



BLOCK C-M-541



## SERVICE REPORT – PSV SIEM GIANT (STATION #45 – New Position)

<b>Client:</b>	Total E&P do Brasil
<b>Client Document Number:</b>	SG-CM541-20-140
<b>Oceaneering Document Number:</b>	200392-OII-RPT-140-R0
<b>Project Name:</b>	C-M-541 Field Development – ROV & Survey Inspections
<b>Vessel:</b>	PSV Siem Giant
<b>Location:</b>	Campos Basin

Rev	Reason For Issue	Author	Reviewed	Approved	Rev Date
0	Issued for Information	SR/GA	LP/BT	EC	27-03-2020



### COMPANY CONFIDENTIAL

THIS CONFIDENTIAL DOCUMENT AND THE COPYRIGHT THEREIN ARE THE PROPERTY OF OCEANEERING – MARINE PRODUCTION SYSTEMS DO BRASIL LTDA., AND MAY NOT BE USED, COPIED, OR DISCLOSED TO ANY THIRD PARTY WITHOUT THE PRIOR AUTHORIZATION OF OCEANEERING – MARINE PRODUCTION SYSTEMS DO BRASIL LTDA. PAPER COPIES ARE CONSIDERED UNCONTROLLED. ALWAYS VERIFY THE CORRECT REVISION STATUS PRIOR TO USE. APPROVALS ARE RECORDED IN THE DOCUMENT CONTROL SYSTEM.

 		ID: 200392-OII-RPT-140-R0
<b>SERVICE REPORT</b>		
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		DATE: <b>27-03-2020</b>
<b><i>PSV Siem Giant</i></b>		PAG: 2/21
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS:01

**REVISION HISTORY:**

Rev	Sections	Reason for Change	Date
0	ALL	Issued for Information	27-03-2020



		ID: <b>200392-OII-RPT-140-R0</b>
<b>SERVICE REPORT</b>		
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		DATE: <b>27-03-2020</b>
<b><i>PSV Siem Giant</i></b>		PAG: <b>3/21</b>
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS: <b>01</b>

**CONTENTS:**

1.	INTRODUCTION	4
1.1.	Project Overview	4
1.2.	Scope of Document	5
1.3.	Scope of Work	5
2.	OPERATIONAL PLAN	6
3.	PROJECT INFORMATION	8
3.1.	Sound Velocity Profile	9
4.	OPERATIONAL SEQUENCE	10
5.	PICTURES	11
6.	CONCLUSION	18
7.	ATTACHMENTS	19
8.	ACCEPTANCE	20

**TABLE INDEX:**

TABLE 1 – OPERATIONAL TEAM.....	8
TABLE 2 – GEODETIC PARAMETERS .....	8
TABLE 3 – SURVEY INSTRUMENTS.....	8
TABLE 4 – ENVIRONMENTAL CONDITIONS.....	9
TABLE 5 – SOUND VELOCITY PROFILE .....	9

		ID: 200392-OII-RPT-140-R0
<b>SERVICE REPORT</b>		
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		DATE: <b>27-03-2020</b>
<b><i>PSV Siem Giant</i></b>		PAG: 4/21
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS:01

C-M-541 BLOCK EBS (Station #45 – New Position)	
FIELD	LOCATION(S)
C-M-541	Campos Basin

## 1. INTRODUCTION

### 1.1. Project Overview

Total E&P do Brasil (Total) has contracted Oceaneering – Marine Production Systems do Brasil (OII) to provide ROV & Survey services for Umbilical, Flowlines and Risers Inspections (UFR) and Field Operations Development at LAPA Field (Production phase) and Block C-M-541 (Exploration phase).

The deep offshore block C-M-541 under exploration is situated in the pre-salt Campos Basin in approximately 3,000m water depth.

