

BUMI ARMADA

Offshore Marine & Subsea Construction

Asset & Profile

IPLOCA, Paris 5th June



"Knots Ahead of the Rest"



BUMIARMADA

A Global Business

Bumi Armada Berhad is a Malaysia-based international offshore energy facilities and services provider with a presence in over 17 countries, spread across five continents, supported by over 1,700 people from 49 nationalities. Bumi Armada operates through two Business Units: FPO and OMS – OSV & SC

Key Regions/ Assets

- FPSOs
- FSU
- OSVs
- SC
- ★ Headquarters
- 🏢 Offices/ Shore Bases



Global network of offices and operations.

Bumi Armada SUBSEA CONSTRUCTION:

- **Offices & Shore Base (3 slides)**
- **Installation Capabilities & Assets (8 slides)**



BUMI ARMADA SUBSEA CONSTRUCTION Presence in Caspian Sea

CASPIAN REGION OFFICES



● Shore Base ● Office

RUSSIA:

**Bumi Armada
Caspian, LLC**
Kirova Street 1
3rd Floor,
414000 Astrakhan,
Russia



TURKMENISTAN:

**Armada Marine Contractors
Caspian Pte Ltd**
Office 902
174, Hero of Turkmenistan
Atamyrat Niyazov street,
Ashgabat,
Turkmenistan



BUMI ARMADA SUBSEA CONSTRUCTION Presence in Caspian Sea

CASPIAN REGION SHORE BASE

RUSSIA



TURKMENISTAN



Caspian Sea Shore base :

- SVAP yard, Astrakhan, Russia
- Adamant Jetty, Astrakhan, Russia
- Turkmenbashi Yard, Turkmenistan



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BUMI ARMADA SUBSEA CONSTRUCTION Presence in Asia Region

ASIA REGION SHORE BASE

INDONESIA



Asian Region Shore base :

- PT Meitech Eka Bintan (Bintan Island)



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BUMI ARMADA SUBSEA CONSTRUCTION Installation Capabilities

CAPABILITY TO UNDERTAKE INSTALLATION AT VARIOUS WATER DEPTHS: FROM SHORE APPROACH TO VERY SHALLOW WATER TO DEEP WATER

CASPIAN SEA:

➤ Very-Shallow Water Laying Capabilities

- Armada Constructor, ultra shallow water barge, is able to operate with 1m draft. Armada Constructor carries out pipelay, umbilical lay, post-trenching, dredging and backfilling operations, light structures installation.

➤ Traditional S-Lay and J-Lay Laying Capabilities

- Armada Installer, DLB, is able to perform S-Lay from 5m water depth with possibility to lay in deep water with single joint 300Te J-lay tower.

➤ Umbilical Laying Capabilities

- Bumi Armada Ice Class DP2 Vessels (Uray, Pokachi, and Naryan-Mar) are able to perform Umbilical lay.

ASIA:

➤ Traditional S-Lay Capabilities

- Armada KP1, DLB, is able to perform S-lay and structure installations starting from 5m of water depth.



1) Shallow Water Barge - ARMADA CONSTRUCTOR

Shallow Water Pipe & Cable Laying, Trenching and Dredging Barge



- ✓ Custom built for laying pipelines from 4" to 30" from 0 to 30m WD, cable from 0 to 100m WD pipeline/cable burial services.
- ✓ Accommodation for 108 people.

CAPABILITIES:

- Pipe & Cable laying
- Trenching/ Post-trenching, spot/ pit dredging, and backfilling
- Shallow water Subsea construction, pre-commissioning, services
- Shallow water field maintenance and inspection services

ARMADA CONSTRUCTOR – DIVING SYSTEM

- Air Diving System (certified and maintained in accordance with International Maritime Contractors Association recommendations for offshore diving operations
The Air Diving Systems includes dive control, main diver control panel, twin lock deck decompression chamber, high-pressure and low-pressure compressors, launch and recovery system, and diver's stage/wet-bell.
- Work boat with Scuba Replacement System

1a) Shallow Water Barge - ARMADA CONSTRUCTOR

POST-TRENCHING/DEBURIAL EQUIPMENT - JETTING AND CUTTING SYSTEM



CAPABILITIES:

- Trenching up to 50m water depth
- Can achieve several trench depths depending on the length of the installed jetting bars and cutting chains for pipelines from 4" to 40" OD
- Operating Ground strength up to 100KPa

TRACK RECORDS:

Post trenching of :

