



Special Edition Newsletter for Offshore Technology Conference

Ziff Energy Completes 1st International FPSO Operations Benchmarking Study

Joseph Kilchrist, P.E., Director Offshore Operations

Ziff Energy recently completed its first **International FPSO Operations Efficiency** study, evaluating operating costs and uptime reliability for FPSOs in various regions of the world.

FPSOs (which stands for 'Floating, Producing, Storage, Offloading') are the principal method for International oil production in offshore areas where no pipeline is available to transport the oil to onshore refineries. Moored offshore, FPSO vessels receive oil production from Platforms or Sub-Sea wells from fields in shallow or deep water, and then store the crude oil for loading onto tankers for delivery to refineries. Some FPSOs are new 'purpose-built'; traditionally many were converted oil tankers. The first FPSO was Shell's Castellon, dating back over 3 decades ago. Like other offshore production systems, there is a wide variety. Some major variances include:

- oil processing capacity (15-40 MBbl/d to 200+ MBbl/d)
- vintage (several decades old to new)
- complexity of processing (amount of water handling, liquids stripping, natural gas re-injection)
- mooring system (internal or external turret, some disconnectable, or spread mooring).

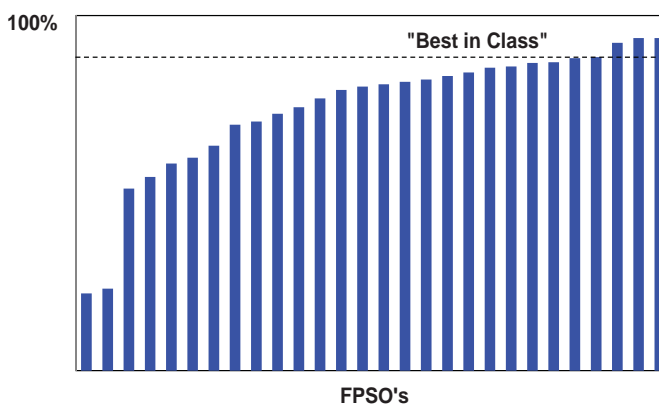
The Ziff Energy study includes vessels operated by **a diverse mix of operators** (Super-Majors; leading Independents; Contract Operators), and located in West Africa (Nigeria, Angola, Equatorial Guinea, Mauritania and the Republic of Congo), the Gulf of Mexico (Mexico), Brazil, Malaysia and New Zealand. Data were for calendar year 2009. The 10 participating operators will now use their results to enhance the efficiency of their operations and counter the effects of **production decline** on unit operating costs.

Richard Tucker, Vice President, Marketing & Client Relations, notes that "as with other benchmarking studies, our FPSO clients were greeted with surprises – both pleasant and some instructive. Our studies are not Report Cards, rather **guideposts** to focus on improvement opportunities." Study participants received "**best in class**" **production uptime targets** that help validate the value associated with specific future investments for improved reliability. They received confidential, blinded, asset-level comparisons identifying potential savings in each cost category, as well as detailed cost driver analysis.

The FPSO study focuses on **Operating Costs** and **Production Uptime Reliability / Operating Efficiency, the twin pillars of Operations Excellence**. The **reliability metrics** were first developed as part of Ziff Energy's Gulf of Mexico Deepwater study, and include the value of lost oil production, the Mean Time Between Incidents (MTBI), and the Mean Time To Recover (MTTR). Uptime is a prime driver of upstream 'value add' as the value of production lost to downtime far exceeds OpEx. The figure below shows a wide variation among the 31 FPSOs in Ziff Energy's database.

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Global FPSO Operating Efficiency



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Easy Contact at OTC:

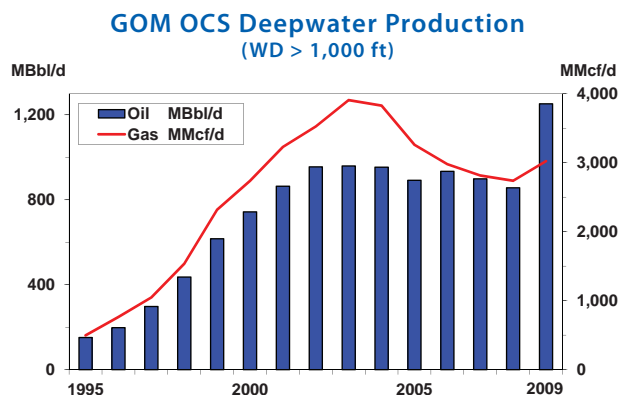
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Ziff Energy Launches 8th Gulf of Mexico Deepwater Operations Study to Enhance Production Efficiency & Manage Cost Challenges