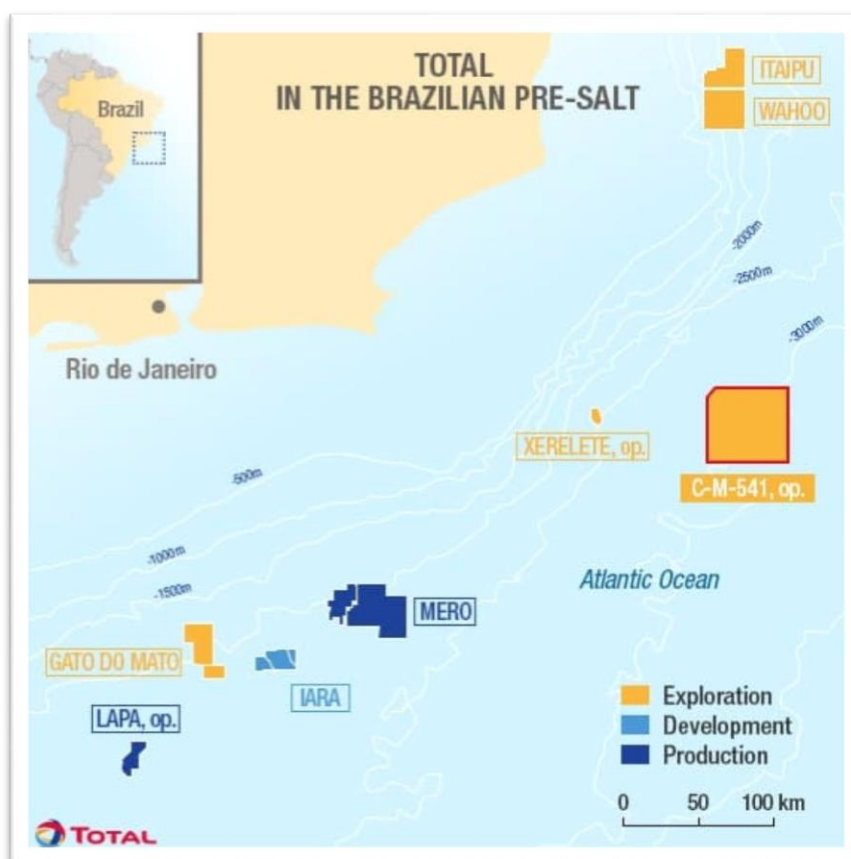




Figure 1 – TOTAL E&P in Brazilian Pre-Salt

		ID: <b>200392-OII-RPT-140-R0</b>
<b>SERVICE REPORT</b>		
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		DATE: <b>27-03-2020</b>
<b>PSV Siem Giant</b>		PAG: <b>5/21</b>
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS: <b>01</b>

## 1.2. Scope of Document

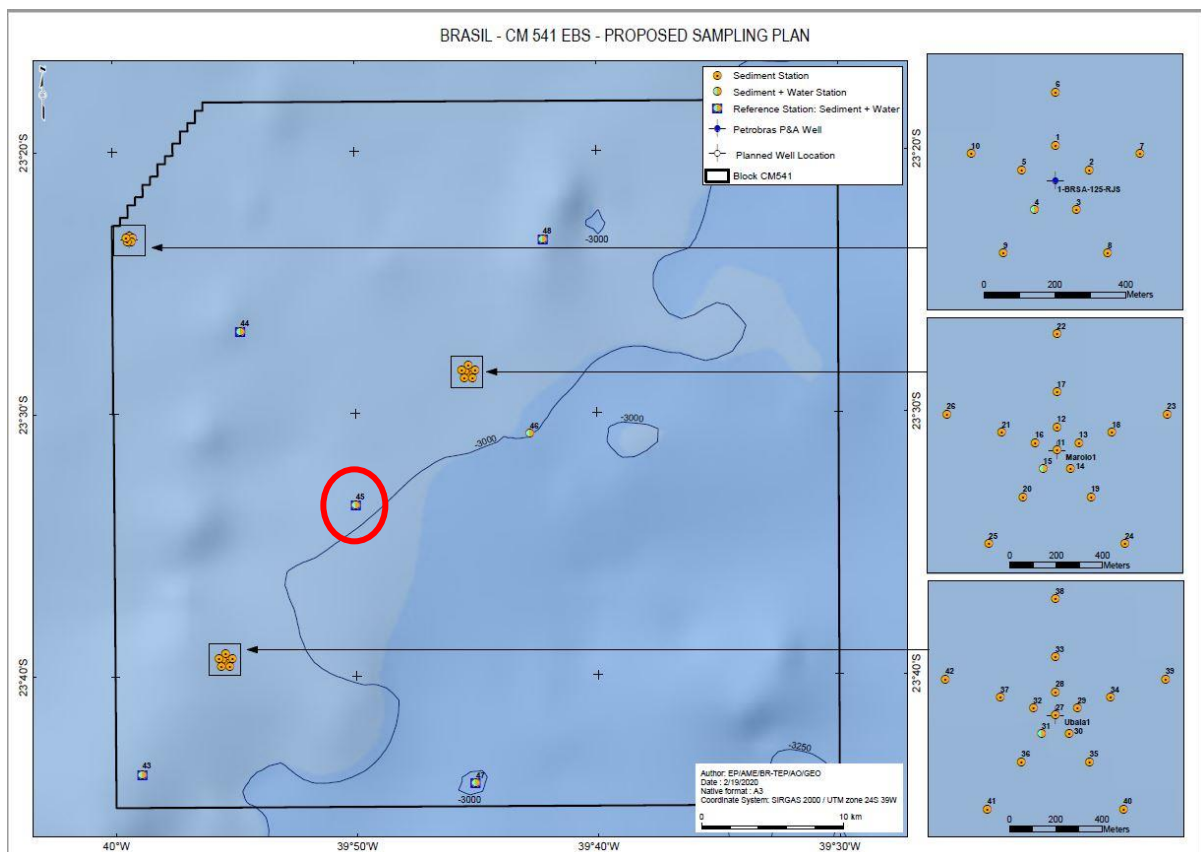
The purpose of this document is to present a detailed summary of operations and results acquired by Oceaneering on board of PSV Siem Giant, during the Environmental Baseline Survey (EBS) at Block C-M-541, in search features such as carbonate formation, or any other marine or anthropogenic features that may affect further activities in this area.

