Innovative Subsea Solutions

Products and Services 2016 and beyond!!
Proteus™ Active Heave-compensators

Compliant Umbilical Splice

Loose-Tube Steel Flying Leads

Bend Limiters & Terminations

Moray® Subsea Deployment Basket includes Rapid Deployment Cartridge and Mudmat

Oceanographic Buoyancy

Engineered Buoyancy

Drilling Riser Buoyancy

Compliant Umbilical Splice

Distributed Pipeline, Flowline, Riser & Umbilical Buoyancy

Intervention Tooling

BS Latchers® & Bend Stiffeners Temporary Hang-off Mechanism

Topside Equipment

Installation Services

Proteus™ Active Heave-compensators

Installation Carousels

Installation Buoyancy

Subsea Accumulator Module

Bend Limiters & Terminations

Subsea Deployment Basket

ROV’s

NHU’s

Engineered Buoyancy

Engineered Buoyancy

NHU’s

ROV’s

Subsea Accumulator Module

Bend Limiters & Terminations

Subsea Deployment Basket

includes Rapid Deployment Cartridge and Mudmat

Loose-Tube Steel Flying Leads

Ends

JURUNATURE SDN BHD

Marine Automation & Control

LOSS & CONTROL

Topside Equipment

Umbilical Installation Services

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Deep Down Inc.

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Intervention Tooling

Deep Down Inc.
EFL = Electronic Flying Lead
LSFL = Loose Steel Flying Lead
NHU = Non-Helical Umbilical (infield umbilical)
SUTH = Single Umbilical Termination Hub
Products and Services

• Core Products & Services:
  – Testing, Monitoring, & Commissioning
  – Subsea Distribution System components
  – Equipment Storage and refurbishment
  – SIT
  – Fabrication of Installation equipment
  – Rental equipment and installation services
  – ROV Services
  – Marine Automation
  – Animation Services

• Steel Flying leads and the installation equipment and services

• NHU™ - Patented Mobile Steel Tube umbilical Manufacturing Plant – and Installation services

• Carousels and large installation equipment
Core Products & Services

Deep Down provides our customers with the unique combination of services and equipment for their project needs.
Patented Steel Flying Leads

- Easier to Install
- Stronger construction
- Several Installation Methods
NHU™ (Non Helical Umbilical) - Steel Infield Umbilicals

- Patented Mobile Operation- read further-
- Place anywhere in world using local content
- Up to 10 miles long
- Modular Installation systems using local vessels already on contract
- Building in country saves time and money
Umbilical Carousel Technologies

- Fully scalable carousel system built to handle 1,000 MT to 7,500 MT [9000 MT designed]
- Now selling Carousel #5 for approximately $4M
- “Innovation Winner” for the ASME Woelfel Best Engineering Achievement Award from the International Petroleum Technology Institute
1500 MT Offshore Carousel
Carousel Delivered 7/1/15
Deep Down Serves Operators, Installation Contractors & OEMs

- Deep Down provides its service and technology to most major integrated oil & gas companies, large independents, and national oil companies
- International and regional Installation Contractors
- Original equipment manufacturers OEMs

See our website - JURUNATURE SDN BHD
USA - DDI Extended Facilities

- DDI Brazil
- DDI Carousel Mobile
- Core Industries
- New HWY 90
HWY 90

- 255,000 ft² - under insulated roof
- 76’ tall high bay
- Test Tank
- Barge dock coming
- Rail spur
- 23 Acres

Close to everything: river, RR, etc.
HWY 90 – Channelview – Texas Terminals

- 10 minutes from Channelview
- Another 3 minutes to Texas Terminals
- The Port of Houston.
Hwy 90

18511 Beaumont Highway aka old Tx-90
Houston Tx. 77049
Our primary location
215,000² under roof
20 Acres

Assembly

Service
Fabrication
Offices

Engineering - project management - service, 2 - large conf.rm., client offices - break-room, and more to serve our valuable clients
More About Products & Services
Umbilical Termination Assemblies
DDI Supporting in Distribution Components

- Easier to Install
- Could reduce subsea Architecture
Modeling and Animation Services

• Project is fully modeled
• Vessels and DDI equipment Modeled
• Animation Services
SAMs
UTAs – Bend Limiters

- Designed to fit flying leads
- Mold designed in house, local fabrication
- Parts manufactured in Texas
- Quick availability, better prices
- Steel bend limiters for larger umbilicals
BS (Bend Stiffener) Latcher™

- Designed, built, and tested in two weeks
- Requires only standard flange on end of I-tube
- Can be made for any size
- No kink-point between BS and Bullnose
Compliant Splices

The Deep Down Compliant Splice™ connects two separate umbilicals of equal or unequal sizes and allows them to be easily deployable and pass directly over the lay shoot into the water.
Umbilical & Riser Clamps