- Many kms of several dia
 - Pipeline deburial
- Can be provided on request

Jetter performance: 1250m³/h

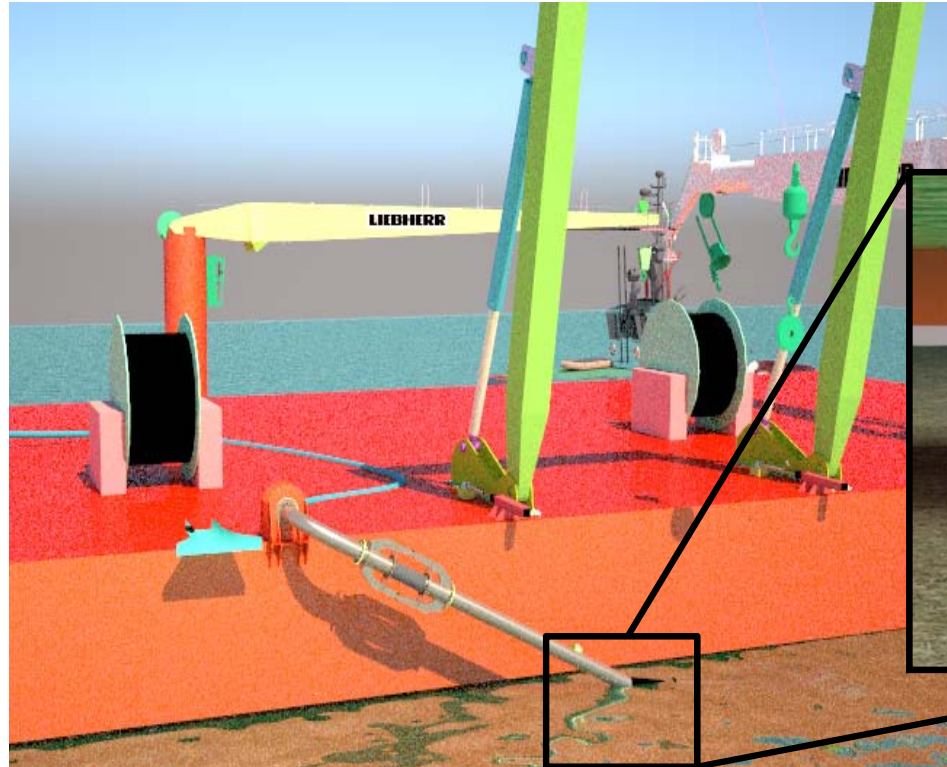
Cutter performance: 50m – 350m/h



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1b) Shallow Water Barge - ARMADA CONSTRUCTOR

DREDGING EQUIPMENT – DOP350 SYSTEM



DOP350 with Auger head mounted on the dredging arm:

CAPABILITIES:

- Pits dredging, backfilling and seabed levelling
- High production capacities (700 – 1000m³ per day)
- Discharge distance up to 1000m

TRACK RECORDS:

- Dredging and backfilling for 10 pits of cable conduits
- Dredging and backfilling of pits nearby existing structures and pipelines

2) Derrick Pipelay Barge – ARMADA INSTALLER

Pipe Lay & Heavy Lift Barge



✓ Purpose Built Derrick Lay Barge for Caspian Sea

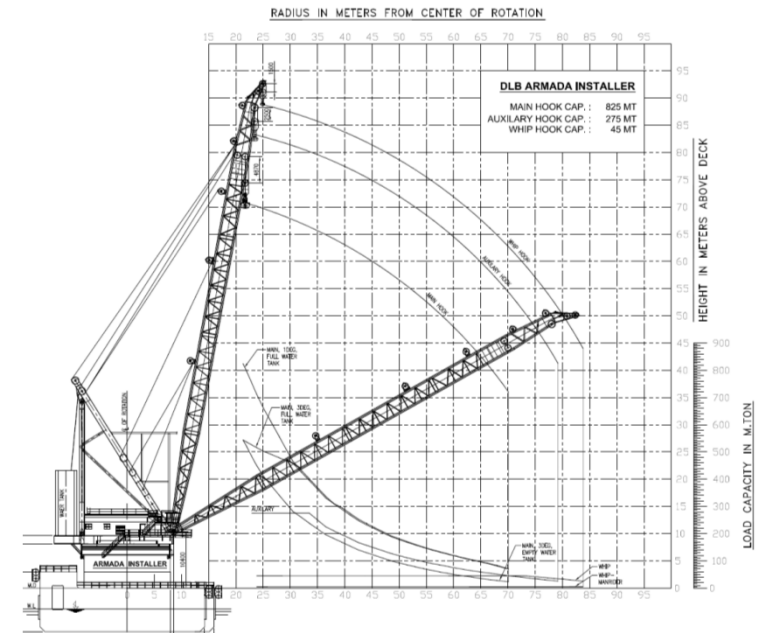
- Capable of laying pipes of 8 – 48 inches in water depths from 8m to 300m)

