PRESENTATION
ON
THE OFFSHORE INDUSTRY

Venkatraman Sheshashayee
Chief Operating Officer
GREATSHIP (INDIA) LIMITED

15th February 2007
A brief introduction

The Great Eastern Shipping Company Limited (G E Shipping)

• India's premier shipping company
• Over five decades of experience
• Currently owns and operates a fleet of 40 vessels comprising of 31 tankers (14 crude oil carriers, 15 product carriers, and 2 LPG carriers) and 9 dry-bulk carriers aggregating 2.96 million DWT
• New building order book comprises 8 Product tankers (4 Medium Range and 4 LR1 Product tankers aggregating around 0.47 million DWT)
• www.greatship.com
A brief introduction

Greatship (India) Limited (GIL)

- A wholly owned subsidiary of G E Shipping
- Establishing itself as a premier service provider to operators in the offshore energy exploration and production domain globally
- Eventually, GIL’s scope will extend to full participation in the E & P value chain across the world
- Since beginning operations in April 2006, GIL has placed orders for five PSVs, six AHTSVs, and through a subsidiary in Singapore, one premium 350’ jack up rig
- Capital commitments to date exceed USD 380 million
- Will leverage capabilities by entering into strategic alliances; will aim to be the partner-of-choice in India.
A brief introduction

Venkatraman Sheshashayee (Shesh)

- Indian, 44 years, married, two children
- B E (Marine) – DMET Calcutta
- PGDM – IIM Bangalore
- A wholly owned subsidiary of Radhika
- Has worked in Engineering, Operations, Commercial, Marketing, Sales, Human Resources and Finance
- Indulges in reading, writing, walking, playing badminton, and attempting golf
- USP – creates and executes visions/business plans impeccably
- vshesh@greatshipglobal.com, vshesh@greatship.com
Scope

- Defining the “offshore” business
- The offshore market – segments & assets
- The offshore market – business drivers
- The offshore market – today
- The offshore market – the coming years
- The offshore market in India
DEFINING
THE OFFSHORE BUSINESS
The offshore business

The offshore oil field business consists of the following activities -

• Survey
• Exploration
• Construction
• Production
• Maintenance & Upgradation

Each of these activities is distinct by virtue of life cycle, technology, assets required and expertise.
The offshore business

Survey

- Seismic services
- Geo-technical services
- Data interpretation and analysis
The offshore business

Exploration

- Well engineering and well design
- Drilling (vertical and directional)
- Drilling services
  - Mud engineering and logging services
  - Cementing
  - Well logging
  - Perforation
  - Well testing and completion
  - Coring and fishing
- Logistics services – sea, air and land
Construction

- Platform design, fabrication & installation
- Sub sea well engineering
- Sub sea piping
- Riser installation

Pipe laying

Logistics services – air, sea and land
The offshore business

Production

• Logistics services – air, sea & land
• FPSOs / FSOs
• Field & Marginal Field Development
  - Drilling
  - Drilling services
  - Horizontal drilling / Side tracking
  - Well stimulation
The offshore business

Maintenance & Upgradation

• Additional well drilling
• Additional risers / clamp ons
• Pigging services
• Sub sea maintenance and inspection
• Logistics services – air, sea & land
• De-commissioning
The offshore business

To sum it up, the offshore oil/gas exploration and production services industry now consists of about 450 operators and contractors, providing a diverse range of services including but not limited to –

Survey – provision and operation of seismic survey vessels, geological analytical services, support services

Drilling – provision and operation of assets such as jack up rigs, semi submersibles, drill ships; Drilling services – provision of mud services, mud logging services, directional drilling services, cementing services, well testing, logistics, line hangar services, etc.
Construction and development – provision of design, fabrication and installation services for jackets, platforms, pipelines, risers; provision and operation of pipelaying barges, accommodation and hook-up barges, Diving Support Vessels (DSVs), Remote Operated Vehicles (ROVs), etc.

Production – Platforms, FPSOs, FSOs, pipelines recovering the oil/gas and delivering it to refineries onshore, with or without some level of processing. Continued drilling of new wells in producing fields, stimulation of aging wells, etc.
The offshore business

Marine logistics - provision and operation of marine assets such as Anchor Handling Tugs (AHTs), Anchor Handling Tug Supply Vessels (AHTSVs), Platform Supply Vessels (PSVs), Multi Support Vessels (MSVs), standby vessels, crew vessels, etc., that support drilling unit and platform operations.

