Liquid Mud Plant Vessel

Dynamically positioned, advanced drilling fluids service vessel
**Introduction**

**ZENTECH Inc. Timeline**

- **1978**:Began engineering services in Houston
- **1980**:Brings in partners and our Engineering is in full gear
- **1990**:Helps NASA with docking system
- **1995**:Helps replace the Tacoma Narrows failed bridge
- **1997**:Develops ZMAS
- **2002**:Creates it's ZAIMS asset integrity services
- **2005**:Extends the life of 63 platforms for PEMEX via ZAIMS
- **2006-2011**:Designs the R550-D Jack up with NOBLE
- **2014**:Create the EVA PLUS semi-sub
- **2015**:Launches our LMPV
- **2017**:Introduces the future of drilling with the R550-D Jack up

Joe Sherwood  I  Business development  I  Zentech Inc

- 10 years on the rigs
- 5 years in Fishing Tools
- 25 years in Drilling Fluids
- Rig of the Future-Schlumberger
- 13 patents all associated with drilling fluids
- Business development in Brasil, Singapore, USA
What does this ever expanding distance from the Supply Base mean to offshore drilling operations?

Shown for reference is our GOM but the same logistics issues apply towards Brasil, West Africa, Arctic, SE Asia.
Increased distance = longer travel time

Within any shipyard, steel = money.

On any offshore operation, time = money.

- Increased delay with any return to the rig
- Increased fuel consumption
- Increased non-productive time for both the OSV and the rig
- Reduction to access of needed solution
- Decreased mud properties in the asset (wellbore) for longer periods of time
- Operation becomes more exposed to both weather and local politics
In one sentence, what does our LMPV bring to your table?

We help you get to, “First oil sooner & at a reduced cost”. 
LMPV.

Value added discipline accessibility

Every offshore well has 2 cost for the Operator:

1. Rig day rate
2. Extended cost

Extended cost = rig day rate x 1.5

ASSUMPTIONS-
Extended cost formula has been validated by 3 x major Operators
Extended cost discipline breakdown % has also been validated by 3 major Operators
Keeping things in perspective

- Remember how big a vessel we are talking about
- Lightship weight will be > 11,000 mt
- DWT will be > 15,000 mt
The Need
Market & Opportunity:

Zentech sees a marketable ‘need’ for our LMPV with every international operator entering into remote and/or deep water, then trying to counter:

a. Long boat runs
b. Existing or lack of quayside infrastructure & politics
c. Drilling program demands

Base logistical (OSV) assumptions:

a. Fast speed 11.5 kt / 12.8 mph
b. Fuel consumption at > 175 gph @ $ 1.80/gal
c. Misc charges with harbor fee, loading fees, dock fees
d. NPT transit, delay and harbor time
Operators will seek our support vessel because…

One or a series of the following demand the support of our LMPV:

1. Lack of existing or adequate infrastructure
2. Remote operations (extended OSV runs)
3. Environmental demands (or constraints)
4. Client(s) wish to centralize their operation
5. Client(s) want more control on their logistics, cost and NPT associated with same (due to local politics, harbor closings, union strikes, etc)
6. Client(s) have more than 1 rig operating in the same field
Current and Potential LMPV Markets

SHELL
BP
BHP
CHEVRON
TOTAL
ENI
REPSOL
PETROBRAS
PTTEP
STATOIL
ANADARKO

TRANSOCEAN
NOBLE
DIAMOND
HALLIBURTON
SCHLUMBERGER
BAKER HUGHES
OSV OPERATORS
LOCALIZED (LC)
MUD COMPANIES
# LMPV as a Marketing Differentiator

<table>
<thead>
<tr>
<th>CONTRACTORS</th>
<th>OPERATORS</th>
<th>FLUIDS PROVIDERS</th>
<th>OSV PROVIDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporation into</td>
<td>Better mud properties in their asset</td>
<td>Incorporated into any “Incentive Based Pay”</td>
<td>Incorporation into</td>
</tr>
<tr>
<td>it’s fleet of rigs</td>
<td>(wellbore) for longer periods</td>
<td>event</td>
<td>it’s fleet of vessels</td>
</tr>
<tr>
<td>Used as a tender</td>
<td>Specifying this vessel in any fluids tender</td>
<td>Used as a tender differentiator</td>
<td>Used as a tender</td>
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<tr>
<td>differentiator</td>
<td></td>
<td></td>
<td>differentiator</td>
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Base design.

