Digital solution for drilling and well services. How to take advantage of your data.

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How to reduce 30% from your Drilling Expense Using Data?
OIL PRICE FLUCTUATION

- Break-even of the projects
- Drilling is 60% CAPEX
- Strategy: reduce cost
- Do reengineering well plan well schematics
- Reduce time reduce cost
DRILLING COST IS DEFINE BY

**Contracts** with service companies
( Drilling & Procurement)

**Well Engineer**
- Well design
- Well Schematics

**Drilling Technology**

**Time**
Planning & Execution time
DRILLING TIME

What is not measure can not be improved!
WELL PLANNING
TECHNOLOGY

EXECUTION
OPERATIVE DISCIPLINE

DRILLING PRACTICES
LESSON LEARNED
HUMAN BEHAVIOR

Cement
Logging
Casing
Fluid
BHA

WELL PLANNING
TECHNOLOGY

EXECUTION
OPERATIVE DISCIPLINE

DRILLING PRACTICES
LESSON LEARNED
HUMAN BEHAVIOR

Cement
Logging
Casing
Fluid
BHA
FIRST STEPS WERE MANUALLY…

Perform a workshop with all service companies to gather information of historical data for drilling performance bench marking.

Gather, Sort & Classify information about the best well in each level of Well complexity.
(Vertical, deviated, High Deviated and Horizontal wells)

Drilling performance were broken down into discrete activities by each well schematic section.

Examine drilling problems and lessons learned to capture the best practices.

Analyze information and get Best composite Time BCT and Best Composite Cost BCC.

Correlative analysis of Inclination, Steps outs, directional profile, Mud weight, Mudlogging data were used to detect well problems and abnormal Flat Times.

We compared 380 different variables that affected performance
Correlated more than 380 variables

Sort by well complexity

Identify

Flat Times & Bit on bottom time

Procedures Technologies Performance

BCT & BCC

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GET CONTROL OF DATA “FOLLOW UP REPORT”
# GET CONTROL OF FLAT TIMES

## Flat Times broken down into discrete activities

Identify BCY & BCC

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### External Editing
- Average EPL Timing

### External Audits
- Average P10

### Duration Total Phase
- BCIT + MLP + IFL + ITF

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### Control Times

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### Performance Analysis

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Analyze data

Generated & Control base line
Time & Cost

Review data well complexity

Analyze execution Time & cost

Identify abnormal BOB and Flat times problems, Mitigate.

Identify NPT To take Actions to mitigate events.
Control ILT
If you want different results, do not do the same

Implement new Technologies
• Change drilling Parameters to increase ROP to reduce BOBT
• Work in Drilling Practices & Procedures
• Improve ILT
• Mitigate NPT
• Support lesson leaned and drilling practices base on data
How to make decisions?

Inaccurate decisions based on low-reliable KPI’s or outdated data

Unified decision-based in field data
Drilling: Art vs. Engineering

GOING FORWARD THE NEXT STEP

APPLY DIGITAL TRANSFORMATION BY AUTOMATIZING DATA PROCESSES
METHODOLOGY FOR BUSINESS INTELLIGENCE

**Business questions**
- What do we need to answer or improve?

**Processes and data flow**
- What data do we need and where is it located considering the appropriate process?

**Data integration**
- Create a data model which allows the analysis of the entire process and make efficient decisions

**Dynamic visualization**
- Create a data model which allows the analysis of the entire process and make efficient decisions
**METHODOLOGY FOR BUSINESS INTELLIGENCE**

- **Business questions**
  - What do we need to answer or improve?
  - Reduce Cost & Time
  - Optimize operations
  - Improve drilling operations

- **Processes and data flow**
  - What data do we need and where is it located considering the appropriate process?
  - Follow up reports
  - Open wells
  - SAP
  - AFES

- **Data integration**
  - Create a data model which allows the analysis of the entire process and make efficient decisions
  - Datamart

- **Dynamic visualization**
  - Create a data model which allows the analysis of the entire process and make efficient decisions
  - Dash Boards
HOW ARE ORGANIZATIONS MAKING DECISIONS?

Under User Experience, Intuition, perception

Drilling Operators loses approximately 300 Billion profit annually to poor operating performance due work practices, outdated technology and the lack of capabilities to predict events.

DATA does not have feelings nor perception,…….just show real tendencies and is the direct result of the actions we made.

Experience + Data = Right Decision

TIME TO CHANGE
“DATA IS THE NEW OIL”

- People
- Process
- Tools & Applications

- Think Data Sharing not Data Silos
- Improve performance
- Generate knowledge
- Activate collaborative Teams
- Control Cost
- Reduce Risk By predictability

- By predictability
Data

- Data has to be reliable.
- Deliver Trust
- Reflect reality
- Generate corporate benefits
  Time, Cost, Analysis.
- Storage Secure
Data Reliability

Problems

- Compatibility: unit, Format, properties defined in data Base
- Completeness: incomplete data base
- Consistency: Inconsistent values
- Validity: Incorrect data
- Conformity: Data in unexpected format
- Integrity: Data Correlation by Missing data

Solution

- Open Wells as a key source
- Standardized coding design
- Generate automatic reports to overview data Quality.
- Quality – DSDQ (Data rules)
- Assurance Information with the personnel involved within the operation
- Bring Visibility to Upper Management
Architecture

- Data Mart/Data Warehouse
- Business Intelligence Tool
- Users

OpenWorks
Information At one Click!

Dash Board answered Business Question

Grupo de Optimización de Perforación

Desempeño por Pozos
- Tiempos & CPP (Real -vs- Plan)
- BOBT (Complejidad)
- BOBT (%)
- BOBT (Promedio & Variabilidad)
- NPT (Tipo)
- NPT (Subtipo)
- Pozos mal Aterrizados, Csg Fuera de Fondo & Sidetracks

Desempeño por Servicios
- Todos los Servicios
- Direccional
- Fluidos
- Registros
- Sólidos
- Acumulado Paretos

Actualizado 15/08/2019
CONTROL OF PERFORMANCE OF THE ASSET & INVESTMENT
GET HISTORICAL DATA

[Graph and data analysis related to asset and investment performance with various metrics and timelines.]
IDENTIFY PROBLEMS & ACTIVATED PLAN OF ACTION
BOBT or FT
IDENTIFY ROOT CAUSE OF NPT & TENDENCIES OF ILT
IMPROVE WELL PLANNING & WELL TRAJECTORIES
GET PERFORMANCE OF TIME AND COST FOR EACH SERVICE COMPANY (MUD, DIRECTIONAL, WASTE MANAGEMENT…)
RESULTS

1 Reduction of 50% Drilling time

NUMERO DE POZOS PERFORADOS

USD/ft

1,5 MM USD REDUCED PER WELL
Your feedback is very important to us. Please open the LIFE2019 app to answer a few short questions on this presentation.
Thank You