Richard Tucker, Vice President, Marketing & Client Relations

Ziff Energy has launched the 8th edition of its **Gulf of Mexico Deepwater Improving Field Performance (IFP)** study, which will evaluate 2010 operations for more than 3 dozen assets. While production in the Gulf of Mexico Deepwater was in the spotlight last year with the unfortunate Macondo incident, the region represents by far the most important domestic oil supply area for the U.S. (other significant Lower 48 areas include the 100-year old Permian Basin in West Texas, and the rapidly expanding unconventional Bakken play in North Dakota).

In recent years, the Gulf of Mexico Deepwater has developed many new 'world class' discoveries. While hurricanes impacted oil and gas production in 2005, 2006, and 2008, the graph shows **production surged by over 250,000 Bbl/d in 2009**, with the start-up of many new assets (including the Atlantis, Thunder Horse, Blind Faith, and Thunder Hawk semi-submersibles, the Tahiti spar, and the Neptune & Shenzi tension leg platforms). Additional new Deepwater assets began production in 2010. Most Deepwater gas production is associated with the oil, and growth in Deepwater oil production has been essential to offset gas production declines this decade in the mature Gulf of Mexico Shelf.

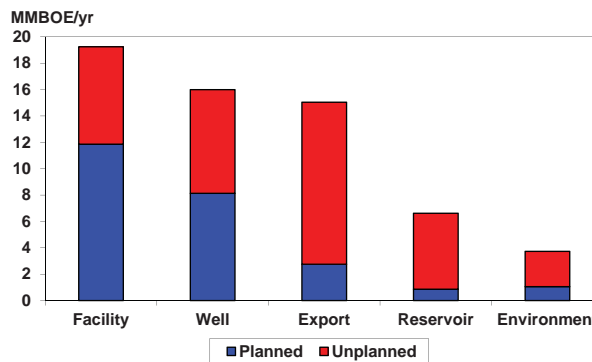


Ziff Energy is the **leading consultant for evaluating offshore operating performance**, with extensive assessment programs for both Deepwater and Shelf operations. Our offshore asset-level database includes extensive cost data for 100+ Deepwater assets and 800+ Shallow depth fields operated by 20 operators in many regions, including the Gulf of Mexico, Asia Pacific, North Sea, West Africa, and South America.

This year's study will update the **Operating Cost Efficiency and Uptime Reliability Metrics** last measured in 2009 with the 7th Edition. The Uptime metrics are based on analysis of daily production and include "deferred production", the mean time between downtime incidents (MTBI), and mean time to recover production (MTTR). With the growth of Deepwater facilities has come increased emphasis by industry on **system reliability**

to maximize production uptime consistent with *safety, health, and environmental stewardship*. Ziff Energy's last Deepwater study found a surprisingly wide range of Uptime performance, which represents an improvement opportunity for industry worth tens of millions of dollars of annual revenue for most assets. Indicating the size of the incentive, the graph shows the study assets' deferred production for the period July 2007 to June 2008 associated with planned and unplanned downtime by cause: facility (on the platform), well (subsurface), export (pipeline), reservoir, and environment (weather). Weather was the smallest factor. **The value of the unplanned deferral (\$2.1 billion) was double the total OpEx (\$1.1 billion) of the assets!**

Reasons for Deferred Deepwater Production



While the 8th Edition study will analyze performance data for 2010, the results will feature extensive trend analysis both on an asset and company level. "Study participants will receive detailed diagnostics for each asset, compared on a 'like kind' basis with peer assets and identifying potential savings in each of 15 cost categories," said Joe Kilchrist, Ziff Energy's Director, Offshore Operations, who will lead the Deepwater study team. Delivery of the asset-level diagnostics is scheduled for early July 2011, in time for action during the second half of the year. After the study is completed, Ziff Energy meets privately with each client regarding their identified improvement opportunities. Ziff Energy intends to offer a full-day **Best Practices Workshop**, at the conclusion of the study, for the exclusive benefit of study participants. Past workshop attendees have rated the workshops highly for their networking and sharing of solutions with peers.

