.05	IS			8.25	76.20		70.38	1.17	1.7	1.9	D
OWF_GI#05B_SAMP	CR01	6.10	IS			8.05	63.00	48.80	61.06	1.09	2.2	2.4	Α
OWF_GI#17_SAMP	CR03	6.25	Q1			1.50	75.70		74.34	1.20	0.3	0.3	D
OWF_GI#04_SAMP	CR06	6.40	Q1			19.65	79.55		77.24	1.22	3.3	4.0	D
OWF_GI#04_SAMP	CR06	6.40	Q1			9.55	32.00	79.55	53.25	1.03	3.4	3.5	Α
OWF_GI#15A_SAMP	CR05	6.50	IS	Weak greenish gr MUDSTO	rey (5Gy 5/1) ONE	1.40	80.10		74.88	1.20	0.2	0.3	D
OWF_GI#20_SAMP	PU11	6.70	IS	2.5y 7/3 pale brow SANI		0.35	50.00	67.00	62.64	1.11	0.1	0.1	Α
OWF_GI#12_SAMP	CR05	7.30	IS			12.00	84.36		74.05	1.19	2.2	2.6	D
OWF_GI#12_SAMP	CR05	7.30	IS			8.30	58.00	84.30	75.42	1.20	1.5	1.8	Α
OWF_GI#01A_SAMP	CR09	7.45	Q1			7.80	78.00		74.94	1.20	1.4	1.7	D
OWF_GI#01A_SAMP	CR09	7.45	Q1			4.90	78.00		74.42	1.20	0.9	1.1	D
OWF_GI#01A_SAMP	CR09	7.45	Q1			8.50	78.00		74.42	1.20	1.5	1.8	D
OWF_GI#17_SAMP	CR05	7.65	IS			6.15	58.00	79.90	62.18	1.10	1.6	1.8	Α
OWF_GI#01A_SAMP	CR09	7.65	IS			13.55	77.50		70.98	1.17	2.7	3.1	D
OWF_GI#12_SAMP	CR06	8.30	IS	Strong brown (28.15	79.39		76.65	1.21	4.8	5.8	D
OWF_GI#12_SAMP	CR06	8.30	IS	Strong brown (14.55	53.00	79.39	71.09	1.17	2.9	3.4	Α
OWF_GI#09_SAMP	CR09	8.30	Q1			4.00	60.00	78.50	68.54	1.15	0.9	1.0	Α
OWF_GI#11_SAMP	CR08	8.50	IS			1.85	71.00	76.50	75.16	1.20	0.3	0.4	Α
OWF_GI#01A_SAMP	CR10	9.30	Q2			22.70	78.40		75.65	1.20	4.0	4.8	D
OWF_GI#01A_SAMP	CR10	9.30	Q2			28.05	52.00	78.40	69.94	1.16	5.7	6.7	Α
OWF_GI#11_SAMP	CR09	9.50	IS			2.70	75.00		70.36	1.17	0.5	0.6	D
OWF_GI#11_SAMP	CR09	9.50	IS			2.30	42.00	75.00	58.63	1.07	0.7	0.7	Α
OWF_GI#22_SAMP	CR09	9.60	Q1			26.70	78.00		74.42	1.20	4.8	5.8	D
OWF_GI#22_SAMP	CR09	9.60	Q1			29.60	48.00	78.00	64.58	1.12	7.1	8.0	Α
OWF_GI#20_SAMP	PU14	9.70	IS	2.5y 7/3 Pale brown gravelly, S	n, clayey, silty, SAND	0.20	64.00	70.00	66.76	1.14	0.0	0.1	Α
Notes Test type key		A D	Axial Diamet	ral	Test	ed by		ate Prin		Ар	proved I	Ву	
Sheet Reference:		AI	D Diametral All tests completed at natural moisture content*			Ocio	D.Smith					l	



(C)	oqu	Project Name							A05 Bret	agne Off	shore G	I	
					Proje	ct No.			GM	OP21-G-	019		
		Sample		Daalid									
Location	Ref	Top Depth	Туре	Rock t includ orienta	ling	P (kN)	D (mm)	W (mm)	De2 (mm)	F	ls (Mpa)	ls50 (Mpa)	Test Type
OWF_GI#20_SAMP	PU14	9.70	IS	2.5y 7/3 Pale brown gravelly, S	n, clayey, silty, SAND	0.15	68.00		65.45	1.13	0.0	0.0	D
OWF_GI#20_SAMP	PU14	9.70	IS	2.5y 7/3 Pale brown gravelly, S		0.40	50.00	68.00	55.83	1.05	0.1	0.1	Α
OWF_GI#14A_SAMP	CR09	10.00	Q1			8.55	76.80		74.88	1.20	1.5	1.8	D
OWF_GI#14A_SAMP	CR09	10.00	Q1			6.40	47.00	76.80	62.54	1.11	1.6	1.8	Α
OWF_GI#24_SAMP	CR10	10.00	IS			5.65	76.50		71.06	1.17	1.1	1.3	D
OWF_GI#01A_SAMP	CR11	10.00	Q1			26.85	77.80		69.45	1.16	5.6	6.5	D
OWF_GI#01A_SAMP	CR11	10.00	Q1			23.75	77.80		75.36	1.20	4.2	5.0	D
OWF_GI#12_SAMP	CR08	10.30	Q1			23.05	79.00		75.42	1.20	4.1	4.9	D
OWF_GI#12_SAMP	CR08	10.30	Q1			19.50	47.00	79.00	63.43	1.11	4.8	5.4	Α
OWF_GI#17_SAMP	PU10	10.60	IS	2.5y 7/3 Pale brow and gravelly.		0.10	59.00		56.96	1.06	0.0	0.0	D
OWF_GI#17_SAMP	PU10	10.60	IS	2.5y 7/3 Pale brow and gravelly.		0.10	51.00	59.00	55.50	1.05	0.0	0.0	Α
OWF_GI#01A_SAMP	CR12	11.00	IS			5.45	68.50	77.41	75.61	1.20	1.0	1.1	Α
OWF_GI#09_SAMP	CR12	11.00	Q1			9.65	79.50		69.07	1.16	2.0	2.3	D
OWF_GI#09_SAMP	CR12	11.00	Q1			9.95	42.00	79.50	58.66	1.07	2.9	3.1	Α
OWF_GI#20_SAMP	CR03	11.50	IS			5.95	65.00	77.00	69.31	1.16	1.2	1.4	Α
OWF_GI#22_SAMP	CR11	11.80	IS			18.10	79.00		77.49	1.22	3.0	3.7	D
OWF_GI#22_SAMP	CR11	11.80	IS			12.70	79.00		76.97	1.21	2.1	2.6	D
OWF_GI#22_SAMP	CR11	11.80	IS			8.70	35.00	79.00	54.01	1.04	3.0	3.1	Α
OWF_GI#17_SAMP	CR08	12.00	IS			1.35	35.00	76.35	52.17	1.02	0.5	0.5	Α
OWF_GI#12_SAMP	CR09	12.05	Q1			6.65	73.00		71.48	1.17	1.3	1.5	D
OWF_GI#12_SAMP	CR09	12.05	Q1			5.95	55.00	73.00	66.09	1.13	1.4	1.5	Α
OWF_GI#04A_SAMP	CR10	12.05	Q1			0.75	77.00		71.83	1.18	0.1	0.2	D
OWF_GI#14A_SAMP	CR11	12.10	Q1			4.30	76.00		74.02	1.19	0.8	0.9	D
OWF_GI#14A_SAMP	CR11	12.10	Q1			6.80	38.00	76.00	57.36	1.06	2.1	2.2	Α
OWF_GI#14A_SAMP	CR11	12.25	IS			1.55	77.30		75.12	1.20	0.3	0.3	D
Notes Test type key			A Axial		Test	Tested by		Date Printed		Approved By			
Sheet Reference:		AI	I tests con	npleted at ure content*	sc	Ocio	12/08/2022 00:00 D.Smith		l				



GE	GEOQUIPMARINE				Projec	t Name			A05 Bret	agne Off	shore G	ĺ	
					Proje	ct No.			GM	OP21-G-	019		
		Sample			,								
Location	Ref	Top Depth	Туре	Rock t includ orienta	ling	P (kN)	D (mm)	W (mm)	De2 (mm)	F	ls (Mpa)	Is50 (Mpa)	Test Type
OWF_GI#14A_SAMP	CR11	12.25	IS			6.55	60.00	77.30	73.57	1.19	1.2	1.4	Α
OWF_GI#22_SAMP	CR12	12.50	IS			13.75	76.30		75.14	1.20	2.4	2.9	D
OWF_GI#11_SAMP	CR11	12.85	Q1			6.50	78.20		73.99	1.19	1.2	1.4	D
OWF_GI#11_SAMP	CR11	12.85	Q1			6.25	50.00	78.20	63.11	1.11	1.6	1.7	Α
OWF_GI#11_SAMP	CR11	13.00	IS			3.75	76.70		70.06	1.16	0.8	0.9	D
OWF_GI#14A_SAMP	CR12	13.50	Q1			1.90	78.50		74.13	1.19	0.3	0.4	D
OWF_GI#14A_SAMP	CR12	13.50	Q1			3.10	78.50		70.32	1.17	0.6	0.7	D
OWF_GI#20_SAMP	PU18	13.80	IS	2.5y 7/3 Pale brow SAND		0.30	76.00		74.48	1.20	0.1	0.1	D
OWF_GI#11_SAMP	CR12	13.90	Q1			7.75	79.18		67.18	1.14	1.7	2.0	D
OWF_GI#11_SAMP	CR12	13.90	Q1			7.10	65.15	79.18	73.10	1.19	1.3	1.6	Α
OWF_GI#09_SAMP	CR15	14.10	IS	(Weak)Brown (LIMESTO	10YR 4/3) DNE	15.50	79.00		74.36	1.20	2.8	3.4	D
OWF_GI#17_SAMP	CR11	14.70	IS			0.50	72.00		68.41	1.15	0.1	0.1	D
OWF_GI#20_SAMP	CR05	15.05	IS			0.80	51.00	76.00	62.99	1.11	0.2	0.2	Α
OWF_GI#09_SAMP	CR16	15.30	IS	(Weak)Brown (LIMESTO	10YR 4/3) DNE	32.05	79.50		72.44	1.18	6.1	7.2	D
OWF_GI#09_SAMP	CR16	15.30	IS	(Weak)Brown (LIMESTO		30.25	50.00	79.50	64.42	1.12	7.3	8.2	Α
OWF_GI#11_SAMP	CR14	15.50	IS			7.05	54.05	79.75	73.08	1.19	1.3	1.6	Α
OWF_GI#20_SAMP	CR06	16.10	IS			0.50	76.10		72.46	1.18	0.1	0.1	D
OWF_GI#20_SAMP	CR06	16.10	IS			0.65	51.00	76.00	68.15	1.15	0.1	0.2	Α
OWF_GI#22_SAMP	CR15	16.20	IS			12.15	77.61		69.37	1.16	2.5	2.9	D
OWF_GI#22_SAMP	CR15	16.20	IS			8.15	50.00	77.60	64.42	1.12	2.0	2.2	Α
OWF_GI#20_SAMP	CR06	16.40	Q1			1.25	76.00		71.89	1.18	0.2	0.3	D
OWF_GI#20_SAMP	CR06	16.40	Q1			0.90	58.00	76.00	69.56	1.16	0.2	0.2	Α
OWF_GI#20_SAMP	CR06	16.40	Q1			0.60	35.00	76.00	51.11	1.01	0.2	0.2	Α
OWF_GI#12_SAMP	CR14	16.85	Q1	CHALI	к	10.30	78.30		68.54	1.15	2.2	2.5	D
OWF_GI#12_SAMP	CR14	16.85	Q1	CHALI	к	7.30	65.00	78.30	76.11	1.21	1.3	1.5	Α
Notes Test type key		A Axial		Tested by		Date Printed		Approved By					
Sheet Reference: All tests completed at natural moisture content* D Diametral S Ocio D		D.Smith	l										



GE	GEOQUIPMARINE Project N					t Name			A05 Bret	agne Off	shore G	I	
						ct No.			GM	OP21-G-	019		
		Sample			1 10,0	I IVO.							
Location	Ref	Top Depth	Туре	Rock t includ orienta	ling	P (kN)	D (mm)	W (mm)	De2	F	Is (Mpa)	Is50 (Mpa)	Test Type
OWF_GI#17_SAMP	PU13	16.90	Q1	(UU)		0.25	66.00		62.93	1.11	0.1	0.1	D
OWF_GI#17_SAMP	PU13	16.90	Q1	(UU)		0.45	45.00	66.00	55.76	1.05	0.1	0.2	Α
OWF_GI#17_SAMP	PU13	16.90	Q1	(UU)		0.45	67.00		62.34	1.10	0.1	0.1	D
OWF_GI#01A_SAMP	CR16	17.00	IS			2.15	79.00		74.36	1.20	0.4	0.5	D
OWF_GI#17_SAMP	PU13	17.10	Q2	(CIU))	0.60	69.00		62.16	1.10	0.2	0.2	D
OWF_GI#17_SAMP	PU13	17.10	Q2	(CIU))	0.75	37.00	69.00	48.70	0.99	0.3	0.3	Α
OWF_GI#17_SAMP	PU13	17.10	Q2	(CIU))	0.60	69.00		62.71	1.11	0.2	0.2	D
OWF_GI#04A_SAMP	CR13	17.40	Q1	White page 2.5y 9	9/2 Very pale k piece	6.70	76.93		73.38	1.19	1.2	1.5	D
OWF_GI#04A_SAMP	CR13	17.40	Q1	White page 2.5y 9		5.50	65.80	76.93	77.30	1.22	0.9	1.1	Α
OWF_GI#17_SAMP	PU14	17.70	Q1			0.70	48.64	66.99	58.41	1.07	0.2	0.2	Α
OWF_GI#11_SAMP	CR16	17.95	IS	(Very Weak) Green 5/1) CLAYS	nish grey (5GY STONE	7.60	77.80		72.74	1.18	1.4	1.7	D
OWF_GI#11_SAMP	CR16	17.95	IS	(Very Weak) Green 5/1) CLAYS		5.45	35.00	77.80	55.41	1.05	1.8	1.9	Α
OWF_GI#04A_SAMP	CR14	18.20	Q1			6.80	78.00		74.94	1.20	1.2	1.5	D
OWF_GI#04A_SAMP	CR14	18.20	Q1			3.75	41.00	78.00	56.37	1.06	1.2	1.2	Α
OWF_GI#04A_SAMP	CR14	18.20	Q1			6.05	78.00		74.42	1.20	1.1	1.3	D
OWF_GI#04A_SAMP	CR14	18.20	Q1			4.55	51.00	78.00	63.03	1.11	1.1	1.3	Α
OWF_GI#04A_SAMP	CR14	18.40	IS			6.35	76.50		71.11	1.17	1.3	1.5	D
OWF_GI#04A_SAMP	CR14	18.40	IS			8.65	53.00	76.50	66.94	1.14	1.9	2.2	Α
OWF_GI#01A_SAMP	CR17	18.50	IS			2.85	51.00	76.80	64.09	1.12	0.7	0.8	Α
OWF_GI#24_SAMP	CR18	18.50	IS			7.35	60.00	76.00	73.61	1.19	1.4	1.6	Α
OWF_GI#17_SAMP	CR13	18.80	IS			4.35	60.00	78.40	72.74	1.18	0.8	1.0	Α
OWF_GI#12_SAMP	CR16	18.95	IS			34.95	79.40		74.55	1.20	6.3	7.5	D
OWF_GI#12_SAMP	CR16	18.95	IS			26.90	79.40		75.61	1.20	4.7	5.7	D
OWF_GI#12_SAMP	CR16	18.95	IS			11.85	32.00	79.40	52.25	1.02	4.3	4.4	Α
OWF_GI#20_SAMP	CR08	19.00	Q1			0.75	76.10		72.46	1.18	0.1	0.2	D
Notes Test type key			ral	Tested by		Date Printed			Approved By				
Sheet Reference:		AI	I tests con		sc	Ocio	12/06/2022 00:00		D.Smith				



		Project Name				A05 Bretagne Offshore GI						
				Proje	ct No.			GM	OP21-G-	019		
;	Sample											
Ref	Top Depth	Туре	includ	ling	P (kN)	D (mm)	W (mm)	De2 (mm)	F	ls (Mpa)	Is50 (Mpa)	Test Type
CR08	19.00	Q1			1.20	61.00	76.10	69.60	1.16	0.2	0.3	Α
CR15	19.25	IS			12.40	79.35		76.11	1.21	2.1	2.6	D
CR15	19.25	IS			17.50	65.00	79.35	77.86	1.22	2.9	3.5	Α
CR20	19.40	Q1			1.65	75.70		70.68	1.17	0.3	0.4	D
CR17	19.55	IS			22.75	58.00	77.82	59.72	1.08	6.4	6.9	Α
CR19	19.80	Q1			2.45	76.60		73.75	1.19	0.5	0.5	D
CR19	19.80	Q1			0.45	76.60		74.26	1.19	0.1	0.1	D
CR19	19.80	Q1			1.40	58.00	76.60	60.88	1.09	0.4	0.4	Α
CR21	20.00	IS			2.35	72.00	78.00	77.19	1.22	0.4	0.5	Α
CR21	20.30	Q1			2.20	77.50		73.65	1.19	0.4	0.5	D
CR21	20.50	IS			1.60	76.71		64.95	1.12	0.4	0.4	D
	А	Axial		Test	ed by	Date Printed			Ар	proved I	Зу	
	AI	I tests con	npleted at	sc	Ocio	12/08/2022 00:00 D.Smith						
	Ref CR08 CR15 CR15 CR20 CR17 CR19 CR19 CR19 CR21	Ref Depth CR08 19.00 CR15 19.25 CR20 19.40 CR17 19.55 CR19 19.80 CR19 19.80 CR21 20.00 CR21 20.50 CR21 20.50 <td>Ref Top Depth Type CR08 19.00 Q1 CR15 19.25 IS CR15 19.25 IS CR20 19.40 Q1 CR17 19.55 IS CR19 19.80 Q1 CR19 19.80 Q1 CR21 20.00 IS CR21 20.50 IS CR21 20.50 IS GR21 4 4 GR21 4 4</td> <td>Ref Top Depth Type Type Orienta </td> <td> Note</td> <td> Note</td> <td> Note</td> <td> Project No. </td> <td> Project No. </td> <td> Project No. </td> <td> Project Native</td> <td> Project No. </td>	Ref Top Depth Type CR08 19.00 Q1 CR15 19.25 IS CR15 19.25 IS CR20 19.40 Q1 CR17 19.55 IS CR19 19.80 Q1 CR19 19.80 Q1 CR21 20.00 IS CR21 20.50 IS CR21 20.50 IS GR21 4 4 GR21 4 4	Ref Top Depth Type Type Orienta	Note	Note	Note	Project No. Project No.	Project No. Project No.	Project No. Project No.	Project Native	Project No. Project No.

GEOQUIPMARINE		ISRM 2007 SM [_	Job Ref	GMOP21-G-019
a		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR10
Soil Description	Moderately wea	k SANDSTONE		Depth m	8.8
Specimen Reference	IS	Specimen Depth	8.80 m	Sample Type	IS
Specimen Description	(Weak) greyish	k) greyish olive (10YR 7/4) LIMESTONE. KeyLAB ID		KeyLAB ID	BH012023022723
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	11/04/2023

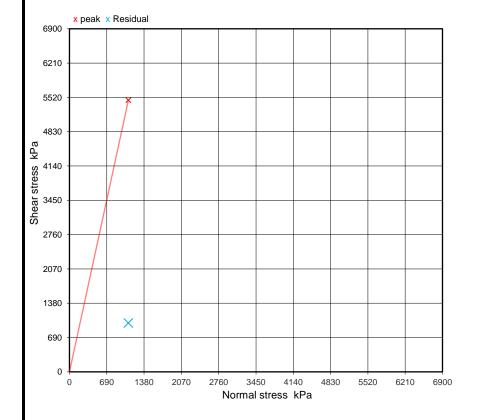
Sample details Undulating, rough

Specimen Details

	Average Length	87.89	mm
	Average Diameter	45.40	mm
	Sample Ratio	1.94	
Initial	Moisture Content	9.93	%
	Bulk Density	2.35	Mg/m³
	Dry density	2.14	Mg/m³
	Initial area	1618.47	mm ₂
Consolidation	Consolidation / Normal Stress applied	1090.00	KPa
Consolidation	Change in height during consolidation*	-0.10	mm

Shearing stage(s)

Rate of displacement	Max Displacement	10.23	mm
Nate of displacement	Calculated Shear Rate	0.32	mm/min
	Relative horizontal displacement	4.10	mm
Peak values, (o)	Shear stress	5465.09	KPa
	Vertical Movement at peak shear stress*	-3.01	mm
Residual values	Shear stress	981.69	KPa



Plane	٥f	Weakness:	

none	

Encapsulating Material:

C40 Cement

Curing Time (hrs):

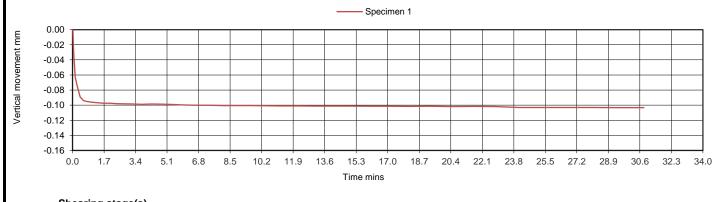
144.0

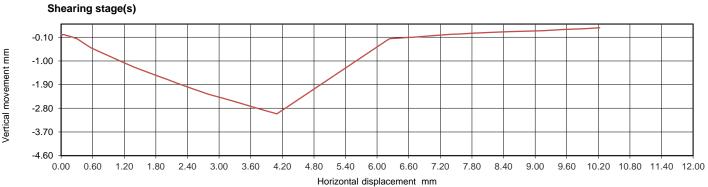
Remarks :		

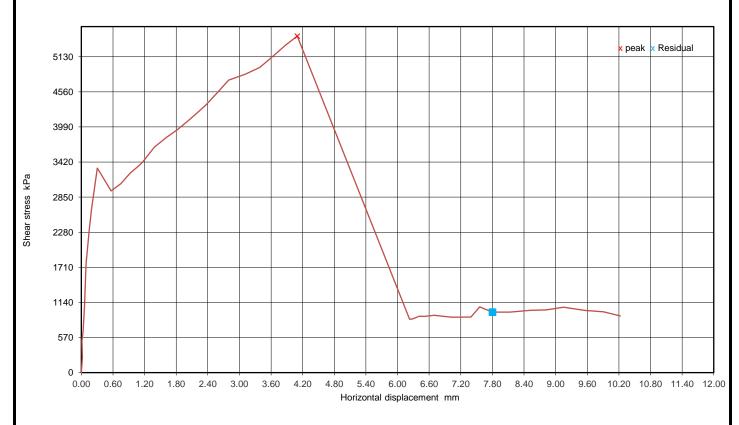
Notes	Approved	Date printed	Test technician		
	D.Smith	16/05/2023 10:05	S Ocio		

			Determir	ina	Job Ref	GMOP21-G-019	
GEOQUIPMARINE		Shear Streng		_	Borehole/Pit No.	OWF_GI#01A_SAMP	
Site Name	A	5 Bretagne Offshore GI			Sample No.	CR10	
Soil Description	Mod	Moderately weak SANDSTONE			Depth m	8.8	
Specimen Reference	IS	IS Specimen 8.8 m		Sample Type	IS		
Specimen Description	(Weak) grey	vish olive (10YR 7/4) L	IMESTONE	≣.	KeyLAB ID	BH012023022723	

Consolidation stage(s)







GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR10	
Soil Description	Moderately weak SANDSTONE			Depth m	8.8	
Specimen Reference	IS Specimen 8.8		8.8	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH012023022723

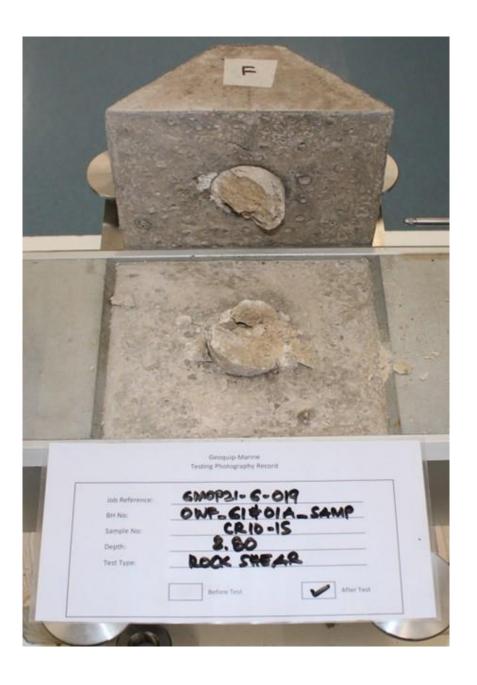
Sample before test

Photo is not available



GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR10
Soil Description	Moderately weak SANDSTONE			Depth m	8.8	
Specimen Reference	IS	Specimen Depth	8.8	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH012023022723

Sample after test



GEOQUIPMARINE		ISRM 2007 SM [_	Job Ref	GMOP21-G-019
		Shear Streng	jth - 1974	Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR11
Soil Description	(Weak) moderate brown (5yR 4/4) SANDSTONE			Depth m	9.5
Specimen Reference	IS	S Specimen 9.50		Sample Type	IS
Specimen Description	(Weak) moderate brown (5YR 4/4) SANDSTONE.			KeyLAB ID	BH012023022727
Test Method	ISRM 2007 SM Determining Shear Strength - 1974			Date of test	14/04/2023

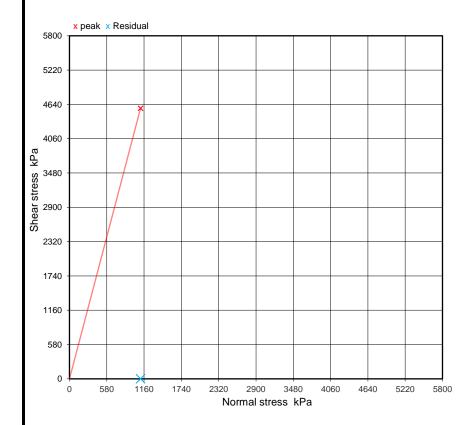
Sample details Undulating, rough

Specimen Details

	Average Length	89.92	mm
	Average Diameter	45.71	mm
	Sample Ratio	1.97	
Initial	Moisture Content	6.69	%
	Bulk Density	2.49	Mg/m³
	Dry density	2.33	Mg/m³
	Average Diameter 45.71 Sample Ratio 1.97 Moisture Content 6.69 Bulk Density 2.49 Dry density 2.33 Initial area 1640.66 Consolidation / Normal Stress applied 1105.00	1640.66	mm ₂
Consolidation	Consolidation / Normal Stress applied	1105.00	KPa
Consolidation	Change in height during consolidation*	45.71 1.97 6.69 2.49 2.33 1640.66 1105.00	mm

Shearing stage(s)

onearing stage(s)			_
Rate of displacement	Max Displacement	10.12	mm
reate of displacement	Calculated Shear Rate Relative horizontal displacement alues, (o) Shear stress Vertical Movement at peak shear stress*	0.34	mm/min
	Relative horizontal displacement	2.94	mm
Peak values, (o)	Shear stress	4573.52	KPa
	Vertical Movement at peak shear stress*	-1.78	mm
Residual values	Shear stress	N/A	KPa
	Rate of displacement Peak values, (o)	Rate of displacement Calculated Shear Rate Relative horizontal displacement Shear stress Vertical Movement at peak shear stress*	Rate of displacement Max Displacement 10.12 Calculated Shear Rate 0.34 Peak values, (o) Relative horizontal displacement 2.94 Shear stress 4573.52 Vertical Movement at peak shear stress* -1.78



Plane of Weakness:

Encapsulating Material:

C40 Cement

Curing Time (hrs):

168.0

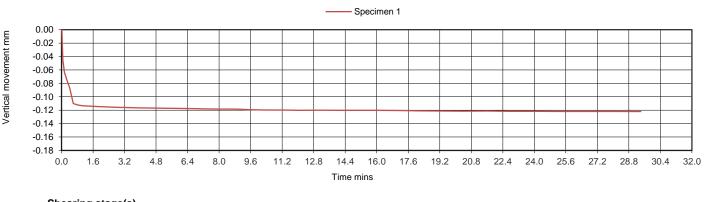
Remarks:

