Getting The Most Out Of Drilling Data - Using WITSML

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Outline

• Vision
• Barriers
• Case Studies for value today
Vision

- Data quality
- Optimized well manufacturing
- Autonomous rigs – QHSE benefits
- High-rate data for all purposes
Barriers

- Lack of data sharing on the rig
  - No common clock, sensors
- Lack of takeup of newer standards
  - WITSML 1.4.1.1, wired pipe
- Missing data from standards
  - e.g, Quality flags
- Bandwidth
- Training
Case studies

- Large US Independent
- Saudi Aramco
- PEMEX
- Statoil
Drilling and completion data available in the field
Completion data manually entered in Excel in the office
Then re-entered into completion database at HQ
Lots of data entry inconsistency
Operator developed a WITSML adapter for Excel
  - Completion data comes from the field, is reviewed in Excel and goes to the completion database all via WITSML
  - Standard reference values are applied

Manual data entry eliminated
  - Improving data quality
  - Chain of custody is clear
Aramco - Situation

- Multiple service and software companies
- Each service company has its own software infrastructure and visualization tool
- Lack of coherent content and format standards
- No connection between real-time and static master data environments
Implemented WITSML-based solution
- Data enters WITSML store from all vendors
- Common reference values applied

Static data also translated into WITSML
- Validated static data improves real-time quality
- Integrated analysis reduces re-work and re-keying
• Major service and software companies and many smaller ones present and handling data
• Each service company has its own software infrastructure and visualization tool
• Users have to copy and paste or re-type data from one vendor’s system to another to bring information together for analysis
Pemex – Standards Solution

• Implemented WITSML-based solution
  – Data enters single WITSML store from all vendors
  – Common reference values applied

• Elimination of vendor-specific solutions meant
  – Duplicated data resolved, improving quality
  – Manual work to resolve differences eliminated??
Many technical computing applications with well-related information

Transferring data among these applications is either:
- Pair-wise movement between applications A and B
- Vendor-specific transfer environment

Automating transfers is problematic
Statoil – proposed standards solution

- Use WITSML as a data transfer standard
- Many technical applications already support it for near real-time trajectory transfer
- Just expand to all the well data
Some ideas for solutions

• WITSML 2
  – Websocket
  – HDF5
  – New API

• SPE DSA-TS with OPC-UA
  – Closed-loop process control