Support services - air logistics, shore supply base management, agency management, manning and personnel management, training, etc.
The offshore business

Some characteristics of the offshore market

- Regional markets
- Varied transaction processes
- Thus, ability to differentiate
- High regulatory barriers of entry – cabotage, country-specific security policies, etc.
- Akin to manufacturing
- Technology is a critical driver
THE OFFSHORE MARKET

SEGMENTS & ASSETS
The offshore market

The offshore oil field market is broadly classified into the following four segments -

• Drilling & allied services
• Sea logistics & special services
• Offshore construction & projects
• Air logistics

Most service providers tend to specialise in one of the above market segments. A few encompass two or more, intending to be a broader spectrum player.
The offshore market - Drilling & allied services

- **ULTRA DEEP WATER**
  - DRILL SHIPS
  - SEMI SUBMERSIBLES
  - 1,500 M +
  - DP2
  - 15,000 psi
  - HPHT wells

- **DEEP WATER**
  - DRILL SHIPS
  - SEMI SUBMERSIBLES
  - 150 - 1,500 M
  - Moored or DP
  - 10 - 15,000 psi
  - Normal wells

- **SHALLOW WATER**
  - DRILL BARGES
  - JACK UP RIGS
  - TENDERS
  - SEMI TENDERS
  - < 150 M
  - Pinned / moored
  - 10,000 psi
  - Normal wells
The offshore market - Drilling & allied services

Common drilling unit categories –

• Jack Up Rig
• Semi submersible
• Drillship
Common drilling unit categories –

**Jack Up Rig**
The offshore market - Drilling & allied services

Common drilling unit categories –

Semi-submersible
Common drilling unit categories –

Drillship
The offshore market - Sea Logistics, etc.

SEARCH
Scanning the seabed

EXPLORATION
Test drilling
Well construction
Towing
Supplying

PRODUCTION
Supply
Anchor Handling & Towing
Stand-by
Oil recovery
Well maintenance
Well intervention
The offshore market - Sea Logistics, etc.

OFFSHORE SUPPORT DUTIES

SUPPLY
- Personnel
- Equipments
- Consumables
- Waste

RIG PLACEMENT
- Ice breaking
- Laying Anchors
- Positioning
- Towing

SUB SEA OPERATIONS
- Inspections
- Construction
- Maintenance
- Pipe/Cable lay

PROTECTION
- Fire fighting
- Rescue
- Survivors
- Oil recovery

SUPPLY VESSELS
- CREW BOAT
- TUG
- AHT
- PSV

RIG PLACEMENT VESSELS
- AHTS

SERVICE VESSELS
- OCV
- ROV

SURVEY VESSELS
- ICE BREAKER
- CABLE LAYER
- DIVING SUPPORT

RESCUE VESSELS
- STANDBY
- OIL RECOVERY

MP OSV
Common vessel categories –

- PSV : Platform Supply Vessel
- AHTSV : Anchor Handling Tug Supply Vessel
- AHT : Anchor Handling Tug
- STBY : Standby Rescue Vessel
- CONSTR : Construction/Subsea Vessel
The offshore market - Sea Logistics, etc.

Common vessel categories - **PSV**
The offshore market - Sea Logistics, etc.

Common vessel categories - AHT
The offshore market - Sea Logistics, etc.

Common vessel categories - AHTSV
The offshore market - Sea Logistics, etc.

Common vessel categories - MSV
The offshore market - Construction services

- **CONSTRUCTION**
  - **PIPE LAY**
    - PIPE LAY & MAINTENANCE
    - INSTALLATION
    - REPAIR & MAINTENANCE
  - **PLATFORMS**
    - WELL ENGINEERING
    - WELL INSPECTION
    - RISERS
    - MAINTENANCE
  - **SUB SEA**
    - INSTALLATION
    - REPAIR & MAINTENANCE

Where passion fuels performance...
The offshore market - Construction services

Platforms
Accommodation Barge
The offshore market - Construction services

Diving Support Vessel
The offshore market - Air Logistics

Helicopters
The offshore market

Matching drilling units to vessels

Water Depth

- 100M
- 500M
- 1000M
- 2000M
- 3000M

JACK-UP

2ND GEN

3RD GEN

4TH GEN

5TH GEN DP

DP DRILLSHIP

PSV (DWT)
2000-4000
AHTS (BHP)
4000-10,000
Winch
150 Tonnes

PSV (DWT)
2000-4000
AHTS (BHP)
8000-15,000
Winch
200 Tonnes

PSV (DWT)
2000-4500
AHTS (BHP)
10,000-16,000
Winch
300 Tonnes

PSV (DWT)
2000-4000
AHTS (BHP)
14,000-20,000
Winch
350 Tonnes

PSV (DWT)
2000-5000
AHTS (BHP)
8000-16,000
Winch
200 Tonnes

PSV (DWT)
2000-5000
AHTS (BHP)
8000-16,000
Winch
200 Tonnes
Matching platforms to vessels

