Upstream Oil & Gas Drilling Operations & Risk Management Dashboards

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LEARNING POINTS

• Demonstrate how to utilize SAP Business Objects dashboards for strategic and performance-level KPIs

• Understand how to mitigate drilling risk through action-based, safety critical PM/EAM operational reporting

• Learn how to identify and provide operational well and rig-level reporting in a single, tailored view to executives and various levels of the organization
Beginning in April 2010, BP’s Deepwater Horizon Oil Spill in the Gulf of Mexico is the largest offshore spill in the US history. 11 lives were lost at sea. Approximately 84 days and an estimated 4.9 million gallons of oil later, the well was finally capped. This catastrophic event has led to resurgence in focus on better managing risk and safety across the entire industry.
Upstream, Midstream, and Downstream business issues.
Current trends include...

### Upstream, Midstream and Downstream

<table>
<thead>
<tr>
<th>Category</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil &amp; Gas Price Volatility</td>
<td>Managing uncertainty ... Portfolio management</td>
</tr>
<tr>
<td>Legacy Systems &amp; Mobility</td>
<td>Optimize ERP, legacy integration. Oracle/ SOA/ SCADA</td>
</tr>
<tr>
<td>Health &amp; Safety concerns</td>
<td>Increased Gov’t regulations and compliance issues,</td>
</tr>
<tr>
<td>Environmental Issues</td>
<td>The Frak debate.. Ground Water contamination. BP event</td>
</tr>
<tr>
<td>Reserve Replacement</td>
<td>High F&amp;D costs with low reserve replacement ... Smart Operations</td>
</tr>
<tr>
<td>Maturing Asset Risk</td>
<td>“Brownfield” assets; high costs ... Smart Operations</td>
</tr>
<tr>
<td>Services/Supply Imbalance</td>
<td>Driving higher costs and project delays ,, SCM</td>
</tr>
<tr>
<td>Demographic Crunch</td>
<td>Aging workforce and skills shortages ,, Smart Ops; BPO</td>
</tr>
</tbody>
</table>

### Corporate

<table>
<thead>
<tr>
<th>Category</th>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio Management</td>
<td>Portfolio Mgt through global &amp; regional divestm’t &amp; acquisition</td>
</tr>
<tr>
<td>Venturing</td>
<td>Venturing with “state” Co to take advantage of emerging regions</td>
</tr>
<tr>
<td>Compliance &amp; Regulation</td>
<td>Sustainable regulatory compliance (SoX, Security, HSE etc)</td>
</tr>
<tr>
<td>Globalization</td>
<td>Centralization, standardization and optimization</td>
</tr>
</tbody>
</table>

Necessitates

Transparency and Visibility

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Solution Briefing

This innovative SAP BusinessObjects dashboard solution allows a top-down view of the Upstream operations of the business, both from a revenue impacting performance perspective to an operations and risk mitigation viewpoint.

This solution showcases how to utilize SAP’s Business Objects platform to extract and arrange key data from a variety of underlying applications at near-real-time, specifically around drilling risk and safety within energy companies. It differentiates SAP because it shows how companies can seamlessly get a holistic view of what is going well, performance exceptions, conduct a root-cause analysis and take action.
Live Dashboard Demonstration
Providing Insight to Action
Executive Level View – Major Drilling KPIs

1. Asset Utilization (By Rig, Fleet)
2. Health, Safety & Environment [Accidents, Lost Time Incidents & Near Misses]
3. Cost management [CAPEX & OPEX]
4. Performance Exceptions by performance metric.
Utilization – Rig Utilization and Downtime Analysis

1. Select a Rig
2. Rig Uptime & Downtime Percentage
3. Hydraulic System
4. YTD Rig Uptime Percentage
5. Equipment Downtime Percentage
6. On Time Maintenance by Equipment – Root Cause Analysis
1. Near Misses
2. YTD for Deep Driller 5 Ab

3. Rig Deep Driller 5 Ab Metrics [Drop Down: Training Coverage, Near Misses, Lost Time Incident Rate]
BPC Integration – Asset Profitability Year Total; Quarter 1; Quarter 2; etc.
1. **Prompt** [Rig Name, Date Between]

2. **Equipment Analyzer** – Major Asset Analysis

3. **Work Orders**

4. **EAM KPI’s**

5. **Well Control Equipment KPI’s**
1. Open Purchase Orders
2. Purchase Exception Summary
3. Purchase Exception Summary Divided
4. Purchase Orders Scheduled to be Received
5. Top Vendors
6. Vendor Performance Analysis