Specimen 1 - Unable to measure residual shear stress

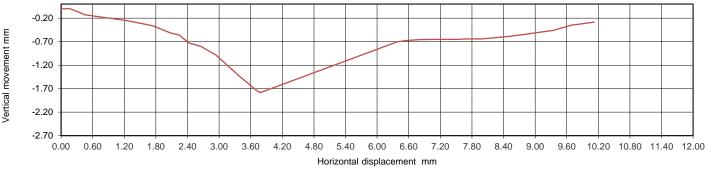
Notes	Approved	Date printed	Test technician	
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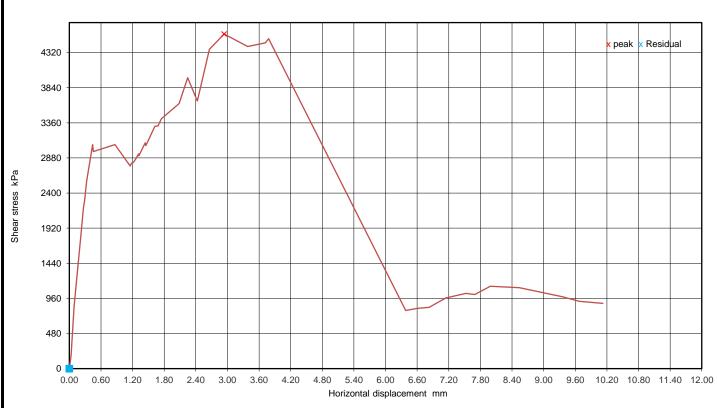
GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR11	
Soil Description	(Weak) moderate brown (5yR 4/4) SANDSTONE			Depth m	9.5	
Specimen Reference	IS Specimen Depth		9.5	m	Sample Type	IS
Specimen Description	(Weak) moderate brown (5YR 4/4) SANDSTONE.			NE.	KeyLAB ID	BH012023022727

Consolidation stage(s)









GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR11
Soil Description	(Weak) moderate brown (5yR 4/4) SANDSTONE			Depth m	9.5	
Specimen Reference	IS	IS Specimen 9.5		m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH012023022727

Sample before test





GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A	05 Bretagne Offshore GI			Sample No.	CR11
Soil Description	(Weak) moderate brown (5yR 4/4) SANDSTONE			ΝE	Depth m	9.5
Specimen Reference	IS	Specimen Depth	9.5	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH012023022727

Sample after test



GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#04A_SAMP
Site Name	A05 Bretagne C	Offshore GI			Sample No.	CR06
Soil Description	(Weak) Brown ((Weak) Brown (10YR 4/3) LIMESTONE			Depth m	5.5
Specimen Reference	Q1	Specimen Depth	5.50 n	n	Sample Type	Q1
Specimen Description	(Weak) Brown (10YR 4/3) LIMESTONE				KeyLAB ID	BH012023022762
Test Method	ISRM 2007 SM	ISRM 2007 SM Determining Shear Strength - 1974			Date of test	03/04/2023

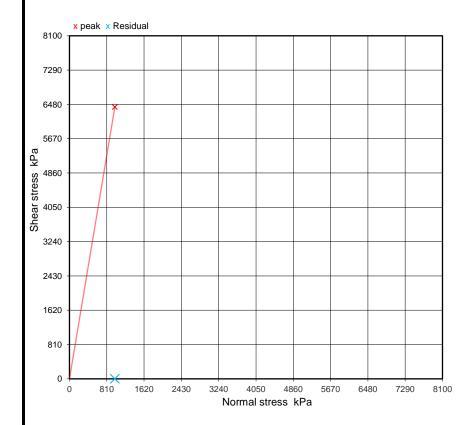
Sample details Undulating, Rough

Specimen Details

	Average Length	85.74	mm
	Average Diameter	45.63	mm
	Sample Ratio	1.88	
Initial	Moisture Content	0.87	%
	Bulk Density	2.77	Mg/m³
	Dry density	2.75	Mg/m³
	Initial Moisture Content Bulk Density Dry density Initial area Consolidation / Normal Stress applied	1635.28	mm ₂
Consolidation	Consolidation / Normal Stress applied	985.00	KPa
Consolidation	Change in height during consolidation*	-0.17	mm

Shearing stage(s)

	onearing stage(s)							
Pate of displacement	Max Displacement	10.04	mm					
reace of displacement	Calculated Shear Rate	0.31	mm/min					
Peak values, (o)	Relative horizontal displacement	2.95	mm					
	Shear stress	6416.22	KPa					
	Vertical Movement at peak shear stress*	-2.70	mm					
Residual values	Shear stress	N/A	KPa					
	Rate of displacement Peak values, (o)	Rate of displacement Calculated Shear Rate Relative horizontal displacement Shear stress Vertical Movement at peak shear stress*	Rate of displacement Calculated Shear Rate 0.31 Peak values, (o) Relative horizontal displacement 2.95 Shear stress 6416.22 Vertical Movement at peak shear stress* -2.70					



Plane of Weakness:

none	

Encapsulating Material:

C40 Cement

Curing Time (hrs):

192.0

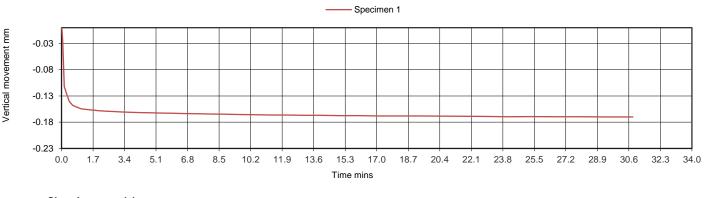
Remarks:

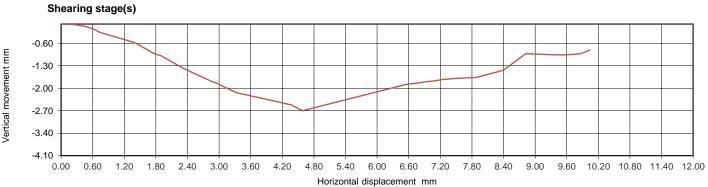
Specimen 1 - Unable to measure residual shear

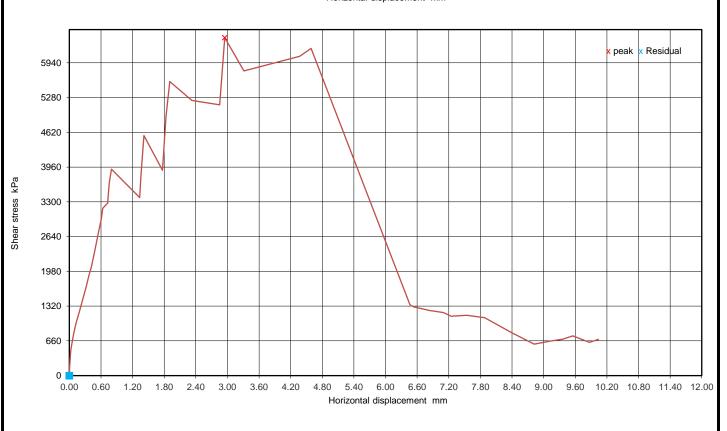
Notes	Approved Date printed		Test technician	
	D.Smith	10/05/2023 09:58	S Ocio	

		ISRN	ISRM 2007 SM Determining -		Job Ref	GMOP21-G-019	
GEOQU	JIPMARINE	Shear Strength - 1974		Borehole/Pit No.	OWF_GI#04A_SAMP		
Site Name	A	A05 Bretagne Offshore GI				Sample No.	CR06
Soil Description	(Weak) Brown (10YR 4/3) LIMESTONE			Depth m	5.5		
Specimen Reference	Q1	Specimen 5.5 m		Sample Type	Q1		
Specimen Description	(Weak) I	(Weak) Brown (10YR 4/3) LIMESTONE				KeyLAB ID	BH012023022762

Consolidation stage(s)

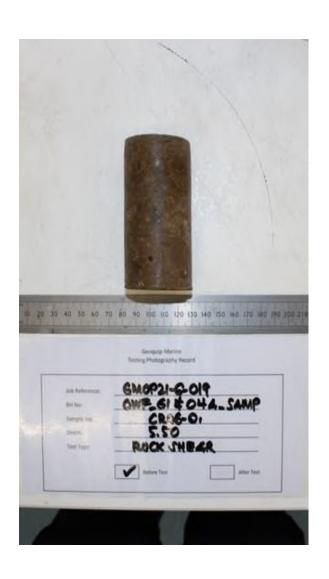






GEOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019	
G.				Borehole/Pit No.	OWF_GI#04A_SAMP	
Site Name	A	05 Bretagne Offshore GI			Sample No.	CR06
Soil Description	(Weak) E	(Weak) Brown (10YR 4/3) LIMESTONE			Depth m	5.5
Specimen Reference	Q1	Q1 Specimen 5.5 m		Sample Type	Q1	
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH012023022762

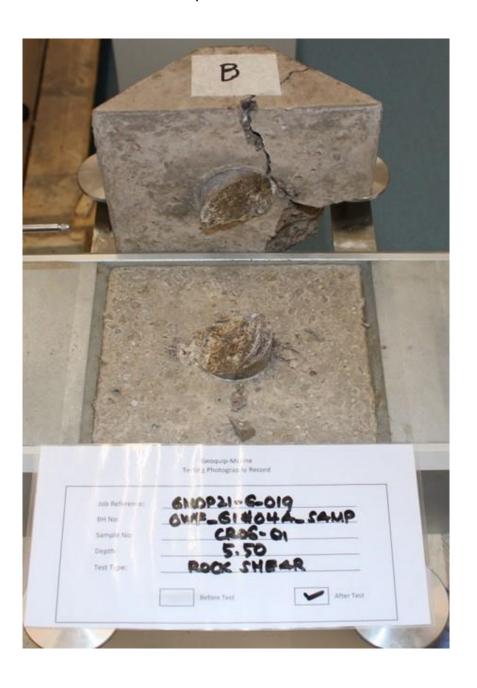
Sample before test





GEOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019	
G.				Borehole/Pit No.	OWF_GI#04A_SAMP	
Site Name	A	05 Bretagne Offshore GI			Sample No.	CR06
Soil Description	(Weak) E	Veak) Brown (10YR 4/3) LIMESTONE			Depth m	5.5
Specimen Reference	Q1	Specimen 5.5 m		Sample Type	Q1	
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH012023022762

Sample after test



GEOC	UIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019
a				Borehole/Pit No.	OWF_GI#04A_SAMP
Site Name	A05 Bretagne C	ffshore GI		Sample No.	CR15
Soil Description	(Weak) yellowish grey (5y 8/1) SANDSTONE			Depth m	19.05
Specimen Reference	Q1	Q1 Specimen 19.05 m		Sample Type	Q1
Specimen Description	(Weak) yellowis	h grey (5Y8/1) SANDS	STONE.	KeyLAB ID	BH012023022794
Test Method	ISRM 2007 SM	Determining Shear Str	rength - 1974	Date of test	13/04/2023

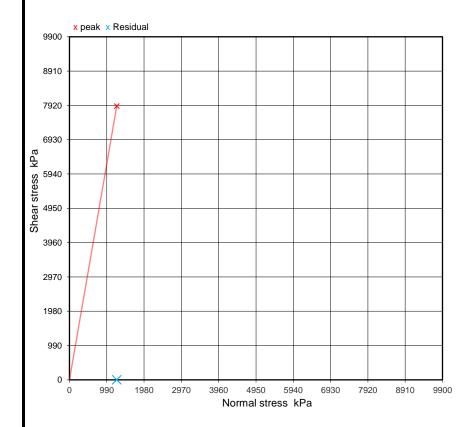
Sample details Undulating, rough

Specimen Details

	Average Length	88.49	mm
	Average Diameter	45.74	mm
	Sample Ratio	1.93	
Initial	Moisture Content	5.35	%
	Bulk Density	2.47	Mg/m³
	Dry density	2.34	Mg/m³
	Initial area	1642.93	mm ₂
Consolidation	Consolidation / Normal Stress applied	1255.00	KPa
Consolidation	Change in height during consolidation*	-0.08	mm

Shearing stage(s)

endering ender(e)						
Rate of displacement	Max Displacement	7.43	mm			
Nate of displacement	Calculated Shear Rate	0.31	mm/min			
	Relative horizontal displacement	5.53	mm			
Peak values, (o)	Shear stress	7898.45	KPa			
	Vertical Movement at peak shear stress*	-3.40	mm			
Residual values	Shear stress	N/A	KPa			



Plane of Weakness:

none

Encapsulating Material:

C40 Cement

Curing Time (hrs):

192.0

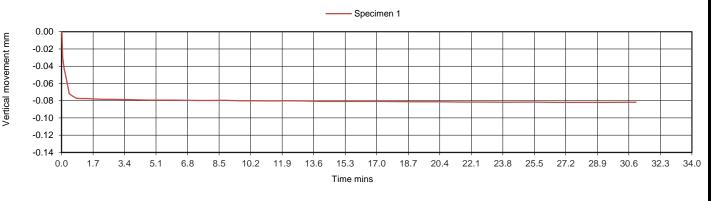
Remarks:

Specimen 1 - Data trimmed at end of test- Unable to measure residual shear stress

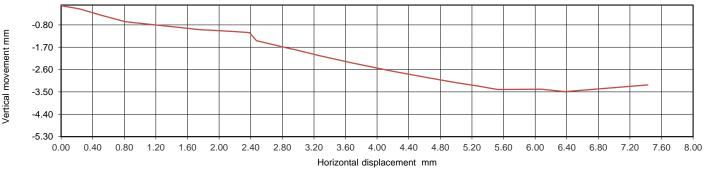
Notes	Approved Date printed		Test technician	
	D.Smith	11/05/2023 09:14	O Atitebi	

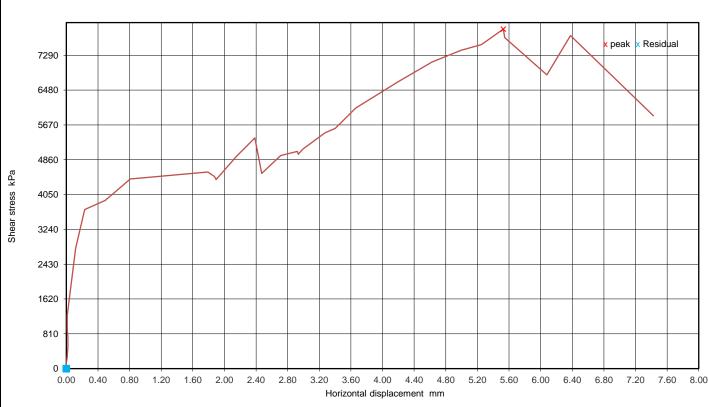
		ISRM 2007 SM Determining – Shear Strength - 1974		Job Ref	GMOP21-G-019	
GEOQU	JIPMARINE			Borehole/Pit No.	OWF_GI#04A_SAMP	
Site Name	A	05 Bretagne Offshore GI		Sample No.	CR15	
Soil Description	(Weak) yell	yellowish grey (5y 8/1) SANDSTONE		Depth m	19.05	
Specimen Reference	Q1	Q1 Specimen 19.05 m		Sample Type	Q1	
Specimen Description	(Weak) yell) yellowish grey (5Y8/1) SANDSTONE.			KeyLAB ID	BH012023022794

Consolidation stage(s)



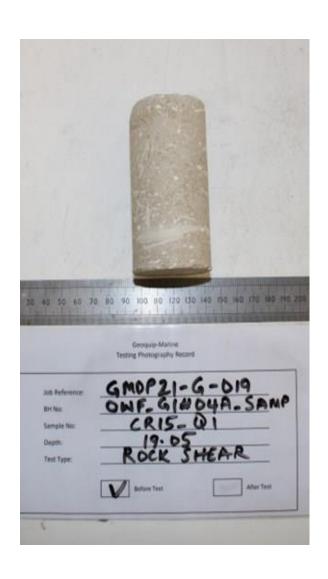


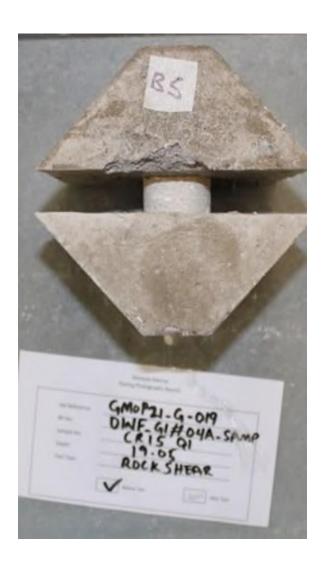




GEOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019	
G.				Borehole/Pit No.	OWF_GI#04A_SAMP	
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR15
Soil Description	(Weak) yellowish grey (5y 8/1) SANDSTONE				Depth m	19.05
Specimen Reference	Q1	Specimen Depth	19.05	m	Sample Type	Q1
Specimen Description	ISRM 2007 SM	I Determining Shear	Strength - 1	974	KeyLAB ID	BH012023022794

Sample before test





GEOOL	IIDMADINE		ISRM 2007 SM Determining		Job Ref	GMOP21-G-019
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#04A_SAMP	
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR15
Soil Description	(Weak) yell	owish grey (5y 8/1) SA	ANDSTONE	Depth m	19.05	
Specimen Reference	Q1	Specimen Depth	19.05	m	Sample Type	Q1
Specimen Description	ISRM 2007 SM	/ Determining Shear S	Strength - 1	974	KeyLAB ID	BH012023022794

Sample after test



GEOQ	UIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019
a				Borehole/Pit No.	OWF_GI#05A_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR01
Soil Description	(Weak) Light gre	eenish grey (10Y 7/1) L	IMESTONE	Depth m	0.5
Specimen Reference	IS	IS Specimen 0.		Sample Type	IS
Specimen Description	(Weak) Light gre	eenish grey (10Y 7/1) L	LIMESTONE	KeyLAB ID	BH012023022799
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	03/04/2023

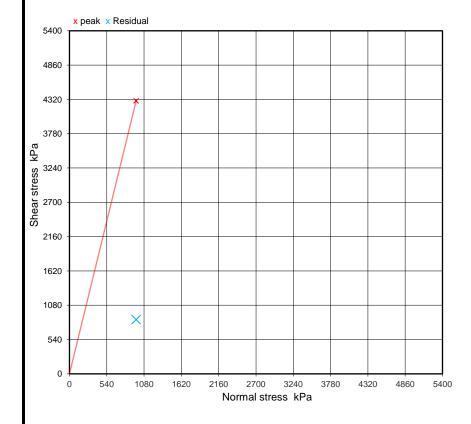
Sample details Undulating, Rough

Specimen Details

	Average Length	85.65	mm
	Average Diameter	45.68	mm
	Sample Ratio	1.87	
Initial	Moisture Content	4.82	%
	Bulk Density	2.44	Mg/m³
	Dry density	2.33	Mg/m³
	Initial area	1639.10	mm ₂
Consolidation	Consolidation / Normal Stress applied	965.00	KPa
Consolidation	Change in height during consolidation*	-0.11	mm

Shearing stage(s)

Official ing Stage(S)			
Rate of displacement	Max Displacement	10.17	mm
reate of displacement	Calculated Shear Rate	0.32	mm/min
	Relative horizontal displacement	0.82	mm
Peak values, (o)	Shear stress	4296.37	KPa
	Vertical Movement at peak shear stress*	-0.96	mm
Residual values	Shear stress	853.71	KPa



Plane of Weakness:

none	

Encapsulating Material:

C40 Cement

Curing Time (hrs):

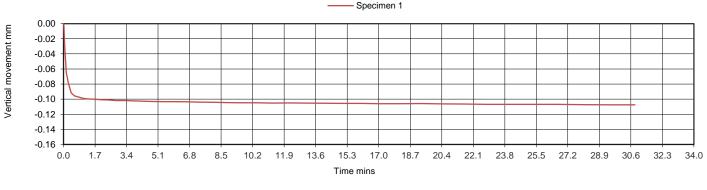
192.0

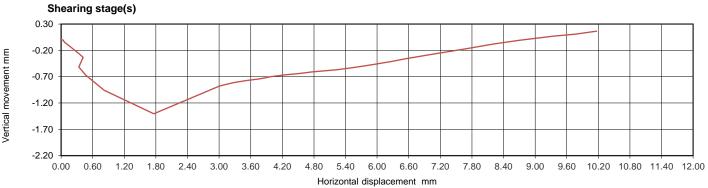
Ren	nar	L۵	
L/CI	IIaII	NO.	

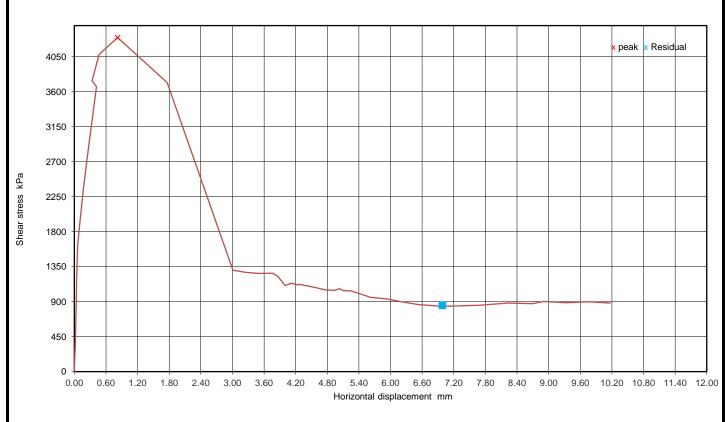
Notes	Approved	Date printed	Test technician	
	D.Smith	15/05/2023 13:36	S Ocio	

	ISRM 2007 SM Determining		ISRM 2007 SM Determining		Job Ref	GMOP21-G-019	
GEOQUIPMARINE		Shear Strength - 1974				Borehole/Pit No.	OWF_GI#05A_SAMP
Site Name	A05 Bretagne Offshore GI				Sample No.	CR01	
Soil Description	(Weak) Light greenish grey (10Y 7/1) LIMESTONE				Depth m	0.5	
Specimen Reference	IS	IS Specimen Depth		0.5	m	Sample Type	IS
Specimen Description	(Weak) Light (k) Light greenish grey (10Y 7/1) LIMESTONE				KeyLAB ID	BH012023022799

Consolidation stage(s)



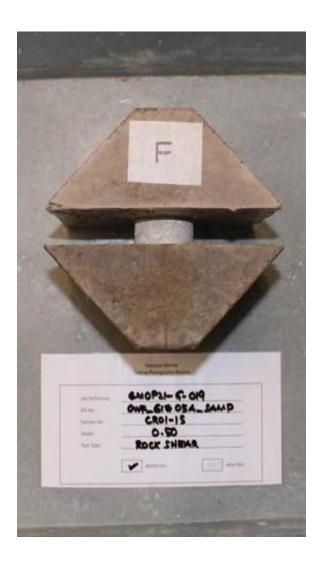




GEOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019	
G.				Borehole/Pit No.	OWF_GI#05A_SAMP	
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR01
Soil Description	(Weak) Light greenish grey (10Y 7/1) LIMESTONE				Depth m	0.5
Specimen Reference	IS	Specimen Depth	0.5	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH012023022799

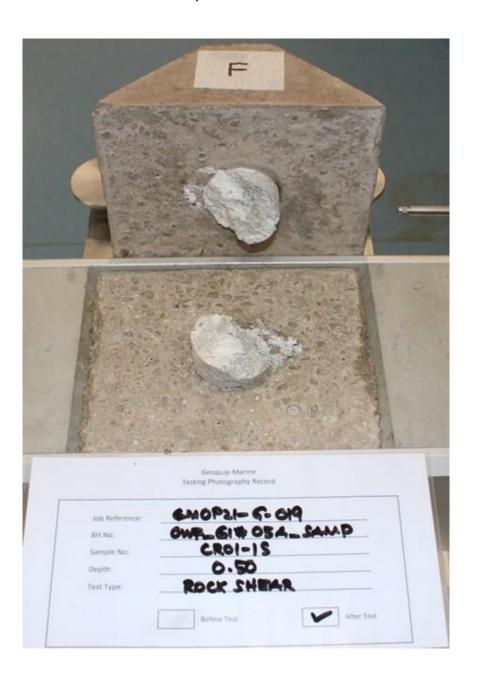
Sample before test





GEOOL	GEOQUIPMARINE		ISRM 2007 SM Determining		Job Ref	GMOP21-G-019
G.	71111111111	Shear Strength - 1974		Borehole/Pit No.	OWF_GI#05A_SAMP	
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR01
Soil Description	(Weak) Light (greenish grey (10Y 7/1) LIMESTO	Depth m	0.5	
Specimen Reference	IS	Specimen Depth	0.5	m	Sample Type	IS
Specimen Description	ISRM 2007 SM	A Determining Shear S	Strength - 1	974	KeyLAB ID	BH012023022799

Sample after test



GEOQ	UIPMARINE	ISRM 2007 SM [_	Job Ref	GMOP21-G-019
a		Shear Streng	jth - 1974	Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR01
Soil Description	(Weak)Brown (1	0YR 4/3) LIMESTONE		Depth m	0.4
Specimen Reference	IS	Specimen Depth	0.40 m	Sample Type	IS
Specimen Description	(Weak)Brown (1	0YR 4/3) LIMESTONE		KeyLAB ID	BH0120230227136
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	21/03/2023

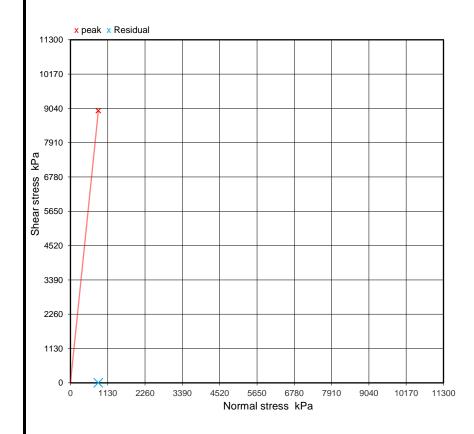
Sample details Undulating, Rough

Specimen Details

	Average Length	85.68	mm
	Average Diameter	45.62	mm
	Sample Ratio	1.88	
Initial	Moisture Content	8.70	%
	Bulk Density	2.55	Mg/m³
	Dry density	2.35	Mg/m³
	Initial area	1634.56	mm ₂
Consolidation	Consolidation / Normal Stress applied	845.00	KPa
Consolidation	Change in height during consolidation*	-0.13	mm

Shearing stage(s)

ſ	Rate of displacement	Max Displacement	10.15	mm
	reace of displacement	Calculated Shear Rate	0.31	mm/min
ſ		Relative horizontal displacement	5.79	mm
	Peak values, (o)	Shear stress	8963.54	KPa
		Vertical Movement at peak shear stress*	-3.85	mm
I	Residual values	Shear stress	N/A	KPa



Plane of Weakness:

Encapsulating Material:

C40 Cement

Curing Time (hrs):

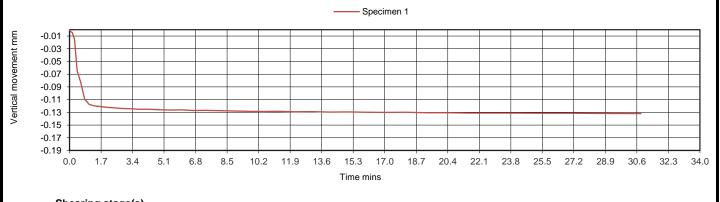
336.0

Remarks:

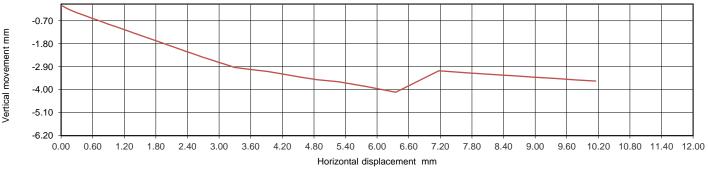
Specimen 1 - Unable to measure resisual shear strength

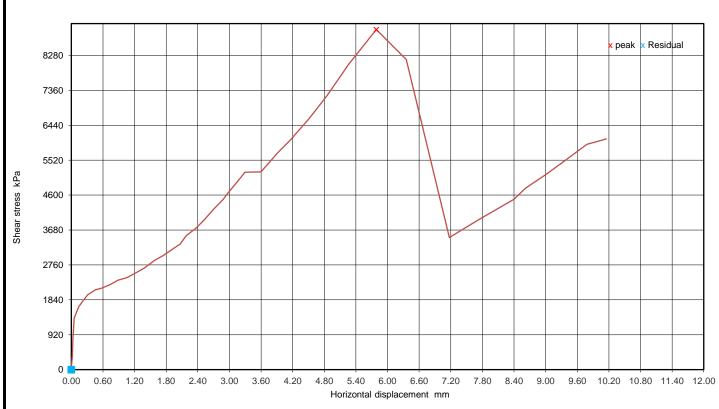
Notes	Approved	Date printed	Test technician
	D.Smith	11/05/2023 11:38	S Ocio

		ISRM 2007 SM	Determi	nina	Job Ref	GMOP21-G-019
GEOQU	JIPMARINE	Shear Strer		_	Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	А	05 Bretagne Offshor	e GI		Sample No.	CR01
Soil Description	(Weak)E	Brown (10YR 4/3) LIN	MESTONE		Depth m	0.4
Specimen Reference	IS	Specimen Depth	0.4	m	Sample Type	IS
Specimen Description	(Weak)E	Brown (10YR 4/3) LIN	MESTONE		KeyLAB ID	BH0120230227136