- **Fixed Platform**
  - PSV (DWT) 2500-4500
  - AHTS (BHP) 6000-12,000
  - Winch 150 Tonnes

- **FPSO/SEMI**
  - PSV (DWT) 2500-4000
  - AHTS (BHP) 8000-12,000
  - Winch 200 Tonnes

- **TLP**
  - PSV (DWT) 2000-4000
  - AHTS (BHP) 8000-12,000
  - Winch 200 Tonnes

- **SPAR**
  - PSV (DWT) 2000-3000

Water Depth
- 500 m
- 2000 m
- 2500 m
- 3000 m
THE OFFSHORE MARKET

BUSINESS DRIVERS
The offshore market - a brief history

The offshore oil/gas exploration and production services industry is relatively quite nascent.

- The first offshore exploration venture took place in the Mississippi delta in 1929
- The first submersible drill barge, Mr. Charlie, was launched in 1954
- The first offshore support vessel, Ebb Tide, was delivered in 1955
Three upheavals drove the world to offshore exploration -

- The discovery of huge oil reserves in the North Sea in the sixties
- The OPEC oil shock in the early seventies
- USA reaching peak onshore oil production in the late seventies
The offshore market - drivers & influencers

Direct drivers:
- World economy
- Oil (and Gas) prices
- Asset supply/demand equations

Influencers:
- Oil consumption patterns and growth rates
- Production/reserve replacement ratio
- OPEC policies
- Global and regional politics
- Oil futures speculation
- Stated reserves
- Nature (weather patterns and calamities)
Boosters:
- Surveying, exploration & drilling technology
- National energy security policies
- Manufacturing growth
- Increase in automobile usage

Threats:
- Alternative energy measures / subsidies
- Energy efficiency measures
Global consumption (past 30 years):

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<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil Consumption ('000 Bpd)</td>
<td>54,962</td>
<td>61,678</td>
<td>59,015</td>
<td>66,390</td>
<td>69,506</td>
<td>75,779</td>
<td>82,459</td>
</tr>
</tbody>
</table>

EIA expects oil demand to grow at a CAGR of 1.8% over 2006-10. The anticipation of increased oil demand is putting pressure to discover larger oil reserves every year to ensure replacement, to delay the threat of peak oil and diminishing reserves.
The offshore market - drivers & influencers

Global demand forecasts (next four years):

(Expected to reach 118 mbd by 2030)

Source: IEA, CERA, ABN AMRO forecasts
The offshore market - drivers & influencers

Proved Reserves (Life in years):

(At current rate, expected to reach 31 years by 2015)

Source: BP Statistical Review 2006
Global Upstream Capital Spending (2001 - 2005):

(Average spend between 1990 – 2000 = US$ 65 billion)

Source: PtW 25 Sept 2006
The offshore market - drivers & influencers

Comparative consumption figures:

<table>
<thead>
<tr>
<th>Regional Oil Consumption</th>
<th>2000</th>
<th>2005</th>
<th>CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>23,522</td>
<td>24,875</td>
<td>1.12%</td>
</tr>
<tr>
<td>Europe</td>
<td>15,942</td>
<td>16,415</td>
<td>0.59%</td>
</tr>
<tr>
<td>Asia Pac</td>
<td>20,839</td>
<td>23,957</td>
<td>2.83%</td>
</tr>
<tr>
<td>China</td>
<td>4,772</td>
<td>6,988</td>
<td>7.93%</td>
</tr>
<tr>
<td>Japan</td>
<td>5,577</td>
<td>5,360</td>
<td>-0.79%</td>
</tr>
</tbody>
</table>

(Non-OECD Asia expected to grow at 3.5%)
### Comparative consumption figures:

<table>
<thead>
<tr>
<th>Country</th>
<th>Per capita annual oil cons.</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>25 bbls</td>
</tr>
<tr>
<td>Japan</td>
<td>16 bbls</td>
</tr>
<tr>
<td>China</td>
<td>02 bbls</td>
</tr>
<tr>
<td>India</td>
<td>01 bbl (Urban = 2; Rural = 0.5)</td>
</tr>
</tbody>
</table>

(Expected growth: China = 4.5% pa; India = 3.2% pa)
What has been driving the price of oil in the recent past?