Client "Kick-off" meetings will take place during February, with data collection to begin thereafter, so **there is still time for additional Deepwater operators to participate**. Further information about the initiative is available from Richard Tucker, VP Marketing & Client Relations, at 1-713-985-5183 or richard.tucker@ziffenergy.com.

<http://www.ziffenergy.com/eandp/multiclient.aspx>

Trinidad & Tobago Energy Conference - The Impact of Shale on LNG for North America

On February 7, CEO Paul Ziff presented at the 2011 Trinidad & Tobago Energy Conference on how North American Shale Gas development will impact on the gas market and by extension Trinidad and Tobago. This conference is the premier annual event for this important energy sector. The keynote presenter was Jeroen van der Veer, former CEO of Royal Dutch Shell.

"LNG imports to North America are adversely impacted", noted Mr. Ziff, "due to the surge in Shale Gas production from the "seven sisters" (Barnett, Woodford, Eagleford, Marcellus, Horn River, Fayetteville, and Haynesville). The key driver behind this growth is technology development (horizontal well drilling and multi-stage fractures)."

Interestingly, Shale Gas could comprise over a third of North American gas supply by the time baby boomers are into their retirement years. While the bottom line is that supply changes have occurred, the key question that companies need to answer is how do they position themselves in the future?

Although Shale Gas is growing, Paul explained that conventional gas is declining, primarily because full cycle costs for conventional gas, on average, exceed the actual gas price realized. For example, average full cycle cost as determined in Ziff Energy's 2nd Economic Ranking of Gas Basins Study shows conventional gas costs are typically US\$5.50 to \$6.00/Mcf vs. the typical Shale price range of US\$4.50/Mcf.

1st International FPSO Operations *cont'd*

Since the early 1990s, Ziff Energy has delivered a series of offshore operations benchmarking studies, including:


- a dozen multi-client **Gulf of Mexico** studies (7 Deepwater, 5 Shelf)
- a major multi-client study in **Asia Pacific**, completed in 2008 for 10 operators, covering 7 countries
- North Sea: a 2009 study of Mature Hub operations (Danish & UK sectors); custom studies for 2 Majors in 2010 and 2011 (UK & Norway sectors)
- custom offshore performance assessments for operators in **Brazil, India, and Trinidad & Tobago**.

Ziff Energy's FPSO Project team included veteran offshore operators based in Houston and the UK, together with Ziff Energy's "Center for Benchmarking Excellence" (CBE), based in Calgary. Key team members included myself, Ziff Energy's Director, Offshore Operations; David Bott, a former Head of Subsea Technology for a Major; and David Richmond, a former Offshore Installation Manager for a Major.

If an FPSO operator would like to have their FPSOs benchmarked, they should contact Richard M. Tucker, VP Marketing & Client Relations at 1-713-985-5183 or richard.tucker@ziffenergy.com. 



Paul Ziff presenting at 2011 Trinidad & Tobago Energy Chamber Conference

Trinidad & Tobago is the dominant (and closest) supplier of LNG to North America, and the outlook for these exports has decreased with the Shale revolution. So Europe will beckon as an alternative destination. 

UPCOMING SPEECHES (partial list)

<http://www.ziffenergy.com/media/speakersbureau.aspx>

Raymond James Canadian Energy Investment Conference

May 16-17 New York

Paul Ziff will present "Gas Supply/Demand Dynamics".

Indonesian Petroleum Association 35th Annual IPA Convention & Exhibition

May 18-20 Jakarta, Indonesia

Richard Tucker will discuss "FPSO Operations Performance: Metrics & Lessons".

SPE - Petroleum Economics Special Interest Group

May 31 Calgary

Cam Gingrich will examine "Western Canada Gas Supply Economics".

Shale Gas Drilling & Completions Conference 2011

June 20 Houston

Bill Gwozd, P.Eng., will present "Current Developments in the North American Shale Gas Industry".

OTC Brasil 2011

October 4-6 Rio de Janeiro, Brazil

Juan Carlos Alba will discuss "Global Offshore Operations Performance: Assessing Uptime Reliability".

To request a speaker for your next event, contact Jenny Jackson, Marketing Coordinator at jennifer.jackson@ziffenergy.com or 1-403-234-4297.