## 1.3. Scope of Work



The Scope of Work comprises in perform a General Visual Inspection (GVI) denominated Environmental Baseline Survey (EBS) in some pre-selected stations and points at the Block C-M-41 in order to present to the environmental agencies and organizations.

The acquisition of video images for the EBS shall follow the lines around the center of each of 09 (nine) pre-selected stations.

On first inspection performed on March 21<sup>st</sup>, 2020, a non-identified cable was found on sea bed. As per instructions were received by client a new location was proposed to avoid that cable of surveyed area at least 200 meters out and shallow than 3000 meters area. The Station #45 New Position is located 300m to 333° from original position. Proposed coordinates for survey sections were indicated on map, as showed below: This report focuses on Station # 45 a new location only



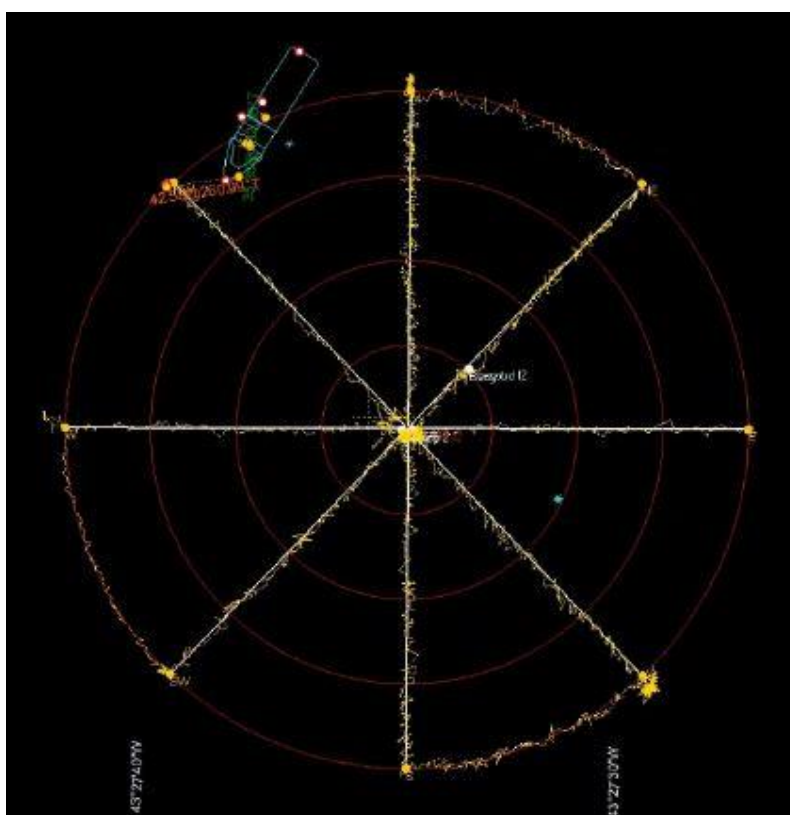
**Figure 2 – EBS – Proposal Sampling Plan at Block C-M-541**

		ID: 200392-OII-RPT-140-R0
<b>SERVICE REPORT</b>		
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		DATE: 27-03-2020
<b>PSV Siem Giant</b>		PAG: 6/21
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS:01

## 2. OPERATIONAL PLAN

It was proposed by the client that this inspection should be performed by ROV on paths along Cardinal Directions (N, NE, E, SE, S, SW, W and NW), and as well a running circles radius around the center point of each station.



The acquisition of images for the baseline survey followed lines around the center of each of the nine stations, similar to the example in the figure below:



**Figure 3** – Example of navigation path during the baseline survey

Instructions were received by client, and proposed coordinates for each survey were indicated on map (**Figure 3**). This report focuses on Station # 45 – New Position only.



Station #45_New Position					
Northing	Easting	Latitude	Longitude	Estimated Depth	As-Found Depth
7.394.664,81	414.803,10	23° 33' 22,13" S	039° 50' 05,20" W	2.970	2.996
Station #45_Project Position				300m to 333° from original position	
Northing	Easting	Latitude	Longitude		
7.394.91,44	414.940,27	23° 33' 31,04" S	039° 50' 00,42" W		

 		ID: <b>200392-OII-RPT-140-R0</b>
<b>SERVICE REPORT</b>		DATE: <b>27-03-2020</b>
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		PAG: 7/21
<b><i>PSV Siem Giant</i></b>		ATTACHMENTS:01
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		

All coordinates refer to DATUM SIRGAS 2000 UTM 24S.  
Different location have different length of the radial lines.