✓ Walk to Work

- Accommodation for 240 personnel with hospital & clinic facilities

✓ Helideck

- Type H2 octagonal for helicopters with max. D 20.88m, single rotor, max. take-off weight 12.8T



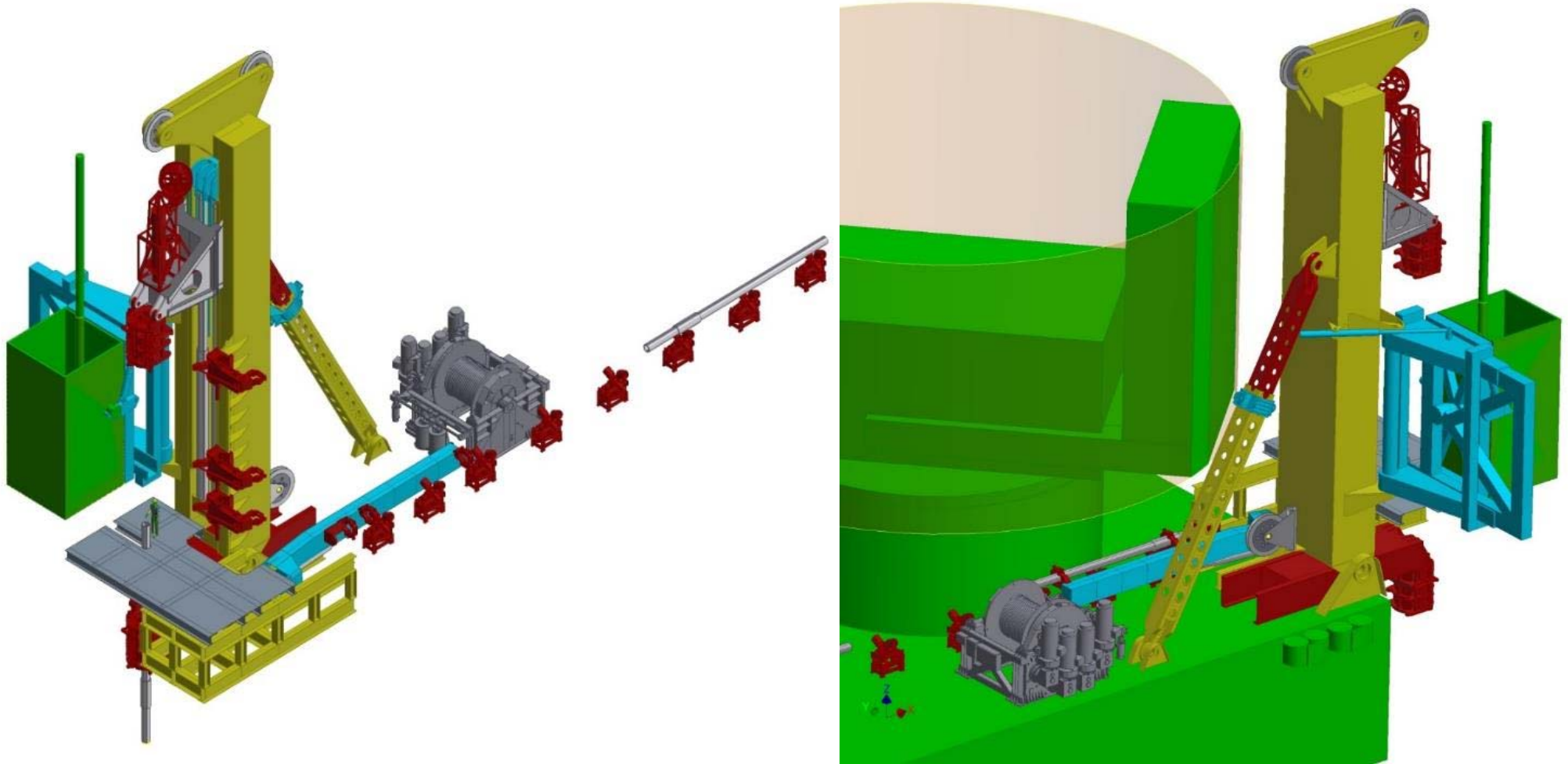
- Length 120m x Breadth 32m x Depth Mould 8m
- Gross tonnage 10,850 T (approx.)
- Electric Drive Tensioners – Remacut 2 sets x 90T
- A/R Winch – Remacut 1 set x 180 T
- Pipe Laying System – PH Hyrdraulic
- Derrick Crane – Amclyde (NOV) 1 set x 825T
- Crawler Crane 1 set x 180T
- Electric Drive Winches – Bruno Presezzi 10 sets
 - Pay-in Speed: 90T @ 25m/min
 - Pay-out Speed: 25T @ 70m/min