- Contingency
- Umbilical Handling
- ROV Intervention
- Riser AUX & MUX
- Riser Thrust Collars
Testing, Monitoring & Commissioning

- Triplex Pumps
- Displacement Pumps
- Transfer Pumps
- Pneumatic Pumps
Fly-Able RDCs
Deployment frames
Loose Steel Flying Leads (LSFL)
Flying Leads
Flying lead Track 600 indoors
22 Line Flying Leads
Shell CTR 2286

• Nearly completed in this photo, ready for our installation team to go offshore for commissioning process.
MSCM Gorgon CTR 2261

- 20 LSFL’S
- 11 RDC’s
BP Galapagos CTR 3328

• Umbilical holdback clamp set up on the pull test frame for testing. This clamp was designed to be installed vertically and bolted up with an ROV. Done and on time and budget.
GE- CMUs - CTR 3024
RIV Products and Services
RIV UTA

CAGE
THR: 644
DPT: 708
HDG: 097
TRN: 0.0

ROV
DPT: 647
ALT: 95
BTY: 743

OCEANEERING
Millennium 64

Dive Number: 9
01 FEB 14
07:15:46
RIV & UTA
UTA
RIV on HDU
RIV on TLP
DDI NHU
RIV on column top
RIV
RIV
RIV
DDI NHU for RIV
RIV
RIV
RIV
RIV at shipyard
Korea
Shell Olympus
TLP
Installation Services
DDI Modular System + Chartered Vessel = Max Capability using local content

- Early Production
- Flying lead – Infield – Rigid Jumper
- ICCP - LOFS
ADCP Installations
Umbilical & Flexible Flowline Installations – DDI 200T Mini Carousel
Interesting Projects
Completing Whitehill
High Client³ Project

Spooling mooring ropes onto reels
Rope arrives in 20 containers
Use RDC as 3 ton holdback

Using a deployment cartridge to do the job!
DDI build-20 reels
Reels are changed out
Batch of Reels-ready to ship
Loaded Trucks

Convoy is ready to depart our 90 facility. Weather protected mooring ropes will be dry upon delivery!
Chevron Containment Boxes
special solution for a specific need
118 Containers arriving 90
Boxes return from coater and delivered to 90 for completion.

Designed from the beginning to be containerized for ease of shipping.
Final Prep and install into container - ship
Future Developments
Distributed Buoyancy Modules
Top Mounted Distributed
New Distributed Buoyancy

- Hinging fast installation design allows installation over conventional lay chutes and requires approx. 1 minute per module to install.
Hwy 90 - Future Barge Dock about to start construction

The river leads directly to Galveston Bay and the rest of the World. Navigable all the way!
DDI Atoll System  Patent Pending

- Allow field vessels to work in rougher seas
- Built in catch and collection system for spills
- Mobile and DP option
• Cross trained Marine and ROV crew
• Work Class ROV with rough weather LARS for ease of launch and recovery
• Crew returns to mother ship at the end of the day or to shore
• DP and 25 knots
WorkCat Supports field

- Video telemetry to FPSO
- Work Class ROV or Observation at fraction the cost
- Crew change at the end of the day
Mother Ship performs one Task – Work Cat performs others
Security or spill observation and telecommunication for the ROV operation as well. Cell site repeater is not impossible. Many options avail.
Double Duty ROV/Aerostat winch on Work Cat with automatic disengaging drums allows ROV and Star Tower to be deployed and recovered simultaneously and yet adjusted individually.
Riser is lightened and carries all Intelligence

Buoyancy for weight reduction and telemetry for decision making.
Intelligent Riser Module

Customized for your application - call us for details.

JURUNATURE SDN BHD

DEEP DOWN
Summary

- DDI – Can establish a service base at client’s facility when required – Trinidad, Australia – West Africa- GOM- SE Asia- etc. Wherever you need DDI.
- Add the Mobile NHU facility- in country, convenient to deployment field.
- Offer the Core services in your entire project
- DDI - can give more capability with less personnel and equipment utilizing the DDI modular capability and with senior management in country and employing local content
- DDI - opens business entity in Brazil
- DDI – Has sold the Channel view facility and is consolidating in to DDI Hwy 90 facility of 215,000 ft² and 20 acres and adding 40,000 ft² under the room and 3 more acres for a total of 255,000 ft² by and 23 acres
- DDI offers DP work vessel for an Offshore Workshop with full equipment spread including carousel and Opti-deck to provide full recovery – repair – testing – and re-installation of the subsea system
- Future services can be incorporated to further increase client capability:
  - Work Cat – Work Class ROV at fraction the cost operated by DDI and alliance partner, Meridian Ocean Services
  - Star Cat – Security – Data transfer
  - Atoll – Increase working days and remediate spill in a fraction of the time