Sampling Plan of BLOCK C-M-541				
IDENTIFIER	STATION NAME	Radius (m) Distance from center	SIRGAS 2000 UTM 24S	
			X	Y
1	Poço 1-BRSA-125-RJS	200	-39° 59' 18.805"	-23° 23' 16.687"
2	2	200	-39° 59' 15.471"	-23° 23' 18.954"
3	3	200	-39° 59' 16.778"	-23° 23' 22.582"
4	4	200	-39° 59' 20.919"	-23° 23' 22.555"
5	5	200	-39° 59' 22.172"	-23° 23' 18.912"
6	6	200	-39° 59' 18.763"	-23° 23' 11.810"
7	7	200	-39° 59' 10.435"	-23° 23' 17.479"
8	8	200	-39° 59' 13.702"	-23° 23' 26.547"
9	9	200	-39° 59' 24.054"	-23° 23' 26.481"
10	10	200	-39° 59' 27.185"	-23° 23' 17.373"
11	MAROLO 1	400	-39° 45' 19.006"	-23° 28' 27.188"
12	12	400	-39° 45' 18.987"	-23° 28' 23.937"
13	13	400	-39° 45' 15.647"	-23° 28' 26.200"
14	14	400	-39° 45' 16.949"	-23° 28' 29.829"
15	15	400	-39° 45' 21.092"	-23° 28' 29.809"
16	16	400	-39° 45' 22.352"	-23° 28' 26.167"
17	17	400	-39° 45' 18.959"	-23° 28' 19.059"
18	18	400	-39° 45' 10.610"	-23° 28' 24.717"
19	19	400	-39° 45' 13.863"	-23° 28' 33.790"
20	20	400	-39° 45' 24.223"	-23° 28' 33.739"
21	21	400	-39° 45' 27.372"	-23° 28' 24.636"
22	22	400	-39° 45' 18.913"	-23° 28' 10.930"
23	23	400	-39° 45' 2.215"	-23° 28' 22.245"
24	24	400	-39° 45' 8.721"	-23° 28' 40.391"
25	25	400	-39° 45' 29.440"	-23° 28' 40.291"
26	26	400	-39° 45' 35.739"	-23° 28' 22.083"
27	UBAIA 1	400	-39° 55' 26.269"	-23° 39' 24.301"
28	28	400	-39° 55' 26.246"	-23° 39' 21.050"
29	29	400	-39° 55' 22.905"	-23° 39' 23.317"
30	30	400	-39° 55' 24.212"	-23° 39' 26.944"
31	31	400	-39° 55' 28.362"	-23° 39' 26.919"
32	32	400	-39° 55' 29.618"	-23° 39' 23.277"
33	33	400	-39° 55' 26.211"	-23° 39' 16.173"
34	34	400	-39° 55' 17.859"	-23° 39' 21.839"
35	35	400	-39° 55' 21.128"	-23° 39' 30.908"
36	36	400	-39° 55' 31.502"	-23° 39' 30.846"
37	37	400	-39° 55' 34.643"	-23° 39' 21.739"
38	38	400	-39° 55' 26.154"	-23° 39' 8.045"
39	39	400	-39° 55' 9.449"	-23° 39' 19.377"
40	40	400	-39° 55' 15.987"	-23° 39' 37.515"
41	41	400	-39° 55' 36.735"	-23° 39' 37.391"
42	42	400	-39° 55' 43.018"	-23° 39' 19.177"
43	43	200	-39° 58' 55.125"	-23° 43' 44.216"
44	44	200	-39° 54' 44.307"	-23° 26' 53.137"
45	45	200	-39° 50' 0.419"	-23° 33' 31.040"
46	46	200	-39° 42' 46.781"	-23° 30' 49.028"
47	47	200	-39° 45' 6.200"	-23° 44' 7.566"
48	48	200	-39° 42' 12.596"	-23° 23' 24.641"

**Figure 4 – Table of Station Locations**

 		ID: <b>200392-OII-RPT-140-R0</b>
<b>SERVICE REPORT</b>		DATE: <b>27-03-2020</b>
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		PAG: 8/21
<b><i>PSV Siem Giant</i></b>		ATTACHMENTS:01
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		



### 3. PROJECT INFORMATION

The tables below details the project information regarding the personnel involved on operations, survey parameters, and the equipment to be inspected (**Table 1** to **Table 5**).

Table 1 – Operational Team		
Name	Function	Company
Leandro Pickhardt	Surveyor Supervisor	Oceaneering
Gabriel Azzolini	Online Surveyor	Oceaneering
Stefan Reuwsaat	Online Surveyor	Oceaneering
Vitor Elias	ROV Supervisor	Oceaneering
Carlos Henrique Silveira	ROV Supervisor	Oceaneering
Mike Gladson	Captain	Siem Offshore

Table 2 – Geodetic Parameters	
DATUM PARAMETERS	
DATUM	SIRGAS 2000 (ITRF2000 at epoch 2000.40) EPSG Code 6674
ELLIPSOID	GRS 1980 (GRS) EPSG Code 7019
SEMI MAJOR AXIS (a)	6 378 137.000 m
SEMI MINOR AXIS (b)	6 356 752.314 m
ECCENTRICITY SQUARE (e <sup>2</sup> )	0.006 694 380 02
INVERSE FLATTENING (1/f)	298.257 222 101
COORDINATE SYSTEM PARAMETERS	
PROJECTION	Universal Transverse Mercator
ZONE	24 South
CENTRAL MERIDIAN	039° West Greenwich
LATITUDE OF ORIGIN	000° Equator
FALSE EASTING	500 000.0 m
FALSE NORTHING	10 000 000.0 m
SCALE FACTOR	0.9996
PROJECTED CRS:	SIRGAS 2000 / UTM Zone 24 S EPSG Code 31984
Table 3 – Survey Instruments	
Operation Mode	SSBL
Depth Gauge	
Model	DIGIQUARTZ 8CB4000