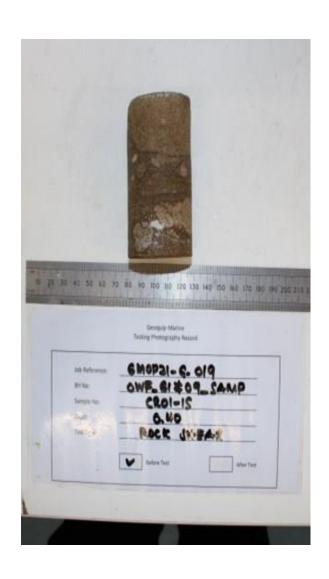






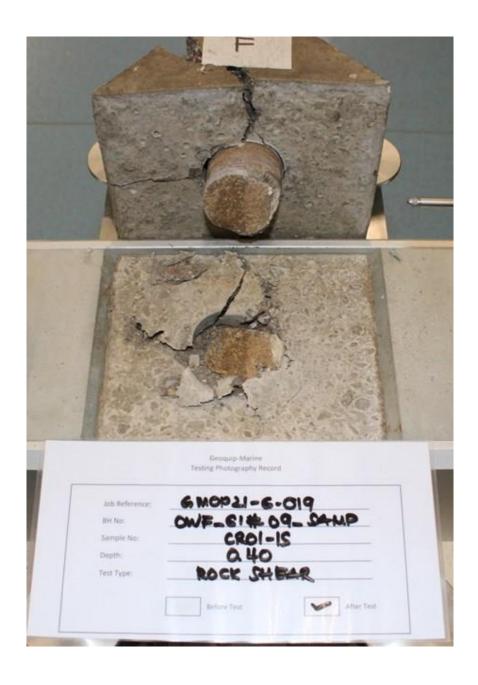


GEOOL	JIPMARINE	ISRM 2007 SM I		_	Job Ref	GMOP21-G-019
G.		Shear Streng	jth - 1974	1	Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	A	05 Bretagne Offshore	GI		Sample No.	CR01
Soil Description	(Weak)E	Brown (10YR 4/3) LIME	STONE		Depth m	0.4
Specimen Reference	IS	Specimen Depth	0.4	m	Sample Type	IS
Specimen Description	ISRM 2007 SN	I Determining Shear S	Strength - 1	974	KeyLAB ID	BH0120230227136





GEOOL	JIPMARINE	ISRM 2007 SM [_	Job Ref	GMOP21-G-019
G.		Shear Streng	jth - 197	4	Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	A	05 Bretagne Offshore	GI		Sample No.	CR01
Soil Description	(Weak)E	Brown (10YR 4/3) LIME	STONE		Depth m	0.4
Specimen Reference	IS	Specimen Depth	0.4	m	Sample Type	IS
Specimen Description	ISRM 2007 SM	/ Determining Shear S	Strength - 1	974	KeyLAB ID	BH0120230227136



GEOQ	UIPMARINE	ISRM 2007 SM [_	Job Ref	GMOP21-G-019
a		Shear Streng	th - 1974	Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR02
Soil Description	(Strong) greyish	orange (10yR 7/4) SA	NDSTONE	Depth m	1.4
Specimen Reference	IS	Specimen Depth	1.40 m	Sample Type	IS
Specimen Description	(Strong) greyish	orange (10YR 7/4) SA	ANDSTONE.	KeyLAB ID	BH0120230227139
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	14/04/2023

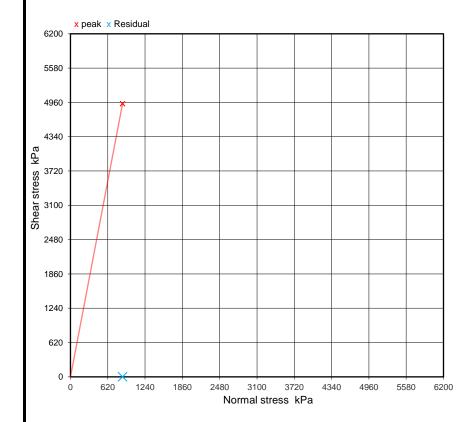
Sample details Undulating, rough

Specimen Details

	Average Length	92.44	mm
	Average Diameter	45.65	mm
	Sample Ratio	2.02	
Initial	Moisture Content	8.94	%
	Bulk Density	2.37	Mg/m³
	Dry density	2.18	Mg/m³
	Initial area	1636.83	mm ₂
Consolidation	Consolidation / Normal Stress applied	865.00	KPa
Consolidation	Change in height during consolidation*	-0.11	mm

Shearing stage(s)

Silearing stage(s)			_
Rate of displacement	Max Displacement	10.90	mm
reace of displacement	Calculated Shear Rate	0.37	mm/min
	Relative horizontal displacement	5.76	mm
Peak values, (o)	Shear stress	4934.42	KPa
	Vertical Movement at peak shear stress*	-3.62	mm
Residual values	Shear stress	N/A	KPa



Plane of Weakness:

|--|

Encapsulating Material:

C40 Cement

Curing Time (hrs):

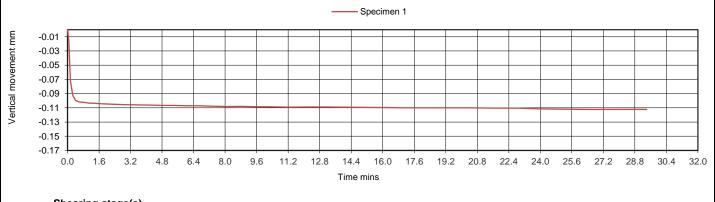
240.0

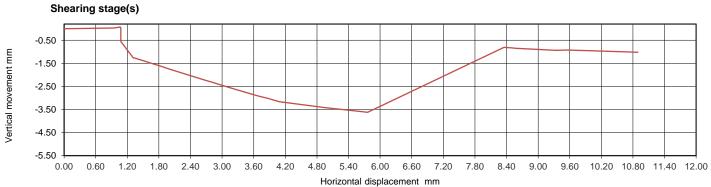
Remarks:

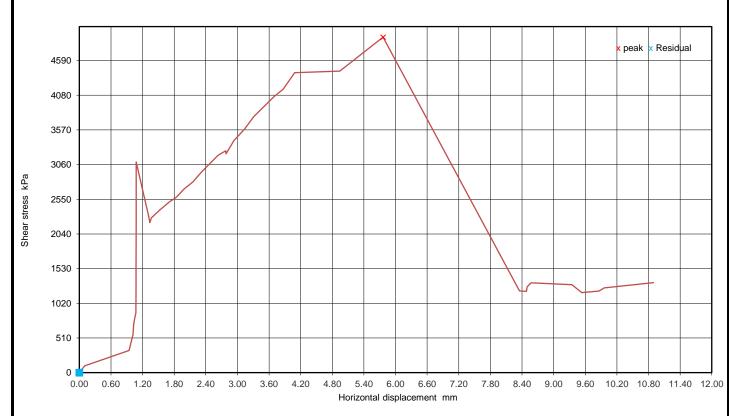
Specimen 1 - Unable to measure residual shear strength

Notes	Approved Date printed		Test technician	
	D.Smith	11/05/2023 11:21	O Atitebi	

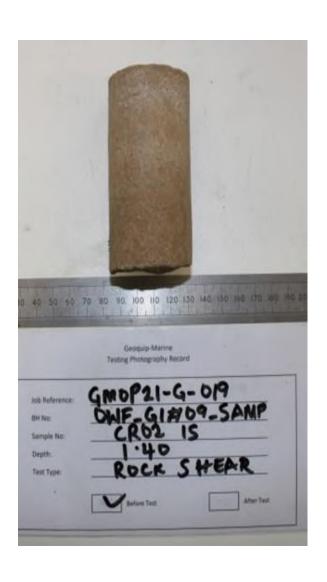
		ISRM 2007 SM Determining . Shear Strength - 1974		ina	Job Ref	GMOP21-G-019
GEOQU	JIPMARINE			Borehole/Pit No.	OWF_GI#09_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR02	
Soil Description	(Strong) greyi	(Strong) greyish orange (10yR 7/4) SANDSTONE			Depth m	1.4
Specimen Reference	IS	Specimen Depth	1.4	m	Sample Type	IS
Specimen Description	(Strong) greyis	sh orange (10YR 7/4) SANDSTONE.			KeyLAB ID	BH0120230227139





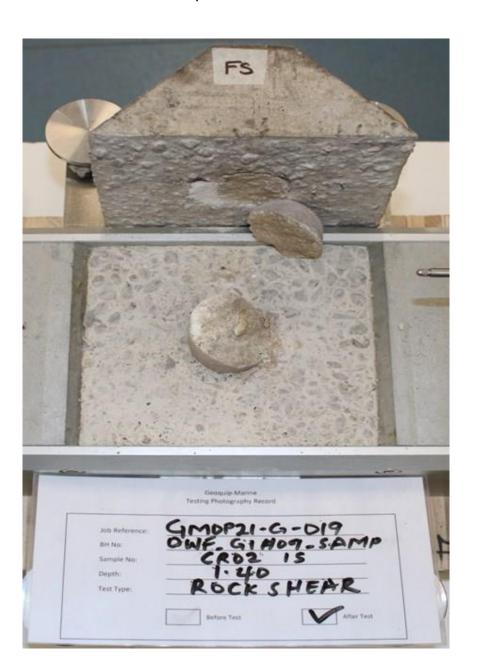


GFOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		_	Job Ref	GMOP21-G-019
C. C.				Borehole/Pit No.	OWF_GI#09_SAMP	
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR02
Soil Description	(Strong) greyi	sh orange (10yR 7/4)	SANDSTO	Depth m	1.4	
Specimen Reference	IS	Specimen 1.4 m		Sample Type	IS	
Specimen Description	ISRM 2007 SM	I Determining Shear S	Strength - 1	974	KeyLAB ID	BH0120230227139





GEOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		<u> </u>		GMOP21-G-019	
G.				Borehole/Pit No.	OWF_GI#09_SAMP		
Site Name	A05 Bretagne Offshore GI			Sample No.	CR02		
Soil Description	(Strong) greyi	(Strong) greyish orange (10yR 7/4) SANDSTONE			Depth m	1.4	
Specimen Reference	IS	Specimen Depth	I 14 I M I			IS	
Specimen Description	ISRM 2007 SN	1 Determining Shear S	Strength - 1	KeyLAB ID	BH0120230227139		



GEOQ	UIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019
a				Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR15
Soil Description	(Weak)Brown (1	0YR 4/3) LIMESTONI		Depth m	14.1
Specimen Reference	IS	Specimen Depth	14.10 m	Sample Type	IS
Specimen Description	(Weak)Brown (10YR 4/3) LIMESTONE			KeyLAB ID	BH0120230227160
Test Method	ISRM 2007 SM	Determining Shear St	rength - 1974	Date of test	28/03/2023

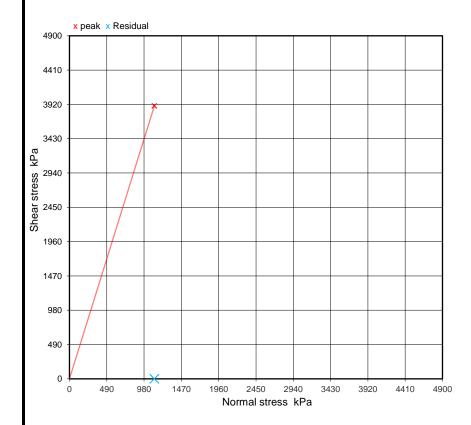
Sample details Undulating, Rough

Specimen Details

	Average Length	86.61	mm
	Average Diameter	45.79	mm
	Sample Ratio	1.89	
Initial	Moisture Content	2.00	%
	Bulk Density	2.53	Mg/m³
	Dry density	2.48	Mg/m³
	Initial area	1647.00	mm ₂
Consolidation	Consolidation / Normal Stress applied	1115.00	KPa
Consolidation	Change in height during consolidation*	-0.31	mm

Shearing stage(s)

	Silearing stage(s)			_
	Rate of displacement	Max Displacement	10.04	mm
	reace of displacement	Calculated Shear Rate	0.31	mm/min
	Peak values, (o)	Relative horizontal displacement	1.85	mm
		Shear stress	3897.90	KPa
		Vertical Movement at peak shear stress*	-1.22	mm
	Residual values	Shear stress	N/A	KPa



Plane of Weakness:

none	

Encapsulating Material:

C40 Cement

Curing Time (hrs):

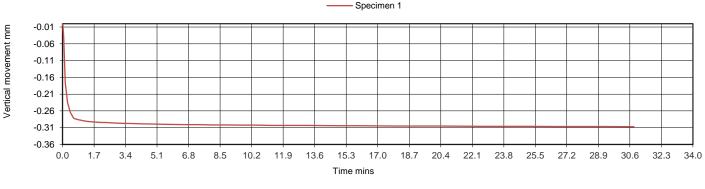
144.0

Remarks:

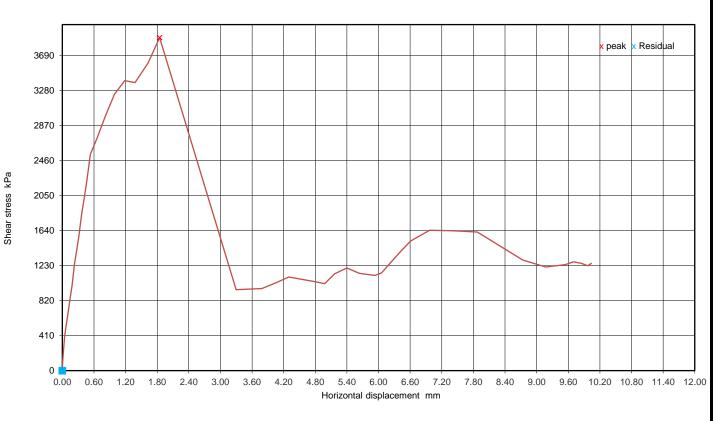
Specimen 1 - Unable to measure Residual shear strength

Notes	Approved	Date printed	Test technician	
	D.Smith	11/05/2023 11:31	S Ocio	

		ISR	ISRM 2007 SM Determining		Job Ref	GMOP21-G-019	
GEOQU	JIPMARINE	Shear Strength - 1974		Borehole/Pit No.	OWF_GI#09_SAMP		
Site Name	A05 Bretagne Offshore GI			Sample No.	CR15		
Soil Description	(Weak)Brown (10YR 4/3) LIMESTONE				Depth m	14.1	
Specimen Reference	IS		Specimen 14.1 m		Sample Type	IS	
Specimen Description	(Weak)E	Brown	rown (10YR 4/3) LIMESTONE			KeyLAB ID	BH0120230227160





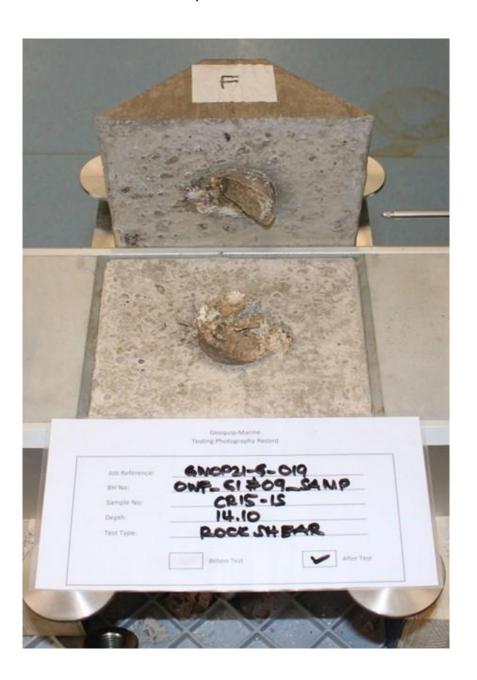


GEOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		_	Job Ref	GMOP21-G-019
GC.				Borehole/Pit No.	OWF_GI#09_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR15	
Soil Description	(Weak)B	rown (10YR 4/3) LIME	STONE	Depth m	14.1	
Specimen Reference	IS	Specimen 14.1 m			Sample Type	IS
Specimen Description	ISRM 2007 SM	RM 2007 SM Determining Shear Strength - 1974			KeyLAB ID	BH0120230227160





GEOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		_	Job Ref	GMOP21-G-019
G.				Borehole/Pit No.	OWF_GI#09_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR15	
Soil Description	(Weak)B	Brown (10YR 4/3) LIME	STONE	Depth m	14.1	
Specimen Reference	IS	Specimen 14.1 m			Sample Type	IS
Specimen Description	ISRM 2007 SM	1 Determining Shear S	Strength - 1	974	KeyLAB ID	BH0120230227160



GEOQ	Job Ref				GMOP21-G-019
a		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore GI		Sample No.	CR16	
Soil Description	(Weak)Brown (10YR 4/3) LIMESTONE		Depth m	15.3	
Specimen Reference	IS	Specimen Depth	15.30 m	Sample Type	IS
Specimen Description	(Weak)Brown (10YR 4/3) LIMESTONE			KeyLAB ID	BH0120230227163
Test Method	ISRM 2007 SM	Determining Shear St	rength - 1974	Date of test	29/03/2023

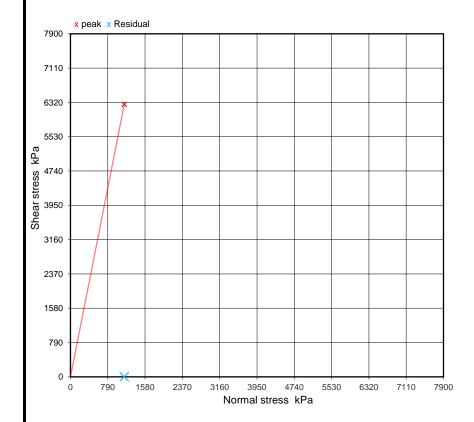
Sample details Undulating, Rough

Specimen Details

	Average Length	86.52	mm
	Average Diameter	45.79	mm
	Sample Ratio	1.89	
Initial	Moisture Content	1.00	%
	Bulk Density	2.33	Mg/m³
	Dry density	2.31	Mg/m³
	Initial area	1646.52	mm ₂
Consolidation	Consolidation / Normal Stress applied	1140.00	KPa
Consolidation	Change in height during consolidation*	-0.09	mm

Shearing stage(s)

Silearing stage(s)			
Rate of displacement	Max Displacement	10.34	mm
Nate of displacement	Calculated Shear Rate	0.32	mm/min
	Relative horizontal displacement	4.49	mm
Peak values, (o)	Shear stress	6273.46	KPa
	Vertical Movement at peak shear stress*	-3.03	mm
Residual values	Shear stress	N/A	KPa



Plane of Weakness:

	none	

Encapsulating Material:

Curing Time (hrs):

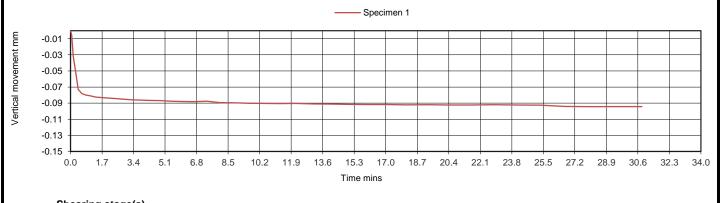
120.0

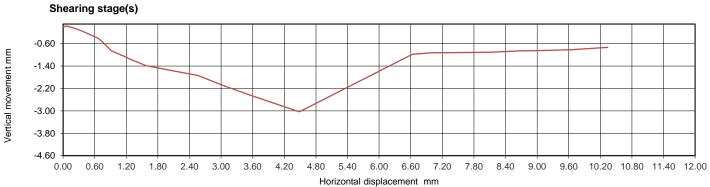
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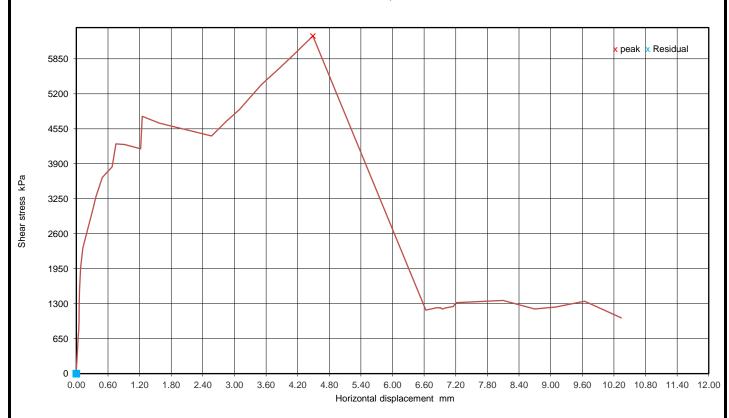
Specimen 1 - Unable to measure residual shear strength

Notes	Approved	Date printed	Test technician
	D.Smith	11/05/2023 11:23	S Ocio

GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			nina	Job Ref	GMOP21-G-019
						Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR16		
Soil Description	(Weak)Brown (10YR 4/3) LIMESTONE				Depth m	15.3	
Specimen Reference	IS	Specir Dep		15.3	m	Sample Type	IS
Specimen Description	(Weak)E	(Weak)Brown (10YR 4/3) LIMESTONE			KeyLAB ID	BH0120230227163	





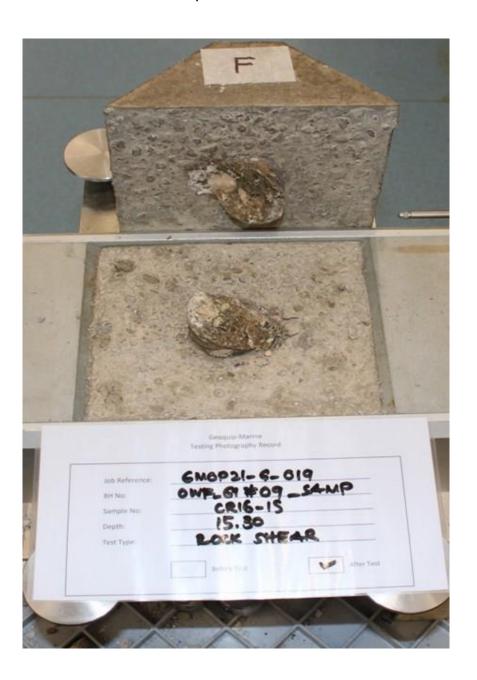


GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
G.	Sho		jth - 1974	4	Borehole/Pit No.	OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore GI		Sample No.	CR16		
Soil Description	(Weak)Brown (10YR 4/3) LIMESTONE			Depth m	15.3	
Specimen Reference	IS	Specimen Depth	15.3	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974			974	KeyLAB ID	BH0120230227163





GEOQUIPMARINE		ISRM 2007 SM Determining			Job Ref	GMOP21-G-019
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#09_SAMP	
Site Name	A	A05 Bretagne Offshore GI		Sample No.	CR16	
Soil Description	(Weak)E	(Weak)Brown (10YR 4/3) LIMESTONE			Depth m	15.3
Specimen Reference	IS	Specimen Depth	15.3	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974			974	KeyLAB ID	BH0120230227163



GEOQ	UIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019
a				Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore GI		Sample No.	CR06	
Soil Description	(Weak) Light brownish grey (10YR 6/2) LIMESTONE		Depth m	6.5	
Specimen Reference	IS	Specimen Depth	6.50 m	Sample Type	IS
Specimen Description	(Weak) Light brownish grey (10YR 6/2) LIMESTONE			KeyLAB ID	BH0120230227183
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	04/04/2023

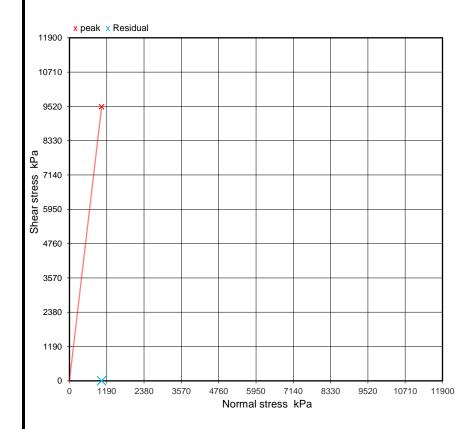
Sample details Undulating, Rough

Specimen Details

	Average Length	90.22	mm
	Average Diameter	45.24	mm
	Sample Ratio	1.99	
Initial	Moisture Content	1.49	%
	Bulk Density	2.46	Mg/m³
	Dry density	2.42	Mg/m³
	Initial area	1607.56	mm ₂
Consolidation	Consolidation / Normal Stress applied	1025.00	KPa
Corisolidation	Change in height during consolidation*	-0.06	mm

Shearing stage(s)

Silearing stage(s)			
Rate of displacement	Max Displacement	10.13	mm
Nate of displacement	Calculated Shear Rate	0.33	mm/min
	Relative horizontal displacement	6.33	mm
Peak values, (o)	Shear stress	9505.72	KPa
	Vertical Movement at peak shear stress*	-4.24	mm
Residual values	Shear stress	N/A	KPa



Plane of Weakness:

Encapsulating Material:

C40 Cement

Curing Time (hrs):

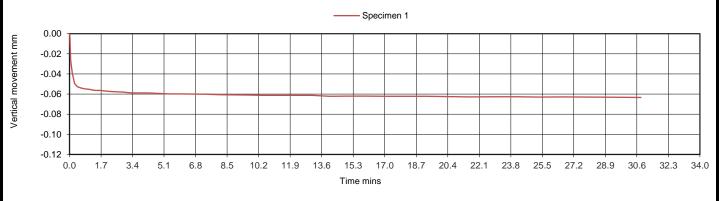
192.0

Remarks:

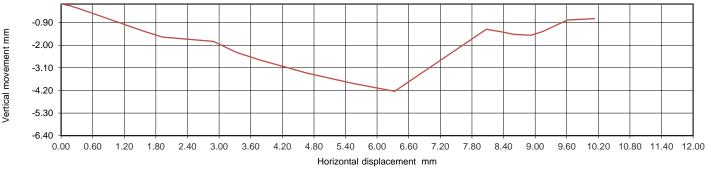
Specimen 1 - Unable to measure residual shear stress

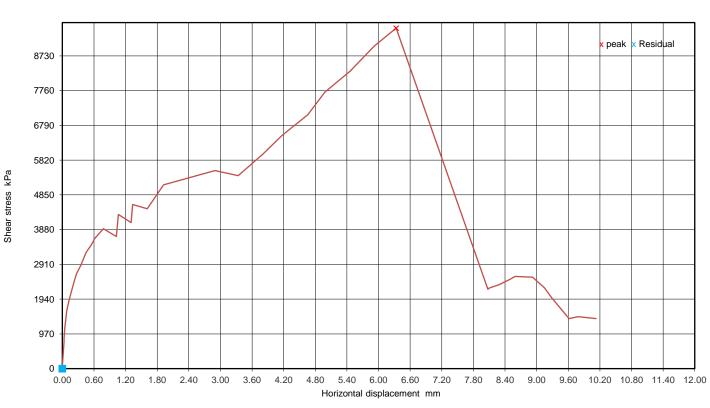
Notes	Approved Date printed		Test technician	
	D.Smith	12/05/2023 15:22	S Ocio	

	ISRM		M 2007 SM Determining		Job Ref	GMOP21-G-019	
GEOQU	JIPMARINE	Shear Strength - 1974		Borehole/Pit No.	OWF_GI#11_SAMP		
Site Name	A05 Bretagne Offshore GI			Sample No.	CR06		
Soil Description	(Weak) Light brownish grey (10YR 6/2) LIMESTONE			Depth m	6.5		
Specimen Reference	IS Specimen 6.5 m			m	Sample Type	IS	
Specimen Description	(Weak) Light brownish grey (10YR 6/2) LIMESTONE				ONE	KeyLAB ID	BH0120230227183









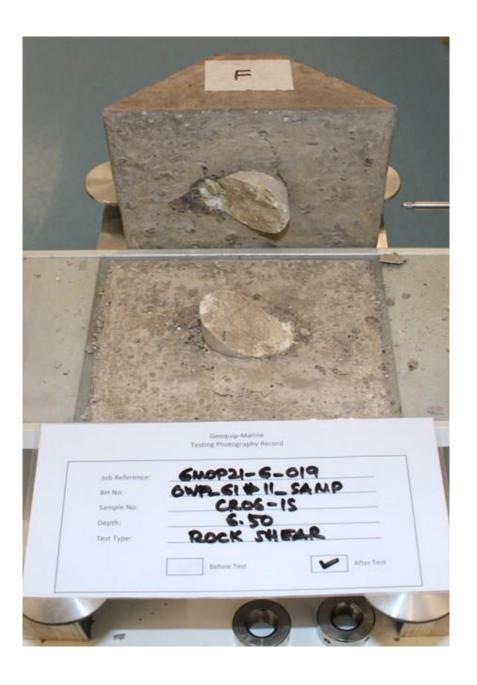
GEOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		<u> </u>		GMOP21-G-019
G.				Borehole/Pit No.	OWF_GI#11_SAMP	
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR06
Soil Description	(Weak) Light brownish grey (10YR 6/2) LIMESTONE				Depth m	6.5
Specimen Reference	IS Specimen 6.5 m			Sample Type	IS	
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH0120230227183





