EnerSea Introduction

- Gas Transport and Storage service provider
- Proprietary CNG system
- World class partners & business relationships
- Access to capital for large projects
CNG – Proven Technology

- **1967-70**
  - Initial CNG Ship Service

- **Since 1970’s**
  - CNG Land Transport

- **Since 1980’s**
  - Public & Commercial Vehicles
Resource Sector for Marine CNG

- Develop smaller undeveloped reserves
- Highly Scalable solution to suit variable gas profiles
- Market solution for power generation currently burning diesel or fuel oil
- Create value from flared gas as supplemental LNG feedstock

Distribution of World’s Gas Fields by Size

Source: HIS Energy Group
Certified for Project Deployment

250 – 1,000 MMscf

Developed design & operating plans with "K"Line and HHI

25 – 75 MMscf

75 – 250 MMscf
Prototype Testing: ABS Approved

• 10 full-scale cylinders tested:
  – Nippon Steel, JFE and Sumitomo qualified
  – Burst pressures > 2 x operating pressure
  – Fatigue cycles > 3 x vessel life
  – Temperatures at -30°C and -50°C

• Gas handling system tests:
  – Loading
  – Unloading
  – Abnormal and Upset conditions
  – Programming logic & controls
VOLANDS Storage: Market

- High cyclability to meet daily demand
- High volumetric storage and delivery efficiency
- Provides ratable deliveries for power generation
Proven Terminal Equipment

- Traditional port or offshore terminal options
- Buoy systems well established in oil & gas operations
- Proven & reliable systems in North Sea adapted for CNG
- Dual buoys for uninterrupted production
- Verification through Logistics & Reliability analyses
Regions Actively Investigating CNG Projects

- Associated & Flared gas
- Deepwater
- Risky areas
- Fast track projects

- Mid size supply & markets
- Medium haul
- Dynamic supply sources
- Emerging gas economies
Flared Gas – CNG Case Study

• Associated gas production alternatives to flaring
  – Pipeline
  – CNG
  – Others - Floating LNG, GTL, Gas to Wire, Hydrates
  – Re-injection (dependent on reservoir)

• Commercial viability of CNG is defined by:
  – Cost to deliver gas from supply to market
  – Market price or value for delivered gas
  – Cost avoidance for re-injection
  – Benefits from credits for flaring reduction
  – Other - Environmental benefits and possible increased production
Flared Gas – CNG Case Study

- Delivered Gas Rate: 80 MMscfd
- Gas Composition: 1265 btu/scf
- Water depth: 1,500 m
- Supply pressure: 120 bar
- Storage temperature: -15ºC
- Transport distance: 200 – 600 km
- Buoy Loading
- Continuous production
- Continuous offloading
- Feedstock for LNG Plant

EnerSea’s CNG system can accommodate wide range of gas compositions and rates
Receiving Terminal Requirements

- Simple finger jetty required – minimal infrastructure
- Port draft of <6m
- 24 Hour/day access
- Proven loading arms for gas transfer
- Terminal Facilities could be sited on a small-barge or onshore
- Gas Storage – can be provided, if needed
Project Components

- **CNG Loading Equipment:**
  - Gas compression (provided by field operator)
  - CNG transfer equipment

- **Gas Transport Fleet of CNG Ships**

- **Gas Delivery Terminal:**
  - Offloading lines and equipment at existing port facility
  - CNG transfer facilities

- **Operations & Maintenance:**
  - Marine Fleet, Dry-docking, annual service and inspections
  - Utilities (fuel gas and electrical power)
  - Gas delivery terminal and offloading facilities

- **Service does not include:**
  - Port development costs (quays, docking or mooring facilities, dredging, etc.)
  - Port facilities & entry fees, Land, Governmental Fees or Licenses
  - Fuel gas (cargo gas used)
  - Permits

<table>
<thead>
<tr>
<th>Distance to Market (km)</th>
<th>Ship Size (MMscf)</th>
<th>CNG Fleet</th>
<th>Tariff ($/MMBtu)</th>
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<tr>
<td>200</td>
<td>110</td>
<td>3</td>
<td>2.00</td>
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<tr>
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<tr>
<td>600</td>
<td>110</td>
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</table>
Producer Economics: CNG vs. Re-injection

• Producer Costs: (Per MMBtu)
  – Gas Gathering: $1.00
  – CNG Transport: $2.60 (600 Km Case)
  – Liquefaction: $1.00
  – LNG Shipping: $0.50 (Europe/US)
  – Regasification: $0.50

• Producer Netback:
  – Gas sales price: $7.00 (Europe/US)
  – Producer costs: ($5.60)
  – Cost avoidance: $0.50 (Re-injection)
  – Emissions Credit: $0.50
  – Producer Net Back: $2.40 per MMBtu

Total Volume Gas Saved: 580 BCF (20 years)
Net Commercial Value: $1.8 Billion
Commercial Viability NPV10: $0.8 Billion
CNG – Flaring Solution: Summary

- Commercially viable for flaring and many other applications
- Simple System with proven components & equipment
- Validated system technology
- Ready for project deployment