 		ID: <b>200392-OII-RPT-140-R0</b>
<b>SERVICE REPORT</b>		DATE: <b>27-03-2020</b>
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		PAG: 9/21
<b>PSV Siem Giant</b>		ATTACHMENTS:01
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		

Time	
Universal Time Coordinate	UTC - 3 Hours
Vertical Datum	
Datum	LMSL
Tide	TPXO Model / Atlantic Ocean

Table 4 – Environmental Conditions			
Date	Wind (kts)	Swell (m)	Surface DP Current (kts)
23-03-2020	16kts @ 160°	1,5m @ 180°	0,9kts @ 315°

### 3.1. Sound Velocity Profile

At the beginning of operations, the ROV MILL 048 dived till the seabed at constant speed in order to collect the sound velocity, and its results were updated on the HIPAP USBL system and survey navigation system. The figure below presents the profile during the downcast.

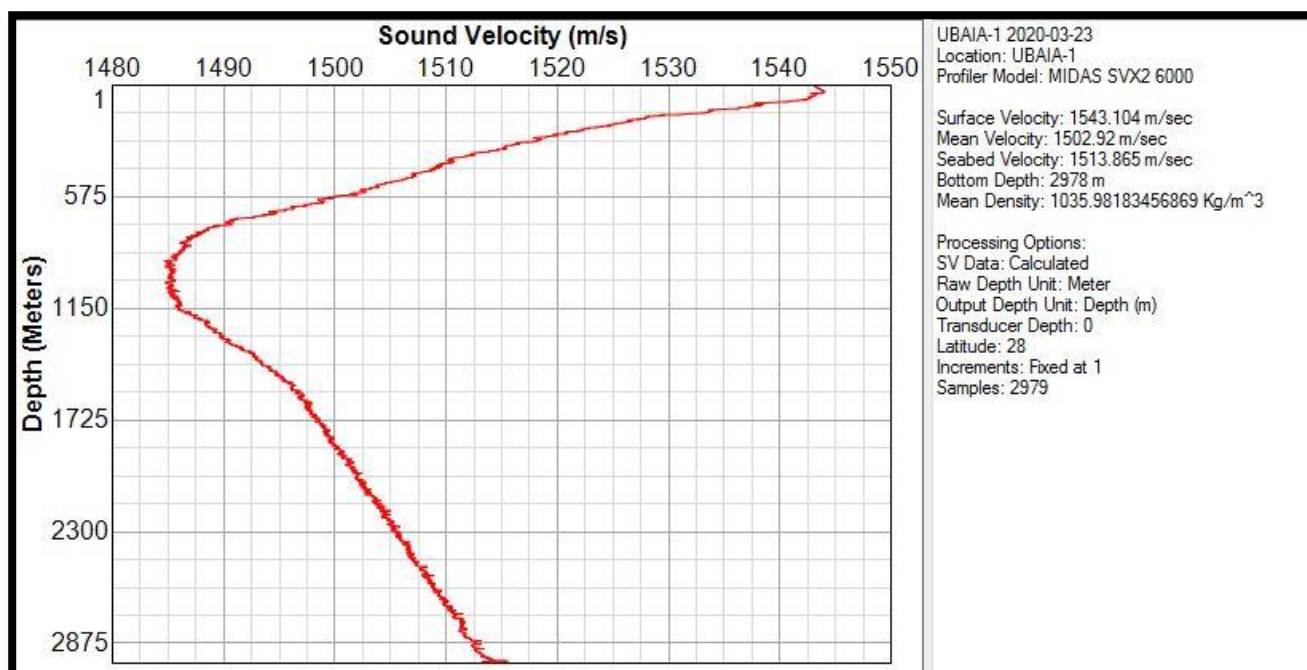




Figure 5 – SVP representation



Table 5 – Sound Velocity Profile			
Date	UTM Coordinates		Mean Sound Velocity (m/s)
	N (m)	E (m)	
23-03-2020	7,399,303.27	426,904.55	1502.9

		ID: <b>200392-OII-RPT-140-R0</b>
<b>SERVICE REPORT</b>		
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		DATE: <b>27-03-2020</b>
<b><i>PSV Siem Giant</i></b>		PAG: 10/21
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS:01