GEOQUIPMARINE ISRM 2007 SM Determinin		_	Job Ref	GMOP21-G-019		
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#11_SAMP	
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR06
Soil Description	(Weak) Light brownish grey (10YR 6/2) LIMESTONE			Depth m	6.5	
Specimen Reference	IS	Specimen 6.5 m			Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH0120230227183

Sample after test



GEOQ	UIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		IPMARINE		GMOP21-G-019
a				Borehole/Pit No.	OWF_GI#11_SAMP	
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR16	
Soil Description	(Very Weak) Greenish grey (5GY 5/1) CLAYSTONE			Depth m	17.95	
Specimen Reference	IS Specimen 17.95 m			Sample Type	IS	
Specimen Description	(Very Weak) Greenish grey (5GY 5/1) CLAYSTONE			KeyLAB ID	BH0120230227208	
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	06/03/2023	

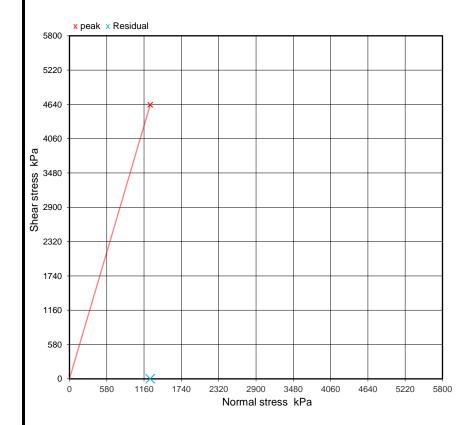
Sample details Undulating, Rough

Specimen Details

	Average Length	89.49	mm
	Average Diameter	77.87	mm
	Sample Ratio	1.15	
Initial	Moisture Content	7.77	%
	Bulk Density	2.40	Mg/m³
	Dry density	2.23	Mg/m³
	Initial area	4761.84	mm ₂
Consolidation	Consolidation / Normal Stress applied	1255.00	KPa
Consolidation	Change in height during consolidation*	-0.21	mm

Shearing stage(s)

onearing stage(s)			_
Rate of displacement	Max Displacement	10.03	mm
reace of displacement	Calculated Shear Rate	0.28	mm/min
	Relative horizontal displacement	2.11	mm
Peak values, (o)	Shear stress	4631.86	KPa
	Vertical Movement at peak shear stress*	-1.68	mm
Residual values	Shear stress	N/A	KPa
	Rate of displacement Peak values, (o)	Rate of displacement Calculated Shear Rate Relative horizontal displacement Shear stress Vertical Movement at peak shear stress*	Rate of displacement 10.03 Calculated Shear Rate 0.28 Peak values, (o) Relative horizontal displacement 2.11 Shear stress 4631.86 Vertical Movement at peak shear stress* -1.68



Plane of Weakness:

|--|

Encapsulating Material:

C40 Cement

Curing Time (hrs):

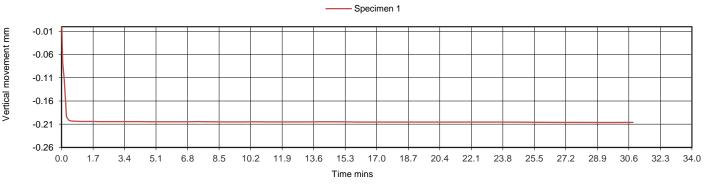
696.0

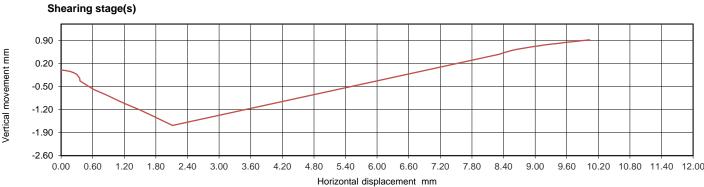
Remarks:

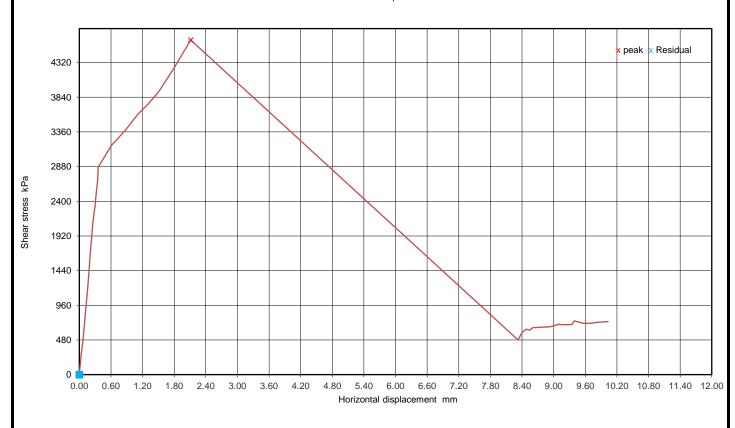
Specimen 1 - Unable to measure residual shear stress

Notes	Approved	Date printed	Test technician
	D.Smith	12/05/2023 15:23	S Ocio

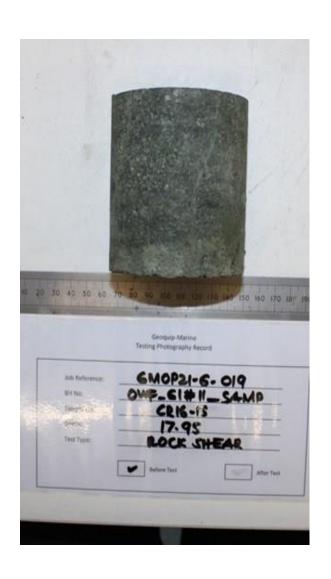
	ISRM 2007 SM Determining		Job Ref	GMOP21-G-019			
GEOQU	JIPMARINE	Shear Strength - 1974		Borehole/Pit No.	OWF_GI#11_SAMP		
Site Name	А	A05 Bretagne Offshore GI			Sample No.	CR16	
Soil Description	(Very Weak) Greenish grey (5GY 5/1) CLAYSTONE			Depth m	17.95		
Specimen Reference	IS Specimen 17.95 m			m	Sample Type	IS	
Specimen Description	(Very Weak) Greenish grey (5GY 5/1) CLAYSTONE				ONE	KeyLAB ID	BH0120230227208





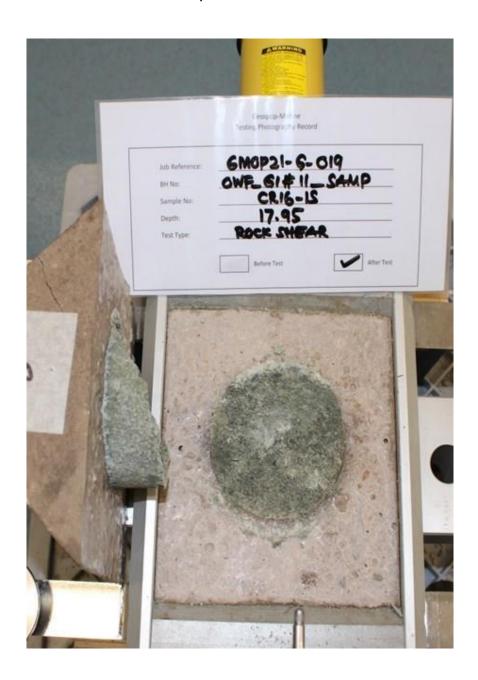


GFOOL	JIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019	
C. C.				Borehole/Pit No.	OWF_GI#11_SAMP	
Site Name	A	05 Bretagne Offshore GI			Sample No.	CR16
Soil Description	(Very Weak) Greenish grey (5GY 5/1) CLAYSTONE			Depth m	17.95	
Specimen Reference	IS Specimen 17.95 m			Sample Type	IS	
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH0120230227208





GEOQUIPMARINE		ISRM 2007 SM Determining			Job Ref	GMOP21-G-019
G.	Shear Strength - 1974		Borehole/Pit No.	OWF_GI#11_SAMP		
Site Name	A	05 Bretagne Offshore GI			Sample No.	CR16
Soil Description	(Very Weak) G	(Very Weak) Greenish grey (5GY 5/1) CLAYSTONE			Depth m	17.95
Specimen Reference	IS	Specimen Depth	17.95	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974			974	KeyLAB ID	BH0120230227208



GEOO	GEOQUIPMARINE ISRM 2007 SM Determining		Job Ref	GMOP21-G-019	
ac		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR02
Soil Description	Greyish orange (10y 7/4) SANDSTONE			Depth m	4.6
Specimen Reference	Q1	Specimen Depth	4.60 m	Sample Type	Q1
Specimen Description	Greyish orange	(10Y 7/4) SANDSTON	IE.	KeyLAB ID	BH0120230227229
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	13/04/2023

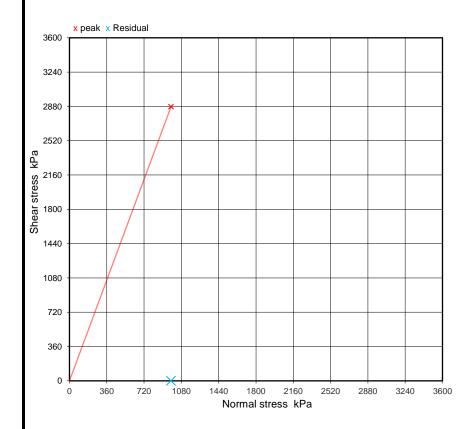
Sample details Undulating, rough

Specimen Details

	Average Length	90.16	mm
	Average Diameter	45.55	mm
Initial	Sample Ratio	1.98	
	Moisture Content	12.00	%
	Bulk Density	2.18	Mg/m³
	Dry density	1.95	Mg/m³
	Initial area	1629.55	mm ₂
Consolidation	Consolidation / Normal Stress applied	980.00	KPa
Consolidation	Change in height during consolidation*	-0.07	mm

Shearing stage(s)

onearing stage(s)						
Rate of displacement	Max Displacement	6.84	mm			
Rate of displacement	Calculated Shear Rate	0.28	mm/min			
	Relative horizontal displacement	6.47	mm			
Peak values, (o)	Shear stress	2877.28	KPa			
	Vertical Movement at peak shear stress*	-1.34	mm			
Residual values	Shear stress	N/A	KPa			



Plane of Weakness:

none		none	
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Encapsulating Material:

C40 Cement

Curing Time (hrs):

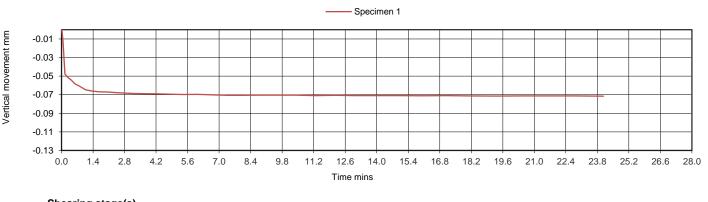
168.0

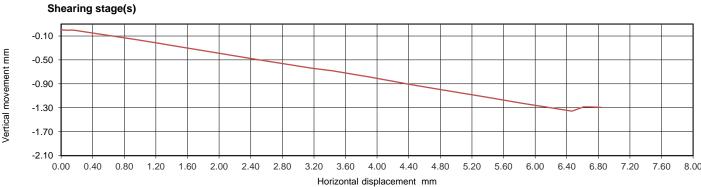
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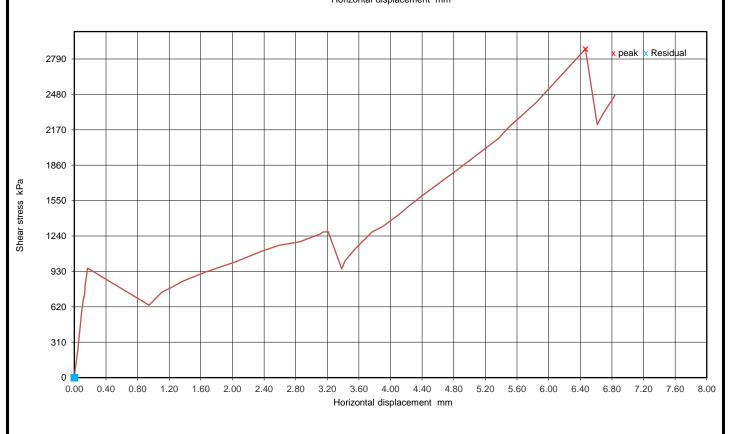
Specimen 1 - Unable to measure residual strength. Shear stress curve is non-typical and should be used with caution.

Notes	Approved	Date printed	Test technician
	D.Smith	15/05/2023 16:59	O Atitebi

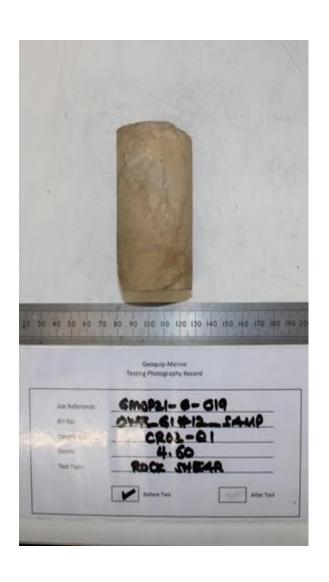
GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore GI		Sample No.	CR02		
Soil Description	Greyish orange (10y 7/4) SANDSTONE				Depth m	4.6
Specimen Reference	Q1	Specimen Depth	4.6	m	Sample Type	Q1
Specimen Description	Greyish o	Greyish orange (10Y 7/4) SANDSTONE.			KeyLAB ID	BH0120230227229





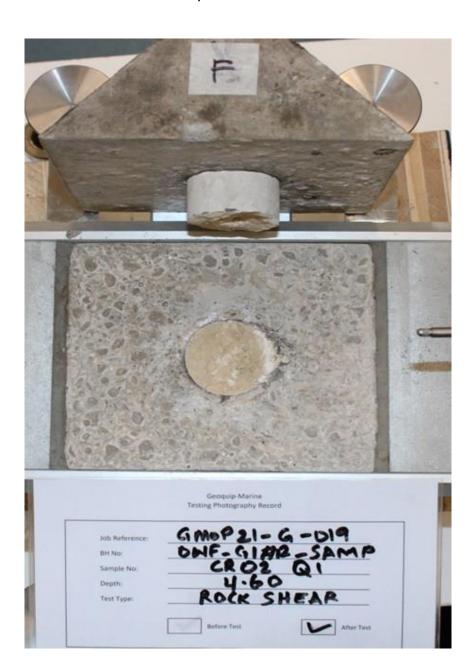


GEOOL	GEOQUIPMARINE ISRM 2007 SM Determining		IIDMADINE		GMOP21-G-019		
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#12_SAMP		
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR02	
Soil Description	Greyish orange (10y 7/4) SANDSTONE			Depth m	4.6		
Specimen Reference	Q1	Q1 Specimen Depth		m	Sample Type	Q1	
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974			974	KeyLAB ID	BH0120230227229	





GEOOL	GEOQUIPMARINE ISRM 2007 SM Determining		Job Ref	GMOP21-G-019		
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#12_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR02	
Soil Description	Greyish orange (10y 7/4) SANDSTONE			Depth m	4.6	
Specimen Reference	Q1	Specimen Depth	4.6	m	Sample Type	Q1
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974			974	KeyLAB ID	BH0120230227229



GEOC	GEOQUIPMARINE ISRM 2007 SM Determining		Job Ref	GMOP21-G-019	
a		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne C	A05 Bretagne Offshore GI		Sample No.	CR06
Soil Description	Strong brown (1	0YR 5/3) LIMESTONE		Depth m	8.3
Specimen Reference	IS	Specimen Depth	8.30 m	Sample Type	IS
Specimen Description	Strong brown (1	0YR 5/3) LIMESTONE		KeyLAB ID	BH0120230227234
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	17/04/2023

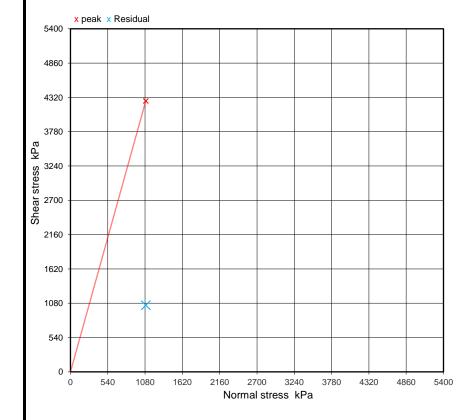
Sample details Undulating, rough

Specimen Details

	Average Length	87.86	mm
	Average Diameter	45.44	mm
	Sample Ratio	1.93	
Initial	Moisture Content	0.82	%
	Bulk Density	2.70	Mg/m³
	Dry density	2.68	Mg/m³
	Initial area	1621.80	mm ₂
Consolidation	Consolidation / Normal Stress applied	1090.00	KPa
Consolidation	Change in height during consolidation*	-0.20	mm

Shearing stage(s)

	onearing stage(s)			
I	Rate of displacement	Max Displacement	10.24	mm
L	Nate of displacement	Calculated Shear Rate	0.35	mm/min
		Relative horizontal displacement	1.19	mm
	Peak values, (o)	Shear stress	4264.80	KPa
		Vertical Movement at peak shear stress*	-0.69	mm
ı	Residual values	Shear stress	1047.49	KPa



Plane of Weakness:

	none	

Encapsulating Material:

C40 Cement

Curing Time (hrs):

168.0

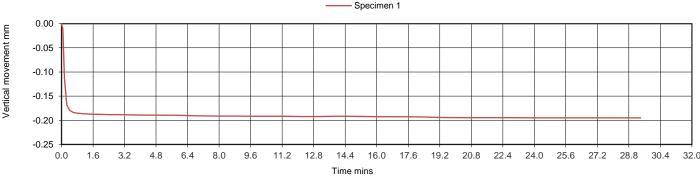
Ren	nar	L۵	
L/CI	IIaII	NO.	

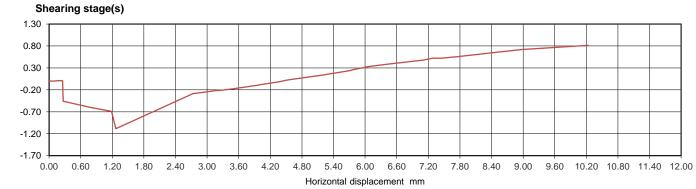
- 101110						

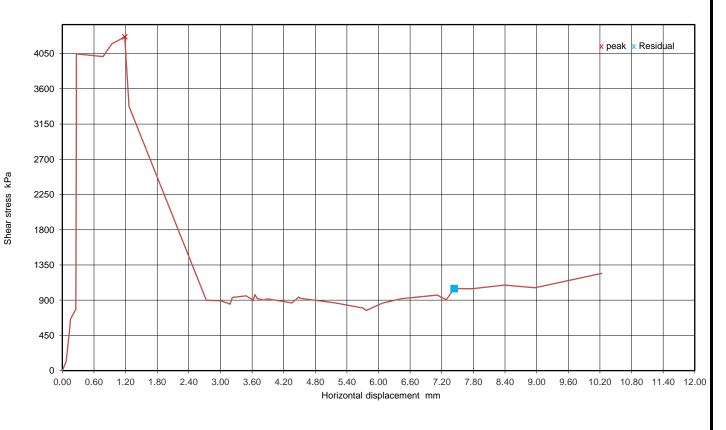
Notes	Approved	Date printed	Test technician
	D.Smith	15/05/2023 16:59	O Atitebi

		ISR	ISRM 2007 SM Determining		Job Ref	GMOP21-G-019	
GEOQU	Shear Strength - 1974		Borehole/Pit No.	OWF_GI#12_SAMP			
Site Name	A	05 Bre	5 Bretagne Offshore GI			Sample No.	CR06
Soil Description	Strong b	Strong brown (10YR 5/3) LIMESTONE				Depth m	8.3
Specimen Reference	IS	IS Specimen 8.3 m			Sample Type	IS	
Specimen Description	Strong b	orown	rown (10YR 5/3) LIMESTONE			KeyLAB ID	BH0120230227234

Vertical movement mm







GEOOL	ISRM 2007 SM Determining Shear Strength - 1974		<u> </u>		Job Ref	GMOP21-G-019
G.			4	Borehole/Pit No.	OWF_GI#12_SAMP	
Site Name	A	A05 Bretagne Offshore GI Strong brown (10YR 5/3) LIMESTONE			Sample No.	CR06
Soil Description	Strong b				Depth m	8.3
Specimen Reference	IS	Specimen Depth	8.3	m	Sample Type	IS
Specimen Description	ISRM 2007 SN	2007 SM Determining Shear Strength - 1974			KeyLAB ID	BH0120230227234





GEOOL	GEOQUIPMARINE		ISRM 2007 SM Determining		Job Ref	GMOP21-G-019
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#12_SAMP	
Site Name	A	5 Bretagne Offshore GI			Sample No.	CR06
Soil Description	Strong b	Strong brown (10YR 5/3) LIMESTONE			Depth m	8.3
Specimen Reference	IS	Specimen Depth	8.3	m	Sample Type	IS
Specimen Description	ISRM 2007 SM	SM Determining Shear Strength - 1974			KeyLAB ID	BH0120230227234



GEOQ	UIPMARINE	ISRM 2007 SM Determining Shear Strength - 1974		Job Ref	GMOP21-G-019
a				Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR08
Soil Description	(Strong) modera	ite brown (5yR 4/4) LIN	MESTONE	Depth m	10.47
Specimen Reference	IS	IS Specimen 10.47 m		Sample Type	IS
Specimen Description	(Strong) modera	te brown (5yR 4/4) LIN	MESTONE	KeyLAB ID	BH0120230227239
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	17/04/2023

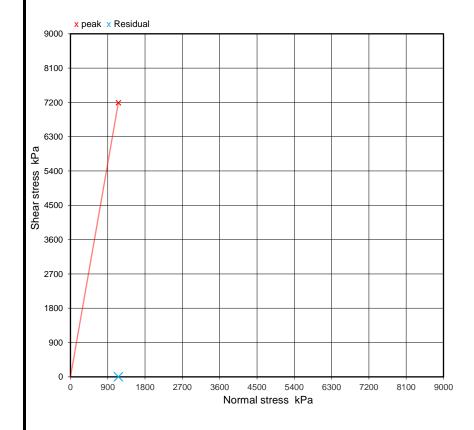
Sample details Undulating, rough

Specimen Details

	Average Length	87.77	mm
	Average Diameter	45.50	mm
	Sample Ratio	1.93	
Initial	Moisture Content	1.32	%
	Bulk Density	2.70	Mg/m³
	Dry density	2.66	Mg/m³
	Initial area	1625.97	mm ₂
Consolidation	Consolidation / Normal Stress applied	1155.00	KPa
	Change in height during consolidation*	-0.19	mm

Shearing stage(s)

ĺ	Rate of displacement	Max Displacement	10.20	mm				
ı	reace of displacement	Calculated Shear Rate	0.35	mm/min				
ĺ		Relative horizontal displacement	3.66	mm				
١	Peak values, (o)	Shear stress	7188.69	KPa				
١		Vertical Movement at peak shear stress*	-2.36	mm				
ĺ	Residual values	Shear stress	N/A	KPa				



Plane of Weakness:

Encapsulating Material:

C40 Cement

Curing Time (hrs):

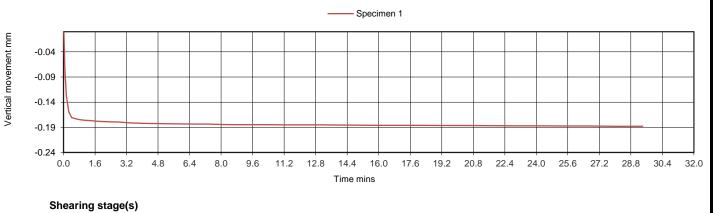
168.0

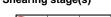
Remarks:

Specimen 1 - Encapsulting material weaker than sample, treat data with caution. Unable to measure residual shear strength

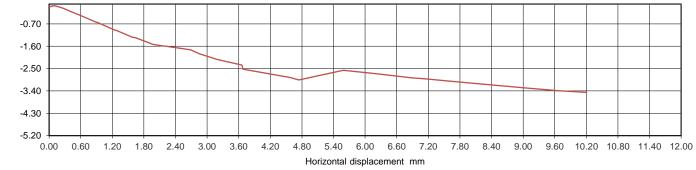
Notes	Approved	Date printed	Test technician
	D.Smith	15/05/2023 16:59	O Atitebi

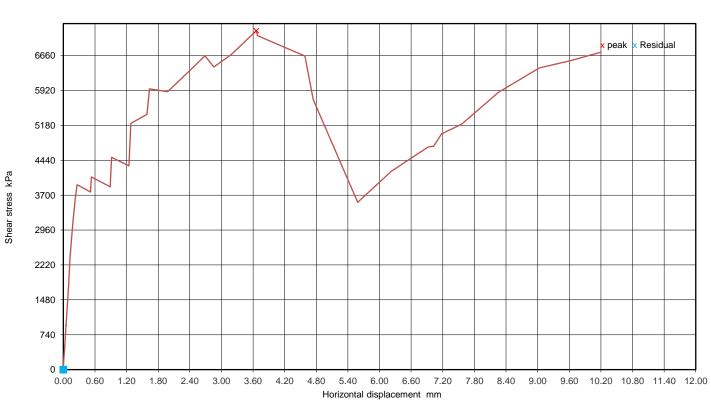
GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore GI				Sample No.	CR08
Soil Description	(Strong) moderate brown (5yR 4/4) LIMESTONE				Depth m	10.47
Specimen Reference	IS	Specimen Depth	10.47	m	Sample Type	IS
Specimen Description	(Strong) moderate brown (5yR 4/4) LIMESTONE				KeyLAB ID	BH0120230227239





Vertical movement mm



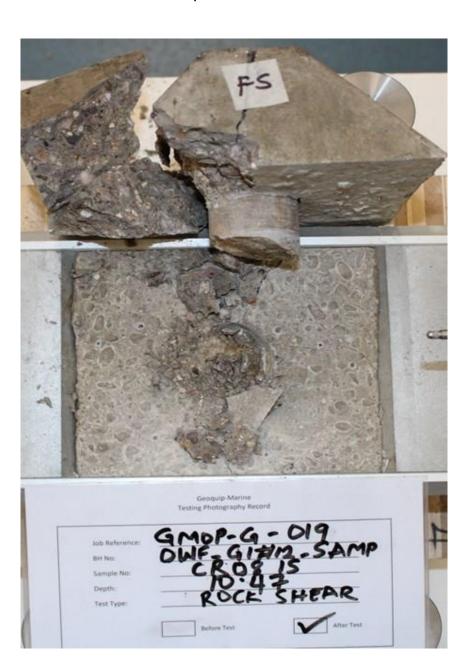


GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore GI				Sample No.	CR08
Soil Description	(Strong) moderate brown (5yR 4/4) LIMESTONE				Depth m	10.47
Specimen Reference	IS	Specimen Depth	10.47	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH0120230227239





GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore GI				Sample No.	CR08
Soil Description	(Strong) moderate brown (5yR 4/4) LIMESTONE				Depth m	10.47
Specimen Reference	IS	Specimen Depth	10.47	m	Sample Type	IS
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974				KeyLAB ID	BH0120230227239



GEOQUIPMARINE		ISRM 2007 SM [_	Job Ref	GMOP21-G-019
a	Shear Strength - 1974		Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne O	ffshore GI		Sample No.	CR03
Soil Description	(Very weak) Greenish grey (5GY 5/1) MUDSTONE			Depth m	3.3
Specimen Reference	IS	IS Specimen 3.30 n		Sample Type	IS
Specimen Description	(Very weak) Gre	enish grey (5GY 5/1) I	MUDSTONE	KeyLAB ID	BH0120230227283
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	31/03/2023

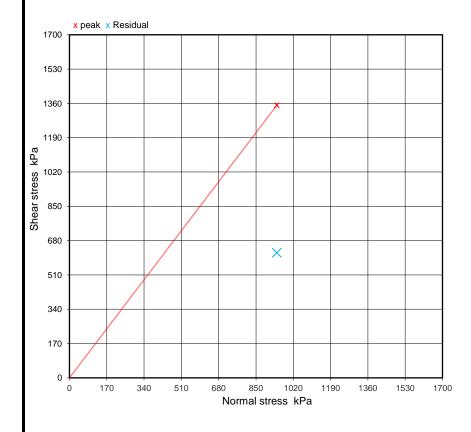
Sample details Undulating, Rough

Specimen Details

	Average Length	90.57	mm
	Average Diameter	76.73	mm
	Sample Ratio	1.18	
Initial	Moisture Content	12.40	%
	Bulk Density	2.42	Mg/m³
	Dry density	2.15	Mg/m³
	Initial area	4624.23	mm ₂
Consolidation	Consolidation / Normal Stress applied	945.00	KPa
	Change in height during consolidation*	-0.65	mm

