



**75 DREBBEL S.A.P.I DE C.V.
(PERMADUCTO/PEMEX PROJECT)**

**OLEOGASODUCTO DE 20"Ø X 16.20
KM DE LA PLATAFORMA KAB-C HACIA
PB-LITORAL-T" PROJECT –**

**20" GAS PIPELINE
(CAMPECHE BAY-MEXICO)**



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1 General project Overview and Reference

The Project is "OLEOGASODUCTO DE 20"DE LA PLATAFORMA KAB-C HACIA PB-LITORAL-T - Mexico" under the patronage of PEMEX and awarded to PERMADUCTO S.A. de C.V. as the Main Contractor.

The project design envisages construction and installation of approx. 16,2 Km of 20" high temperature gas pipeline, from KAB-C field platform to PB-Litoral-T Platform, located in the offshore North-East of Ciudad del Carmen – Gulf of Mexico (Campeche, Mexico).

Drebbel S.A.P.I de C.V. (Contractor) has been awarded by PERMADUCTO (Client) for the execution of various activities (i.e. survey, mattress installation, trenching works etc.) concerning the pipeline.

The pipeline was requested to be trenched to an approximate depth of 1m TOP, and SEA S.R.L. was contracted by Drebbel S.A.P.I de C.V. to perform the Post-Trenching activities of the 20" pipeline route between two platforms, for a length of approx. 15,500 Km.

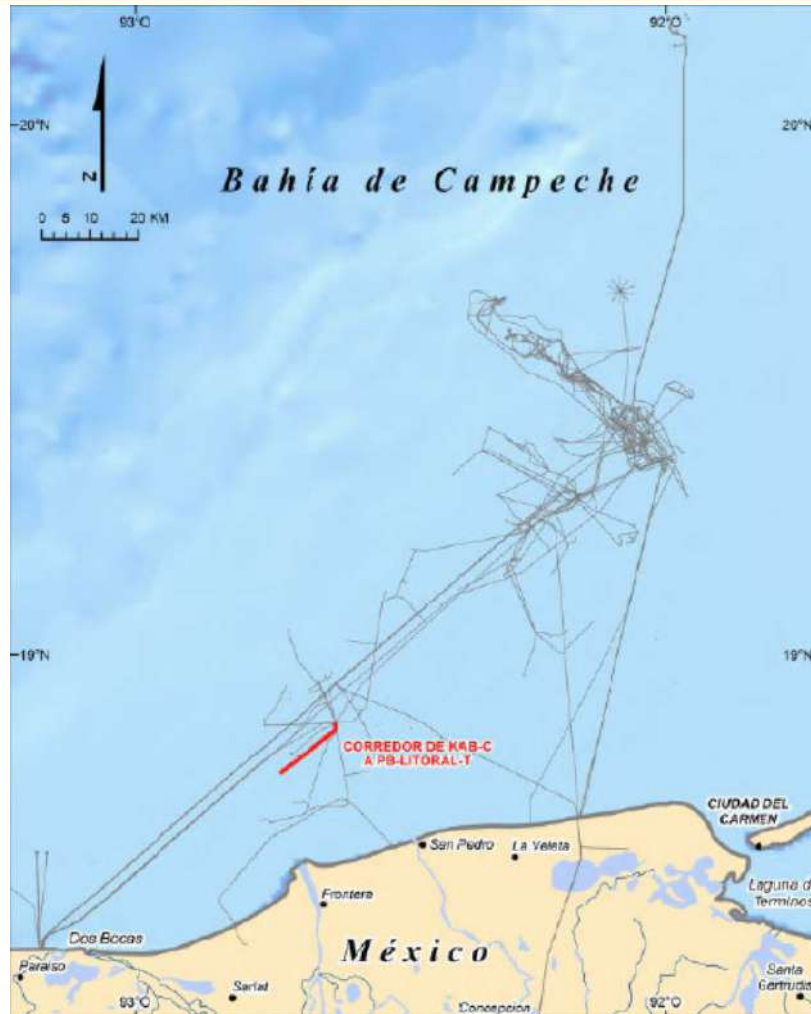


Figure 1: overview of project area

2 Scope of work

Drebbel S.A.P.I de C.V. contracted SEA S.R.L. (Sub-Contractor) for the supply of Post-Trenching Spread & Personnel for the execution of post-trenching activities of a high temperature gas pipeline (OD: 20") from KAB-C Platform to PB Litoral-T Platform in Campeche Bay, Mexico, for an overall total length of 15,486 km (from KP 0,060 to KP 15,546) to 1m TOP.

The area bathymetry ranged from 22 m to 26 m WD.

The project execution started in mid April 2018, as previously planned, and was completed on 1st June 2018.