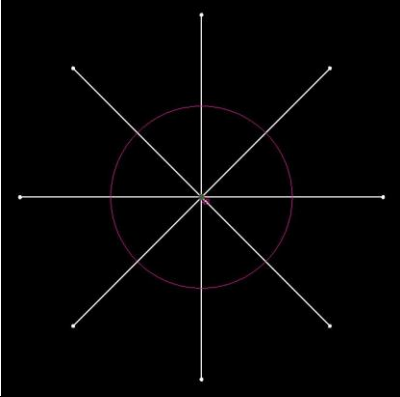
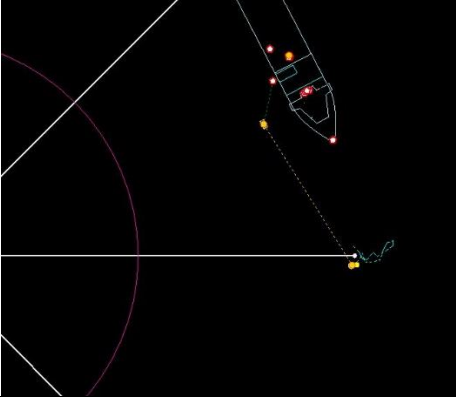
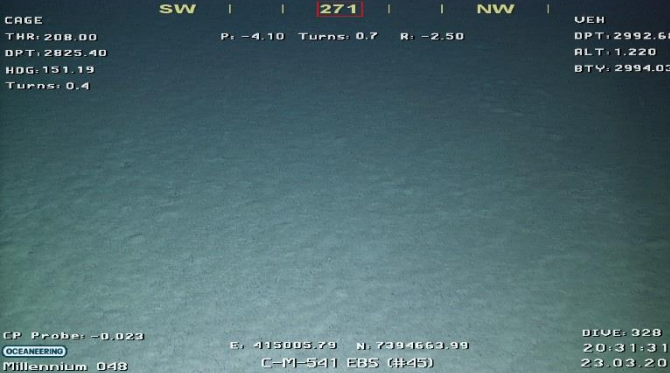



#### 4. OPERATIONAL SEQUENCE

The ROV dived and commenced the inspection of the environmental baselines at Station #45, following sequence:

- EBS Station #45 – EBS Plan View (**Picture 1**);
- EBS at Station #45 – from E to W Baseline (**Picture 2 to Picture 8**);
- EBS at Station #45 – from NW to SE Baseline (**Picture 9 to Picture 15**);
- EBS at Station #45 – from S to N Baseline (**Picture 16 to Picture 22**);
- EBS at Station #45 – from SW to NE Baseline (**Picture 23 to Picture 27**);
- EBS at Station #45 – on the circle of 100m radius in a counter clockwise direction, the center of Location and a cable in the seabed survey (**Picture 28 to Picture 40**).

 		ID: 200392-OII-RPT-140-R0
<b>SERVICE REPORT</b>		DATE: 27-03-2020
BLOCK C-M-541 – EBS - Station #45 – New Position		PAG: 11/21
<b>PSV Siem Giant</b>		ATTACHMENTS:01
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		

## 5. PICTURES

			
<b>Picture 1 – Station #45 – EBS Plan View</b>		<b>Picture 2 – E to W Baseline – Start – Plan View</b>	
			
<b>Picture 3 – E to W Baseline – Start – Seabed View</b>		<b>Picture 4 – Debris with Marine Life on Seabed</b>	
			
<b>Picture 5 – Marine Life on Seabed</b>		<b>Picture 6 – Marine Life on Seabed</b>	



ID:  
200392-OII-RPT-140-  
R0

## SERVICE REPORT

BLOCK C-M-541 – EBS - Station #45 – New Position

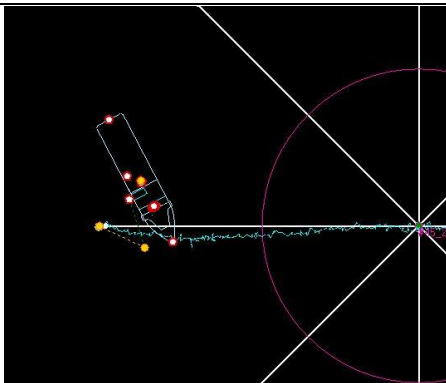
DATE:  
27-03-2020

*PSV Siem Giant*

PAG: 12/21

MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.

ATTACHMENTS:01



Picture 7 – E to W Baseline – End – Plan View



Picture 8 – E to W Baseline – End – Seabed View



Picture 9 – NW to SE Baseline – Start – Plan View



Picture 10 – NW to SE Baseline – Start – Seabed View



Picture 11 – Marine Life on Seabed



Picture 12 – Marine Life on Seabed





ID:  
200392-OII-RPT-140-  
R0

## SERVICE REPORT

BLOCK C-M-541 – EBS - Station #45 – New Position

DATE:  
27-03-2020

*PSV Siem Giant*

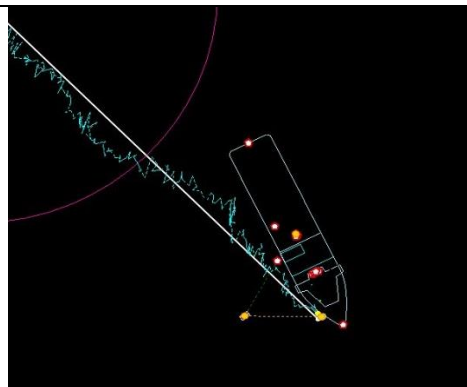
PAG: 13/21

MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.