Base design is set up to support 2 x floaters or 4 x Jack Ups.
Our dynamically positioned Zentech LMPV concept is not a new one. The Whaling industry was performing the same idea >200 years ago by positioning a “Mothership” centrally located and having satellite ships perform the logistics bringing the product to and from her, as needed. We are only following this centralized, efficient business model.

We are providing a close-proximity service platform from which we are providing the centralization with many of the daily needed components (in particular we are delivering drilling fluid properties) that support any offshore rig, onto a single location in this case which is a vessel and then positioning these components as close to the rig (or rigs) as possible.

What sets us apart is our (1) engineering time, (2) investment done to date, (3) our 30 years of drilling fluid experience & (4) our patent applied for DP-LMPV design itself.
Our vessel has one primary assignment and that is to, “Deliver Mud Properties”

Hard to quantify due to limited access to client documents & numbers, but interesting to discuss, are cost saving assumptions from **always having your best mud properties in the well:**

a. Drilling NPT reduction associated with hole conditions  
b. ROP improvements  
c. Less ECD = deeper penetrations into depleted fields before losses occur = access to more reserves and less skin damage to the zones drilled  
d. More logs to bottom  
e. More casing to bottom

**Value pricing by Client for these deliverables…?**
Same Base Design. Same work-flow. Same design philosophy.

**QUAYSIDE** version. No heli-deck. No LQ. Can utilize existing power supply or run generators. Designed to accept 8 point or even DP3 retro-fit.

**8 POINT MOORED** version. Designed for sheltered water or water < 1500m in depth.

**DYNAMIC POSITION** level 2/3. Designed to hold-station next to drilling operation. Self-propelled.
Client Specific Design (example)
Drilling Fluid Work Flow

36 LQ w/ heli-hanger on top

Mud mix w/ silo & DWM

3200 m³ fluid storage. Can be segregated into multiple fluids

Mud mix w/ silo & DWM

Pipe rack with contained wash down

- Drill cuttings
- Base oil recovery
- Slops
- Hazardous drains
- Interface
- Pneumatic handling

3200 m³ fluid storage. Can be segregated into multiple fluids
Skips and/or chemical storage

Centrifuges in series
+ First responder
+ SLOPS process
+ Advanced DWM

Mud tank system pre-plumbed for First Responder. Entire area bunded and drained into SLOPS process

LGS reduction process (NT)

Skips and/or chemical storage
Client value added
With a broad sweep of our engineering brush...

- **Cuttings Storage**
  - Reduced centrifuge
  - Reduced dryer
  - Reduced helicopter runs
  - Reduced personnel expenses
  - Immediate access

- **Flo-tel**
  - Centralized fleet-spare inventory
  - Level 0-2 tool rebuild capability
  - Specialty tool

- **Tubular**
  - Mud plant
    - 3 x different fluid capability
    - Advanced mud conditioning
    - Brine make up
    - Chemical inventory

- **Mud Plant**
  - DWM
    - Mud cut-back
    - Mud conditioning
    - Base fluid/oil recovery
    - Advanced processing (Thermal)

- **DWM**
  - Well Service
    - Well stimulation
    - Well intervention
    - DKD

- **Well Service**
  - SLOPS
    - Hazardous drains fleet-processing station
    - Recovered water down to < 5 ppm
    - Recovered dense phase returned to active
    - Back load of SLOPS reduced

- **SLOPS**
  - Intangibles
    - Logistics reduction
    - More logs to bottom
    - More casing to bottom
    - Spill response and recovery
With our LMPV and through our engineering considerations + by simply being onsite, the offshore personnel associated have greatly increased their survival risk and exposure:

- CATASTROPHIC EVENT EVACUATION VESSEL
- SAFER WORK FLOW VIA ENGINEERED DESIGNS
- MIX ON THE FLY AND KILL MUD
- NEXT TUBULAR STRING AVAILABLE
- LESS EXPOSURE TO MATERIAL AND FLUIDS
- HELICOPTER GARAGE (REPAIRS)
- ALTERNATIVE WORK STATIONS
- FIRST RESPONDER
And then some...
Beyond any LMP, we offer much more...