The 20" oleogasoducto pipeline had the following characteristics:

Description	Gas Pipeline
Pipe Grade	Carbon steel L-450 (X-65 PSL-2)
Anticorrosive coating	Polypropylene
Pipe Diameter	20" pipeline (OD 508 mm)
Pipe Wall Thickness	19,05 mm (0,750")
Pipe Concrete-Coating Thickness	3" CWC (76,2 mm)
Total external OD	26" (660,40 mm)
Pipe Submerged Weight	289,88 lb/feet
Pipe Concrete-Coating Density	3.000 kg/m ³
Anodes	85,73 kg / 152,4 mm
Joints	Filled with polyurethane

Table 1: pipeline details

The pipeline was flooded and unpressurized when post-trenching operations were performed.

The following table summarizes the Post-Trenching SOW:


 1726 DREBBEL DE MEXICO Oleogasoducto de 20" Kab-C hacia PB-Litoral-T Project MEXICO										
	PRODUCT	CWC	Zone	Operations	From KP (approx Km)	To KP (approx Km)	Length (approx km)	Trench/ Cover Depth (m) TOP	From Water Depth (approx m) LAT	To Water Depth (approx m) LAT
1	20" Pipeline (OD 508 mm)	3"	Off-Shore	Post-trenching	0,060	15,546	15,486	1	-28	-22
<i>Sub-Total (km)</i>							15,486			

Table 2: SEA' scope of work

3 Vertical tolerance requirements

Due to the high temperature nature of the pipeline, PERMADUCTO requested that a burial quota not exceeding 30 cm over 72 m route length was to be complied with.

SEA's achieved post-trenching quota was assessed by Drebbel who performed the post-trenching survey with a ROV equipped with acoustic instruments along the entire route.

Drebbel confirmed that the requested burial quota (1 mt TOP) was achieved along the entire 20" pipeline route without imperfections, therefore Drebbel approved SEA's performed works.


Project:		Trenching OPS												
Client:		Drebbel												
UTEC Job No.:		1008A-18-011-010												
Area:		KAB-C to Litoral-T												
														