ATTACHMENTS:01



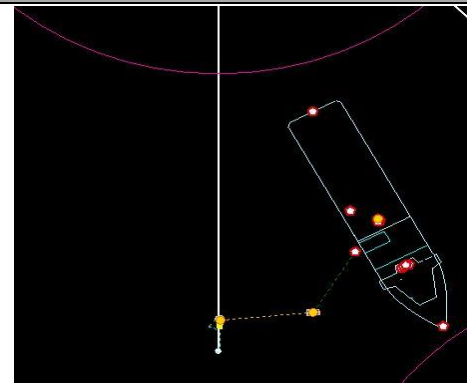
Picture 13 – Marine Life on Seabed



Picture 14 – NW to SE Baseline – End – Plan View



Picture 15 – NW to SE Baseline – End – Seabed View



Picture 16 – S to N Baseline – Start – Plan View



Picture 17 – S to N Baseline – Start – Plan View



Picture 18 – Marine Life on Seabed



ID:  
200392-OII-RPT-140-  
R0

## SERVICE REPORT

BLOCK C-M-541 – EBS - Station #45 – New Position

DATE:  
27-03-2020

*PSV Siem Giant*

PAG: 14/21

MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.

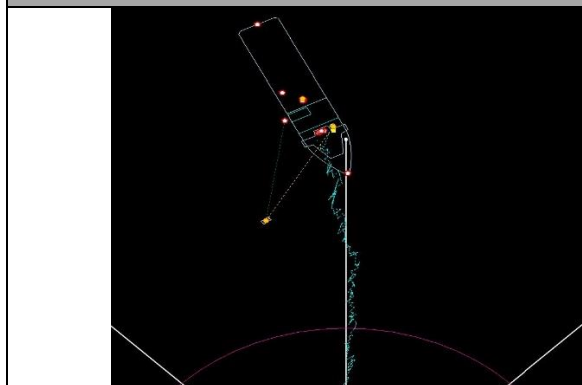
ATTACHMENTS:01



Picture 19 – Debris on Seabed



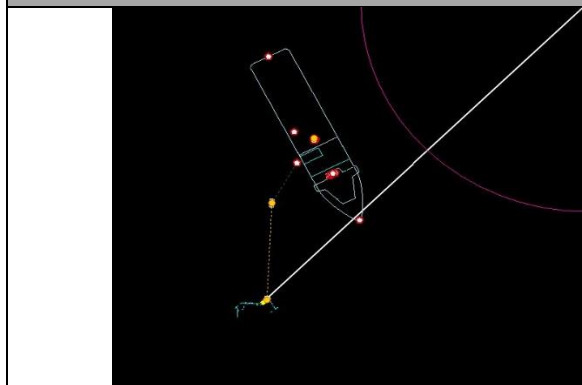
Picture 20 – Marine Life on Seabed



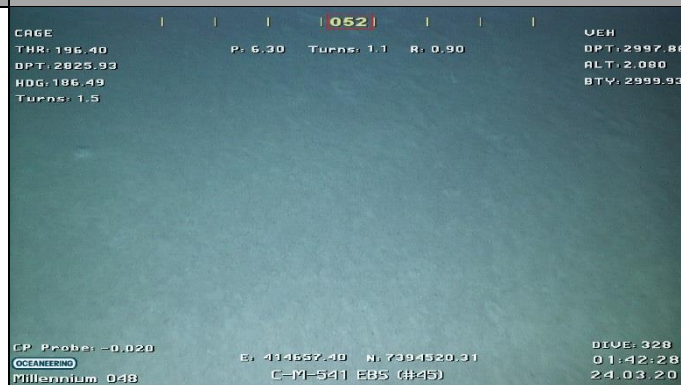
Picture 21 – S to N Baseline – End –Plan View



Picture 22 – S to N Baseline – End –Seabed View



Picture 23 – SW to NE Baseline – Start – Plan View



Picture 24 – SW to NE Baseline – Start –Seabed View





ID:  
200392-OII-RPT-140-  
R0

## SERVICE REPORT

BLOCK C-M-541 – EBS - Station #45 – New Position

DATE:  
27-03-2020

*PSV Siem Giant*

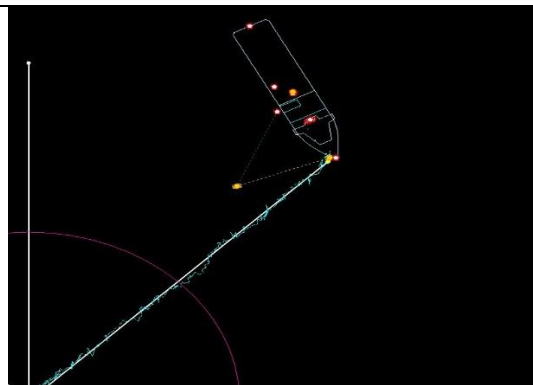
PAG: 15/21

MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.