Shearing stage(s)

onouring stage(o)							
Rate of displacement	Max Displacement	10.11	mm				
Nate of displacement	Calculated Shear Rate	0.27	mm/min				
	Relative horizontal displacement	1.95	mm				
Peak values, (o)	Shear stress	1350.87	KPa				
	Vertical Movement at peak shear stress*	-0.28	mm				
Residual values	Shear stress	619.85	KPa				



Plane of Weakness:

none	

Encapsulating Material:

C40 Cement

Curing Time (hrs):

144.0

Remarks:

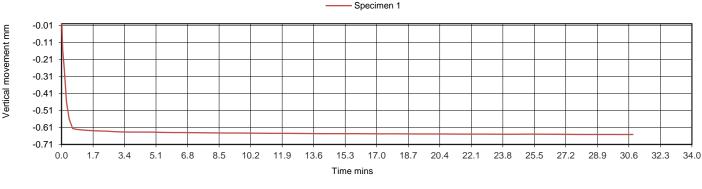
Specimen 1 - Sample fractured during preparation-use data with caution

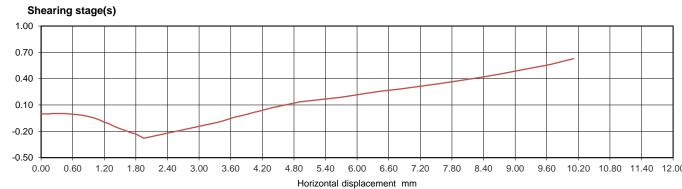
Notes	Approved	Date printed	Test technician
	D.Smith	12/05/2023 14:47	S Ocio

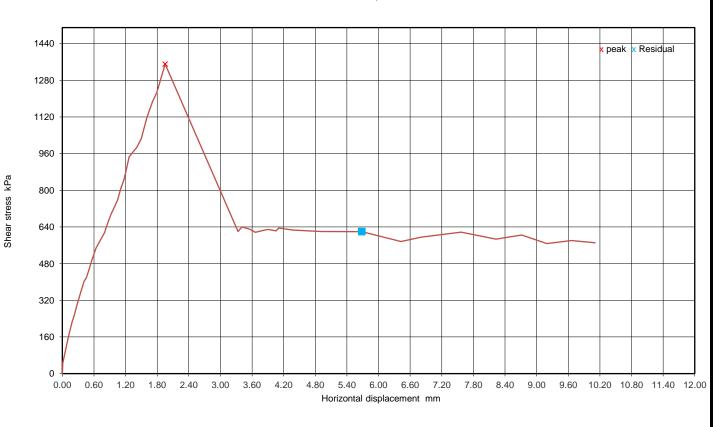
GEOQUIPMARINE		ISR	M 2007 SM [)etermin	ina	Job Ref	GMOP21-G-019
		Shear Strength - 1974			_	Borehole/Pit No.	OWF_GI#14A_SAMP
Site Name	A	A05 Bretagne Offshore GI				Sample No.	CR03
Soil Description	(Very weak) G	(Very weak) Greenish grey (5GY 5/1) MUDSTONE			NE	Depth m	3.3
Specimen Reference	IS Specimen 3.3 m		m	Sample Type	IS		
Specimen Description	(Very weak) G	ry weak) Greenish grey (5GY 5/1) MUDSTONE			NE	KeyLAB ID	BH0120230227283

Consolidation stage(s)

Vertical movement mm







GEOQUIPMARINE		ISRM 2007 SM I		_	Job Ref	GMOP21-G-019
		Shear Strength - 1974			Borehole/Pit No.	OWF_GI#14A_SAMP
Site Name	A	A05 Bretagne Offshore GI			Sample No.	CR03
Soil Description	(Very weak) G	(Very weak) Greenish grey (5GY 5/1) MUDSTONE			Depth m	3.3
Specimen Reference	IS Specimen 3.3 m		Sample Type	IS		
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974			KeyLAB ID	BH0120230227283	

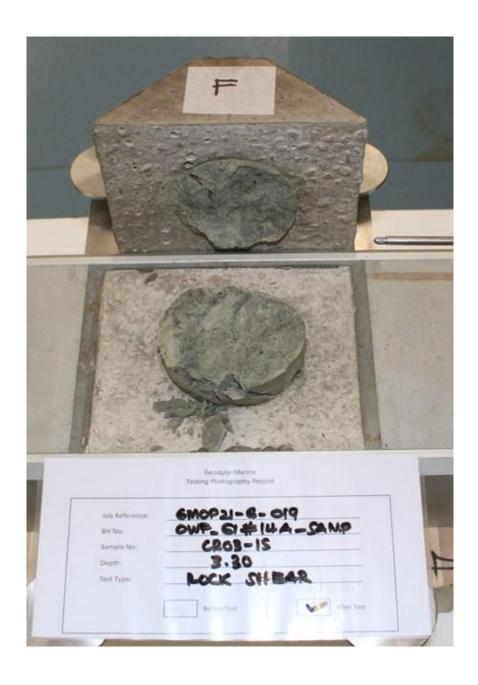
Sample before test

Photo is not available



ISRM 2007 SM Determining Shear Strength - 1974			RM 2007 SM Determining		Job Ref	GMOP21-G-019
		4	Borehole/Pit No.	OWF_GI#14A_SAMP		
Site Name	A	05 Bretagne Offshore	5 Bretagne Offshore GI			CR03
Soil Description	(Very weak) G	(Very weak) Greenish grey (5GY 5/1) MUDSTONE			Depth m	3.3
Specimen Reference	IS	IS Specimen 3.3 m		m	Sample Type	IS
Specimen Description	ISRM 2007 SM	SRM 2007 SM Determining Shear Strength - 1974			KeyLAB ID	BH0120230227283

Sample after test



GEOQUIPMARINE ISRM 2007 SM Determining Shear Strength - 1974			_	Job Ref	GMOP21-G-019
		Borehole/Pit No.	OWF_GI#14A_SAMP		
Site Name	A05 Bretagne O	A05 Bretagne Offshore GI		Sample No.	CR06
Soil Description	(Weak) Greyish	(Weak) Greyish olive (10Y 5/2) LIMESTONE		Depth m	6.6
Specimen Reference	Q1	Specimen Depth	6.60 m	Sample Type	Q1
Specimen Description	(Weak) Greyish	olive (10Y 5/2) LIMES	TONE	KeyLAB ID	BH0120230227296
Test Method	ISRM 2007 SM	Determining Shear Str	ength - 1974	Date of test	04/04/2023

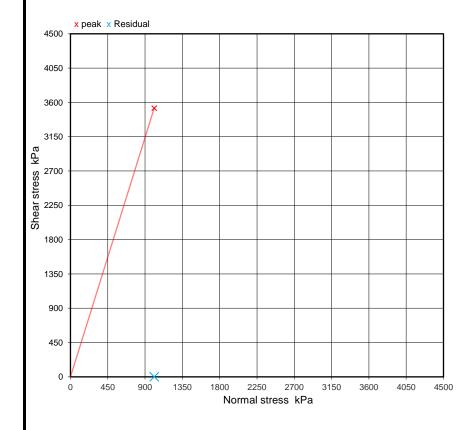
Sample details	

Specimen Details

	Average Length	90.82	mm
	Average Diameter	45.42	mm
	Sample Ratio	2.00	
Initial	Moisture Content	7.48	%
	Bulk Density	2.40	Mg/m³
	Dry density	2.23	Mg/m³
	Initial area	1620.50	mm ₂
Consolidation	Consolidation / Normal Stress applied	1010.00	KPa
	Change in height during consolidation*	-0.11	mm

Shearing stage(s)

	Official ing Stage(S)			
	Rate of displacement	Max Displacement	10.12	mm
	reate of displacement	Calculated Shear Rate	0.31	mm/min
	Peak values, (o)	Relative horizontal displacement	0.49	mm
		Shear stress	3524.10	KPa
		Vertical Movement at peak shear stress*	-0.29	mm
	Residual values	Shear stress	N/A	KPa



Plane of Weakness:

|--|

Encapsulating Material:

C40 Cement

Curing Time (hrs):

168.0

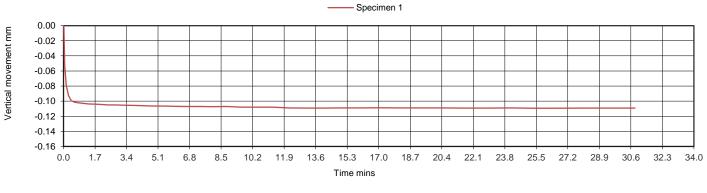
Remarks:

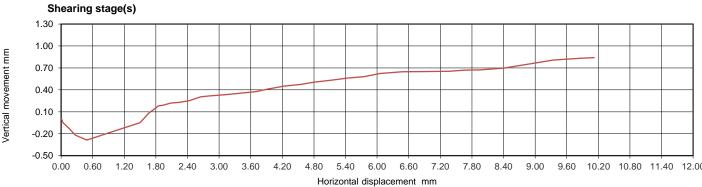
Specimen 1 - Unable to measure residual shear stress

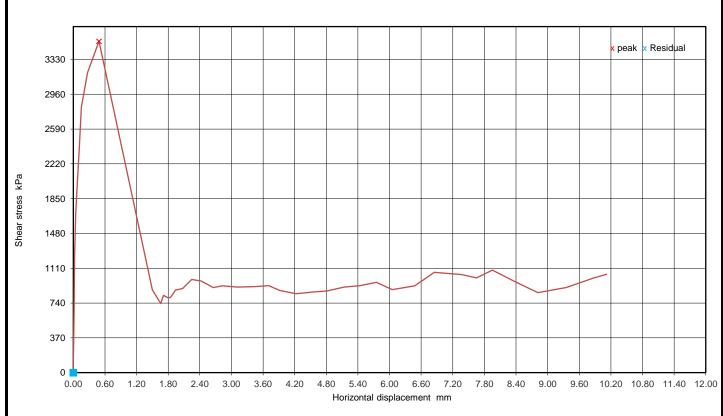
Notes	Approved	Date printed	Test technician
	D.Smith	12/05/2023 14:47	S Ocio

GEOOLIPMARINE		ISRM 2007 SM Determining		Job Ref	GMOP21-G-019	
			Strength - 1974		Borehole/Pit No.	OWF_GI#14A_SAMP
Site Name	A	A05 Bretagne Offshore GI		Sample No.	CR06	
Soil Description	(Weak) Gre	Greyish olive (10Y 5/2) LIMESTONE		Depth m	6.6	
Specimen Reference	Q1	Specimen Depth	6.6	m	Sample Type	Q1
Specimen Description	(Weak) Gre	reyish olive (10Y 5/2) LIMESTONE		KeyLAB ID	BH0120230227296	

Consolidation stage(s)

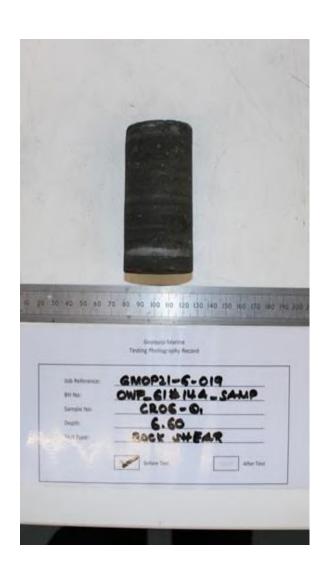






GEOQUIPMARINE		ISRM 2007 SM Determining			Job Ref	GMOP21-G-019
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A	A05 Bretagne Offshore GI		Sample No.	CR06	
Soil Description	(Weak) Greyish olive (10Y 5/2) LIMESTONE			Depth m	6.6	
Specimen Reference	Q1 Specimen 6.6 m		Sample Type	Q1		
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974		KeyLAB ID	BH0120230227296		

Sample before test





GEOQUIPMARINE		ISRM 2007 SM Determining			Job Ref	GMOP21-G-019
GC.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR06	
Soil Description	(Weak) Greyish olive (10Y 5/2) LIMESTONE			Depth m	6.6	
Specimen Reference	Q1	Specimen 6.6 m		Sample Type	Q1	
Specimen Description	ISRM 2007 SM Determining Shear Strength - 1974		KeyLAB ID	BH0120230227296		

Sample after test



GEOO	GEOQUIPMARINE ISRM 2007 SM Determining		Job Ref	GMOP21-G-019	
a		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#14A_SAMP
Site Name	A05 Bretagne O	fshore GI		Sample No.	CR13
Soil Description	(Weak) Grey (2.	Grey (2.5Y 5/1) SANDSTONE		Depth m	14
Specimen Reference	IS	Specimen Depth	14.00 m	Sample Type	IS
Specimen Description	(Weak) Grey (2.5Y 5/1) SANDSTONE		KeyLAB ID	BH0120230227322	
Test Method	ISRM 2007 SM Determining Shear Strength - 1974		Date of test	06/04/2023	

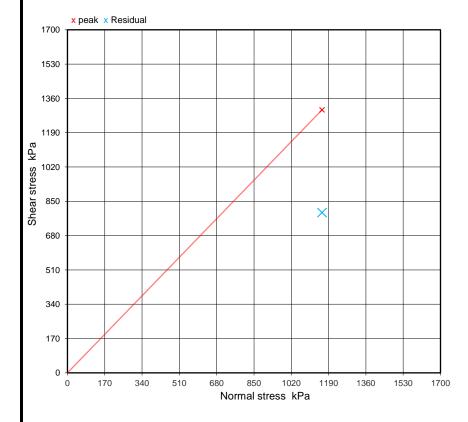
Sample details	

Specimen Details

	Average Length	93.45	mm
	Average Diameter	45.88	mm
	Sample Ratio	2.04	
Initial	Moisture Content	12.07	%
	Bulk Density	2.03	Mg/m³
	Dry density	1.81	Mg/m³
	Initial area	1653.00	mm ₂
Consolidation	Consolidation / Normal Stress applied	1160.00	KPa
Consolidation	Change in height during consolidation*	-0.43	mm

Shearing stage(s)

onearing stage(s)			
Rate of displacement	Max Displacement	10.03	mm
reace of displacement	Calculated Shear Rate	0.31	mm/min
Peak values, (o)	Relative horizontal displacement	0.63	mm
	Shear stress	1303.07	KPa
	Vertical Movement at peak shear stress*	0.13	mm
Residual values	Shear stress	794.33	KPa
	Rate of displacement Peak values, (o)	Rate of displacement Calculated Shear Rate Relative horizontal displacement Shear stress Vertical Movement at peak shear stress*	Rate of displacement Max Displacement 10.03 Calculated Shear Rate 0.31 Peak values, (o) Relative horizontal displacement 0.63 Shear stress 1303.07 Vertical Movement at peak shear stress* 0.13



Plane of Weakness:

Encapsulating Material:

Curing Time (hrs):

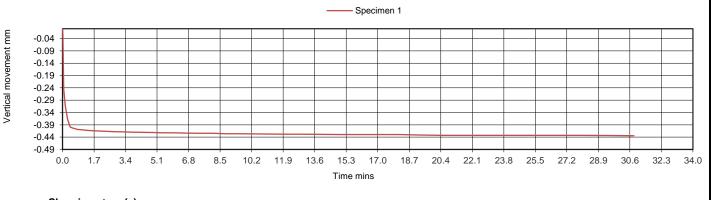
144.0

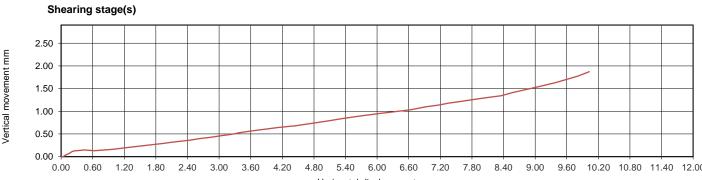
Remarks		
Nemains	•	

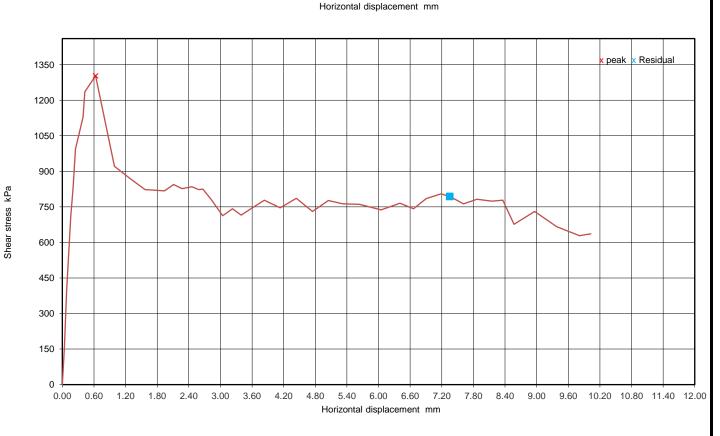
Notes	Approved	Date printed	Test technician
	D.Smith	12/05/2023 14:48	S Ocio

GEOQUIPMARINE		ISRM 2007 SM Determining Shear Strength - 1974			Job Ref	GMOP21-G-019
					Borehole/Pit No.	OWF_GI#14A_SAMP
Site Name	A	05 Bretagne Offshore	GI		Sample No.	CR13
Soil Description	(Weak)	Grey (2.5Y 5/1) SANI	OSTONE		Depth m	14
Specimen Reference	IS	Specimen 14 m		Sample Type	IS	
Specimen Description	(Weak)	Grey (2.5Y 5/1) SANDSTONE			KeyLAB ID	BH0120230227322

Consolidation stage(s)







GEOQUIPMARINE		ISRM 2007 SM [_	Job Ref	GMOP21-G-019
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	AC	5 Bretagne Offshore GI			Sample No.	CR13
Soil Description	(Weak)	Grey (2.5Y 5/1) SAND	Grey (2.5Y 5/1) SANDSTONE			14
Specimen Reference	IS	Specimen 14 m		Sample Type	IS	
Specimen Description	ISRM 2007 SN	1 Determining Shear S	Strength - 1	974	KeyLAB ID	BH0120230227322

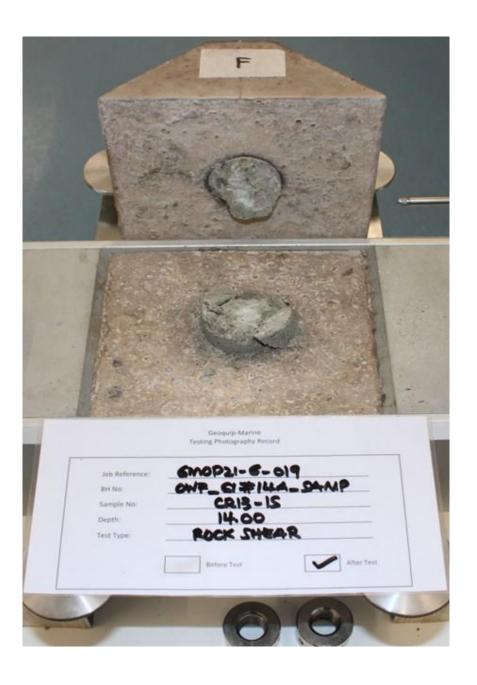
Sample before test





GEOQUIPMARINE			ISRM 2007 SM Determining			GMOP21-G-019
G.		Shear Strength - 1974		Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	AC	5 Bretagne Offshore GI			Sample No.	CR13
Soil Description	(Weak)	Grey (2.5Y 5/1) SANDSTONE			Depth m	14
Specimen Reference	IS	Specimen 14 m		Sample Type	IS	
Specimen Description	ISRM 2007 SM	1 Determining Shear S	Strength - '	1974	KeyLAB ID	BH0120230227322

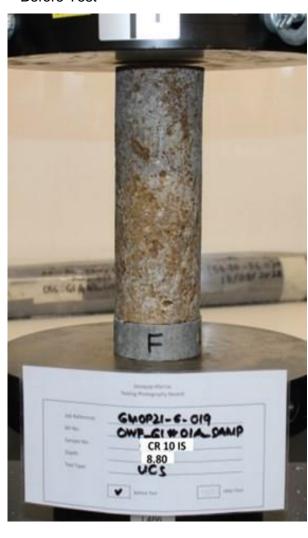
Sample after test



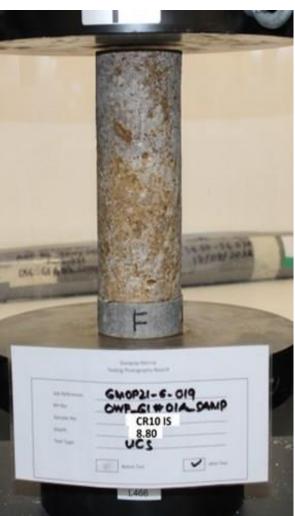
GEOQUIPMARINE	Uniaxia	I Compress	ive Strength		Job Ref		GMOP21-G-01	9
G CEOGOII I MILITE	and Deformability of Rock				Borehole/Pit No	Э.	OWF_GI#01A_SAMF	
Site Name	A05 Bretagne Offshore GI				Sample No.		CR10	
Rock Description	Moderately weak SANDSTONE				Depth m		8.80	
Specimen Reference	IS	Specimen Depth	8.80	m	Sample Type		IS	
Specimen Rock Type	Moderately weak pale	Moderately weak pale brown (10YR 6/3) SANDSTONE.			KeyLAB ID		BH01202302272	23
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testi	ng and	Date of test		15/03/2023	
Orientation of loading to bedding planes Condition for test Length, L Diameter, D JD Bulk density Ory density Moisture Content	210.07 mm 77.76 2.70 mm 2.50 Mg/m 2.39 Mg/m 4.4 %			Equiv Dura Maxii Unia	of loading valent stress rate tion of test mum Axial Load vial Compressive gth, UCS	21.0 0.07368 338.7 115.4 24.30	kN/min MPa/s seconds kN MPa	
Mode of failure Remarks :	fragmented							

Test technician	Approved by	Date printed
S Ocio	U. Mazhar	31/03/2023 11:45

GEOQUIPMARINE	Uniaxia	l Compressi	ve Strength	Job Ref	GMOP21-G-019
GEOGOIPHANNE	and Deformability of Rock			Borehole/Pit No.	OWF_GI#01A_SAMP
Site Name	A05 Bretagne Offshore	GI	Sample No.	CR10	
Rock Description	Moderately weak SANDSTONE			Depth m	8.80
Specimen Reference	IS	Specimen Depth	8.80 m	Sample Type	IS
Specimen Rock Type	Moderately weak pale t	orown (10YR 6/3)	SANDSTONE.	KeyLAB ID	BH012023022723
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	racterization Testing and	Date of test	15/03/2023



After Test



GEOOUIPMARINE Uniaxial Compressive Strength				Job Ref	GMOP21-G-019
GEOGOIFMANNE	and I	and Deformability of Rock			OWF_GI#01A_SAMP
Site Name	A05 Bretagne Offshore	: GI	Sample No.	CR10	
Rock Description	Moderately weak SANDSTONE			Depth m	8.80
Specimen Reference	IS	Specimen Depth	8.80 m	Sample Type	IS
Specimen Rock Type	Moderately weak pale	brown (10YR 6/3)	SANDSTONE.	KeyLAB ID	BH012023022723
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	15/03/2023



GEOQUIPMARINE	Uniaxia	ıl Compressi	ive Strength		Job Ref			GMOP21-G-019
GEOQUIPMARINE	and Deformability of Rock				Borehole/Pit No.		0	WF_GI#05B_SAMP
Site Name	A05 Bretagne Offshore GI				Sample No.			CR01
Rock Description	Moderately weak MUDSTONE				Depth m			5.50
Specimen Reference	IS Specimen 5.50 m				Sample Type			IS
Specimen Rock Type	Moderately weak greenish grey (5GY 5/1) MUDSTONE.				KeyLAB ID		BH0120230227118	
Test Method	ISRM, Suggested Meth Monitoring, 2007	hods for Rock Cha	aracterization Test	ing and	Date of test			15/03/2023
Orientation of loading to bedding planes Condition for test	Random as received			Equiv Dura	of loading valent stress rate tion of test	0.02	2999 4.3	kN/min MPa/s seconds
Length, L Diameter, D L/D	169.83 mm 77.55 mm 2.19 *outside specification for ISRM			Unia	mum Axial Load kial Compressive gth, UCS			kN MPa
Bulk density Dry density Moisture Content	2.51 Mg/n 2.39 Mg/n 5.1 %							

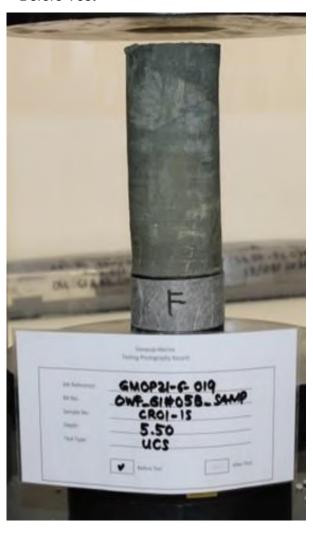
fragmented		

Mode of failure

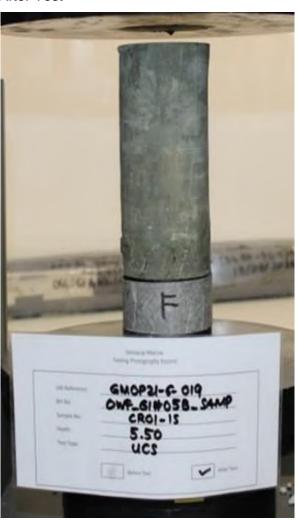
Remarks:

Test technician	Approved by	Date printed
S Ocio	U. Mazhar	31/03/2023 11:48

GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength and Deformability of Rock			GMOP21-G-019
GEOGOIPHANNE	and [OWF_GI#05B_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR01
Rock Description	Moderately weak MUDSTONE			Depth m	5.50
Specimen Reference	IS	Specimen Depth	5.50 m	Sample Type	IS
Specimen Rock Type	Moderately weak greenish grey (5GY 5/1) MUDSTONE.			KeyLAB ID	BH0120230227118
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	aracterization Testing and	Date of test	15/03/2023



After Test



GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength and Deformability of Rock			GMOP21-G-019
GEOGOIFMANNE	and I				OWF_GI#05B_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR01
Rock Description	Moderately weak MUD	Moderately weak MUDSTONE			5.50
Specimen Reference	IS	Specimen Depth	5.50 m	Sample Type	IS
Specimen Rock Type	Moderately weak greenish grey (5GY 5/1) MUDSTONE.			KeyLAB ID	BH0120230227118
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	racterization Testing and	Date of test	15/03/2023



	T							
GEOQUIPMARINE	Uniaxia	I Compress	ive Strength		Job Ref		GMOP21-G-0	19
ac.	and l	and Deformability of Rock				0.	OWF_GI#09_S	AMP
Site Name	A05 Bretagne Offshore	e GI			Sample No.		CR01	
Rock Description	Medium strong brown(10yr 5/3) LIMEST	ONE		Depth m		0.20	
Specimen Reference	IS	Specimen Depth	0.20	m	Sample Type		Q1	
Specimen Rock Type	Medium strong brown(Medium strong brown(10yr 5/3) LIMESTONE					BH0120230227	7135
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testir	ng and	Date of test		16/03/2023	l
Orientation of loading to bedding planes Condition for test	Random			Equiv	of loading valent stress rate tion of test	23. 0.080 304	017 MPa/s	
Length, L Diameter, D L/D	187.41 mm 78.19 mm	78.19 mm			wial Compressive	129 27.1	_	
Bulk density Dry density Moisture Content	2.56 Mg/n 2.48 Mg/n 3.4 %							
Mode of failure	fragmented							
Remarks :								

Test technician	Approved by	Date printed
S Ocio	U. Mazhar	31/03/2023 12:45

GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength and Deformability of Rock			GMOP21-G-019
GEOGOIFFIARINE	and [OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR01
Rock Description	Medium strong brown(10yr 5/3) LIMESTONE			Depth m	0.20
Specimen Reference	IS	Specimen Depth	0.20 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown(10yr 5/3) LIMESTONE			KeyLAB ID	BH0120230227135
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	racterization Testing and	Date of test	16/03/2023



After Test



GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength and Deformability of Rock			GMOP21-G-019
GEOGOIFFIARINE	and [OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR01
Rock Description	Medium strong brown(10yr 5/3) LIMESTONE			Depth m	0.20
Specimen Reference	IS	Specimen Depth	0.20 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown(10yr 5/3) LIMESTONE			KeyLAB ID	BH0120230227135
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	racterization Testing and	Date of test	16/03/2023