Ziff Energy Group Celebrates its 11th Year in Latin America

Juan Carlos Alba, Vice President, E&P Business Unit

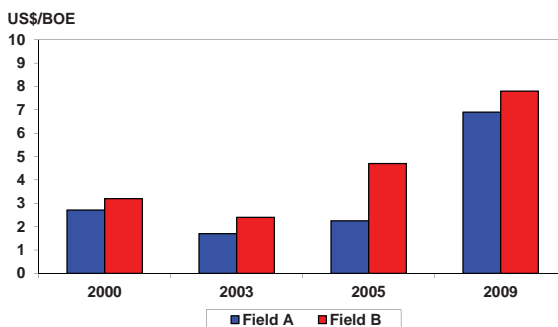
Since 1999, Ziff Energy has completed over 30 studies in Latin America for E&P clients including National Oil Companies (Petrobras, Ecopetrol, Pemex, Petrotrin), International Majors (BP & Chevron), and other operators with significant presence in the region, including YPF, Petrobras Energia, and Pluspetrol. Our Latin America oil and gas field-level data cover 7 producing countries: Argentina, Bolivia, Brazil, Colombia, Ecuador, Mexico, and Venezuela (plus nearby Trinidad & Tobago). In Brazil, Ziff Energy has assessed operations performance of both onshore and offshore assets. To support our Latin American clients, Ziff Energy has established a network of experienced local (in region) Associates familiar with actual operating conditions, geology, and operational challenges.

Most of our studies in the region have focused on benchmarking production operating costs and production efficiency. Our approach is to compare field-level performance against similar gas or oil fields from our extensive world-wide database. Latin American field operations are comparable to similar fields located in North America. These comparisons yields insights on improvement opportunities. For example, Neuquen Basin oil fields in Argentina are similar to some oil fields in the Permian Basin and Western Canada. Some Argentinean onshore gas operations are similar to conventional gas operations in the shallow Hugoton Basin and East Texas fields.


As Latin America basins become more mature, unit operating costs have increased. For example, the unit operating cost of Argentina's mature fields has increased much more than the exchange rate, oil industry wages, WTI, and other local price indexes between 2005 and 2009 (from 2001 to 2005,

the Peso depreciated in value, which helped keep unit operating costs down relative to oil prices).

Oil Fields \$/BOE (Nominal Terms US Dollars)



Regional Database – Latin America

Ziff Energy's field-level operating cost and practices database is the world's largest, covering the experience of 4,000+ oil and gas fields operated by 100+ operators in 35 countries. The number of Latin American oil and gas fields in Ziff Energy's database has grown significantly during the last decade. In 2011, our database coverage will expand to **400 fields**. This provides a strong platform for cost, production efficiency, and best practices analysis, both in the region and for similar assets worldwide. In addition to field performance data, Ziff Energy has built a large repertoire of Key Performance Indicators (**KPIs**) based on our studies in the area. Sample KPIs include metrics related to Well Servicing, Surface Maintenance, Drilling & Completion, Energy Usage, Labor & Field Staff, and Contract Services. 

Clients' Operations across Latin America



Catastrophic Failure of Harmonic Filters in Variable Frequency Drive (VFD) Systems Can Have Grave Consequences in the Oil Patch

David Richmond, Senior Associate, Aberdeen Scotland

The following information is for all Ziff Energy clients who own, operate, manage, or lease Drilling Rigs, Drill Ships, FPSOs, Platforms, or land based developments, which use variable frequency electrical equipment fitted with harmonic filter capacitor banks. Extensive use of variable frequency drive applications is made in all or some of the following:

- Drilling Rigs mud pumps, rotary table, top drives
- Drill Ships mud pumps, rotary table, top drives, propulsion systems
- FPSOs gas compressors and some water injection applications
- Offshore Platforms gas compressors, some water injection, and drilling equipment as above
- Land Based Developments as appropriate.

In September 2010, a disastrous failure occurred onboard the Cunard passenger ship RMS Queen Mary 2 with a full complement of crew and passengers, as the ship approached Barcelona. A harmonic filter failed with a violent explosion causing extensive damage to the surrounding electrical panels. A steel door was forced through its frame and serious damage occurred to the adjacent steelwork of the compartment. Several other harmonic filter capacitors were found to be in a poor condition.