ATTACHMENTS:01



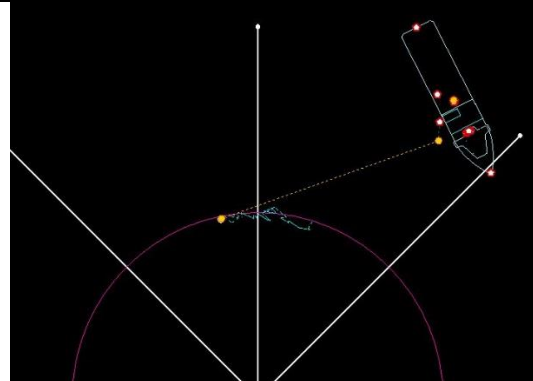
Picture 25 – Marine Life on Seabed



Picture 26 – SW to NE Baseline – End – Plan View



Picture 27 – SW to NE Baseline – End – Seabed View



Picture 28 – Start of inspection on the circle of 100m radius - direction counter clockwise - Plan View



Picture 29 – Start of inspection on the circle of 100m radius - direction counter clockwise - Seabed View



Picture 30 – Marine Life on Seabed



ID:  
200392-OII-RPT-140-  
R0

## SERVICE REPORT

BLOCK C-M-541 – EBS - Station #45 – New Position

DATE:  
27-03-2020

*PSV Siem Giant*

PAG: 16/21

MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.

ATTACHMENTS:01



Picture 31 – Marine Life on Seabed



Picture 32 – Marine Life on Seabed



Picture 33 – Marine Life on Seabed



Picture 34 – Marine Life on Seabed



Picture 35 – Marine Life on Seabed



Picture 36 – Marine Life on Seabed





ID:  
200392-OII-RPT-140-  
R0

## SERVICE REPORT

BLOCK C-M-541 – EBS - Station #45 – New Position

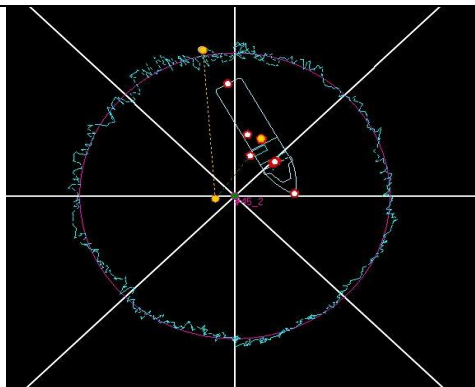
DATE:  
27-03-2020

*PSV Siem Giant*

PAG: 17/21

MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.

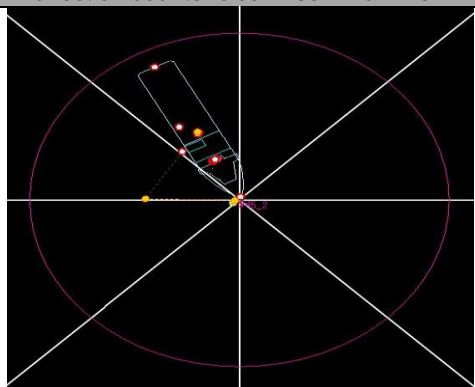
ATTACHMENTS:01



Picture 37 – End of inspection on the circle of 100m radius - direction counter clockwise - Plan View





Picture 38 – End of inspection on the circle of 100m radius - direction counter clockwise - Seabed View



Picture 39 – Center of the Location – Plan View





Picture 40 – Center of the Location – Seabed View

		ID: <b>200392-OII-RPT-140-R0</b>
<b>SERVICE REPORT</b>		
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		DATE: <b>27-03-2020</b>
<b><i>PSV Siem Giant</i></b>		PAG: 18/21
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS:01



## 6. CONCLUSION

- With the new location for the Station #45 it was able to have at maximum 3000 meters of depth in the area, and stay more than 200 meters far from the cable in the seabed;
- The EBS Station #45 was moved 300m to 333° from original position;
- The EBS operation at Station #45 in the C-M-541 Block was conducted with success and identified some marine life events at the location;
- Any information about the non-identified cable or previous survey on station #45, can be provided by Oceaneering survey team on board Siem Giant.

		ID: <b>200392-OII-RPT-140-R0</b>
<b>SERVICE REPORT</b>		
<b>BLOCK C-M-541 – EBS - Station #45 – New Position</b>		DATE: <b>27-03-2020</b>
<b><i>PSV Siem Giant</i></b>		PAG: 19/21
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS:01

## 7. ATTACHMENTS

- 01 HD with the images, videos, report and other files of the operation:
  - Images of Operation (\*.jpeg);
  - Videos of Operation (\*.mpg);
  - Report (\*.pdf);
  - JSEA and RA (\*.pdf);
  - SVP files (\*.usr, \*.000).

 		ID: 200392-OII-RPT-140-R0
<b>SERVICE REPORT</b>		
BLOCK C-M-541 – EBS - Station #45 – New Position		DATE: 27-03-2020
<b><i>PSV Siem Giant</i></b>		PAG: 20/21
MARINE PRODUCTION SYSTEMS DO BRASIL – AT SERVICE OF TOTAL E&P DO BRASIL LTDA.		ATTACHMENTS:01

## 8. ACCEPTANCE

Leandro Pickhardt Survey Supervisor - OSS	Signature	27-03-2020 Date
--	-----------	--------------------

No CSR on board Total Representative - CSR	Signature	Date
---	-----------	------



We Solve the Unsolvable.