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2a) Derrick Pipelay Barge – ARMADA INSTALLER

DLB Armada Installer equipped with 300Te Modular J-Lay System with in-line PLET Installation Capabilities:



3) Umbilical Lay Vessel – ARMADA URAY, POKACHI, NARYAN-MAR

OFFSHORE SUPPLY VESSEL



Bumi Uray



Bumi Pokachi

✓ Ice Capable Ship Design

- Classification: Russian Maritime Register of Shipping (ARC4 & ARC5 requirement) with zero discharge to sea

✓ Construction Capabilities

- DP2 class vessels able to accommodate equipment to run umbilical installation activities



Bumi Naryan-Mar

4) Derrick Lay Barge – ARMADA KP1



- Length 139m x Breadth 30.2m x Depth Mould 9.1m
- Gross tonnage 12,600T (approx.)
- Electric Drive Tensioners – 2 sets x 68T = 136T
- A/R Winch – Remacut 1 set x 136T
- Derrick Crane – 1 set x 600T
- Electric Drive Winches – Skagit AED 285 10 sets with 136T

✓ Derrick Lay Barge for Asian Region

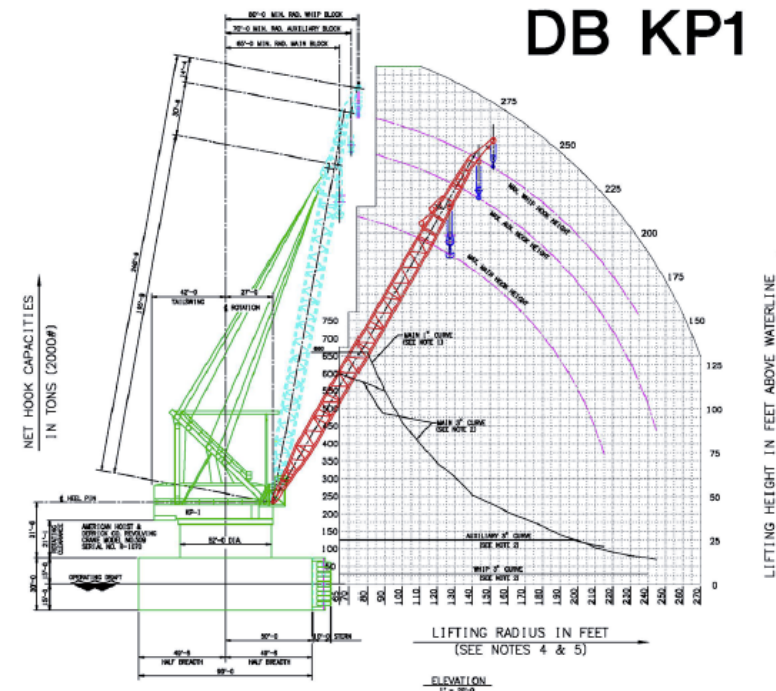
- Capable of laying pipes of 4 – 60 inches from 5m onwards

✓ Walk to Work

- Accommodation for 275 personnel with hospital & clinic facilities

✓ Helideck

- Square Helideck of 21.3m x 21.3m



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Bumi Armada SUBSEA CONSTRUCTION Track Record:

- **Caspian Sea Projects (8 slides)**
- **Asian Region Projects (2 slides)**



RUSSIA - CASPIAN SEA FIELD DEVELOPMENT EPCIC PROJECT

V.Filanovsky and Yu.Korchagin Field Development Project

Client: Lukoil
Location: V.Filanovsky and Yu.Korchagin Fields, Russia
Water Depth: 6 to 11m
Award Date: July 2012
Installation: 2013, 2016, 2017 and 2018

Sr. No	Description	No. of Welds	No. of Repairs	Repair Percentage (%)
Pipeline Automatic Welding Repair Statistics				
1.	Total number of Pipe Joints Based on very stringent project criteria	8595	107	1.25%