### Purchase Orders Scheduled to be Received

<table>
<thead>
<tr>
<th>Vend #</th>
<th>Vendor Name</th>
<th>Item #</th>
<th>Item Description</th>
<th>Request Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>60000</td>
<td>Caterpillar</td>
<td>E4009-00</td>
<td>Caterpillar Type 3512 DITA Diesel Engine (Replace)</td>
<td>5/29/2000</td>
</tr>
<tr>
<td>60000</td>
<td>Caterpillar</td>
<td>E4009-00</td>
<td>Caterpillar Type 3512 DITA Diesel (Parts 10431A)</td>
<td>5/12/2000</td>
</tr>
<tr>
<td>60000</td>
<td>Caterpillar</td>
<td>E4009-00</td>
<td>Caterpillar Type 3512 DITA Diesel (Parts 10431A)</td>
<td>6/3/2008</td>
</tr>
<tr>
<td>60000</td>
<td>Caterpillar</td>
<td>E2251</td>
<td>Caterpillar Type 3512 (Fitting Case 55515A)</td>
<td>5/29/2009</td>
</tr>
<tr>
<td>60000</td>
<td>Caterpillar</td>
<td>E3090</td>
<td>Caterpillar Type 3512 (Fitting Case 55515A-Variable)</td>
<td>6/12/2008</td>
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<tr>
<td>60000</td>
<td>Caterpillar</td>
<td>E3409</td>
<td>Cat type 3066 DIT (Replace Line In 12661A)</td>
<td>5/29/2009</td>
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<tr>
<td>60000</td>
<td>Caterpillar</td>
<td>E3091</td>
<td>Cat type 3066 DIT (Replace Line In 12661B)</td>
<td>5/29/2009</td>
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<tr>
<td>60000</td>
<td>Caterpillar</td>
<td>E3092</td>
<td>Cat type 3066 DIT (Replace Control 320 Unit)</td>
<td>5/29/2009</td>
</tr>
</tbody>
</table>

### Top Vendors

<table>
<thead>
<tr>
<th>Vendor Name</th>
<th>YTD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stewart and Stevenson</td>
<td>$31,400,000</td>
</tr>
<tr>
<td>Russell Oilfield Equipment</td>
<td>$21,093,983</td>
</tr>
<tr>
<td>National Oilwell Varco LP</td>
<td>$10,775,586</td>
</tr>
<tr>
<td>CDW Direct LWL</td>
<td>$5,675,242</td>
</tr>
<tr>
<td>Access Oil Tools</td>
<td>$990,221</td>
</tr>
<tr>
<td>Acme Truck Line</td>
<td>$622,415</td>
</tr>
<tr>
<td>Caterpillar</td>
<td>$446,362</td>
</tr>
<tr>
<td>Baker &amp; Mckenzia Abogados</td>
<td>$31,200</td>
</tr>
<tr>
<td>Camen Supplier Inc</td>
<td>$223,000</td>
</tr>
<tr>
<td>Baker Hughes Oil Tools</td>
<td>$115,670</td>
</tr>
<tr>
<td>Bishop Lifting Products</td>
<td>$98,456</td>
</tr>
<tr>
<td>Cameron Drilling &amp; Products</td>
<td>$54,667</td>
</tr>
<tr>
<td>MI Swaco Houston</td>
<td>$34,667</td>
</tr>
<tr>
<td>Grainger</td>
<td>$22,969</td>
</tr>
<tr>
<td>HydraDine Hydraulics</td>
<td>$19,334</td>
</tr>
<tr>
<td>Manifold Valve Services</td>
<td>$9,606</td>
</tr>
<tr>
<td>Hannan</td>
<td>$4,977</td>
</tr>
<tr>
<td>Total Oilfield &amp; Safety Serv</td>
<td>$2,244</td>
</tr>
</tbody>
</table>

### WO Receipts Over the Past 5 Days

<table>
<thead>
<tr>
<th>Vend #</th>
<th>Vendor Name</th>
<th>Item #</th>
<th>Item Description</th>
<th>Total $</th>
</tr>
</thead>
<tbody>
<tr>
<td>6000</td>
<td>Caterpillar</td>
<td>E55002016</td>
<td>Cat type 3066 DIT (Replace Line In 126613)</td>
<td>$0.009</td>
</tr>
<tr>
<td>7700</td>
<td>CDW Direct</td>
<td>E00502003</td>
<td>Ruggerized PC - Model 31105</td>
<td>$4,450</td>
</tr>
<tr>
<td>9070</td>
<td>Caterpillar</td>
<td>E55009004</td>
<td>Cat type 3066 DIT (Replace Control 34A Unit)</td>
<td>$4,192</td>
</tr>
<tr>
<td>7700</td>
<td>Petroleum Helicopter</td>
<td>E5503402</td>
<td>Service 5A - Out of Cycle Check Drop</td>
<td>$772</td>
</tr>
<tr>
<td>3925</td>
<td>Cooper Cameron</td>
<td>E5501003</td>
<td>Valve segment - Internal 5 - 1235</td>
<td>$4,436</td>
</tr>
</tbody>
</table>
1. Analytics [% of Budget; % of Cost; Billable Cost; Cost; etc.]

