



**70 BUMI ARMADA CASPIAN LLC/  
LUKOIL –  
FILANOVSKYI PROJECT  
(RUSSIAN CASPIAN SEA)**

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**1 General project Overview**

The LUKOIL's project covered the construction of underwater pipelines for the development of V. Filanovsky field and inter-field pipelines connecting it with Yu-Korchagin field.

The area of subsea pipelines installation was located in the Russian sector of the north-western shallow water part of the Caspian Sea, at water depths ranging from 6 m (nearby RB of Filanovsky field) to 11.4 m (nearby LSP of Yu. Korchagin field), 100 km to the east off the Kalmykiya Republic, 40 km to the north-east of Astrakhan anchorage area, 20 km to the West of Malyi Zhemchuzhnyi Island.

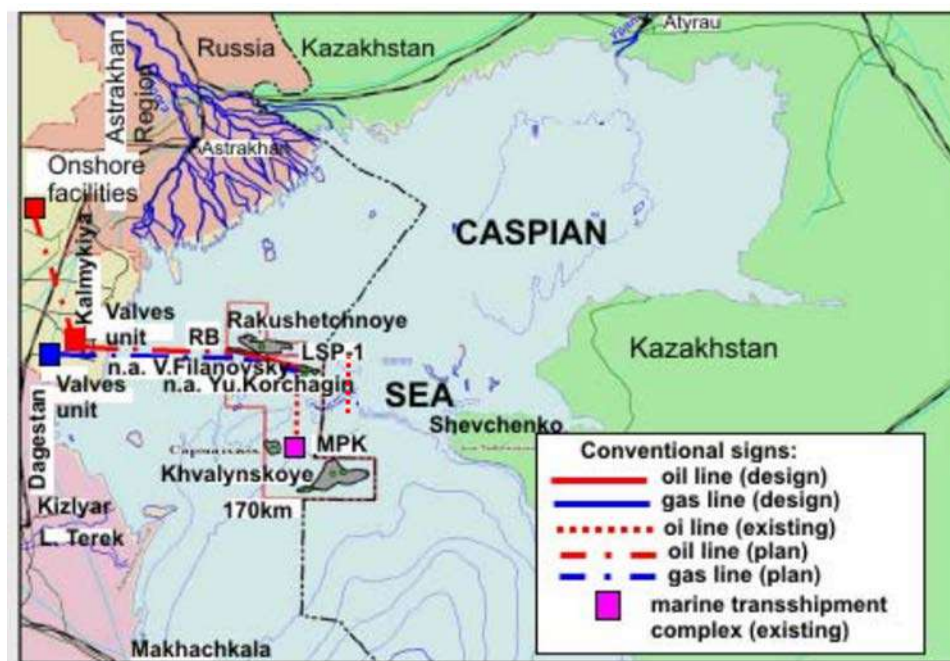


Figure 1 – Diagram of the area of construction of underwater pipelines

## 2 Scope of work

SEA S.r.l. (SEA) was sub-contracted by BUMI ARMADA CASPIAN LLC to perform the post-trenching and back-filling operations along all pipeline routes.

During the execution of the project, SEA was requested to perform the post-trenching activities along three pipelines:

Product	OD mm	Pipeline route	Operations	Trenching Depth (m) T.o.P.	From Water Depth (approx m)	To Water Depth (approx m)
Ø16" gas line	500,8	From RB of Filanovsky to LSP-1 of Yu-Korchagin	Post-trenching + Back-filling	1,9	-6,14	-11.4
Ø12" Oil Line	438,3	From LSP-1 of Filanovsky to LSP-1 of Yu-Korchagin	Post-trenching + Back-filling	1,9	-6,00	-11.4
Ø4,5 " Connection Pipeline	118,3	From LSP1 of Filanovsky to Tie-in Point on 16" Gas Line (item 4.1)	Post-trenching + Back-filling	2,0	-5.95	-6,67

The project was developed in 2 trenching campaigns in 2013 and 2014 years

The following trenching operations were performed:

Along 12" Oil Pipeline:

from KP 0,000 to KP 11,614 =11.614 m  
 from KP 19,575 to KP 24,960 =5.385 m  
 from KP 38,575 to KP 39,224 =649 m

Along 16" Gas Pipeline:

from KP 0,000 to 1,125 =1.125  
 from KP 19,740 to 23,595 =3.855  
 from KP 38,403 to KP 39,022 =619 m

Along 4.5" Oil connection Pipeline:

from KP 0,000 to KP 0,450 =450 m

<b>POST-TRENCHING 12" GAS LINE</b>	<b>17.648 METERS</b>
<b>POST-TRENCHING 16" GAS LINE</b>	<b>5.599 METERS</b>
<b>POST-TRENCHING 4,5 CONNECTION PIPELINE</b>	<b>450 METERS</b>
<b><u>TOTAL TRENCHED METERS</u></b>	<b><u>23.697 METERS</u></b>



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## **SEA's EQUIPMENT utilized for the project:**

### NAVAL MEANS:

- Trimaran ROSSANA modular barge

### POST TRENCHING MACHINES:

- COMBO PTM
- LEO PTM
- JOLLY PTM

## **3 Encountered Soil condition**

In the sections of the seabed soil included between the RB deposit, the LSP-1 of V. Filanovsky Field and the LSP-1 of the Yu. Korchagin deposit, various geological units (EGE) have been encountered by SEA S.r.l. along the trenched routes.