Capacitor which Failed, Causing it to Rip Off the Foundation Bolts and Rise Approx. 60cm



Source: Marine Accident Investigation Branch (www.maib.gov.uk)

Damaged Steel Door to the Harmonic Filter Compartment




Source: Marine Accident Investigation Branch (www.maib.gov.uk)

The explosion took place in one of the electrical panels housing the harmonic filter capacitor banks. Fortunately no personnel were in the compartment at the time of the explosion or fatalities would have been a certainty. The ship had a total loss of power for a short period, which was then only partially restored.

Very few failures of this type have occurred. This type of failure was so unexpected that the Marine Accident Investigation Branch issued a report on the incident in December 2010.

The failed capacitors were 7-9 years old and their deterioration had been observed. Inspection of other capacitors, after the incident, revealed that additional capacitors had deteriorated and their casing was bulging.

Since the interim report was issued, the MAIB has received information from the Shipping Industry that bulging capacitor casings have been found in the age range of only 5-6 years!

Any failure with the potential of causing a fatality is highly undesirable. Clients are strongly recommend to study the report from the Marine Accident Investigation Board and take appropriate action. The report and photographs of the aftermath are available on the following web site: http://www.maib.gov.uk/cms_resources/SB4-10.pdf 

Shell International Selects Ziff Energy for its Global Upstream Operations Benchmarking

Richard Tucker, Vice President, Marketing & Client Relations

On June 25th 2010, Shell International Exploration & Production and Ziff Energy executed a Multi-Year Global Agreement to benchmark the operations of Shell's worldwide upstream assets. Ziff Energy will assess, for each Shell operated asset, detailed Operating Cost metrics and a family of Uptime Reliability metrics. The benchmarking of Shell assets will occur over a 3-year time period. At present, Ziff Energy is benchmarking assets for Shell Europe (UK, Norway and the Netherlands) and Shell Americas (Gulf of Mexico Deepwater and Canadian assets).

The Shell contract followed shortly after Ziff Energy was awarded a project, now completed, to benchmark **Uptime Reliability metrics** for all of **BP's upstream assets globally**. The Uptime metrics that Ziff Energy will benchmark for Shell include: Lost Production, Value of Lost Production, Operating Efficiency, Mean Time Between Unplanned Downtime Incidents, and Mean Time to Recover from Unplanned Downtime Incidents. BP and Shell International's assets are assessed against similar assets using Ziff Energy's proprietary "**World Types**" of **Oil & Gas Fields** to define Peer Groups. 20+ World Types of assets are used for performance comparisons. In some cases, sub-types will be defined for more specific Peer Groups.

Ziff Energy's methodology for benchmarking **Operating Costs** began in 1994 and has been applied in over 100 multi-client and custom operations benchmarking studies. As a result, the firm has built the **world's largest database** of field-level operating costs, with information for over 4,000 oil and gas fields located in over 3 dozen countries.

Our methodology for Uptime or Production Reliability analysis was created during 2007 and enhanced with client input. Ziff Energy has adapted its uptime analysis methodology for onshore as well as offshore assets. Since 2007, Uptime Reliability analysis has been applied in all Ziff Energy benchmarking projects. Ziff Energy has comparative Uptime Reliability metrics for 650 *upstream assets in 35+ countries*. The Shell and the BP global projects have significantly enhanced this database.

Operators interested in having the Production Reliability of their upstream assets assessed using the Ziff Energy approach should contact: Richard M. Tucker, VP Marketing & Client Relations at 1-713-985-5183 or by email, richard.tucker@ziffenergy.com. <http://www.ziffenergy.com/eandp/reliability.aspx>

How Good is Good? Uptime Reliability Performance Analysis

Sergey Turchin, Manager, Operations Consulting Services

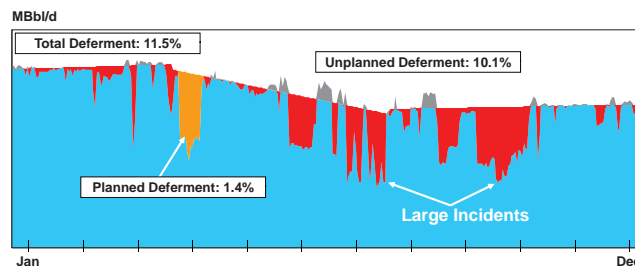
In recent years, Ziff Energy identified a clear need for new management tools to assess uptime reliability performance and identify operating inefficiencies. Uptime or Production Reliability is a proven key Operations Excellence Metric. Improving uptime will lead to increased profitability.