2. Cost Analysis [By Region: QTD Cost; QTD Capital Cost; % of Cost; % of Capital Cost; QTD Open CIP]

3. Other Links

4. Cost

5. Capital cost

6. Open CIP
Rentals – Rental Performance and Inventory Analytics

1. Prompt [Region]
2. Business Analysis [Projected Revenue; Quantity; Rental Days Length; etc.]
3. Inventory Exceptions [Rental Report Type; Item Name; Quantity]
4. Total Rental Inventory Analysis
1. Contract Projects Cost Management KPI's [% of Budget; % of Cost; Billable Cost; Cost; etc.]

2. Contract Project Cost Analytics [By Region: QTD Cost; QTD Capital Cost; % of Cost; % of Capital Cost; QTD]

3. Cost

4. Billable Cost

5. % Budget Cost
1. Top 10 Safety Class Attendance
2. Program Performance – Enrollment, Grade, Satisfaction
3. Top 5 Feedback
4. Safety Correlation by Rig
Performance Management
Leading Practices & Dashboard Recipe
Dashboards & Performance Management

- Performance Management is a structured approach to managing business performance that aligns top-down aspirations with bottom-up behaviour thru the use of KPI and Metric driven Dashboards

- A Performance Management Dashboard equips the business to:
  - Effectively steer and monitor all aspects of business performance (financial and non-financial)
  - Define key priorities for the business and align the organization to deliver
  - Have a seamless line of sight on performance from the top to the bottom of the organization
  - Easily identify strategic and operational performance issues and drill down to their root causes
    - Identifying and driving corrective actions
  - Develop a performance-driven culture where staff identify and address performance challenges

Performance Management takes a top-down perspective on performance, integrates it with the operational view, developing an aligned framework to monitor and manage the business.
Understand the KPIs and Measures

Business Intelligence provides the ability to measure which enables the ability to predict and act.

- Effective measurement can detect change, isolate its impact and help create a focused response
- Effective measurement provides the knowledge of performance needed to support operational decision making
- Effective measurement can help manage the uncertainty and validate the assumptions of the business model

However, many companies describe measurement as an empty ritual rather than a purposeful undertaking....

"We can use 2% of what we measure; the rest is ‘CYA’"

"We measure the wrong things to four decimal points of accuracy"

"We are masters of the micro. We measure paper clip acquisition times"

"We measure far too much and get far too little for what we measure because we never articulated what we need to get better at and our measures aren’t tied together to support higher-level decision making"

"It’s hard to do measurement right because our managers don’t believe its important"

"It’s crazy that we have to run our business without knowing where the products are."

"If you want to know my inventory levels on March 2, I’ll tell you in mid-April"

Is this indicative of your organization?

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This simple approach involves a three-step process that aligns business strategy with execution in the organization’s operating units by providing business unit level KPIs that are linked with corporate strategy.

**Objective:**
- Develop a top-down link between strategy, KPIs, and the intended target audience

**Deliverables:**
- Functional Map
- Data & Technical Mapping
- Prioritized list of KPIs
  - Corporate Level
  - Business Unit
  - Department

**Aligning/Cascading Dashboards:**
- Link Business Unit/Functional Dashboards to the Corporate Dashboard
- Aligned Dashboards at the Corporate, Divisional, and Department level

**PM Dashboard Development Recipe**

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Four Key Areas and Pillar of Best Practices

**Adoption**
What do you want to measure?
- Identify and define the KPIs and measures
- Align those to specific business users/roles
- How often and who attends?

**Alignment**
What are the review mechanisms?
- When is performance reviewed?
- What is covered in those reviews?
- How often and who attends?

**Visualize**
What is the Dashboard structure?
- How will the data actually look? Dashboards and Reports?
- How much do you need to see?
- Embedded Drill down, etc?
- Explanations?

**Mapping**
What is the data required?
- Which is the best source of this data?
- Can we source a given KPI?
- How will this be done on an ongoing basis within minimum impact

Best practice. Create alignment Top to Bottom. Refine Dashboards and Pilot across processes with real data. Validate... And Refine again...

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SESSION CODE: 5104

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