Pipelay Vessel: Armada Installer

BUMI ARMADA Scope of Work

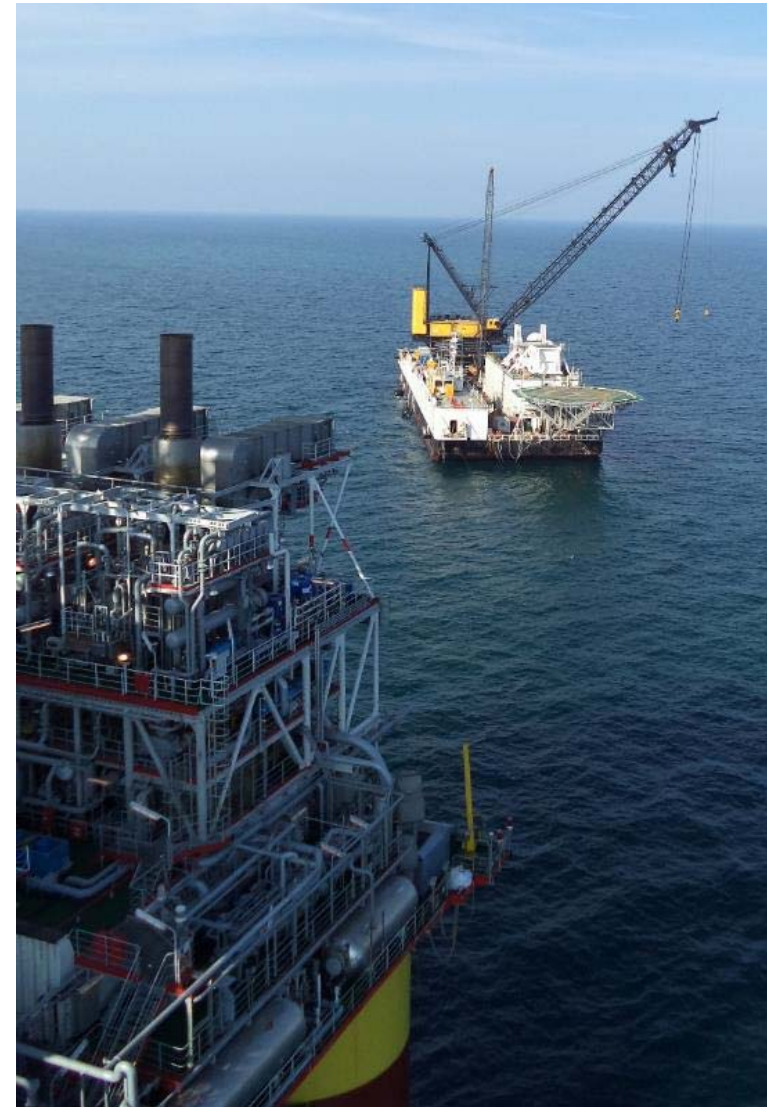
Full Project management and **EPCIC** for the following:

- 40km of Inter-field subsea 12" 11mm WT oil pipeline
- 40km of Inter-field subsea 16" 17.5 mm WT gas pipeline
- 500m of Inter-field subsea 4,5" x 7.1 mm WT).
- S-lay of Six (6) x 5.9km subsea infield pipeline
- S-lay of One (1) x 7.9km subsea infield pipeline
- Pre-commissioning



RUSSIA - CASPIAN SEA FIELD DEVELOPMENT EPCIC PROJECT

V.Filanovsky and Yu.Korchagin Field Development Project



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TURKMENISTAN – PETRONAS BLOCK 1 DEVELOPMENT PROJECT

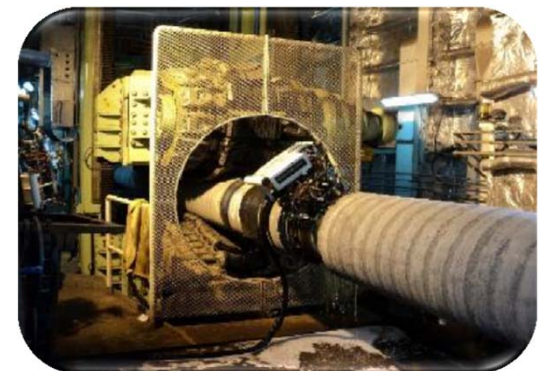
PETRONAS Block 1 Development Project

Client:	Petronas / Sigur Ros
Location:	Offshore Turkmenistan Block 1 Field
Water Depth:	0 to 75m
Award Date:	2010
Installation:	2011 - 2016
Marine Spread:	Armada Installer

The Turkmenistan Block 1 field is an elongated field approx. 60 km long and 10 km wide. Petronas Carigali (Turkmenistan) Sdn Bhd (COMPANY), a wholly owned exploration and production subsidiary of PETRONAS, awarded a long term contract to Bumi Armada for the provision of the Armada Installer to execute the full field development project.

