Oxy’s Digital Transformation

Occidental Petroleum Corporation
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Use of non-GAAP Financial Information
This presentation includes non-GAAP financial measures. You can find the reconciliations to comparable GAAP financial measures on the “Investors” section of our website.
Agenda

• Oxy’s Journey to Digital Transformation

• Re-Imagined Oilfield (RIO) – What’s Next

• Driving Value Through Data Analytics
Driving Returns using — Data, Automation, Analytics

- Well Productivity
  - Integrated Subsurface Characterization
  - Oxy Drilling Dynamics

- Enhanced Reservoir Management
  - Multi-lateral wells (SL2)
  - Unconventional flow-back optimization
  - OxyLift artificial lift optimization
  - Steam/Water/CO\(_2\) flood efficiency

- Operating Cost Efficiencies
  - Extensive remote operations and automation
  - Advancing towards “Autonomous Oilfield”
  - Logistic and Maintenance hubs
  - Innovative facility designs
  - Leverage through scale – commercial and data
Oxy Permian

• Position
  > 302,000 net acres associated with 11,325 wells in unconventional inventory
  > Largest oil producer in the Permian Basin

• Scale
  > 10k mi² 3D seismic
  > 130k mi² 2D seismic
  > 24.5k gross operated wells
  > 10k gross OBO wells

<table>
<thead>
<tr>
<th>Oxy Permian Business Overview</th>
<th>Net Acres</th>
<th>Operated Wells*</th>
<th>2016 Net Production Mboed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Resources – Unconventional Areas</td>
<td>1.4</td>
<td>5,150</td>
<td>124</td>
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<tr>
<td>• Enhanced Oil Recovery Areas</td>
<td>1.1</td>
<td>19,310</td>
<td>145</td>
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<tr>
<td>Oxy Permian Total</td>
<td>2.5MM</td>
<td>24,460</td>
<td>269</td>
</tr>
</tbody>
</table>

*Gross Oxy operated wells including producers and injectors, and idle wells.
Our Journey to Digital Transformation

**Production Optimization**
- Institutionalized Processes and Tools
- Single reporting repository
- Focus on analysis and decision making

**Consolidated ERP Systems**
- Integration of operational, technical and financial data
- Global Supply Chain
- Single Chart of Accounts

**Technical Data Management**
- Technical Data Consolidation
- Global Well Naming Convention

**Field Automation**
- Standardized End Devices
- Segregation of Automation Network
- Secured Remote Access to Real time Data
- Process Historian

**Next Generation Production Optimization**
- Real time Data Historian
- Predictive Analytics
- Advanced Surveillance

- Smart Oilfield
- Edge Computing
- Internet of Things
- Cloud and Mobility
- Big Data and Analytics
- Cognitive Service and Machine Learning
- UAV
- Virtual Reality
Capturing and Executing Innovative Ideas

Strategic Innovation

INNOVATE IN CORE

THINK DIFFERENTLY

FOLLOW FASTER

Oxy’s Innovation Process

A flexible system that flows, changes form in real time, and seeks the most natural path to its destination.

Current Innovation Pipeline Statistics and Results
RIO Technology Project - Production Technician Digital Twin

Map View

Real-time Alarms

Route – Main Screen

Production Screen

Trend Screen

Route 1

SCR CTB1

Production

Tanks

Equipment

Wells

Greasebook

Production

Oil Sales

Yesterday’s Total 1689.00 bbl

Today’s Projected 1850.00 bbl

TDY 1850.00 bbl

YDY 685.00 bbl

Averages

Current Month 1693.06 bbl

Last Month 1577.22 bbl

Oil Stock

Tk 1 Tk 2 Tk 3 Tk 4 Tk 5 Tk 6

3.21 ft: 2.07 ft: 1.88 ft: 1.67 ft: 2.50 ft: 2.50 ft

Current Stock 446.86 bbl

Water Transfer

Yesterday’s Total 4102.85 bbl

71 Mobile Applications

Ensuring employees have control where it matters most
Oilfield of the Future
Oilfield of the Future
Data Science – Going Beyond Interesting

Data Collection & Profiling
- Data Preparation & Tagging
- Data Quality & Cleaning
- Data Forensics & Profiling

Insight & Recommendations
- Visualization
- Benchmarking
- Exploitation & Exploration

Computational Methods
- Numerical and stochastic Simulation
- Signal Processing
- Network Analysis

Optimization
- Computational Intelligence
- Natural Language Processing
- Image/Voice Processing
- Data Structure & Classical Algorithms

Statistical Methods
- Bayesian Analysis
- Survival Analysis
- Uncertainty Analysis
- Design of Experiment
- Statistical Learning (Machine Learning)
- Spatial/Temporal Analysis

Artificial Intelligence

Key Levers
- University Partnerships
- O&G Industry Research
- Outside Industry Research
- Commercially Viable Algorithms
- Vendors
- IT

Data Management
Driving Value @ the Bit

@Bit + @Target

- Predicts bit location using physics + machine learning
- Calculates dogleg severity, build/turn rate, motor yield

@ Target Algorithm

- Determines optimum build & turn rate, sliding and rotating lengths to reach target point
- Minimizes loss of weight on bit, tortuosity, drilling time, dogleg severity

Vendor performance metrics
- Increase in Rate of Penetration
- “Problem Well” avoidance
- Optimal path determination (staying in producing zone)

$325K avg. per rig savings
High Speed, Low Fidelity Reservoir Models

Historical/field data to calibrate and quantify uncertainty

Field decisions that optimize daily total field production

Maximize NPV honoring economic, operating, and well constraints by generating thousands of what-if scenarios

Leverage field data and new data sources

Optimize over larger areas

Integrates with existing workflow

Significantly lower computational costs

Target=$100MM

Driving Value @ the Reservoir

Steam/Water/CO2

Optimizer

Reservoir & Operational Facilities

Steam/Water/CO2

• Leverage field data and new data sources
• Optimize over larger areas
• Integrates with existing workflow
• Significantly lower computational costs
Driving Value @ the Well

- Increase run life
- Earlier detection of failures
- Improve staff efficiency, quality
- Industry leading capabilities into Oxy’s proprietary lift platform (OxyLift)

Lift System Diagnostic/Optimization

- Leverages artificial intelligence and pattern recognition
- Proprietary deviated well algorithms based on mechanical engineering + applied mathematics

Upcoming Opportunities

- Text and image analytics of unstructured data to drive efficiencies with chemical treatments, safety, failure detection, etc.
- Survival and risk analysis to identify odds of failure in advance.
- Combine maintenance cost factors and risk of failures to optimize preventative maintenance.
The Possibilities Are Endless...

Digital Foundational Capabilities

- Predictive Analysis
- Internet of Things
- Cloud Computing & Mobility
- Cognitive Services & Machine Learning
- Big Data and Analytics
- Drones
- Robotics
- Virtual & Augmented Reality
- Edge Computing