While the eighties oil price spike was largely due to supply side crises, the current steady rally over the past two and a half years is believed to be due to:

- Robust consumption growth / anticipated growth in non-OECD countries (especially China and India)
- Inadequate investment in the nineties, resulting in,
  i. dipping buffers between demand and production capacity
  ii. future reserves depletion
- Geo-political concerns (Iran, Nigeria, Venezuela, Russia)
## The offshore market - drivers & influencers

What has been driving the price of oil in the recent past?

**Inadequate investment in offshore –**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Wells drilled</td>
<td>18,400</td>
<td>11,240</td>
<td>7,800</td>
</tr>
<tr>
<td>Rigs built</td>
<td>483</td>
<td>72</td>
<td>83</td>
</tr>
<tr>
<td>OSVs built</td>
<td>2,971</td>
<td>780</td>
<td>1,869</td>
</tr>
</tbody>
</table>
THE OFFSHORE MARKET

TODAY
The Oil & Gas Industry is currently defined by high oil prices and low spare capacities.

The primary reason for low spare capacities – low investments in E&P activities during 1980s and 1990s.

Oil/Gas E&P industry growing rapidly due to need for energy self-sufficiency and to curb huge import bills.

Increased investments in E&P activities by Oil/Gas producing nations and emphasis on tapping unexplored potential reserves. (Eg: China’s expenditure on E&P has grown at 14% year on year)
EIA estimates that global oil consumption will rise from 85 mbd in 2006 to 118 mbd in 2030.

Oil prices are estimated to remain within a band of US$ 45 – US$ 60 (2004 prices) between now and 2030.

Maximum Oil/Gas consumption growth projected in non-OECD Asian countries. Emerging Asia (including China and India) to account for 45% of the total world increase in oil use.

Higher costs and longer gestation periods due to increasing difficult terrains for conducting E&P activities.
Offshore Oil/Gas E&P services industry growing rapidly in terms of size, spread & value due to increased E&P activities.

Offshore industry suffers from outdated and antiquated assets (more than 50% of fleet > 20 years old)

Industry requires larger, more capable, specialized assets as it moves further offshore to operate in much more challenging and harsher environments.

Huge improvements in technology over past 20 years.
The offshore market - overview of today

Increasing requirement of tailor made & specialized assets for regional and multipurpose operations.

Shipyards’ order books are full till 2009 in general, and till 2010 for certain vessel classes.

Rig building yards’ order books are full till 2009 for JURs, and till 2011 for floaters.

Larger (and continuously expanding) market, perceived urgency, and demand for technically advanced & high capacity offshore assets are resulting in extremely attractive charter rates.
The offshore market - overview of today

Some indicative charter rates (US$ per day) -

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jack Up Rig (300’)</td>
<td>45,000</td>
<td>150,000</td>
</tr>
<tr>
<td>PSV (3,000 DWT)</td>
<td>8,500</td>
<td>17,000</td>
</tr>
<tr>
<td>AHTSV (150 TBP)</td>
<td>14,500</td>
<td>25,000</td>
</tr>
<tr>
<td>Semi sub (1,500 m)</td>
<td>175,000</td>
<td>400,000</td>
</tr>
<tr>
<td>MSV</td>
<td>35,000</td>
<td>75,000</td>
</tr>
</tbody>
</table>
The offshore market - overview of today

Some indicative asset prices (US$ million) -

<table>
<thead>
<tr>
<th>Asset Type</th>
<th>2002</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jack Up Rig (300’)</td>
<td>90</td>
<td>160</td>
</tr>
<tr>
<td>PSV (3,000 DWT)</td>
<td>16</td>
<td>22</td>
</tr>
<tr>
<td>AHTSV (150 TBP)</td>
<td>18</td>
<td>31</td>
</tr>
<tr>
<td>Semi sub (1,500 m)</td>
<td>200</td>
<td>375</td>
</tr>
<tr>
<td>MSV</td>
<td>35</td>
<td>55</td>
</tr>
</tbody>
</table>
THE OFFSHORE MARKET

THE COMING YEARS
The offshore market - the coming years

The burning question -
• How long is this booming market situation going to last?

The concomitant concerns –
• Will the oil price remain high?
• What about petroleum substitutes? How will they affect the future?
• Isn’t the industry overbuilding assets? Won’t the classical cycle repeat?
The EIA (Energy Information Administration) and the IEA (International Energy Agency) have both reported -

• The price of oil is expected to range between US$ 45 – US$ 60 over the next 25 years.

• This price band is based on business-as-usual. Any disruption (war, terror, weather, geopolitics) will have an adverse impact.

• Demand for oil is expected to outstrip production, in the medium term. Non-OECD Asia consumption is expected to grow at 3.5% or more.