They were specified and defined in the Lukoil reports as follows:

- EGE 1-1- shell sand soil
- EGE 1-1a- shell soil-gravel sand and gravel soil
- EGE 1-2- compact sand, seldom, fine
- EGE 1-3- clay, fluid and clay plastic, peaty
- EGE 1-4-1- loose sand,
- EGE 1-4-2- clay, fluid, plastic and soft plastic, peaty
- EGE 2a- sand, gravel heterogeneous in grading composition, saturated with water, pebble ,crushed stone);
- EGE 2r- sand fine homogeneous in grading composition , loose, saturated with water;
- EGE 3- sand homogeneous in grading composition , saturated with water;
- EGE 3-1- clay, tough-plastic and semi-hard
- EGE 3-2- sand, with the layers of silt
- EGE 3-3a-clay loam, fluid, plastic and soft plastic with layers of sand
- EGE 3-3δ- clay sand, fluid and plastic, occasionally with the layers of sand and clay loam.
- EGE 4- clay silt
- EGE 5a – sand homogeneous in grading composition , saturated with water;
- EGE 5 δ - clay sand, fluid;
- EGE 6- clay silt
- EGE 7a- clay light, soft-tough- plastic
- EGE 7b- clay loam, light, soft, fluid, plastic



## 4 Photos at worksite



The Filanovsky Field



The Korchagin Platform



The Trimaran Rossana assembly at 3<sup>rd</sup> International yard



The Trimaran Rossana assembly at CMC dry-dock



The Trimaran ROSSANA at Third International - loading the COMBO2 PTM (2013)



The Trimaran ROSSANA shallow water barge



The Trimaran ROSSANA A-frame



The Trimaran ROSSANA during the 2013 trenching activities





COMBO PTM on-board of Caspian Spider vessel(2013)



COMBO PTM launched from the Caspian Spider (2013 Campaign)



The Jolly PTM (Caspian Spider 2013)



COMBO and COMBO2 PTMs on-board of DLB Armada Installer (2013 Campaign)



The COMBO2 PTM (2013 campaign)



DLB Armada Installer - The WINTER season 2013-2014





COMBO PTM on-board of the Trimaran Rossana (2014)



LEO PTM on-board of the Topaz Dignity (2014)

## 5 Reference

Form of Certificate of Completion

<p>Certificate of Completion of SERVICE CONTRACT PO#4500058928 dated 28.09.2012</p>	<p>Акт выполненных работ по КОНТРАКТУ НА ОКАЗАНИИ УСЛУГ РО#4500058928 от 28.09.2012</p>
<p>We undersigned, SEA Srl, a company established and existing under the law of Italy, with registered Via Mariani 44/46, 48121 – Ravenna (RA), Italy, P/IVA 1206570390 and Bumi Armada Marine LLC, a company established and existing under the law of Russian Federation, with registered and head office in Kirova Str., 1, floor 3, Astrakhan, 414000, collectively referred to as the Parties, have drafted the present Certificate of Completion, stating that according to Article 7.1 of Service Contract for post trenching and backfilling services for Filanovsky field development project PO#4500058928 dated 28.09.2012:</p>	<p>Мы нижеподписавшиеся, SEA Srl, компания основанная и существующая по законодательству Италии, зарегистрированная по адресу Виа Мариани 44/46, 48121 – Равенна (RA), Италия, и ООО «Буми Армада Каспиан», компания основанная и существующая по законодательству Российской Федерации, с зарегистрированным головным офисом по адресу: Российская Федерация, 414000, г.Астрахань, ул. Кирова, д. 1, 3ий этаж, вместе именуемые «Стороны», составили настоящий Акт выполненных работ, о том, что в соответствии с пунктом 7.1, Контракта на оказание услуг по заглублению и обратной засыпке трубопровода для проекта разработки месторождения им. Филановского #4500058928 от 28.09.2012:</p>
<p>Parties confirm the performance of all obligations under the contract.</p>	<p>Стороны подтверждают исполнении всех обязательств по контракту.</p>
<p>SEA Srl performed, carry out and provided to complete satisfaction of Bumi Armada Caspian LLC's whole scope of work requested by Bumi Armada Caspian LLC within Service Contract for post trenching and backfilling services for Filanovsky field development project PO#4500058928 dated 28.09.2012.</p>	<p>SEA Srl выполнила, осуществила и предоставила, к полному удовлетворению ООО «Буми Армада Каспиан», весь объем работ запрошенный ООО «Буми Армада Каспиан», в соответствии с Контрактом на оказание услуг по заглублению и обратной засыпке трубопровода, для проекта разработки месторождения им. Филановского #4500058928 от 28.09.2012.</p>
<p>Services provided according to the Contract</p>	<p>Услуги оказаны полностью, в соответствии с условиями договора. Стороны претензий друг к другу не имеют.</p> <p>Общая стоимость услуг, оказанных SEA Srl, 10</p>

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<p>condition. Parties do not have claims to each other.</p> <p>Total amount of service provided by SEA Srl is 10 407 134, 50 Euro (Ten million four hundred and seven thousand one hundred and thirty four Euro 50 Eurocents). Total amount paid by Bumi Armada Caspian LLC to Sea Srl is Euro ( ).</p> <p>The present Certificate has been drafted in 2 (two) copies, one retained by the Bumi Armada Caspian LLC and second one by the SEA Srl.</p>	<p>407 134, 50 Евро (Десять миллионов четыреста семь тысяч сто тридцать четыре Евро 50 евроцентов). Общая сумма платежей в адрес компании Sea Srl Евро ( ).</p> <p>Настоящий Акт составлен в 2 (двух) экземплярах, один из которых находится у ООО Буми Армада Каспиан, а другой - у Компании SEA Srl.</p>
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SEA SRL

Bumi Armada Caspian LLC /  
ООО Буми Армада Каспиан



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Name, position, date / ФИО, должность, дата

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