Each large operator has their own approach to defining and measuring "Uptime" or Production Reliability. The Ziff Energy approach provides a consistent basis for field and asset external performance benchmarking (i.e. between operators). Over the last 4 years, 650+ fields from 35+ countries around the world have been assessed (some over multiple years).

The Ziff Energy approach is to calculate **Operating Efficiency** – the single most important reliability measure for operators – as the ratio of actual Production over Predicted Production Capacity (PPC), in other words 'Field Capacity'. PPC is an estimate of the potential production on any day based on the assumption that the field is operating at its own demonstrated best performance for each day of the entire year. Our methodology also distinguishes planned, unplanned, and exogenous (e.g. OPEC quota) production losses based on information provided by clients, allowing management to make well-informed decisions for optimization initiatives.

Ziff Energy defines downtime incidents by a threshold percentage drop against 'base' production determined by a moving average of daily production. These incidents become a basis for calculating the Mean Time Between Incidents

Sample Metrics - Planned vs. Unplanned Downtime & Production Deferment



(MTBI) and Mean Time To Recover (MTTR) metrics. Comparing metrics for a field against the same for peer fields provides the performance assessment (leader, average, below average). "**Best in Class**" targets for each asset group are determined. If performance is below average, the client can analyze the root causes to determine what changes to make to improve Uptime Reliability.

Avoiding downtime is the easiest way to increase production and profitability resulting in increased cash flow.

To assess your upstream assets using our Uptime Reliability Performance approach, contact Richard Tucker, VP, Marketing & Client Relations at 1-713-985-5183 or Sergey Turchin, Manager, Operations Consulting Services at 1-403-234-4298. <http://www.ziffenergy.com/eandp/reliability.aspx>

4th World Operations Forum: October 13 & 14, Houston - a Community to Share Best Practices in Operations Excellence

Ziff Energy, the worldwide leading consultancy for upstream performance benchmarking services, hosted the 4th International Operations Excellence Seminar on October 13 & 14, 2010 in Houston. The program was attended by over 100 Operations Executives and Managers from 24 countries on 5 continents. Attendees learned from 25+ industry leaders who shared their experiences and provided many illustrative examples and best practices. The 2-day seminar included many opportunities for attendees to network with speakers and other attending E&P participants. Speakers were carefully selected by Ziff Energy to represent companies that have achieved excellence and leadership in various types of oil and gas operations, including: onshore and offshore; primary, secondary and enhanced recovery; and mature and young unconventional.

The overall theme this year was Production Reliability: Achieving Operations Excellence. On **Day 1**, Greg Guidry, EVP, Shell Europe, and Iman Hill, SVP, Development & Operations, BG Group, began the program by sharing insights regarding their company's strategies for pursuing excellence. At Shell, Mr. Guidry emphasized that Asset Integrity and Health, Safety & Environment (HSE) are the center points. In 2004, Malcolm Brinded, Shell's Executive Director, E&P established Top Quartile

operations performance goals, based on peer comparisons, for their E&P Assets regarding Uptime and Unit Operating Costs. In June of 2010, Ziff Energy was retained to provide the external benchmarks for Shell's assets globally to measure progress of Shell's 1000 major assets towards these goals.

Ms. Hill spoke of BG's "Fit for the Future" (FFF) program, to develop an organization capable of delivering BG's growth ambitions. BG's strategy integrates People, Processes and Technology, and includes an "Operate" program with 6 sub-programs targeting such important aspects of Operations Excellence as Integrated Activity Planning & Scheduling (IAPS), Competence Assurance, Maintenance Excellence & Safe Delivery of the Day. Currently known for its rapid international growth and success in LNG development & marketing, BG is on the verge of becoming an Oil company, through its large exposure to the Brazilian offshore sub-salt mega-play.