**DRILLING WASTE MANAGEMENT**
- Pre-plumbed and pre-wired for many equipment choices
- Base design configured to support a series of centrifuges with a qualifying shaker + a Hammermill system
- LGS is the single targeted issue with mud brought to our vessel
  - Unique and new process onboard to decrease LGS % with any fluid
- Dedicated work deck with crane access
- Extended mud lab for advanced testing

**SLOPS & HAZARDOUS DRAINS**
- SLOPS buffer/receiving tank
- Process capable of < 5 ppm hydrocarbon for release
- Process highest flow rate in industry
- Process capable of handling Hazardous Drains + SLOPS + any Interface
- Negation of any back loads to the beach are the goal
- Reduction in client risk & exposure is in the engineering
- Pipe rack on main deck has a wash rack for tools that goes to SLOPS tank
ENVIRONMENT

- Existing designs capture the most reasonable of new technologies
- Vessel is designed to accommodate changes for the life of the vessel
- Process intensification
- SLOPS capacity capable of self-sufficiency for not only our LMPV but also for the assigned rig(s)
- LMPV-DWM able to exceed local release legislation (< 6.9% OOC or < 5 ppm, for example)
- Wash down & handling or CTB’s, dowhole tools, OSV fluid tanks all onboard our LMPV with no need to go back to the beach

REDUCTION OF ENVIRONMENTAL IMPACT OF BOTH THE RIG AND OUR LMPV + STOP ALL BACK LOADS TO THE BEACH
Summary of support...
<table>
<thead>
<tr>
<th>ITEM</th>
<th>SAFETY</th>
<th>LOGISTICS</th>
<th>ASSET INTEGRITY (Reservoir)</th>
<th>ROP</th>
<th>ENVIRONMENT</th>
<th>VDL</th>
<th>NPT REDUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stable platform away from the rig for E-Vac/muster point</td>
<td>Reduction of OSV runs from port x 25%</td>
<td>Better fluids in well bore more of the time</td>
<td>better &amp; more consistent drlg fluid properties</td>
<td>First responder. Spill recovery &amp; segregation</td>
<td>Next tubular string onboard</td>
<td>OSV harbour access / dock issues</td>
</tr>
<tr>
<td>2</td>
<td>POB overflow</td>
<td>Negation of back load of SLOPS to the beach</td>
<td>Lower ECD</td>
<td>Increased ROP</td>
<td>SLOPS taken below regional release point</td>
<td>Spare, down hole tool storage</td>
<td>OSV travel time to and from</td>
</tr>
<tr>
<td>3</td>
<td>Zero physical exposure to cuttings and SLOPS streams due to handling and processing systems</td>
<td>Downhole tool clean and rebuild level 0-2, onsite</td>
<td>More logs to bottom</td>
<td>More bit on bottom time due to reduction in NPT associated with port/OSV trip times</td>
<td>OOC% taken to below regional release point</td>
<td>Large main deck storage space onboard</td>
<td>POOH (trip time) associated with drlg fluid</td>
</tr>
<tr>
<td>4</td>
<td>Reduction with tank entry due to less tank cleaning</td>
<td>Helicopter repair garage/workshop</td>
<td>More casing strings to casing depth</td>
<td>&gt; 5% reduction is targeted LGS due to specialized processes onboard</td>
<td>Reduction in risk &amp; exposure to spills due to handling/vessel transfer/port storage/port transportation</td>
<td>DWM equipment onboard Samsara</td>
<td>Good and in spec mud properties delivered to the rig quickly</td>
</tr>
<tr>
<td>5</td>
<td>Well control fluid make up and availability</td>
<td>Reduction with quick-turnaround specialist to stay onboard vs. return to beach</td>
<td>&gt; 5% reduction in targeted LGS due to specialized processes onboard</td>
<td>Reduced LGS + better mud properties increase pump fluid end component wear time + reduces down hole tool erosion</td>
<td>Reduction in 25% of emissions associated with OSV trips</td>
<td>Dry silo &amp; sack chemical storage</td>
<td>Large reduction in any pit cleaning and time/ labor associated</td>
</tr>
</tbody>
</table>
The name of our vessel is the, Saṃsāra Safety, Advanced Mud Solutions And Recovery Answers.

“Cyclicality of all life, matter & existence”.

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