Project Scope of Work

- Export submarine pipelines from Magtymguly (MCR-A) to Kiyarli OGT
 - 26" gas export pipeline, 73km in length
 - 12" condensate export pipeline, 73km in length
- MEG supply pipeline from Kiyarli OGT to Magtymguly (MCR-A)
 - 4" MEG supply pipeline, 73km in length (this line is piggybacked on the 12" condensate pipeline)
- Condensate loading pipelines from the OGT to SPM buoy
 - 2 x 12" condensate loading pipelines, approximately 7km in length each
- SPM buoy, complete with mooring system, risers and PLEM (engineering and procurement by others)



ARMADA INSTALLER Caspian Sea Pipelay Track Records

- 73km - 26" gas export pipeline
- 73km - 12" condensate export pipeline
- 73km - 4" MEG supply pipeline, piggybacked
- 7km - 2 x 12" condensate loading pipelines
- 2km - 6" pipeline
- 1.5km - 10" pipeline
- 3km - 14" pipeline
- 6.5km - 18" pipeline
- 5.2km - 20" pipeline
- 40km - 12" Oil pipeline
- 40km - 16" Gas pipeline
- 6.954 km - Piggyback 18"/ 4" Pipeline
- 7.415 km - Piggyback 14"/ 4" Pipeline
- 72km - 14" Pipeline
- 4.9km - 6" gas-lift Pipeline
- 4.9km - 22" multiphase pipeline
- 4.9km - 16", water pipeline

A total of **490 km of pipelines had been installed by the Armada Installer** since 2011 in the Caspian Sea



ARMADA INSTALLER Caspian Sea Pipelay Welding Repair Rate

Bumi Armada does not possess OFFSHORE WELDING EQUIPMENT AND PERSONNEL and has a long standing partnership with SERIMAX to undertake such services worldwide

V.Filanovsky and Yu.Korchagin Field Development Project

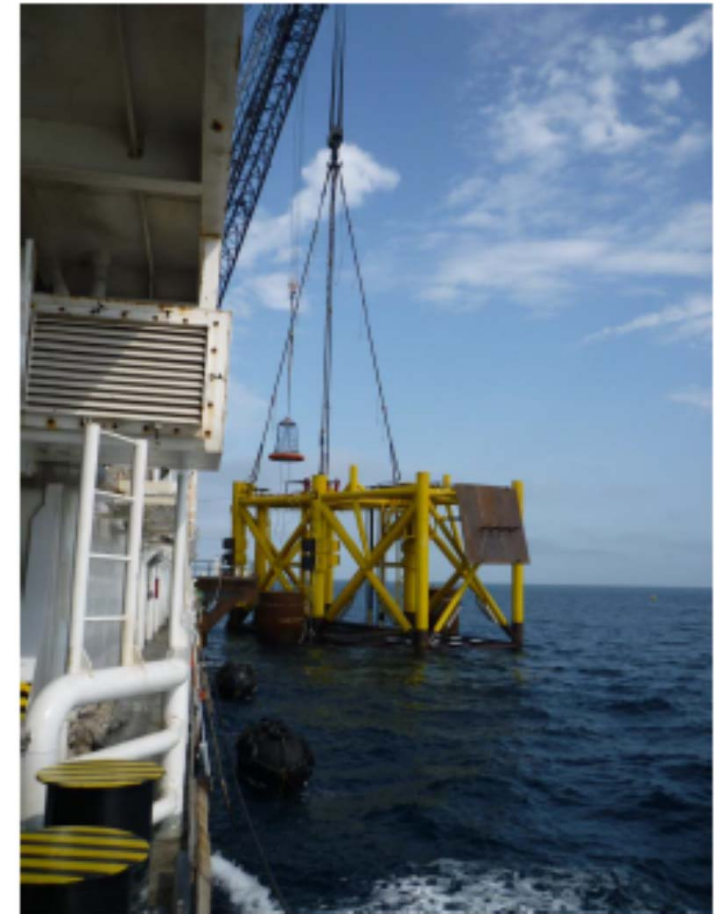
OD	WT	Grade	Overall ML Length (km)	Number of welds	Production	Repair Rate	Best rate (24h)
(")	(mm)	API 5L					
12.75"	11.1	X52	38.892 km	3,241	2013	1.06%	230
16"	17.5	X60	38.580 km	3,215	2013	1.62%	219
4.5"	7.1	X52	0.456 km	38	2013	2.70%	
22"	20.6	X60	4.8 km	398	2016	1.26%	
6.625"	12.7	X52	4.8 km	402	2016	0.00%	
16"	12.7	X60	4.8 km	400	2016	0.50%	
22"	20.6	X60	1 km	71	2017	2.82%	
6.625"	12.7	X52	1 km	118	2017	1.69%	
16"	12.7	X52	1 km	72	2017	0.00%	
12.75"	17.5	X52	7.9 km	640	2017	1.41%	