GEOQUIPMARINE		Uniaxial Compressive Strength			Job Ref		GMOP21-G-019
ac	and I	Deformability	y of Rock		Borehole/Pit No	0.	OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			Sample No.		CR02
Rock Description	Medium strong brown (10yr 5/3) LIMESTONE				Depth m		1.20
Specimen Reference	Q1	Specimen Depth	1.20	m	Sample Type		Q1
Specimen Rock Type	Medium strong brown (10yr 5/3) LIMESTONE			KeyLAB ID		BH0120230227138	
Test Method	ISRM, Suggested Meth Monitoring, 2007	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007					16/03/2023
Orientation of loading	Random			Rate	of loading	23.4	kN/min
bedding planes	Kandom			_ <u></u>	valent stress rate	0.08046	MPa/s
Condition for test	oo roooiyad		1	Dura	tion of test	555	seconds
Condition for test	as received			Maxii	mum Axial Load	223.7	kN
Length, L Diameter, D L/D	165.43 mm 78.56 mm 2.11 * outsic	le specification for ISRN			xial Compressive	46.20	MPa

Bulk density Dry density Moisture Content	2.62 Mg/m ³ 2.56 Mg/m ³ 2.3 %
Mode of failure	fragmented
Remarks :	

Test technician	Approved by	Date printed
S Ocio	U. Mazhar	31/03/2023 12:42

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIPHANNE	and I	and Deformability of Rock			OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR02
Rock Description	Medium strong brown (10yr 5/3) LIMESTONE			Depth m	1.20
Specimen Reference	Q1	Specimen Depth	1.20 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown (10yr 5/3) LIMESTONE			KeyLAB ID	BH0120230227138
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	16/03/2023



After Test



GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength and Deformability of Rock			GMOP21-G-019
GEOGOIFMANNE	and I				OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR02
Rock Description	Medium strong brown	Medium strong brown (10yr 5/3) LIMESTONE			1.20
Specimen Reference	Q1	Specimen Depth	1.20 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown (10yr 5/3) LIMESTONE			KeyLAB ID	BH0120230227138
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	racterization Testing and	Date of test	16/03/2023



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref		GMOP21-G-019	
Grocon i minine	and I	Deformability	y of Rock		Borehole/Pit No). (OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	e GI			Sample No.		CR14
Rock Description	Medium strong brown (10yr 5/3) LIMESTONE			Depth m		13.00	
Specimen Reference	Q1	Specimen Depth	13.00	m	Sample Type		Q1
Specimen Rock Type	Medium strong brown (10yr 5/3) LIMESTONE			KeyLAB ID		BH0120230227157	
Test Method	ISRM, Suggested Meth Monitoring, 2007	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007					16/03/2023
rientation of loading	Random			Rate	of loading	24.0	kN/min
bedding planes	Tandom				/alent stress rate		MPa/s
ondition for test	as received				tion of test mum Axial Load	349.8 142.3	seconds kN

to bedding planes

Equivalent stress rate 0.08016 MPa/seco

Duration of test 349.8 seco

Maximum Axial Load 142.3 kN

Length, L
Diameter, D
L/D

Bulk density

Equivalent stress rate 0.08016 MPa/seco

Maximum Axial Load 142.3 kN

Uniaxial Compressive Strength, UCS

MPa

28.50 MPa

Bulk density2.48Mg/m³Dry density2.35Mg/m³Moisture Content5.3%

Mode of failure Axial cleavage

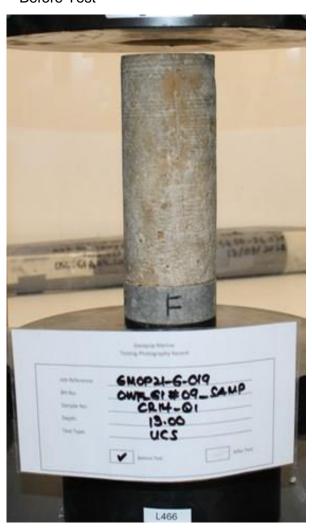
Remarks :

Test technician	Approved by	Date printed
S Ocio	U. Mazhar	31/03/2023 12:34

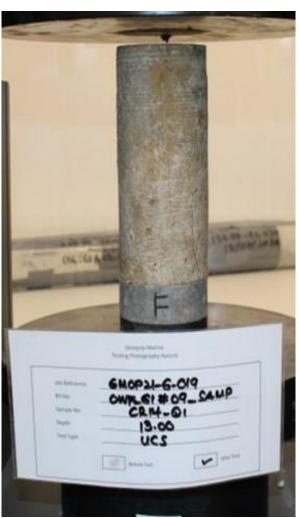
Page

1

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and I	and Deformability of Rock			OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR14
Rock Description	Medium strong brown (10yr 5/3) LIMESTONE			Depth m	13.00
Specimen Reference	Q1	Specimen Depth	13.00 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown ((10yr 5/3) LIMEST	ONE	KeyLAB ID	BH0120230227157
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	16/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFHANNE	and I	and Deformability of Rock			OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR14
Rock Description	Medium strong brown	(10yr 5/3) LIMEST	Depth m	13.00	
Specimen Reference	Q1	Specimen Depth	13.00 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown	(10yr 5/3) LIMEST	ONE	KeyLAB ID	BH0120230227157
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	racterization Testing and	Date of test	16/03/2023



GEOQUIPMARINE	Uniaxia	I Compressi	ive Strength		Job Ref			GMOP21-G-019
GEOGOIPPANINE	and I	and Deformability of Rock			Borehole/Pit No) .	(OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	e GI			Sample No.			CR15
Rock Description	Medium strong brown (10yr 5/3) LIMESTONE			Depth m			14.00	
Specimen Reference	Q1	Q1 Specimen 14.00 m			Sample Type			Q1
Specimen Rock Type	Medium strong brown (Medium strong brown (10yr 5/3) LIMESTONE			KeyLAB ID		BH0120230227159	
Test Method	ISRM, Suggested Meth Monitoring, 2007	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test			16/03/2023
Orientation of loading to bedding planes	Random			Equi	of loading valent stress rate tion of test	0.07	1.0 7990 7.1	kN/min MPa/s seconds
Condition for test	as received				mum Axial Load		1.9	kN
Length, L Diameter, D L/D	1/9 84 Imm			xial Compressive ngth, UCS	32	.30	МРа	
Bulk density Dry density Moisture Content	2.63 Mg/m 2.56 Mg/m 2.5 %							

Axial cleavage		

Mode of failure

Remarks:

Test technician	Test technician Approved by	
S Ocio	U. Mazhar	31/03/2023 12:29

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIPHANNE	and I	and Deformability of Rock			OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR15
Rock Description	Medium strong brown (10yr 5/3) LIMESTONE			Depth m	14.00
Specimen Reference	Q1	Specimen Depth	14.00 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown (10yr 5/3) LIMESTONE			KeyLAB ID	BH0120230227159
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	racterization Testing and	Date of test	16/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIPHANNE	and I	and Deformability of Rock			OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR15
Rock Description	Medium strong brown (10yr 5/3) LIMESTONE			Depth m	14.00
Specimen Reference	Q1	Specimen Depth	14.00 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown (10yr 5/3) LIMESTONE			KeyLAB ID	BH0120230227159
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	racterization Testing and	Date of test	16/03/2023



GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength			Job Ref		GMOP21-G-019
GEOGOIF MARINE	and Deformability of Rock			Borehole/Pit No	Э.	OWF_GI#09_SAMP	
Site Name	A05 Bretagne Offshore	e GI			Sample No.		CR16
Rock Description	Medium strong brown (10yr, 5/3) LIMESTONE			Depth m		15.10	
Specimen Reference	Q1	Q1 Specimen 15.10 m					Q1
Specimen Rock Type	Medium strong brown (10yr, 5/3) LIMESTONE			KeyLAB ID		BH0120230227162	
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testi	ng and	Date of test		16/03/2023
Orientation of loading to bedding planes Condition for test	Random as received			Equi ^v Dura	of loading valent stress rate tion of test mum Axial Load	24.1 0.0801 421.2 173.8	seconds
Length, L Diameter, D L/D	1/9 88 Imm			xial Compressive ngth, UCS	34.70) МРа	
Bulk density Dry density Moisture Content	2.64 Mg/m 2.59 Mg/m 1.9 %						

Axial cleav	age .		

Mode of failure

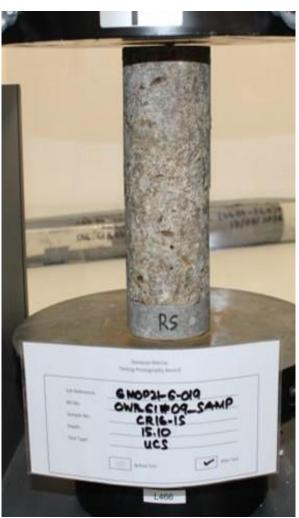
Remarks:

Test technician	Approved by	Date printed	
S Ocio	U. Mazhar	31/03/2023 12:20	

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and I	and Deformability of Rock			OWF_GI#09_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR16
Rock Description	Medium strong brown (10yr, 5/3) LIMESTONE			Depth m	15.10
Specimen Reference	Q1	Specimen Depth	15.10 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown ((10yr, 5/3) LIMES	TONE	KeyLAB ID	BH0120230227162
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	16/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOITIANINE	and Deformability of Rock		Borehole/Pit No.	OWF_GI#09_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR16
Rock Description	Medium strong brown (10yr, 5/3) LIMESTONE			Depth m	15.10
Specimen Reference	Q1	Specimen Depth	15.10 m	Sample Type	Q1
Specimen Rock Type	Medium strong brown (10yr, 5/3) LIMESTONE			KeyLAB ID	BH0120230227162
Test Method	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test	16/03/2023



GEOOUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
	and Deformability of Rock		Borehole/Pit No.	OWF_GI#11_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR05
Rock Description				Depth m	5.50
Specimen Reference	IS	Specimen Depth	5.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227182
Test Method	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test	07/03/2023

Rate of loading

Duration of test

Strength, UCS

Equivalent stress rate

Maximum Axial Load

Uniaxial Compressive

24.0

0.08135

536.6

213.4

43.40

kN/min

seconds

MPa/s

kΝ

МРа

Orientation of loading to bedding planes

Random

Condition for test

as received

Length, L Diameter, D L/D 210.81 mm 79.12 mm 2.66

 $\begin{array}{ccc} \text{Bulk density} & 2.53 & \text{Mg/m}^3 \\ \text{Dry density} & 2.44 & \text{Mg/m}^3 \\ \text{Moisture Content} & 3.7 & \% \end{array}$

Mode of failure

fragmented

Remarks:

CORE SAMPLE TOLERANCES NOT MEASURED

Test technician	Approved by	Date printed
S Ocio	D.Smith	04/04/2023 09:13

Page 1

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and Deformability of Rock		Borehole/Pit No.	OWF_GI#11_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR05
Rock Description				Depth m	5.50
Specimen Reference	IS	Specimen Depth	5.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227182
Test Method	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test	07/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength and Deformability of Rock			Job Ref	GMOP21-G-019
GEOGOIPHANINE				Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR05
Rock Description				Depth m	5.50
Specimen Reference	IS	Specimen Depth	5.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227182
Test Method	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test	07/03/2023



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
Contraction in the second	and I	Deformability	y of Rock	Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	e GI		Sample No.	CR14
Rock Description				Depth m	15.50
Specimen Reference	IS	Specimen Depth	15.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227201
Test Method	ISRM, Suggested Metl Monitoring, 2007	hods for Rock Cha	aracterization Testing and	Date of test	07/03/2023

Rate of loading

Duration of test

Strength, UCS

Equivalent stress rate

Maximum Axial Load

Uniaxial Compressive

24.0

0.08030

606

244.4

49.10

kN/min

seconds

MPa/s

kΝ

МРа

Orientation of loading to bedding planes

Random

Condition for test

as received

Length, L Diameter, D L/D 199.56 mm 79.64 mm 2.51

 $\begin{array}{ccc} \text{Bulk density} & 2.66 & \text{Mg/m}^3 \\ \text{Dry density} & 2.60 & \text{Mg/m}^3 \\ \text{Moisture Content} & 2.2 & \% \end{array}$

Mode of failure

fragmented

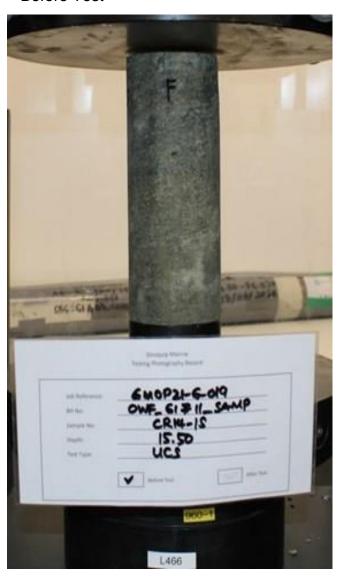
Remarks:

CORE SAMPLE TOLERANCES NOT MEASURED

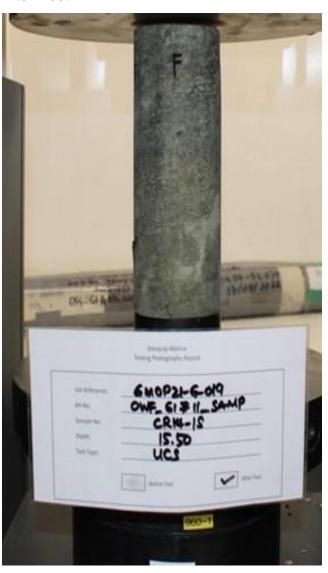
Test technician	Approved by	Date printed
S Ocio	D.Smith	04/04/2023 09:13

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GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength			GMOP21-G-019
GEOGOIFMANINE	and I	Deformabilit	y of Rock	Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	e GI		Sample No.	CR14
Rock Description				Depth m	15.50
Specimen Reference	IS	Specimen Depth	15.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227201
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	07/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and [Deformability	y of Rock	Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR14
Rock Description				Depth m	15.50
Specimen Reference	IS	Specimen Depth	15.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227201
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	07/03/2023



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
G	and I	Deformability	y of Rock	Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	e GI		Sample No.	CR16
Rock Description				Depth m	17.50
Specimen Reference	IS	Specimen Depth	17.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227206
Test Method	ISRM, Suggested Metl Monitoring, 2007	hods for Rock Cha	aracterization Testing and	Date of test	07/03/2023

Rate of loading

Duration of test

Strength, UCS

Equivalent stress rate

Maximum Axial Load

Uniaxial Compressive

24.0

0.08776

430.3

160.0

35.10

kN/min

seconds

MPa/s

kΝ

МРа

Orientation of loading to bedding planes

Random

Condition for test

as received

Length, L Diameter, D L/D 196.62 mm 76.18 mm 2.58

 $\begin{array}{ccc} \text{Bulk density} & 2.52 & \text{Mg/m}^3 \\ \text{Dry density} & 2.43 & \text{Mg/m}^3 \\ \text{Moisture Content} & 3.7 & \% \end{array}$

Mode of failure

fragmented

Remarks:

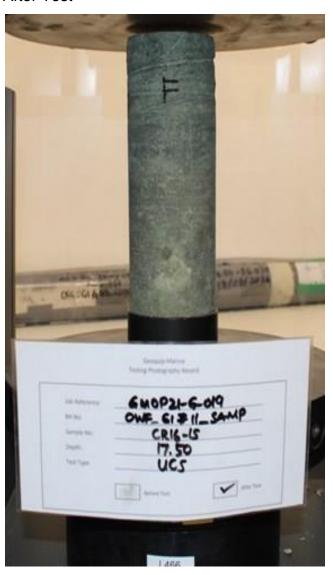
CORE SAMPLE TOLERANCES NOT MEASURED

Test technician	Approved by	Date printed
S Ocio	D.Smith	04/04/2023 09:13

GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength			GMOP21-G-019
GEOGOIFMANINE	and I	Deformabilit	y of Rock	Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	e GI		Sample No.	CR16
Rock Description				Depth m	17.50
Specimen Reference	IS	Specimen Depth	17.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227206
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	07/03/2023



After Test



GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength			GMOP21-G-019
GEOQUIPHARINE	and [Deformability	y of Rock	Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR16
Rock Description				Depth m	17.50
Specimen Reference	IS	Specimen Depth	17.50 m	Sample Type	IS
Specimen Rock Type				KeyLAB ID	BH0120230227206
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	07/03/2023



	1							
GEOQUIPMARINE	Uniaxial Compressive Strength		Job Ref		GMOP21-G-019			
Contraction of the second of t	and I	and Deformability of Rock			Borehole/Pit No).	OWF_GI#11_SAMP	
Site Name	A05 Bretagne Offshore	e GI				Sample No.		CR17
Rock Description	Moderately weak dark	Moderately weak dark greenish grey (5GY 4/1) MUDSTONE			Depth m		18.50	
Specimen Reference	Q1	Q1 Specimen 18.50 m			Sample Type		Q1	
Specimen Rock Type	Moderately weak dark	Moderately weak dark greenish grey (5GY 4/1) MUDSTONE				KeyLAB ID		BH0120230227209
Test Method	ISRM, Suggested Metl Monitoring, 2007	nods for Rock Cha	aracterization Testi	ing and	ł	Date of test		17/03/2023
Orientation of loading to bedding planes Condition for test	Random as received	Random Equiv			quiv Ourat	of loading ralent stress rate ion of test	16.7 0.05998 237.1 67.8	kN/min MPa/s seconds
Length, L Diameter, D L/D	187.92 mm 76.86 mm			Jniax	tial Compressive	14.60	MPa	

Bulk density Dry density Moisture Content	2.39 Mg/m ³ 2.23 Mg/m ³ 7.1 %
Mode of failure	fragmented
Remarks :	

Test technician	Approved by	Date printed
S Ocio	D.Smith	04/04/2023 09:39

GEOQUIPMARINE	Uniaxial Compressive Strength and Deformability of Rock			Job Ref	GMOP21-G-019
GEOQUIPHARINE				Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR17
Rock Description	Moderately weak dark greenish grey (5GY 4/1) MUDSTONE			Depth m	18.50
Specimen Reference	Q1	Q1 Specimen 18.50 m			Q1
Specimen Rock Type	Moderately weak dark greenish grey (5GY 4/1) MUDSTONE			KeyLAB ID	BH0120230227209
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	17/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength and Deformability of Rock			Job Ref	GMOP21-G-019
GEOQUIPHARINE				Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR17
Rock Description	Moderately weak dark greenish grey (5GY 4/1) MUDSTONE			Depth m	18.50
Specimen Reference	Q1	Q1 Specimen 18.50 m			Q1
Specimen Rock Type	Moderately weak dark greenish grey (5GY 4/1) MUDSTONE			KeyLAB ID	BH0120230227209
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	17/03/2023



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
Contract of the second	and [and Deformability of Rock		Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR18
Rock Description				Depth m	19.60
Specimen Reference	Q1	Specimen Depth	19.60 m	Sample Type	Q1
Specimen Rock Type				KeyLAB ID	BH0120230227212
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	07/03/2023

Orientation of loading to bedding planes

Random

Condition for test

as received

Length, L Diameter, D L/D 161.87 mm 77.88 mm 2.08 * outside specification for ISRM

0.44

Bulk density
Dry density
Moisture Content

2.44 Mg/m³ 2.31 Mg/m³ 5.5 %

Mode of failure

fragmented

Remarks:

CORE SAMPLE TOLERANCES NOT MEASURED

Rate of loading	30.0	kN/min
Equivalent stress rate	0.10497	MPa/s
Duration of test	213.4	seconds
Maximum Axial Load	103.2	kN
Uniaxial Compressive Strength, UCS	21.70	МРа

Test technician	Approved by	Date printed	
S Ocio	D.Smith	04/04/2023 09:13	

GEOQUIPMARINE	Uniaxial Compressive Strength and Deformability of Rock			Job Ref	GMOP21-G-019
GEOGOIFMANINE				Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR18
Rock Description				Depth m	19.60
Specimen Reference	Q1	Q1 Specimen 19.60 m			Q1
Specimen Rock Type				KeyLAB ID	BH0120230227212
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	07/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength and Deformability of Rock			Job Ref	GMOP21-G-019
GEOGOIFMANINE				Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR18
Rock Description				Depth m	19.60
Specimen Reference	Q1	Specimen Depth	19.60 m	Sample Type	Q1
Specimen Rock Type				KeyLAB ID	BH0120230227212
Test Method	ISRM, Suggested Metl Monitoring, 2007	hods for Rock Cha	aracterization Testing and	Date of test	07/03/2023



GEOQUIPMARINE	Uniaxial Compressive Strength and Deformability of Rock			Job Ref		GMOP21-G-019	
000	4.14	and beformability of Nock			Borehole/Pit No).	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			Sample No.		CR15
Rock Description	Weak dark greenish grey (5gy, 4/1) MUDSTONE			Depth m		16.55	
Specimen Reference	Q1	Q1 Specimen 16.55 m			Sample Type		Q1
Specimen Rock Type	Weak dark greenish gr	Weak dark greenish grey (5gy, 4/1) MUDSTONE					BH0120230227204
Test Method	ISRM, Suggested Meth Monitoring, 2007	SRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007					16/03/2023
Orientation of loading to bedding planes	Random			Equiv	of loading valent stress rate	17.0 0.06032 188.2	kN/min MPa/s seconds
Condition for test	as received					55.3	kN

Length, L Diameter, D L/D

160.54 mm 77.33 mm

2.08 * outside specification for ISRM

Bulk density 2.40 Mg/m3 2.23 Mg/m3 Dry density Moisture Content 7.6

Mode of failure

fragmented

Remarks:

Rate of loading	17.0	kN/min
Equivalent stress rate	0.06032	MPa/s
Duration of test	188.2	seconds
Maximum Axial Load	55.3	kN
Uniaxial Compressive Strength, UCS	11.80	MPa

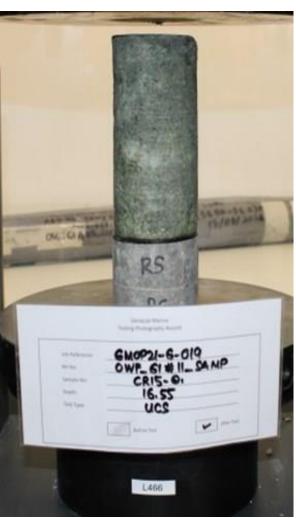
Test technician	Approved by	Date printed
S Ocio	U. Mazhar	31/03/2023 12:15

1

CEOQUI HIPMADINIE	Uniaxial Compressive Strength and Deformability of Rock			Job Ref	GMOP21-G-019
GEOQUIPMARINE				Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR15
Rock Description	Weak dark greenish grey (5gy, 4/1) MUDSTONE			Depth m	16.55
Specimen Reference	Q1	Q1 Specimen 16.55 m			Q1
Specimen Rock Type	Weak dark greenish grey (5gy, 4/1) MUDSTONE			KeyLAB ID	BH0120230227204
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	racterization Testing and	Date of test	16/03/2023



After Test



C STOOL HIPMADIN IF	Uniaxial Compressive Strength and Deformability of Rock			Job Ref	GMOP21-G-019
GEOQUIPMARINE				Borehole/Pit No.	OWF_GI#11_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR15
Rock Description	Weak dark greenish grey (5gy, 4/1) MUDSTONE			Depth m	16.55
Specimen Reference	Q1	Q1 Specimen 16.55 m			Q1
Specimen Rock Type	Weak dark greenish grey (5gy, 4/1) MUDSTONE			KeyLAB ID	BH0120230227204
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	racterization Testing and	Date of test	16/03/2023



GEOOUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019	
<u>Gran</u>	and [and Deformability of Rock			Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			Sample No.	CR05
Rock Description	Strong brown (10YR 5/	Strong brown (10YR 5/3) LIMESTONE			Depth m	7.45
Specimen Reference	Q1	Q1 Specimen 7.45 m			Sample Type	Q1
Specimen Rock Type	Strong brown (10YR 5/3) LIMESTONE				KeyLAB ID	BH0120230227233
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and		Date of test	01/03/2023

Orientation of loading to bedding planes

Random

Condition for test

as received

Length, L Diameter, D L/D

 187.10
 mm

 79.54
 mm

 2.35
 * outside specification for ISRM

Bulk density

2.66 Mg/m³

Dry density

2.59 Mg/m³

Moisture Content

2.7 %

Mode of failure

Axial cleavage

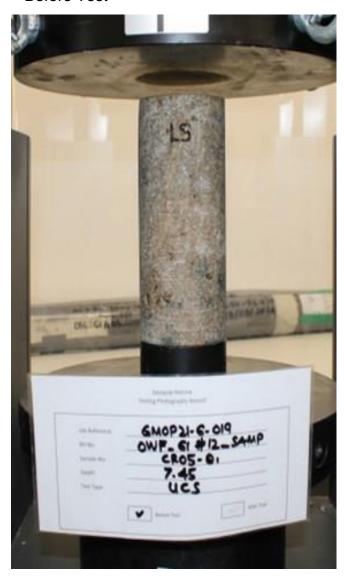
Remarks:

CORE SAMPLE TOLERANCES NOT MEASURED

		_
Rate of loading	24.0	kN/min
Equivalent stress rate	0.08051	MPa/s
Duration of test	738.5	seconds
Maximum Axial Load	296.0	kN
Uniaxial Compressive Strength, UCS	59.60	МРа
		=

Test technician	Approved by	Date printed
S Ocio	D.Smith	05/04/2023 10:00

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and [and Deformability of Rock			OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR05
Rock Description	Strong brown (10YR 5/3) LIMESTONE			Depth m	7.45
Specimen Reference	Q1	Q1 Specimen 7.45 m			Q1
Specimen Rock Type	Strong brown (10YR 5/3) LIMESTONE			KeyLAB ID	BH0120230227233
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	aracterization Testing and	Date of test	01/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and [and Deformability of Rock			OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR05
Rock Description	Strong brown (10YR 5/3) LIMESTONE			Depth m	7.45
Specimen Reference	Q1	Specimen Depth	7.45 m	Sample Type	Q1
Specimen Rock Type	Strong brown (10YR 5/3) LIMESTONE			KeyLAB ID	BH0120230227233
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	01/03/2023



GEOOUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019	
<u>Grand</u>	and [and Deformability of Rock			Borehole/Pit No.	OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			Sample No.	CR06
Rock Description	Strong brown (10YR 5/	Strong brown (10YR 5/3) LIMESTONE			Depth m	8.30
Specimen Reference	IS	IS Specimen 8.30 m			Sample Type	IS
Specimen Rock Type	Strong brown (10YR 5/3) LIMESTONE				KeyLAB ID	BH0120230227234
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and		Date of test	28/02/2023

Orientation of loading to bedding planes

Random

Condition for test

as received

Length, L Diameter, D L/D 223.05 mm 79.47 mm 2.81

Bulk density
Dry density
Moisture Content

2.63 Mg/m³ 2.55 Mg/m³ 3.1

Mode of failure

fragmented

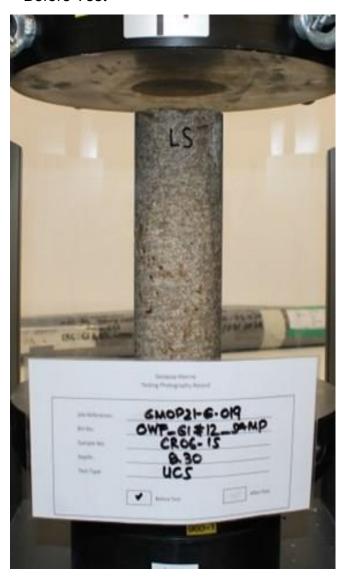
Remarks:

CORE SAMPLE TOLERANCES NOT MEASURED

Rate of loading	24.0	kN/min
Equivalent stress rate	0.08065	MPa/s
Duration of test	637.1	seconds
Maximum Axial Load	258.0	kN
Uniaxial Compressive Strength, UCS	52.00	MPa

Test technician	Approved by	Date printed
S Ocio	D.Smith	05/04/2023 10:00

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANNE	and [and Deformability of Rock			OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR06
Rock Description	Strong brown (10YR 5/3) LIMESTONE			Depth m	8.30
Specimen Reference	IS	IS Specimen 8.30 m			IS
Specimen Rock Type	Strong brown (10YR 5/3) LIMESTONE			KeyLAB ID	BH0120230227234
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	aracterization Testing and	Date of test	28/02/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and [and Deformability of Rock			OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR06
Rock Description	Strong brown (10YR 5/3) LIMESTONE			Depth m	8.30
Specimen Reference	IS	IS Specimen 8.30 m			IS
Specimen Rock Type	Strong brown (10YR 5/3) LIMESTONE			KeyLAB ID	BH0120230227234
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	aracterization Testing and	Date of test	28/02/2023