Note: Depths reduced to MSL As-trenched Survey KAB-C to Litoral-T Survey Dates: May 12th, 2018														
Date	Time	KP	DCC	Easting	Northing	TOP Depth (m)	BOP Depth (m)	Mean Adjacent Seabed (m)	Mean Seabed (m)	DOL (m)			Required DOL (m)	Comment
05/12/2018	15:47:14	10,203	-0,13	536972,64	2082790,98	25,94	26,60	25,62	24,69	1,25	-0,037	-0,14	1	
05/12/2018	15:47:20	10,205	-0,13	536974,15	2082792,26	25,94	26,60	25,55	24,60	1,34	-0,036	-0,14	1	
05/12/2018	15:47:26	10,207	-0,14	536975,69	2082793,57	25,94	26,60	25,58	24,67	1,27	-0,036	-0,15	1	
05/12/2018	15:47:32	10,209	-0,15	536977,30	2082794,94	25,95	26,61	25,56	24,61	1,34	-0,036	-0,15	1	
05/12/2018	15:47:38	10,311	-0,15	536978,71	2082796,14	25,96	26,62	25,60	24,64	1,32	-0,036	-0,15	1	
05/12/2018	15:47:44	10,313	-0,16	536980,32	2082797,51	25,96	26,62	25,72	24,74	1,23	-0,036	-0,15	1	
05/12/2018	15:47:50	10,315	-0,16	536981,92	2082798,87	25,97	26,63	25,70	24,71	1,27	-0,036	-0,14	1	
05/12/2018	15:47:55	10,316	-0,16	536982,96	2082799,66	25,97	26,63	25,67	24,71	1,26	-0,036	-0,15	1	
05/12/2018	15:47:59	10,318	-0,16	536984,43	2082801,00	25,97	26,63	25,67	24,62	1,35	-0,036	-0,14	1	
05/12/2018	15:48:05	10,320	-0,16	536986,00	2082802,33	25,98	26,64	25,61	24,60	1,39	-0,036	-0,13	1	
05/12/2018	15:48:11	10,322	-0,17	536987,45	2082803,56	25,99	26,65	25,60	24,60	1,39	-0,036	-0,11	1	
05/12/2018	15:48:17	10,324	-0,16	536989,06	2082804,91	26,00	26,66	25,66	24,66	1,34	-0,036	-0,10	1	
05/12/2018	15:48:20	10,326	-0,16	536989,98	2082805,69	26,01	26,67	25,79	24,72	1,30	-0,036	-0,09	1	
05/12/2018	15:48:26	10,328	-0,15	536991,67	2082807,03	26,02	26,68	25,66	24,62	1,40	-0,036	-0,08	1	
05/12/2018	15:48:32	10,330	-0,14	536993,15	2082808,36	26,03	26,69	25,67	24,66	1,37	-0,036	-0,07	1	
05/12/2018	15:48:38	10,332	-0,13	536994,69	2082809,66	26,04	26,70	25,59	24,59	1,45	-0,036	-0,05	1	
05/12/2018	15:48:44	10,334	-0,12	536996,13	2082810,86	26,05	26,71	25,65	24,62	1,43	-0,036	-0,04	1	
05/12/2018	15:48:50	10,336	-0,11	536997,66	2082812,15	26,06	26,72	25,66	24,63	1,43	-0,036	-0,03	1	
05/12/2018	15:48:56	10,338	-0,10	536999,20	2082813,45	26,07	26,73	25,78	24,74	1,33	-0,036	-0,02	1	
05/12/2018	15:49:02	10,340	-0,09	537000,73	2082814,73	26,08	26,74	25,73	24,66	1,42	-0,036	-0,02	1	
05/12/2018	15:49:05	10,341	-0,09	537001,61	2082815,49	26,08	26,74	25,71	24,72	1,36	-0,036	-0,02	1	
05/12/2018	15:49:11	10,343	-0,09	537003,16	2082816,78	26,09	26,75	25,62	24,64	1,45	-0,037	-0,01	1	
05/12/2018	15:49:17	10,345	-0,08	537004,64	2082818,04	26,09	26,75	25,66	24,65	1,44	-0,037	0,00	1	
05/12/2018	15:49:23	10,347	-0,08	537006,14	2082819,32	26,10	26,76	25,66	24,60	1,50	-0,036	0,00	1	
05/12/2018	15:49:29	10,349	-0,09	537007,66	2082820,61	26,11	26,77	25,70	24,58	1,53	-0,036	0,01	1	
05/12/2018	15:49:35	10,351	-0,09	537009,15	2082821,89	26,11	26,77	25,81	24,74	1,37	-0,036	0,01	1	
05/12/2018	15:49:41	10,353	-0,10	537010,56	2082823,09	26,12	26,78	25,65	24,59	1,52	-0,036	0,01	1	
05/12/2018	15:49:47	10,355	-0,11	537012,15	2082824,46	26,11	26,77	25,63	24,67	1,54	-0,036	0,01	1	
05/12/2018	15:49:53	10,357	-0,12	537013,85	2082825,74	26,11	26,77	25,79	24,67	1,43	-0,036	0,01	1	
05/12/2018	15:49:59	10,359	-0,13	537015,26	2082827,12	26,10	26,76	25,72	24,67	1,43	-0,036	0,01	1	
05/12/2018	15:50:02	10,360	-0,13	537016,16	2082827,89	26,10	26,76	25,70	24,69	1,41	-0,036	0,01	1	
05/12/2018	15:50:08	10,362	-0,14	537017,72	2082829,23	26,10	26,76	25,73	24,67	1,43	-0,036	0,01	1	
05/12/2018	15:50:14	10,364	-0,15	537019,19	2082830,49	26,10	26,76	25,76	24,66	1,44	-0,036	0,01	1	
05/12/2018	15:50:20	10,366	-0,16	537020,79	2082831,86	26,10	26,76	25,63	24,61	1,49	-0,036	0,01	1	
05/12/2018	15:50:26	10,368	-0,17	537022,32	2082833,17	26,09	26,75	25,65	24,65	1,44	-0,036	0,01	1	
05/12/2018	15:50:32	10,370	-0,18	537023,84	2082834,48	26,09	26,75	25,67	24,60	1,49	-0,036	0,01	1	
05/12/2018	15:50:35	10,371	-0,18	537024,75	2082835,26	26,09	26,75	25,68	24,56	1,53	-0,037	0,02	1	
05/12/2018	15:50:41	10,373	-0,20	537026,32	2082836,60	26,09	26,75	25,63	24,58	1,51	-0,037	0,02	1	

Table 3: example of a survey section

3 Encountered soil condition

Soft and very soft calcareous clay with lenses of medium dense silt.

4 Photos at worksite



PTM during assembly phase onshore



PTM dry test



TSV equipped with trenching spread



PTM in the water during trenching operations

5 Reference



DREBBEL S.A.P.I de C.V.
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To: SEA Srl
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ITALY

Attn: Ms. A. R. Marangoni
Sole Director
rossana.marangoni@sea-group.net

Ciudad del Carmen, 26/Jun/2018

Subject: Project Execution Reference Letter

Dear Ms. Marangoni,

With reference to the "Oleogasoducto de la Plataforma Kab-C hacia PB Litoral-T" Project (Ciudad del Carmen - México), we are pleased to confirm that SEA Srl carried out the post-trenching operations in a successful manner and to our complete satisfaction.

The project consisted on trenching one pipeline (OD: 20") for an overall total length of 15,486 km (from KP 0,060 to KP 15,546) to 1m TOP, in water depth that ranged from -26 to -22m.

Kind regards,

Signature

Name/Surname

Position

Angel Gonzalez Ruiz, Alvidrez
Representante Legal

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