On **Day 2**, the attendees chose between 2 concurrent programs, one focused on **onshore** operations and the other on **offshore** operations. Steve Turk, VP Operations, Southern Division of Chesapeake Energy (the US leader in Shale Play development), kicked off the onshore

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Participating Companies - 55 Operators from 24 Countries



visit our website www.ziffenergy.com for more information


Ziff Energy Completes Global Uptime Reliability Assessment for BP

Richard Tucker, Vice President, Marketing & Client Relations

Ziff Energy recently completed a project benchmarking the Uptime Reliability of 106 BP upstream assets worldwide (operated and non-operated). Ziff Energy assessed Lost Production and Value of Lost Production, Operating Efficiency, Mean Time Between Downtime Incidents (MTBI), and Mean Time to Recover from Downtime Incidents (MTTR). In addition, Ziff Energy provided its Production Reliability Index for the BP assets. BP's assets were assessed against similar assets using **Ziff Energy's 20 World Types of Oil & Gas Fields** to define appropriate Peer Groups. In some cases, sub types were defined for more specific Peer Groups. After the Reliability metrics were determined at the asset level, Ziff Energy "rolled up" the results to the Performance Unit level. This allowed for a comparison across BP's 13 PU's.

The Ziff Energy methodology for downtime analysis was created and further evolved by Ziff Energy with input from clients during the past 4 years, starting with the 6th edition of Ziff Energy's Gulf of Mexico Deepwater studies. (BP participated in the first 7 editions of Ziff Energy's Deepwater analysis.) The Uptime Reliability analysis has been applied in all Ziff Energy benchmarking projects since 2007, including onshore assets.

At present, Ziff Energy has delivered Uptime Reliability metrics for 650 upstream assets in 35+ countries. The Ziff Energy methodology utilizes daily production data. Engineers in Ziff Energy's **Center for Benchmarking Excellence** use regression analysis to establish predicted potential production, which becomes the basis for determining lost production. The analysis utilizes actual daily production relative to a moving average of production to determine the beginning and end of downtime incidents. These dates become the basis for the MTBI and MTTR metrics. Comparing metrics against the same for peer fields provides the performance assessment (leading, average, below average). 'Best in Class' targets for each Peer Group are also determined. If performance is below average, the client will need to analyze root causes to determine what changes to make to improve Uptime Reliability. Ziff Energy can assist with this analysis to determine a course of action.

Operators interested in having their upstream assets assessed using the Ziff Energy approach should contact Richard M. Tucker at 1-713-985-5183 or richard.tucker@ziffenergy.com. 

4th World Operations Forum: October 13 & 14, Houston Creating a Community to Share Best Practices (continued)

program by sharing his firm's experience with Gas Shale operations. He spoke of the Manufacturing Process nature of shale operations and the challenges associated with perfecting this process for the operations associated with each shale rock opportunity. He also spoke about the challenges of operating in urban environments, such as at the Dallas-Fort Worth Airport! Another speaker, Dave McKay, Director, Bakken Shale for Hess, addressed a similar pursuit of Operations Excellence, regarding their experience in the 'hot' Bakken Oil Shale operations in North Dakota. Cam Todd, SVP of Connacher from Canada, explained how their junior company had developed a successful SAGD (Steam Assisted Gravity Drainage) play in the Canadian oil sands, alongside Majors.

The Offshore program featured speakers who focused on the operations of mature and new assets. Mark Hatfield, GM, Asset Development, Chevron and Stein Wolden, Functional Excellence Team Lead, ConocoPhillips, for example, focused on mature Shelf operations in the Gulf of Mexico and

Norway, respectively, while Christina Sistrunk, VP, Production Operations, Shell GOM, focused on mature Deepwater operations. Jorge Rangel, Operations & Maintenance Manager, Petrobras, and Anne Rocher, Total, focused on newer **Deepwater** operations in Brazil and Angola.

With 25+ speakers, a wide variety of topics related to Operations Excellence were covered with many case studies, which attendees valued for potential application to their company's challenges. This year's speakers (like the attendees) included senior Operations Executives and Managers representing a wide diversity of companies and countries --- Majors & Super-Majors; Domestic & International Independents; and National Oil Companies.

The **5th world operations forum** will be held in **Spring 2012**. To receive advance information, please contact Seminar Coordinator, Jenny Jackson, at jennifer.jackson@ziffenergy.com, 1-403-234-4297, or visit our website <http://www.ziffenergy.com/event/opex4.aspx>. 

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