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
Corogon in a direct	and [and Deformability of Rock			OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR16
Rock Description	Strong brown (10YR 5/	Strong brown (10YR 5/3) LIMESTONE			19.10
Specimen Reference	Q1	Q1 Specimen 19.10 m			Q1
Specimen Rock Type	Strong brown (10YR 5/3) LIMESTONE			KeyLAB ID	BH0120230227256
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	aracterization Testing and	Date of test	28/02/2023

Rate of loading

Duration of test

Strength, UCS

Equivalent stress rate

Maximum Axial Load

Uniaxial Compressive

24.0

0.08043

1102.3

442.0

88.90

kN/min

seconds

MPa/s

kΝ

МРа

Orientation of loading to bedding planes

Random

Condition for test

as received

Length, L Diameter, D L/D 212.32 mm 79.58 mm 2.67

Bulk density
Dry density
Moisture Content

2.70 Mg/m³ 2.66 Mg/m³ 1.4

Mode of failure

Axial cleavage

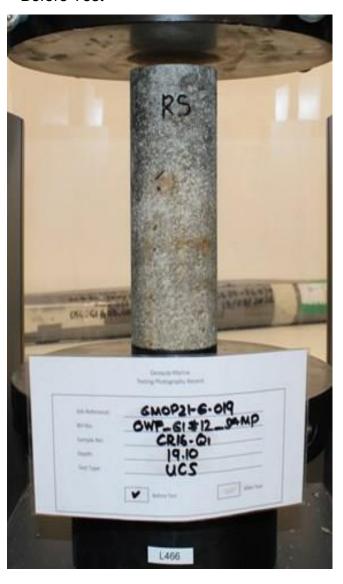
Remarks:

CORE SAMPLE TOLERANCES NOT MEASURED

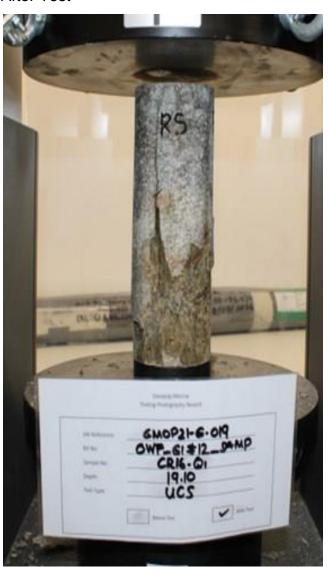
Test technician	Approved by	Date printed
S Ocio	D.Smith	05/04/2023 10:00

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GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength and Deformability of Rock			GMOP21-G-019
GEOQUIPMANINE	and [OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	05 Bretagne Offshore GI			CR16
Rock Description	Strong brown (10YR 5/	Strong brown (10YR 5/3) LIMESTONE			19.10
Specimen Reference	Q1	Specimen Depth	19.10 m	Sample Type	Q1
Specimen Rock Type	Strong brown (10YR 5/	3) LIMESTONE		KeyLAB ID	BH0120230227256
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	28/02/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOQUIPHARINE	and [and Deformability of Rock			OWF_GI#12_SAMP
Site Name	A05 Bretagne Offshore	GI	Sample No.	CR16	
Rock Description	Strong brown (10YR 5/	3) LIMESTONE		Depth m	19.10
Specimen Reference	Q1	Specimen Depth	19.10 m	Sample Type	Q1
Specimen Rock Type	Strong brown (10YR 5/	3) LIMESTONE		KeyLAB ID	BH0120230227256
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	aracterization Testing and	Date of test	28/02/2023



GEOQUIPMARINE	Uniaxia	l Compress	ive Strength		Job Ref		GMOP21-G-019
G	and [Deformabilit	y of Rock	Borehole/Pit No	о.	OWF_GI#14_SAMP	
Site Name	A05 Bretagne Offshore	e GI			Sample No.		CR04
Rock Description	Very weak dark greenis	Very weak dark greenish grey (5Gy 4/1) MUDSTONE					3.30
Specimen Reference	IS	Specimen Depth	3.30	m	Sample Type		IS
Specimen Rock Type	Very weak dark greenish grey (5Gy 4/1) MUDSTONE				KeyLAB ID		BH0120230227270
Test Method	ISRM, Suggested Meth Monitoring, 2007	SRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007					17/03/2023
Orientation of loading to bedding planes Condition for test Length, L Diameter, D L/D Bulk density Dry density Moisture Content Mode of failure Remarks:	Random as received 200.05 mm 78.09 mm 2.56 2.35 Mg/m 7.0 Mg/m 7.0 %			Equiv Durat Maxir Uniax	of loading valent stress rate tion of test mum Axial Load vial Compressive gth, UCS	17.5 0.0609 33.4 9.3 1.94	90 MPa/s seconds kN

Test technician	Approved by	Date printed
S Ocio	D.Smith	04/04/2023 09:54

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOQUIPHARINE	and [Deformabilit	y of Rock	Borehole/Pit No.	OWF_GI#14_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR04
Rock Description	Very weak dark greeni	sh grey (5Gy 4/1)	MUDSTONE	Depth m	3.30
Specimen Reference	IS	Specimen Depth	3.30 m	Sample Type	IS
Specimen Rock Type	Very weak dark greenis	sh grey (5Gy 4/1)	MUDSTONE	KeyLAB ID	BH0120230227270
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	17/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019	
GEOGOIFT PARINE	and	and Deformability of Rock			Borehole/Pit No.	OWF_GI#14_SAMP
Site Name	A05 Bretagne Offshor	A05 Bretagne Offshore GI			Sample No.	CR04
Rock Description	Very weak dark greenish grey (5Gy 4/1) MUDSTONE			Depth m	3.30	
Specimen Reference	IS	Specimen Depth	3.30	m	Sample Type	IS
Specimen Rock Type	Very weak dark greenish grey (5Gy 4/1) MUDSTONE				KeyLAB ID	BH0120230227270
Test Method	ISRM, Suggested Met Monitoring, 2007	hods for Rock Cha	aracterization Testing and		Date of test	17/03/2023



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref		GMOP21-G-019	
G G G G G I I I I I I I I I I I I I I I	and [Deformability of Rock			Borehole/Pit No	Э.	OWF_GI#14A_SAMP
Site Name	A05 Bretagne Offshore	GI			Sample No.		CR03
Rock Description	Weak dark greenish gr	Weak dark greenish grey (5Gy, 1/4) MUDSTONE					3.10
Specimen Reference	Q1	Q1 Specimen 3.10 m					Q1
Specimen Rock Type	Weak dark greenish gr	Weak dark greenish grey (5Gy, 1/4) MUDSTONE					BH0120230227282
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing	and	Date of test		17/03/2023
Orientation of loading to bedding planes	Random			Equiv	of loading valent stress rate	17.8	
Condition for test	as received				tion of test mum Axial Load	188.1 57.1	seconds kN
Length, L Diameter, D L/D				xial Compressive ngth, UCS	11.60	MPa	
Bulk density Dry density Moisture Content	2.43 Mg/m 2.26 Mg/m 7.5 %						

Mode of failure	fragmented
Remarks :	

Test technician	Test technician Approved by	
S Ocio	D.Smith	04/04/2023 10:07

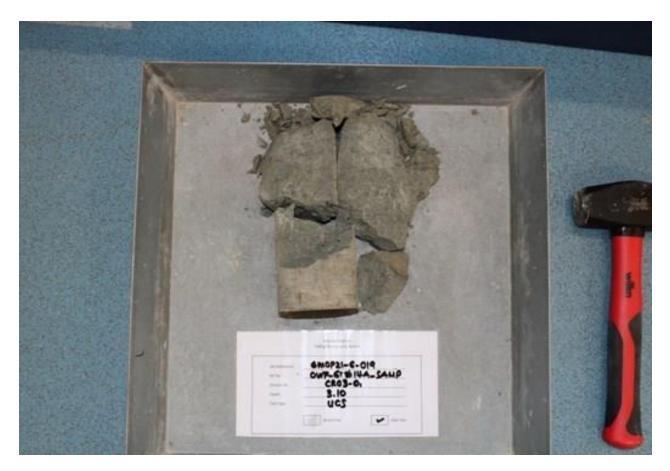
GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and [Deformabilit	y of Rock	Borehole/Pit No.	OWF_GI#14A_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR03
Rock Description	Weak dark greenish grey (5Gy, 1/4) MUDSTONE			Depth m	3.10
Specimen Reference	Q1	Specimen Depth	3.10 m	Sample Type	Q1
Specimen Rock Type	Weak dark greenish gr	ey (5Gy, 1/4) MU	DSTONE	KeyLAB ID	BH0120230227282
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	17/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOQUIPHARINE	and [Deformability	y of Rock	Borehole/Pit No.	OWF_GI#14A_SAMP
Site Name	A05 Bretagne Offshore	A05 Bretagne Offshore GI			CR03
Rock Description	Weak dark greenish grey (5Gy, 1/4) MUDSTONE			Depth m	3.10
Specimen Reference	Q1	Specimen Depth	3.10 m	Sample Type	Q1
Specimen Rock Type	Weak dark greenish gr	ey (5Gy, 1/4) MU	DSTONE	KeyLAB ID	BH0120230227282
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	17/03/2023



GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref		GMOP21-G-019		
GEOGOIFMANINE	and [nd Deformability of Rock			Borehole/Pit No). C	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Offshore	: GI				Sample No.		CR05
Rock Description	Moderately weak greenish grey (5GY 4/1) MUDSTONE				Depth m		5.70	
Specimen Reference	IS	IS Specimen 5.70 m Sample Type				IS		
Specimen Rock Type	Moderately weak greer	Moderately weak greenish grey (5GY 4/1) MUDSTONE				KeyLAB ID		BH0120230227293
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testir	ng and	t	Date of test		17/03/2023
Orientation of loading to bedding planes	Random			E	Equiv	of loading ralent stress rate	17.8	kN/min MPa/s
Condition for test	as received				ion of test num Axial Load	271.3 83.2	seconds kN	
Length, L Diameter, D	169.36 mm 78.89 mm 2.15 * outsig	le specification for ISRI				dial Compressive	17.00	MPa

Mg/m³ Bulk density 2.50 2.38 4.9 Mg/m³ % Dry density Moisture Content

2.15

L/D

Mode of failure Axial cleavage

* outside specification for ISRM

Remarks:

Test technician	Approved by	Date printed		
S Ocio	D.Smith	04/04/2023 10:08		

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CECOL HIPMADINE	Uniaxial Compressive Strength and Deformability of Rock		ve Strength	Job Ref	GMOP21-G-019
GEOQUIPHARINE			Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR05
Rock Description	Moderately weak greenish grey (5GY 4/1) MUDSTONE			Depth m	5.70
Specimen Reference	IS	IS Specimen 5.70 m			IS
Specimen Rock Type	Moderately weak greenish grey (5GY 4/1) MUDSTONE			KeyLAB ID	BH0120230227293
Test Method	SRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test	17/03/2023



After Test



GEOQUIPMARINE	Uniaxial Compressive Strength		Job Ref	GMOP21-G-019	
GEOQUIPHARINE			Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR05
Rock Description	Moderately weak greenish grey (5GY 4/1) MUDSTONE			Depth m	5.70
Specimen Reference	IS Specimen 5.70 m			Sample Type	IS
Specimen Rock Type	Moderately weak greenish grey (5GY 4/1) MUDSTONE			KeyLAB ID	BH0120230227293
Test Method	SRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test	17/03/2023



GEOOL IIPMARINE	GEOQUIPMARINE Uniaxial Co		Compressive Strength		Job Ref		GMOP21-G-019	
CE CECCOII PARINE	and Deformability of Rock			Borehole/Pit No	Э.	OWF_GI#14A_SAMP		
Site Name				Sample No.		CR13		
Rock Description	Moderately weak dark	Moderately weak dark greenish grey (5Gy 4/1) SANDSTONE			Depth m		14.75	
Specimen Reference	Q1	Q1 Specimen 14.75 m				Sample Type		Q1
Specimen Rock Type	Moderately weak dark	Moderately weak dark greenish grey (5Gy 4/1) SANDSTONE ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			KeyLAB ID		BH0120230227325	
Test Method	ISRM, Suggested Met Monitoring, 2007				Date of test		17/03/2023	
Orientation of loading to bedding planes Condition for test	Random Equi Dura			Equiv Durat	of loading valent stress rate ion of test	17.6 0.06004 294.8 88.7	kN/min 4 MPa/s seconds	
Length, L Diameter, D L/D	174.65 mm Unia			Uniax	tial Compressive	18.20	MPa	

Dry density Moisture Content	2.17 Mg/m ³ 6.3 %
Mode of failure	Axial cleavage
Remarks :	

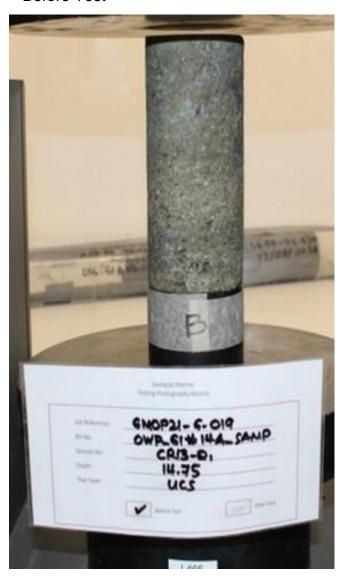
Mg/m³ Mg/m³

2.31 2.17

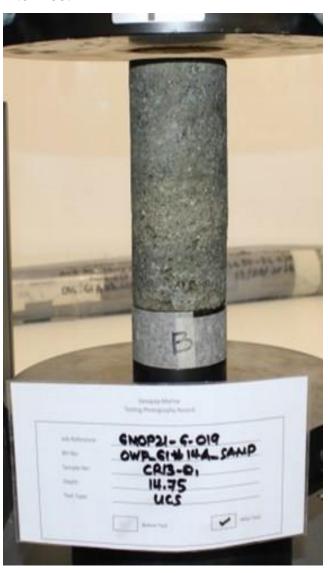
Bulk density

Test technician	Approved by	Date printed		
S Ocio	D.Smith	04/04/2023 10:08		

GEOQUIPMARINE	Uniaxial Compressive Strength			Job Ref	GMOP21-G-019
GEOGOIFMANINE	and Deformability of Rock		Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR13
Rock Description	Moderately weak dark greenish grey (5Gy 4/1) SANDSTONE			Depth m	14.75
Specimen Reference	Q1	Q1 Specimen 14.75 m			Q1
Specimen Rock Type	Moderately weak dark greenish grey (5Gy 4/1) SANDSTONE			KeyLAB ID	BH0120230227325
Test Method	SRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test	17/03/2023



After Test



GEOOL IIPMARINE	Uniaxial Compressive Strength and Deformability of Rock		Job Ref	GMOP21-G-019	
GEOGOIF PARINE			Borehole/Pit No.	OWF_GI#14A_SAMP	
Site Name	A05 Bretagne Offshore GI			Sample No.	CR13
Rock Description	Moderately weak dark greenish grey (5Gy 4/1) SANDSTONE			Depth m	14.75
Specimen Reference	Q1	Q1 Specimen 14.75 m			Q1
Specimen Rock Type	Moderately weak dark greenish grey (5Gy 4/1) SANDSTONE			KeyLAB ID	BH0120230227325
Test Method	SRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007			Date of test	17/03/2023

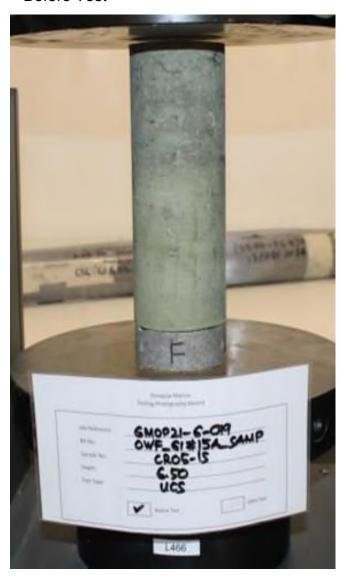


GEOQUIPMARINE	Uniaxia	I Compressi	ve Strength		Job Ref		GMOP21-G-019	
G GEOGOII I PANINE	and I	Borehole/Pit No.		OWF_GI#15A_SAMP				
Site Name	A05 Bretagne Offshore GI				Sample No.		CR05	
Rock Description	Weak greenish grey (5	Weak greenish grey (5Gy 5/1) MUDSTONE			Depth m		6.50	
Specimen Reference	IS	Specimen Depth	6.50	m	Sample Type		IS	
Specimen Rock Type	Weak greenish grey (5	Weak greenish grey (5Gy 5/1) MUDSTONE					BH012023030723	
Test Method	ISRM, Suggested Meth Monitoring, 2007	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007					17/03/2023	
Orientation of loading to bedding planes Condition for test Length, L Diameter, D L/D Bulk density Dry density Moisture Content Mode of failure Remarks:	ISRM, Suggested Methods for Rock Characterization Testin			Equiv Durat Maxir Uniax	of loading valent stress rate tion of test mum Axial Load vial Compressive gth, UCS	18.4 0.0602 103 34.4 6.76	MPa/s seconds kN	

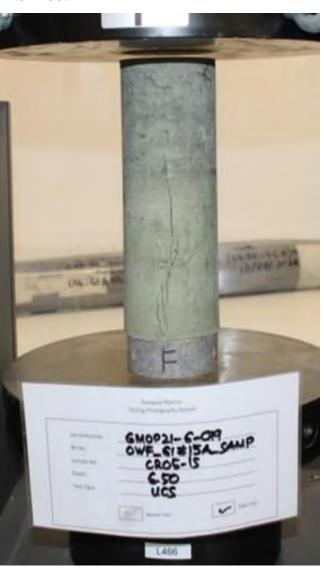
Test technician	Approved by	Date printed
S Ocio	D.Smith	04/04/2023 10:14

GEOQUIPMARINE	Uniaxia	Uniaxial Compressive Strength			GMOP21-G-019
GEOGOIP PARINE	and Deformability of Rock			Borehole/Pit No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR05
Rock Description	Weak greenish grey (5Gy 5/1) MUDSTONE			Depth m	6.50
Specimen Reference	IS	Specimen Depth	6.50 m	Sample Type	IS
Specimen Rock Type	Weak greenish grey (5	Gy 5/1) MUDSTC	NE	KeyLAB ID	BH012023030723
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	aracterization Testing and	Date of test	17/03/2023

Before Test



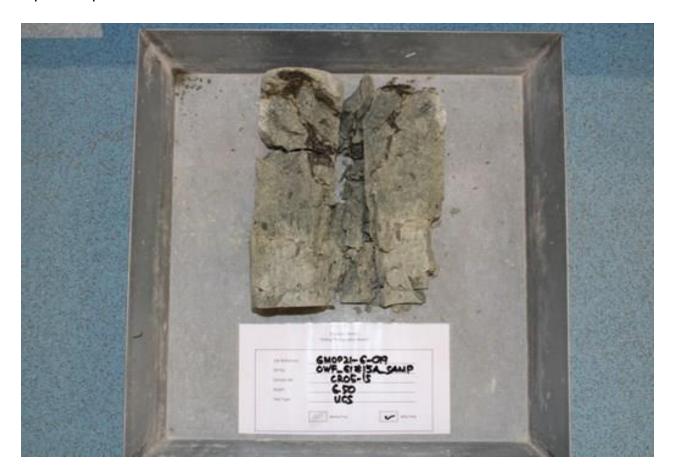
After Test



Sample may have been rotated to highlight failures

GEOQUIPMARINE	Uniaxia	l Compressi	ve Strength	Job Ref	GMOP21-G-019
GEOGOIFFIANINE	and Deformability of Rock			Borehole/Pit No.	OWF_GI#15A_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR05
Rock Description	Weak greenish grey (5Gy 5/1) MUDSTONE			Depth m	6.50
Specimen Reference	IS	Specimen Depth	6.50 m	Sample Type	IS
Specimen Rock Type	Weak greenish grey (5	Gy 5/1) MUDSTC	NE	KeyLAB ID	BH012023030723
Test Method	ISRM, Suggested Meth Monitoring, 2007	ods for Rock Cha	aracterization Testing and	Date of test	17/03/2023

Split Sample

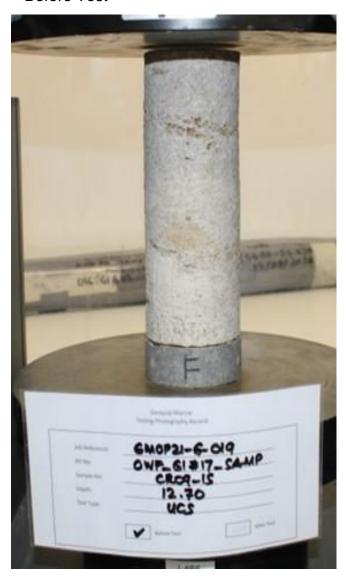


GEOQUIPMARINE	Uniaxia	I Compress	ive Strength		Job Ref		GMOP21-G	-019	
G	and Deformability of Rock				Borehole/Pit No.		OWF_GI#17_SAMP		
Site Name	A05 Bretagne Offshore	Sample No.		CR09					
Rock Description	Moderately weak pale	Depth m		12.70					
Specimen Reference	IS	Specimen Depth	12.70	m	Sample Type		IS		
Specimen Rock Type	Moderately weak pale	<u> </u>					BH0120230227359		
Test Method	ISRM, Suggested Meth Monitoring, 2007	ISRM, Suggested Methods for Rock Characterization Testing and Monitoring, 2007				Date of test		17/03/2023	
Orientation of loading to bedding planes Condition for test Length, L Diameter, D L/D Bulk density Dry density Moisture Content Mode of failure Remarks:					of loading valent stress rate tion of test mum Axial Load vial Compressive gth, UCS	0.03 372 72	1.3 kN/min 3999 MPa/s 2.4 seconds 2.0 kN .30 MPa		

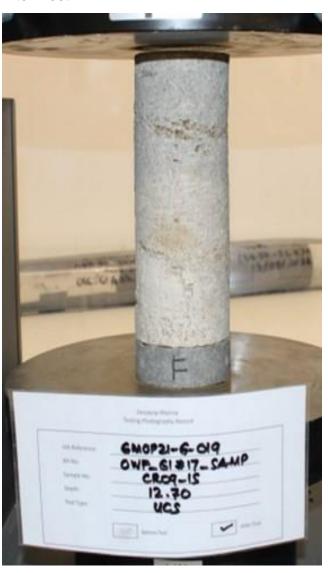
Test technician	Approved by	Date printed
S Ocio	D.Smith	04/04/2023 10:56

GEOQUIPMARINE	Uniaxia	l Compressi	ive Strength	Job Ref	GMOP21-G-019
GEOQUIPMANNE	and Deformability of Rock			Borehole/Pit No.	OWF_GI#17_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR09
Rock Description	Moderately weak pale brown (2.5y 7/3) SANDSTONE			Depth m	12.70
Specimen Reference	IS	Specimen Depth	12.70 m	Sample Type	IS
Specimen Rock Type	Moderately weak pale	brown (2.5y 7/3) \$	SANDSTONE	KeyLAB ID	BH0120230227359
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	17/03/2023

Before Test



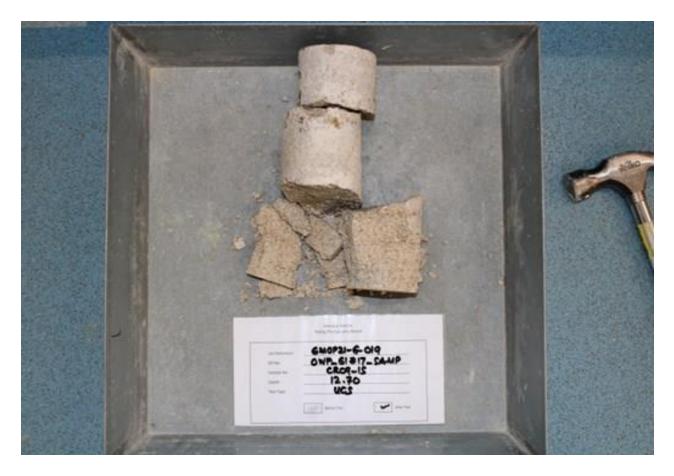
After Test

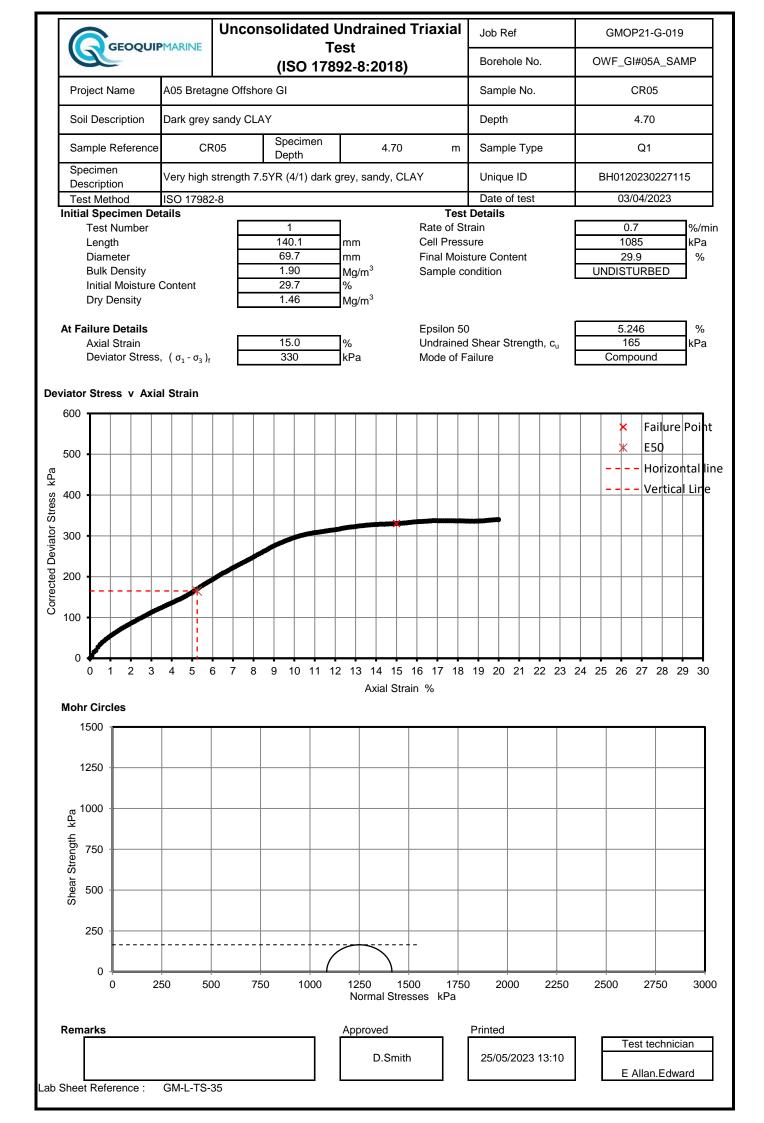


Sample may have been rotated to highlight failures

GEOQUIPMARINE	Uniaxial Compressive Strength and Deformability of Rock			Job Ref	GMOP21-G-019
GEOGOIPHANNE				Borehole/Pit No.	OWF_GI#17_SAMP
Site Name	A05 Bretagne Offshore GI			Sample No.	CR09
Rock Description	Moderately weak pale brown (2.5y 7/3) SANDSTONE			Depth m	12.70
Specimen Reference	IS	Specimen Depth	12.70 m	Sample Type	IS
Specimen Rock Type	Moderately weak pale	brown (2.5y 7/3) S	SANDSTONE	KeyLAB ID	BH0120230227359
Test Method	ISRM, Suggested Meth Monitoring, 2007	nods for Rock Cha	aracterization Testing and	Date of test	17/03/2023

Split Sample





		_	nconsolida			Job Ref		GI	MOP21-G	-019
Remoulded Triaxial Test (ISO 17892-8:2018)				Borehole No).	OWF_GI#05A_SAMP				
Project Name	A05 Breta	tagne Offshore GI				Sample No.		CR05		
Soil Description	Dark grey	sandy CL	sandy CLAY			Depth		4.70		
Sample Reference	CR	(05	Specimen Depth	4.70	m	Sample Typ	е		Q1	
Specimen Description	High streng	gth 7.5YF	R (4/1)dark grey lo	ow sensitivity sa	ndy CLAY	Unique ID		BH0120230227115		27115
Test Method	ISO 17982	2-8				Date of test			03/04/202	23
nitial Specimen Deta	ails				Test	Details				
Test Number			1	1	Rate of St	rain			1.0	%/m
Length			100.0	mm	Cell Press	ure	ľ		1085	kPa
Diameter			50.0	mm	Final Mois	ture Content	l		29.7	%
Bulk Density			1.90	Mg/m ³	Sample co			RFM	OULDED	
Initial Moisture C	`ontent	-	30.2	%	Gampie oc	Tidition.	L	110	TOOLDEL	
Dry Density	Millorit		1.46	Mg/m ³						
Dry Density		<u> </u>	1.40	_lvig/m	Concitivity		ī		1	_
					Sensitivity				1	
At Failure Details		_	45.0	٦٠,	Epsilon 50				2.23	<u>%</u>
Axial Strain	,	<u> </u>	15.0	%		Shear Strengt	n, S _u	-	129	kPa
Deviator Stress,	$(\sigma_1 - \sigma_3)_f$		255	kPa	Mode of F	ailure	ļ		Plastic	
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0 0 1 2 or Circles 500 250	3 4	5 (6 7 8			14 15 1	6 17	18 1	9 20	21 22
0 0 1 2 or Circles 500 250	3 4	5 6	6 7 8			14 15 1	6 17	18 1	9 20	21 22
0 0 1 2 or Circles 500 250	3 4	5 6	5 7 8			14 15 1	6 17	18 1	9 20	21 22
0 0 1 2 or Circles 500 250	3 4	5 6	5 7 8			14 15 1	6 17	18 1	9 20	21 22
0 0 1 2 or Circles 500 250	3 4	5 6	5 7 8			14 15 1	6 17	18 1	9 20	21 22
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0 1 2 nr Circles 500 750 0 250				Axial Stra	1750 ses kPa	2000	2250		2750	
0 1 2 nr Circles 500 750 0 250	500			Axial Stra 1250 1500 Normal Stress Approved	1750 ses kPa	2000 Printed	2250		2750	300

APPENDIX C METHODOLOGIES AND PROCEDURES

Appendix C.1 Soil Classification and Description Methodologies

Overview

In general, soil classifications and descriptions are based on the requirements as outlined by BS 5930, BS EN ISO 14688-1 and BS EN ISO 14688-2. Where classification or description terms are not covered by BS or ISO, they have been specified in the relevant sections below.