CASPIAN SEA FIELD DEVELOPMENT EPCIC PROJECT



Structures Installation



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RUSSIA - CASPIAN SEA FIELD DEVELOPMENT EPCIC PROJECT



Pipelines Installation

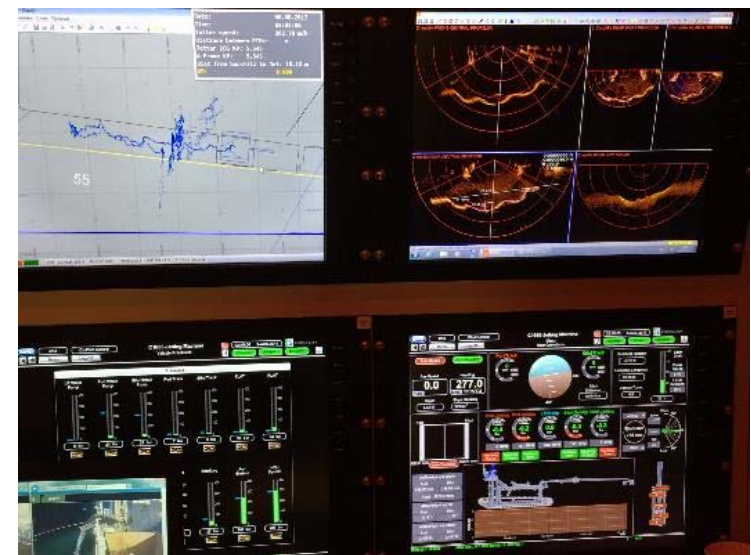
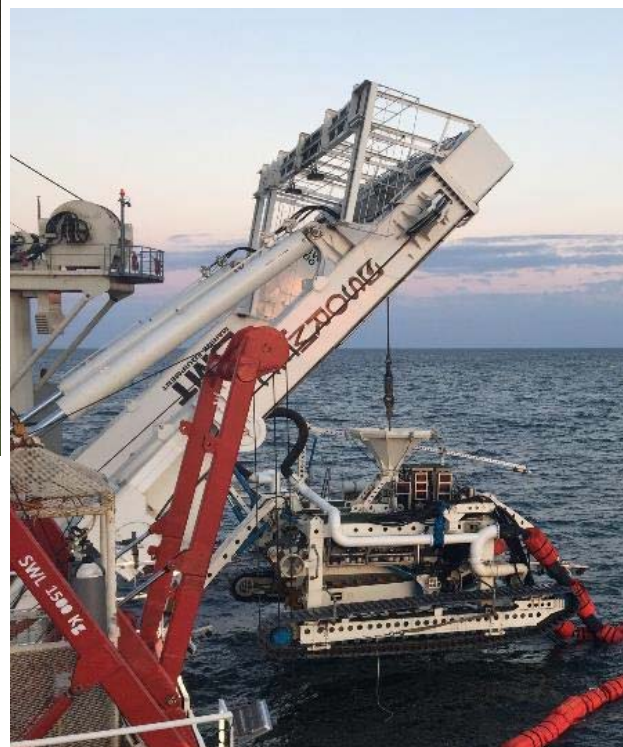


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RUSSIA - CASPIAN SEA FIELD DEVELOPMENT EPCIC PROJECT



Dredging,
Post-
Trenching,
Backfilling
Operations



ASIAN REGION – PIPELAY AND JACKET INSTALLATION

PT Pertamina Hulu Energi (PHE) - SP New Field Development Project

Client: PT Pertamina Hulu Energi
Location: Offshore North West Java
Water Depth: 3 to 50m
Award Date: 2018
Installation: 2018 – 2019 (on-going)
Marine Spread: Armada KP1