• Most incremental oil demand is projected for use in the transportation sector.
The Oil & Gas Journal 2006 report states -

• Worldwide crude and condensate production rose a mere 0.18%, from 72.26 million b/d to 72.39 million b/d.

• Depletion continues to overwhelm new production in the North Sea (-9.6%).

• Most regions were flat (Asia-Pacific +0.6%, Africa -0.2%, Western Hemisphere -0.4%).

• Only Eastern Europe and the Former Soviet Union increased substantially (+4.3%).
The offshore market - the coming years

Some facts -

• Today, there is no economically scalable alternative to oil.
• Existing alternatives suffer from –
  - lack of energy density and inability to scale
  - energy intermittency
  - inappropriateness as transportation fuels
  - most alternatives need oil to locate, extract and process
    the raw materials required to generate the alternatives
• In 2003, the world consumed 420 quadrillion BTUs. Of
  this, 1.1 quadrillion BTUs was generated by Solar and
  Wind energy. About 0.26%.
• All renewable sources accounted for just over 10%. 
The offshore market - the coming years

Some facts -

- 55% of the world’s offshore vessel fleet is more than 20 years old.
- 42% of the world’s offshore drilling unit fleet is more than 30 years old.
- The average depth of offshore oil well drilled in 1985 was 2,800 feet. The average water depth was 372 feet.
- The average depth of offshore oil well drilled in 2005 was 7,100 feet. The average water depth was 525 feet.
- 39% of all new discoveries of oil and gas have come from deep water locations (> 3,000 feet)
The offshore market - the coming years

Some facts -

• The total world order book for offshore vessels adds up to 16.5% of the existing fleet.
• The total world order book of offshore drilling units adds up to 17.2% of the existing fleet.
• 120 platforms need to be de-commissioned in the North Sea. Each platform de-commissioning requires 3 boat-years.
• 140 platforms need to be de-commissioned in GOM.
• Since 1998, 18 new countries have commenced the search for and exploration of oil.
THE OFFSHORE MARKET
INDIA
Some facts -

• Only 18% of India’s total offshore area has been explored.

• 58 offshore wells were drilled between 2000–2004; NELP envisages 498 wells to be drilled between 2006-2012.

• India imports 73% of its crude oil requirements. In 2006, the crude import bill crossed 4.5% of GDP.

• Indian operators chartered 25 rigs in 2004. By 2010, it is estimated that 44 rigs will be chartered for working in the Indian offshore.

• The number of offshore vessels working in India has moved from 89 in 2004 to 112 in 2007. By 2010, it is estimated that 135+ vessels will be required.
Some facts -

• Of the 87 vessels chartered by operators for the Indian offshore, only 47 are Indian. The rest come from Europe, Middle East and Far East.

• Of the 31 drilling units chartered by operators for the Indian offshore, only 8 are Indian. The rest come from USA and Europe.

• 80% of all seismic and exploration services are provided by foreign MNCs.

• Two of India’s largest operators have been unable to obtain drilling units since 2005. All drilling programmes are delayed.
### The offshore market - India

#### Some facts -

Mainstream Indian companies working in India (and their fleets)

<table>
<thead>
<tr>
<th>Company</th>
<th>Vessels</th>
<th>Drilling units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Offshore</td>
<td>37</td>
<td>2</td>
</tr>
<tr>
<td>SCI</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Varun Shipping</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Garware Offshore</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Tag Sea Logistics</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Aban Offshore</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Jindal Drilling</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>
### Some facts -

**Mainstream Foreign companies working in India (and their fleets)**

<table>
<thead>
<tr>
<th>Company</th>
<th>Vessels</th>
<th>Drilling units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transocean</td>
<td>0</td>
<td>88</td>
</tr>
<tr>
<td>ENSCO</td>
<td>0</td>
<td>49</td>
</tr>
<tr>
<td>Noble Drilling</td>
<td>0</td>
<td>63</td>
</tr>
<tr>
<td>Pride Offshore</td>
<td>0</td>
<td>64</td>
</tr>
<tr>
<td>Tidewater</td>
<td>457</td>
<td>0</td>
</tr>
<tr>
<td>Solstad</td>
<td>31</td>
<td>0</td>
</tr>
<tr>
<td>Swire Pacific</td>
<td>46</td>
<td>0</td>
</tr>
<tr>
<td>Gulf Offshore</td>
<td>48</td>
<td>0</td>
</tr>
<tr>
<td>Schlumberger</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baker Hughes</td>
<td></td>
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</tr>
<tr>
<td>Clough Offshore, &amp; so on..</td>
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</tbody>
</table>

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**The offshore market - India**
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