Wellsite Monitoring Solutions (WMS)
IADC Spark Tank - August 2018
www.strainstall.com
Current situation

‘Modern’ sensor technology

Majority of load cells currently used at well sites are cabled or hydraulic.

- Trip hazards
- Cost of cable replacements
- Common cause of non-productive time (NPT)
The way forward

Wellsite Monitoring Solutions (WMS)

A direct replacement for existing cabled sensors or hydraulic load cells:

• Wireless sensors
• Improved safety
• More efficient
• Drives data
• Cost effective
Who we are

Strainstall UK Ltd

- UK based engineering company
- >50 years - asset management and monitoring innovation
- Multiple industries including oil and gas (45 years)
- Monitoring innovation - effects of load, stress and fatigue
- Baker Hughes vendor-partner – wireline division
- Part of James Fisher and Sons plc
Wellsite Monitoring Solutions

Introducing WMS

• Brings together proven wireless technology, IoT and hazardous area approved load cells to improve wellsite safety and efficiency

• Also add wireless functionality to cabled sensors, with no need to replace existing equipment

Rapid digitalization

Wireless technology

Internet of things (IoT)

Hazardous area load cells

WMS
Where is WMS used?

- Wireline logging
- Measurement-while-drilling – pressure monitoring
- Slickline - interventions
- Umbilical monitoring
- BOP lifting
- New applications – Where?
Reasons to use WMS

- Safer – no trip hazards
- Production sooner
- Less non-productive time (NPT)
- Cheaper
- Improved accuracy of data
- Value added – multiple applications
- Wireless creates:
  - Additional value
  - Further innovation

Improved safety and operational efficiency
Reasons to use WMS

US land total lost time incidents by incident type
(chart 7) Based on 114 incidents

Key:
- **Slip/fall: different level 10.53%**
- **Slip/fall: same level 12.28%**
- Struck by 28.07%
- Struck against 2.63%
- Caught between/in 27.19%
- Strain/overexertion 8.77%
- Contact with chemicals/fluids 1.75%
- Electrical shock 0.88%
- Flame/heat/steam (contact/exposed) 0.88%
- Debris 0.88%
- Cut 0.88%
- Jump 0.88%
- Sprain 1.75%
- Heat exhaustion/heat stroke 2.63%
Our customers

**Present time**
- Service companies
  - Major
  - Smaller

**Next steps**
- Operators
- Drilling contractors
  - Offshore
  - Onshore
The way forward

Opportunities and future potential

New product needs opportunity and market:

- Opportunity – Bakes Hughes wireline request cable free load cells
- Market – retrofit to wired sensors across industry
- Market innovation opportunity
  - Thought leadership with BH
  - Co-developed new wireless system - industry leader
  - Oil field digitalization– right time, logical next step
  - Other receptive customers – scalable product line
The brief

Challenge

Customer driven request - Zone 1 hazardous area system

1. Wireless capability - remove need for cabled connections

2. Plug and play capable:
   a) Mechanical compatibility with existing wellsite equipment without modification
   b) Data compatibility with existing systems

3. Integrated logging – including a direct data logging capability in addition to the external data interfaces

4. Modular system would greatly increase usefulness
Our innovation

Reaction to Baker Hughes request

• Designed modular system – wireline first focus
  • Successful testing 2015. BH Montrose
  • Offshore use GOM 2017 – present
  • Data to existing acquisition system
  • Production quantities now available

• Wider application range of wireless solutions
  • MWD
  • Slickline
Wireline application

Results - wireline

• Data comparison: wireless vs wired

• Value:
  • Direct measurement – top sheave most accurate location
  • Rig up and re-rigging time saved
  • NPT risk significantly lowered
  • Cost of cable replacement saved $325,000 USD pa

• Supply of additional units
**Measurement while drilling application**

**Results - MWD**

- Existing, trusted pressure transducer
- High frequency sampling
- Frequency response test successful
- Will ensure accurate MWD decode
- Delivered to major MWD SC for trial
- Status: awaiting data
- Value:
  - Rig up time saved
  - NPT risk significantly lowered
  - Trip hazard removal
Slickline application

Results - slickline

- Digital slickline tension system
- Used Offshore Newfoundland
- Trials UK & USA land
- Hay pulley – Improved data accuracy vs hydraulics
- Additional wireless benefits:
  - Data logging (min 10Hz)
  - Data to network / desk / real time analytics
  - Client gets operational oversight
  - Database + “Flight recorder” function
  - Operator competency check
  - No additional training
Benefits delivered

Wellsite Monitoring Solution benefits

Safety
• Hazard removal
• Risk reduction

Efficiency
• Reduced costs
• Operational efficiency gains
• NPT reduction
• Increased asset availability
• Retrofit / plug & play

Data
• Logging (post-job data analysis)
• Accuracy
• Operational oversight by client
• Database creation
• New capabilities – add extra sensors to network
“We want to see innovation that provides HSE benefits and efficiencies but also guarantees existing cost savings remain unaffected.”

Statoil, OTD – Norway
Who are our customers

Customers and accreditations

Baker Hughes (a GE company)
Equinor
Altus Intervention
Statoil
ExxonMobil

Franklin
Applied Physics
SGS US
Ex ATEX
IECEx

Energy lives here™
Improving wellsite safety and efficiency through wireless measurement technology

- Wireless
- Safer
- More efficient
- Drives data
- Cost effective
Thank you

Any questions?

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