- **Background:**
 - JV partnership with PT Meindo Elang Indah
- **Scope of Work:**
 - 12" dia x 11 km pipeline from B2C to SP c/w, pipe crossings and riser both ends.
 - Installation of SP Platform which consist of braced monopod, 130 MT and top side 180 MT.
- **Project Highlights:**
 - First DLB Armada KP1 project for Bumi Armada in Indonesia
 - 2nd Indonesian flag DLB in Indonesia after DLB-01 owned by PT Timas



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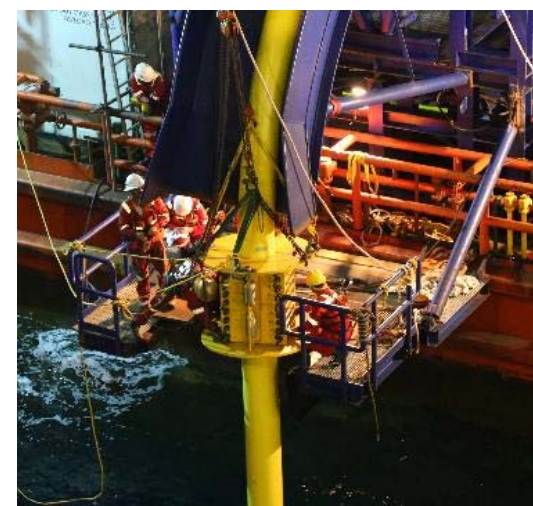
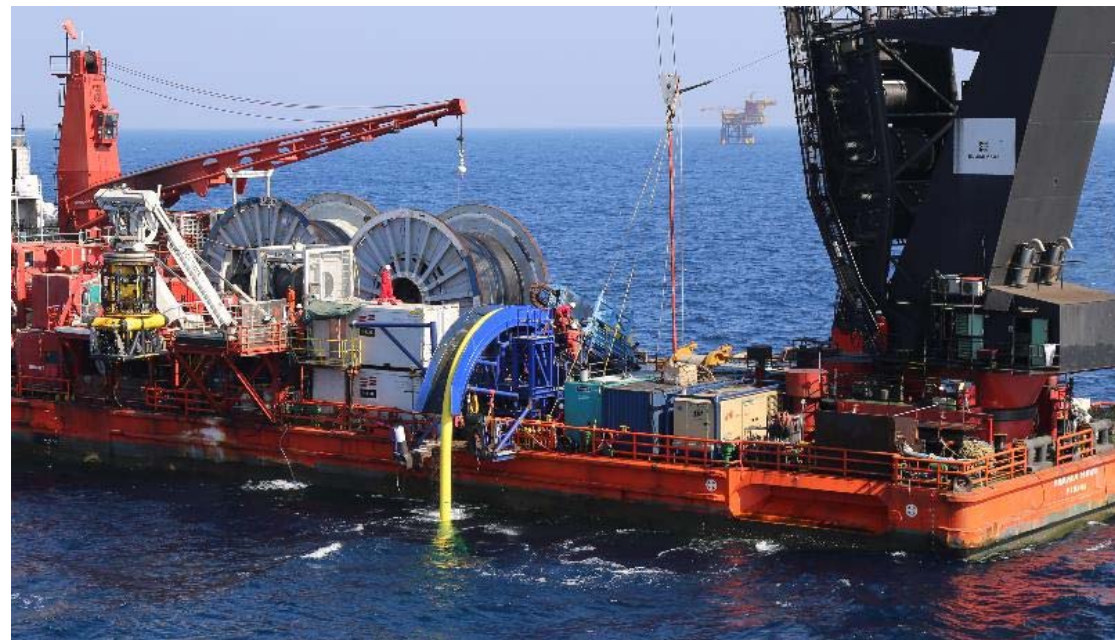
ASIAN REGION – FPSO HOOK-UP/ SURF INSTALLATION

Cluster-7 Armada Sterling II Hook-Up Operation

Client:	Shapoorji Pallonji
Location:	Offshore Mumbai
Water Depth:	100m
Award Date:	2014
Installation:	2014 - 2015
Marine Spread:	Armada Hawk

- **Scope of Work:**

- Recovery and Hook-up/ Tensioning of 12 mooring chains to FPSO
- Installation of MWA
- Installation of subsea structures (SUTA)
- Laying and Hook-up of 7 flexibles (12", 10", 6") and 1 umbilical
- Subsea tie-in of flexibles and umbilical
- FPSO Turret re-instatement
- Pressure test and Pre-commissioning



BUMIARMADA

Our Clients



Servicing clients in the Caspian



PTT EXPLORATION AND
PRODUCTION PUBLIC
COMPANY LIMITED



BUMIARMADA

Servicing clients from independents, NOCs to the majors worldwide