Classification and Description

Soil descriptions and classification are completed as per contractual requirements utilising the following standards:

- For primary, secondary and tertiary fractions:
 - o BS 5930 Code of practice for ground investigation
 - o BS EN ISO 14688-1 Identification and description
 - o BS EN ISO 14688-2 Principles for a classification

Strength Descriptions

Undrained Shear Strength descriptors are summarised in the following table (after ISO 14688-2):

Term	Undrained shear strength s _u , kPa
Extremely Low	<10
Very Low	10-20
Low	20-40
Medium	40-75
High	75-150
Very High	150-300

Where undrained shear strengths of cohesive materials cannot be measured, a consistency based on hand manipulation can be applied (after BS EN ISO 14688-1):

Term	Field Assessment
Very Soft	Finger can be easily pushed in up to 25 mm.
10,700,0	Soil exudes between the fingers when squeezed in the hand.
Soft	Finger can be pushed in up to 10 mm.
3011	Soil can be moulded by light finger pressure.
	Thumb makes an impression easily.
Firm	Soil cannot be moulded by fingers but rolls in the hand to 3 mm thick
	threads without breaking or crumbling.
	Soil can be indented slightly by thumb.
Stiff	Soil crumbles and breaks when rolling to 3 mm thick threads but is still
	sufficiently moist to be moulded to a lump again.
	Soil can be indented by thumb nail.
Very stiff	Soil cannot be moulded but crumbles under pressure.
	Many desiccated soils fall in this class.

Relative Density Descriptions are based on the following table (after Lunne and Christoffersen, 1983):

Term	Relative Density (%)
Very loose	0 to 15
Loose	15 to 35
Medium dense	35 to 65
Dense	65 to 85
Very dense	85 to 100

Tertiary constituents fraction

The following descriptions for tertiary fraction are used and were adopted for the terms from BS 5930.

Term	Percentage
with rare	<5
with occasional	5 – 20
with frequent	>20

Bedding Thicknesses

Bedding thicknesses are described on the following (after BS EN ISO 14688-1):

Term	Thickness of bedding (mm)
Thinly laminated	<6
Thickly laminated	6 to 20
Very thinly bedded	20 to 60
Thinly bedded	60 to 200
Medium bedded	200 to 600
Thickly bedded	600 to 2000
Very thickly bedded	>2000

<u>Particle Size Distribution – Fractions</u>

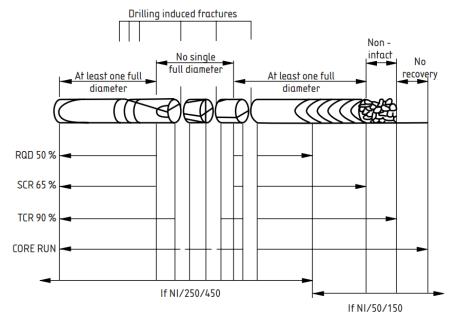
The description of particle sizes is described (after ISO 14688-1) as follows:

Soil Group	Particle Size Fractions	Range of Particle Sizes (mm)
	Coarse Gravel	20 – 63
	Medium Gravel	6.3 – 20
Coarse Soil	Fine Gravel	2 – 6.3
Course son	Coarse Sand	0.63 – 2
	Medium Sand	0.2 – 0.63
	Fine Sand	0.063 - 0.2
Fine Soil	Silt	0.002 - 0.063
	Clay	< 0.002

Appendix C.2 Rock Core Handling and Rock Core Logging Methodologies

Fracture State

Fracture state of the rock core is described as below based on BS EN ISO 22475-1:2006.



NOTE All features shown are natural discontinuities unless stated otherwise.

Total Core Recovery (TCR)

Total Core Recovery (TCR) is defined as the total length of the core recovered (solid and non-intact), expressed as a percentage of the length of the core run.

$$TCR = \left(\frac{Sum\ of\ core\ recovered}{Sum\ of\ the\ total\ core\ run}\right) \times 100\%$$

Solid Core Recovery (SCR)

Solid Core Recovery (SCR) is defined as the length of the core recovered as solid cylinders at full diameter, expresses as a percentage of the length of the core run.

$$SCR = \left(\frac{Sum\ of\ soild\ core\ pieces\ (of\ full\ diameter)}{Sum\ of\ the\ total\ core\ run}\right) \times 100\%$$

Rock Quality Designation (RQD)

Rock Quality Designation (RQD) is defined as the sum of length of core pieces of a full diameter greater than 100mm between natural fractures, measured along the centre line of the core, expressed as a percentage of the length of the core run.

$$RQD = \left(\frac{Sum\ of\ length\ of\ core\ pieces > 100mm}{Sum\ of\ the\ total\ core\ run}\right) \times 100\%$$

From the RQD the rock mass can then be classified as follows:

RQD	Rock Mass Quality
<25%	Very Poor
25-50%	Poor
51-75%	Fair
76-90%	Good
91-100%	Excellent

Core Description to BS 5930 and BS EN ISO 14689

Reference should be made to BS5930 and BS EN ISO 14689 for guidance on rock description.

- Strength of the rock (Based on Point load tests or Rock Hammer test)
- Structure and fabric of the rock (Bedding, Laminations, Foliations)
- Colour (Munsell Colour Charts Rock)
- Weathering classification (use of terms weathered/unweathered)
- Grain size
- Rock classification (Rock Type e.g. Sandstone, Shale, Marble)
- Minor constituents (Shells, Pyrite, Crystals, organics)
- Weathering of the whole rock
- Spacing (Bedding and discontinuities)
- Weathering description
- Dip/dip direction and spacing of discontinuities
- Roughness of discontinuities
- Discontinuity Infill

Strength Classification

The table below shows how the hammer test can be related to the unconfined compressive strength of the rock in accordance with BS 5930 and BS EN ISO 14689.

Term	Field Identification	Unconfined compressive strength (MPa)
Extremely weak ^a	Indented by thumbnail	0.6 to 1
	Crumbles under firm blows with point of	
Very weak	geological hammer, can be peeled by a pocket knife	1 to 5
	Can be peeled by a pocket knife with	
Weak	difficulty, shallow indentations made by	5 to 12.5
	firm blow with point of geological hammer	
	Can be scratched with difficulty by pocket	
Moderately Weak	knife, specimen can be broken with single	12.5 to 25
	firm blow of geological hammer	
	Cannot be scraped or peeled with a pocket	
Medium Strong	knife, specimen can be fractured with	25 to 50
	single firm blow of geological hammer	
Strong	Specimen requires more than one blow of	50 to 100
Strong	geological hammer to fracture it	30 to 100
Very Strong	Specimen requires many blows of	100 to 250
very strong	geological hammer to fracture it	100 to 230
Extremely Strong	Specimen can only be chipped with	Greater than 250
LACTERIETY SCIONS	geological hammer	Greater triair 230

a – Some extremely weak rocks will behave as soils and should be described as soils according to BS EN ISO 14688 and BS 5930

Structure and Fabric

Sedimentary	Metamorphic	Igneous
Bedded Interbedded Laminated Folded Massive Graded	Cleaved Foliated Schistose Banded Lineated Gneissose Folded	Massive Flowbanded Folded Lineated

Thickness of bedding units or other foliations shall be measured in millimetres and can be classified as below.

Term	Thickness (mm)
Very Thickly	> 2000
Thickly	600 – 2000
Medium	200 – 600
Thinly	60 – 200
Very Thinly	20 – 60
Thickly Laminated (Sedimentary) Narrowly (Metamorphic and Igneous)	6 – 20
Thinly Laminated (Sedimentary) Very narrowly (Metamorphic and Igneous)	< 6

Weathering

Term	Description
Fresh	No visible sign of weathering/alteration of the rock
Discoloured	The colour of the original fresh rock is changed and is evidence of weathering/alteration. The degree of change from the original colour should be indicated. If the colour changes is confirmed to particular mineral constituents, this should be mentioned
Disintegrated	The rock is broken up by physical weathering, so that bonding between grains is lost and the rock is weathered/altered towards the condition of a soil in which the original material fabric is still intact. The rock material is friable but the mineral grains are not decomposed
Decomposed	The rock is weathered by the chemical alteration of the mineral grains to the condition of a soil in which the original material fabric is still intact; some or all of the mineral grains are decomposed

Grain Size

Term	Size (mm)
Very Coarse Grained	> 63
Coarse Grained	2 to 63
Medium Grained	0.063 to 2
Fine Grained	0.002 to 0.063 mm
Very Fine Grained/Crypto-crystalline	< 0.002 mm

Rock Classification

Sedimentary rock type						
		Biog	enic			
Grain size	Siliceous	Low porosity	Porous	Volcanic	Carbonaceous	Evaporities
>20mm	Conglomerate	Limestone	Calcirudite	Agglomerate		Halite

6.3mm to 20mm 2mm to 6.3mm	Breccia	Or Dolomite		Volcanic Breccia		Anhydrite Gypsum Travertine
0.63mm to 2mm 0.2mm to 0.63mm	Sandstone Greywacke		Calcarenite	Tuff		
200μm			Calcisiltite			
2μm to 63μm	Siltstone		Calcislitite Chalk*	Fine Tuff	Coal	
<2μm	Claystone Mudstone		Calcilutite	Very fine Tuff	Lignite	
Crypto- crystalline	Flint Chert					
Igneous rock type		Metamorphic rock type				
Grain size	Light coloured (acidic)	Varying light to dark coloured	Dark coloured (basic)	Foliated	Oth	er
Coarse >5mm	Granite	Diorite	Gabbro	Gneiss	Mari	ole
Medium 1mm to 5mm	Micro-granite	Micro- diorite	Dolerite	Schist	Quart	zite
Fine 0.5mm to 1mm	Rhyolite	Andesite	Basalt	Slate	Horn	fels
Crypto- crystalline <0.5mm		Volcanic gla	ss/obsidian			

Discontinuities

The following table briefly outlines on the indications of either natural or drilling induced discontinuities.

Natural Discontinuities	Drilling/Mechanical induced Discontinuities
Joints are often not fresh	Fresh looking surface could indicate artificial break
Joints are often stained or have some type of coating or fill	Break perpendicular to the core axis could be an indication of an artificial break
Joints separate solid (intact) core pieces and exhibit no tensile strength	Rough surface could indicate artificial break
The edges of a joint usually do not match back together as seamlessly as a mechanical break	No coating or in fill could indicate artificial break
Low angle breaks are more likely to be joints than mechanical breaks	Spin marks from the drilling process

Discontinuities are breaks, fractures or planes of weakness in the rock mass and include the following:

Type of discontinuity	Description	
Joint	A discontinuity in the body of rock along which there has been no visible displacement.	
Fault	A fracture or fracture zone along which there has been recognisable displacement.	
Bedding fracture	A fracture along the bedding.	
Cleavage fracture	A fracture along cleavage. (cleavage is a set of parallel planes of weakness often associated with mineral realignment).	
Induced fracture	A discontinuity of non-geological origin, e.g. brought about by coring, blasting, ripping etc.	

Spacing & Thickness

The spacing and thickness of discontinuities needs to be assessed. Tables below provides details regarding the spacing and thickness of discontinuities.

Term	Thickness (mm)	
Thinly laminated	Less than 6	
Thickly laminated	6 to 20	
Very thin	20 to 60	
Medium	60 to 200	
Medium	200 to 600	
Thick	600 to 2000	
Very thick	Greater than 2000	

Term	Spacing (mm)
Extremely close	Less than 20
Very close	20 to 60
Close	60 to 200
Medium	200 to 600
Wide	600 to 2000
Very wide	Greater than 2000

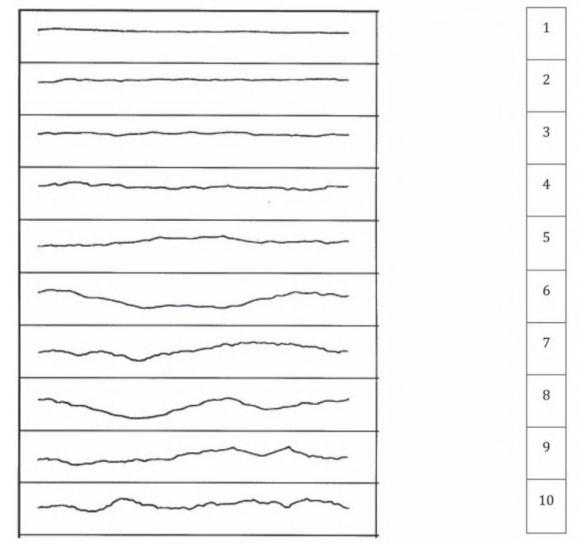
Weathering along the Discontinuities

If weathering is present along the discontinuities it needs to be describe as per the weathering section and included on the Log of Rock Core Sheet.

Roughness

The surface condition and the shape of discontinuities shall be described if possible on the basis of three scales of observation using the terms given in table below.

Profiles number	Small scale of millimetres	Medium scale of centimetres	Large scale of meters
Fromes number	Profile below = 10mm	Profile below = 100mm	Profile below = 1000mm
1 to 3	Striated (in direction of	Planar	Straight
	striae)		
4 to 7	Smooth	Undulating	Curved
8 to 10	Rough	Stepped	Wavy



Barton comb can be used, if available, in order to aid with the identification of the roughness of discontinuities.

Wall Strength

If possible, a strength test to directly identify the strength of the discontinuity should be undertaken. This needs to be undertaken in the event when discontinuity has a different strength than rock material. The hammer test may be conducted in order to determined different strength.

Infilling

If present the infilling material between discontinuity needs to be identified and described (e.g. soil, minerals such as calcite, quartz, epidote, chlorite). The shear strength of the infilling and the potential for infilling to swell or dissolve if applicable needs to determined.

Appendix C.3 Offshore Laboratory Testing Methodologies

Overview

The following excerpts are from GEOQUIP procedure GM-MSP-OI-5-3-3 Offshore Sample Handling, Soil Description & Laboratory Testing.

Water Content

Moisture content tests were carried soon after recovery on samples recovered in the field.

The water content is the ratio between mass of water and mass of solids of soil.

$$w = \frac{M_w}{M_s}$$

where:

w = Water content

 $M_{\rm W}$ = Mass of water

 M_s = Mass of solids

The water content tests were performed according with BS EN ISO 17892-1. This test consists of a measurement of the weight of the sample before and after drying in an oven. The sample is placed in an oven at a temperature of $105^{\circ}c$ ($\pm 5^{\circ}c$) for at least 16 hours. The measurements of weight should consider the weight of the tares.

Density

Bulk (or wet) and dry density test are determined on appropriate extruded samples in the field. Densities are calculated in accordance with BS EN ISO 17892-2.

The bulk (or wet) density is the ratio between the total mass and the total volume.

$$\rho_m = \frac{M_t}{V}$$

where:

 ρ_m = Bulk density of soil

 M_t = Total mass of soil sample (wet)

V = Mass volume of soil sample

The dry density was then calculated, drying the sample following the procedure, or it was calculated following the next equation based on the total density and the water content.

$$\rho_d = \frac{\rho_m}{(1+w/100)}$$

where:

 ρ_d = Dry density of soil

Torvane

This test is most accurately performed on cohesive soils up to 75kPa. Although the small vane adapter will allow you to exceed this and perform tests up to 225kPa, care and judgement must be used by the Geotechnical Engineer, and they must be confident that the test is representative of the soil. The results of shear strength measurements taken with a torvane should only be used as a guide to the soil's strength. The test can be susceptible to inaccuracy in cohesive soils with pockets of sand or shells. It is recommended to carry out several torvane tests in one undisturbed sample.

The following outlines the method for yielding undrained shear strength results from torvanes:

• Select an area of the undisturbed sample and cut a face parallel to the ends of the core

- Select the vane size based on soil characteristics. Small vane diameter for high strength soil and large vane diameter for low strength soil type
- Attach vane head to instrument body
- Ensure dial gauge reads zero
- Place vane on the 'undisturbed' flat soil surface and push into soil until vanes penetrate specimen. i.e. back
 of the vane head is flush with surface of soil
- Supporting the soil sample, rotate the instrument head at a smooth constant rate until shearing occurs.
 Remember to keep pressure applied to the torvane at all times and rotate the instrument in one movement (not too fast)
- Remove the torvane from the specimen and record dial gauge reading from the head of the torvane
- Record results on Soil Sample Data Sheets
- The shear strength of a specimen is determined from the conversion charts corresponding to the dial reading and vane size

Pocket Penetrometer

This test is most accurately performed on cohesive soils from 50 to 850kPa. The results of shear strength measurements taken with a pocket penetrometer should only be used as a guide to the soil's shear strength. This test is inaccurate in the shear strength range 0 to 50kPa and greater than 850kPa, at which point the soil can essentially be considered to have become rock. The test can be susceptible to inaccuracies in cohesive soils with pockets of sand or shells. It is recommended to carry out a number of pocket penetrometer tests in one undisturbed sample.

The following outlines the method for yielding undrained shear strength results from pocket penetrometers:

- Select an area of the undisturbed sample and cut a flat face parallel to the core specimen ends
- Select penetrometer head size based on soil characteristics. Small head for high strength soil and normal head for lower strength soil types
- Ensuring the penetrometer scale reads zero, push the instrument at a constant rate into the specimen until the head penetrates the soil up to marker on the style. Do <u>not</u> push to the end of the penetrating rod
- Observe reading on penetrometer scale and record. Note that the reading is taken from the underside of the indicator
- Record results on Soil Sample Data Sheets
- The shear strength of specimen is determined from conversion tables corresponding to penetrometer size and scale reading

Miniature Laboratory Vane

These tests are carried out on cohesive soils up to 75kPa. These were performed offshore on undisturbed samples in accordance with BS1377 Part 7.

The test is suitable for cohesive soils that are too soft or too sensitive for the preparation of good quality undisturbed specimens for use in UU triaxial shear strength tests. Always ensure that the spring set (4 in number) is in calibration period outlined in Geoquip Technical Procedure, "Field Laboratory Equipment Calibration", Ref GM-MSP-OI-5-3-13. Watch out for pockets and seams of silt or sand which should be looked for following extrusion and noted accordingly.

Unconsolidated Undrained Triaxial Tests

Undrained unconsolidated triaxial (UU) tests were conducted on cohesive soil samples above 20kPa to determine the undrained shear strength.

These were performed both offshore and onshore on undisturbed samples in accordance. The selected specimens were trimmed so that the height to diameter ratio of 2 at membrane with a thickness of 0.38 mm. The samples were then placed into a triaxial back to near in situ conditions. An axial load is then applied to produce an axial strain tests were run until the soil has failed or at least 20% axial strain.	nd then inserted into a latex cell and pressured with water

Appendix C.4 Sampling

Soil samples were obtained using conventional push tube sampling methodologies, based on GEOQUIP procedure GM-MSP-OI-5-2-9 Wireline Sampling & In Situ Testing and BS EN ISO 22475-1. Push sampling with or without using an internal piston arrangement was conducted in cohesive and non-cohesive formations.

The wireline push sampler is lowered into the drill string where it latches into the Bottom Hole Assembly (BHA). The attached sample tube was hydraulically pushed into the ground ahead of the drill bit to sample the soil. Before the push commences, the piston is located at the bottom of the sample tube preventing any ingress of drill cuttings and travels up the tube as it penetrates the ground minimising sample disturbance and maximising recovery. When the piston is not fitted the push sampler head has a hole which allows water to escape whilst penetrating the ground. After the test has completed the hole is then covered by a ball and held in place using a spring this is to prevent losing the sample when recovering the tool.

Appendix C.5 Wireline Coring

Wireline coring can be used to recover samples where push and piston samplers and hammer sampling is deemed to be inappropriate, such as rock, highly over-consolidated clays and material with a high degree of cementation. Whilst coring sample is recovered whilst advancing the borehole. The operations were performed in accordance with Geoquip Procedure GM-MSP-OI-5-2-9 Wireline Sampling & In Situ Testing and ISO 22475-1.

The core barrel is either dropped or lowered with an overshot into the drill string where it latches into the Borehole Assembly (BHA). The borehole is then progressed with the core barrel in place with the driller reviewing rotation, torque, bit load and mud pressure, to safeguard sample to enter the core barrel rather than washing it away. It should be noted that whilst the driller will make every effort to recover sample due to ground conditions it may not always be successful.

On completion of a core run the barrel is recovered from the drill string using an overshot and returned to deck, where it is secured horizontally before the liner is removed.

Appendix C.6 Cone Penetration Testing

Overview

In situ PCPT were performed in accordance with ISO 19901-8 (2014) using a WISON-APB wireline downhole tool with 1.5m and 3.0m stroke length tool configurations. This tool has a hydraulically controlled thrusting mechanism which pushes an instrumented cone on a rod into the soil. A data cable connects the cone to a surface acquisition computer.

To carry out a PCPT test, the hole is first drilled out to the required test depth, ensuring that all cuttings are flushed out of the hole by the drilling mud. The drill string is advanced to the required testing depth and clamped by the seabed frame to provide on bottom weight reaction for the test. At this point the first baseline reading is taken from the cone sensors at deck level. The WISON-APB tool is then lowered into the drill string on its combined hydraulic/data/lift cable until it latches into the bottom hole assembly (BHA) of the drill string. When the tool is correctly latched, the cone is just behind the drill bit at the bottom of the borehole.

At this point the second baseline reading is taken from the cone sensors, these are also known as the zero offsets before testing as the system zero's all the cone channels; cone resistance (qc), sleeve friction (fs) and pore water pressure (u2). The test is then started by activating the hydraulic flow from the topside power pack which pushes the cone into the soil at a constant (flow controlled) rate of 2cm/s. Data is continuously recorded and displayed in real time on the surface acquisition and control computer for all cone channels. At the end of the test the drill string is lifted to pull the cone rod free from the ground and so that the cone is at the same depth as the beginning of the test when the third baseline reading is taken. The tool is then recovered from the drill string and returned to the drill deck using the umbilical winch. Once safely back on deck the final baseline reading is taken. The baseline readings were checked after each test to ensure that the cone was stable and fell within the minimum allowable accuracies set in ISO 19901-8 (2014) for the testing soil type which is summarised in the following table.

Application Class

- Intended for very soft to soft soil deposits. Class 1 penetration tests are normally not achievable for mixed bedded soil profiles with weak to strong layers (although predrilling through these layers can overcome the problem). Tests can only be performed as PCPT
- 2 Intended for precise evaluation for mixed bedded soil profiles with weak to strong layers, in terms of profiling and material identification. Interpretation in terms of soil parameters is also possible, with restriction to indicative use for the soft to weak layers. The test type should be PCPT
- Intended for evaluation of mixed bedded soil profiles with soft to stiff clays and loose to dense sands, in terms of profiling and material identification. Interpretation in terms of soil parameters is appropriate for very stiff to hard clay and for dense to very dense sand layers. For stiff clays or silts and loose sands, only an indicative qualitative interpretation can be undertaken using data acquired under this application class. The test type should be PCPT but in some cases CPT may be acceptable

Application Class	Test Type	Measured parameter	Allowable min. accuracy ^a
1	PCPT	Cone resistance	35 kPa or 5%
		Sleeve friction	5 kPa or 10%
		Pore pressure	10 kPa or 2%
2	CPT or PCPT	Cone resistance	100 kPa or 5%
		Sleeve friction	15 kPa or 15%
		Pore pressure ^b	25 kPa or 3%
3	CPT or PCPT	Cone resistance	200 kPa or 5%
		Sleeve friction	25 kPa or 15%
		Pore pressure ^b	50 kPa or 5%

Larger value of the two quoted. Percentage values apply to measured value and not measured range

Derived Results - Net Cone Resistance

The net cone resistance (q_{net}) is computed by correcting measured cone resistance (q_c) for pore water pressure effects on the net areas of the cone face and behind the shoulder of the cone (Lunne et al., 1997). Effects of overburden pressure are also removed to standardise the cone resistance as a function of depth.

The process for calculating q_{net} from a test zeroed at the bottom of a borehole is:

$$q_t = q_c + (h \cdot \alpha \cdot \gamma_w) + (1 - \alpha) \cdot (u_2 + h \cdot \gamma_w)$$

which can be simplified to:

$$q_t = q_c + (1-\alpha) \cdot u_2 + h \cdot \gamma_w$$

where:

 q_t = corrected cone resistance (for pore water pressure effects)

 q_c = measured cone resistance

 α = net area ratio of cone

 u_2 = measured pore pressure behind the cone tip

h = depth (below seabed) at start of test

b Pore pressure can only be measured if PCPT is used

$$\gamma_w$$
 = unit weight of water

then:

$$q_{net} = q_t - \sigma_{v0}$$

where:

 q_{net} = net cone resistance

 σ_{v0} = in situ vertical total stress (referenced to seabed)

Derived Results - Friction Ratio

The friction ratio (R_f) is the ratio of the sleeve friction divided by corrected cone resistance.

Therefore:

$$R_f = \frac{f_s}{g_t}$$

The ratio can be used for soil classification (Schmertmann, 1978). Sand typically gives a friction ratio of less than 2 percent, while the friction ratio of clays is normally between 2 to 5 percent, depending on cone resistance. Clays with a high silt content show a lower friction ratio.

<u>Derived Results – Pore Pressure Ratio</u>

The pore pressure ratio (B_q) is the ratio of the excess pore water pressure (i.e., the water pressure in excess of theoretical hydrostatic pressure) to the net cone resistance (Sennesset et al., 1982).

The process for calculating Bq is:

$$\Delta u = u_2 - z \cdot \gamma_w$$

then:

$$B_q = \frac{\Delta u}{q_{net}}$$

where:

 γ_w = unit weight of water

 $\Delta u = \text{excess pore pressure}$

 u_2 = measured pore pressure

z = test depth below bottom of the borehole

 q_{net} = net cone resistance

The pore pressure ratio is a good indicator for the soil type in layered soils. Clays show a positive pore pressure ratio (except stiff over-consolidated clays which may give small or negative values if dilatant during shear) and sands (except very loose or very silty sands) a negative pore pressure ratio. Sharp changes normally observed at layer changes accurately define the layer boundaries. The ratio can also be used to provide an indication of the over-consolidation ratio of clays (Lunne et al., 1985; Rad et al., 1985).

Undrained Shear Strength Profile

In addition to the direct measurements of undrained shear strength performed by laboratory testing, the undrained shear strength has also been derived from PCPT data in cohesive soil layers.

Undrained shear strength can be estimated from PCPT data using the following relationship (Lunne et al., 1997).

$$s_u = \frac{q_{net}}{N_{kt}}$$

where:

 q_{net} = net cone resistance

 N_{kt} = cone factor

Typically, a range 15< N_{kt} < 20 is used however, this is can be modified depending on the as found conditions at the borehole or site.

Relative Density Plot

In situ relative density can be determined from the results of PCPTs based on the cone resistance as follows Jamiolkowski et al. (2003)

$$D_R = \frac{1}{3.10} \cdot ln \left(\frac{q_c}{17.68 \cdot \sigma_{v0}^{\prime 0.50}} \right) \cdot 100$$

where:

 D_R = relative density (%)

 q_c = cone resistance (kPa)

 σ'_{v0} = in situ vertical effective stress (kPa)

Internal Angle of Friction

Internal angle of friction is derived based on the relative density as follows:

$$\varphi' = 0.226 \cdot D_r + 18.689$$

where:

 φ' = internal angle of friction (°)

Appendix C.7 References

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