Real-time Monitoring of Offshore Oil & Gas Operations Workshop

Incorporating Real-time Well Monitoring Technologies into Existing Roles and Regulations

Third-Party Real-time Monitoring Providers

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- 25 years with Baker Hughes in various domestic and international roles; 7 years with Oil & Natural Gas Corporation
- Current position: Director Global Operations, Remote Operations Services, Baker Hughes
- Responsible for global real-time services operations across well life cycle
- BS in Mechanical Engineering, MBA
- PMP and ITIL Certified
Third-Party Real-time Monitoring Providers

- Schlumberger
- Halliburton
- Baker Hughes
- Weatherford
- GE Oil & Gas
- NOV
- Cameron
- Petrolink
- Kongsberg
- Pason
- B-geo
- Ashford Technical Services
- Genesis RTS
What is Real-time Well Monitoring?

1. Acquisition & Aggregation of Sensor Data at the wellsite
2. Secure, standards-compliant data transmission
3. Administration of Data and Services
4. End-user access
   * Remote
   * Secure
   * Device-agnostic
Q.1 Describe the role of third-party providers?
Q.2 How do you interface with industry customers, and how do you view this relationship?

- Integrated Drilling Services
- Drilling and Production Optimization Services
- Geological Interpretation and Reservoir Consulting
- Digital Oilfield Projects
- Software Development Services
- IT Services – Data Hosting, Telecommunications, etc.
Q.5 What about accountability between the Operator and your firm?

- Depends upon the scope of work, SLA and the contractual terms
- The main role of third party real-time data management service companies is to gather the well data on behalf of the clients, and deliver to subject matter experts. The decision making and the accountability belongs to the Operator or Client, as the case may be.
Q.6 What level of automation and remote control is appropriate to balance accountability, responsibility, and operational efficiency?

- Service companies use some level of automation and remote control for performance assurance and operational efficiency of their equipment. For all such use, the service companies assume the full responsibility and accountability for success of those services.

- Service companies provide some level of automation and remote control viz. MWD, LWD on behalf of a Client or an Operator. In all such cases, the responsibility and accountability of assets (direct or collateral) generally lies with Clients or Operators.
Q.14 Which activities could real-time monitoring supplement or replace?

- **Real-time monitoring can supplement the following activities**
  - Field Operations decision support
    - Alerts and alarms
    - Well Placement and Anti-Collision
    - Data Interpretation
    - Knowledge management
  - Predictive and preventive maintenance of equipment
    - Condition based monitoring of drilling safety equipment
    - Alerts and alarms
  - Training - Time to enhance competency
  - Collaboration across stakeholders

- **Real-time monitoring can replace the following activities**
  - Data analytics for benchmarking and performance management
Presentations

1. Schlumberger
2. Halliburton
3. Weatherford
4. Petrolink
5. Genesis RTS
Threat Factors in Real-time Data Management Service

- Regulatory Compliance
- Cyber Security
- Data Integrity
- Field Telecoms QoS
- Data Assurance
- Interoperability
- Data Center Availability
- Software Quality
- Human Factors
- BYOD

Likelihood vs. Business Impact

Service Cost
Conclusions

• Real-time remote monitoring can supplement Field Operations decision support, however the ultimate responsibility must remain with the rig/well personnel.

• Third party service providers provide a range of services to enable real-time monitoring – from data aggregation at the well to an end-to-end SaaS. The scope of such services and the SLAs vary across the industry.

• The data ownership belongs to the Operators. Third party service providers are accountable to Operators only.

• Interoperability is critical to successful integration of data from multiple sources.

• Data analytics for benchmarking and performance management can be effectively done remotely.

• Despite significant advancements in information technology, it is difficult to guarantee 100% reliable service.

• Cyber Security and the use of mobile devices have added significant risk to the cloud based services.