

# GLOBAL PERSPECTIVES

## Deep & Ultra-deepwater Technologies & Projects 2008/2012

infield  
THE ENERGY ANALYSTS

# **Global Perspectives Deep & Ultra-deepwater Technologies & Projects 2008/12**

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## This Report

This report seeks to provide a comprehensive overview of technologies and key market information within the deep and ultra-deepwater sectors and aims to provide the background information, figures and statistics required to understand this vibrant sector.

This report is designed as a business tool and as such makes no apologies for its forthright style.

## Outline structure of Report

The early chapters of the report profile the primary geographic areas of deepwater activity before the final chapters analyse the current and prospective technologies used for exploration, drilling, development and production in deep and ultra-deepwater areas.

## Clarity & Terminology

Within the context of this report a consistent set of terms is used to ensure clarity and comparability. The most important of these are:

**Deepwater** – fields or development activity in water depths  $\geq$  500 metres.

**Ultra-deepwater** – fields or development activity in water depths  $\geq$  1500 metres (unless stated ultra-deepwater is a subset of deepwater).

**Regions** – a definitive list of which countries are classified within which regions is appended to this report. If a different country / region classification is required, then please contact Infield directly.

Wherever possible the colour representation of regions, status, development type, operator etc. has been maintained throughout the report.

## Deep ProjectBase Online

Purchasers of *Global Perspectives Deep & Ultra-deepwater Technologies & Projects 2008 - 2012* receive free access to **Deep ProjectBase Online** for a 12 month period. This website which provides information on all fields in water depths of 500 metres and greater which are now under development, or which are being considered for development in the current year and the next four years. The service details key information about each project including field name, on-stream date, field location, water depth, reserves, production rates, field life, development scenarios, and well numbers.

The service is available online at <http://www.infieldonline.com>. **Deep ProjectBase Online** is updated on a weekly basis. More frequent updates and expanded coverage may be arranged. Existing users of Infield Systems' databases may modify their current arrangements and should contact us for details.

## Data Sources

The base data used in this study relate to fields brought on-stream over the 2003 – 2007 period, or which are currently under development or being planned or considered for development for the 2008 – 2012 period. Fields are referred to, in the historic period, as '**projects**' and to those in the future period as '**prospects**.' It is also important to differentiate between basic field information and the market information which are '**forecasts**'.

The information on the deepwater projects and prospects, and their associated development hardware, was taken from the Infield Systems database during the third quarter 2007. Data given elsewhere in the text are drawn from a wide range of publications, national and international statistics and internal analysis by Infield Systems. Where appropriate, the relevant source has been cited. This information has been supplemented by our own contacts with operators, contractors and suppliers worldwide.

## The OFFPEX™ Market Modelling & Forecasting System

The OFFPEX™ Market Modelling & Forecasting System is a proprietary system developed, owned and operated exclusively by Infield Systems. Working in conjunction with the main Infield Systems' databases, including the Offshore Energy Database, the OFFPEX™ system allows for the modelling and forecasting of all aspects of the development cycle of the offshore oil and gas industry.

In addition project timing, development scenarios, expenditure allocations, supply & demand planning, operator profiles etc can be analysed. Whilst producing models and forecasts over the medium (5-10 years) and longer-term (10-20 years), the OFFPEX™ system also takes into account the influences of macro-economic, techno-economic, geopolitical and other discerning factors, to produce alternative expenditure scenarios.

Built from the bottom up, the OFFPEX™ system is highly versatile and infinitely adaptable to allow for specific field analysis and major global or sectoral forecasts.

The OFFPEX™ Modelling & Forecasting System is the only complete global view of the entire offshore industry available today anywhere in the world.

Further details of the OFFPEX™ system can be obtained from Infield Systems Limited.

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After leaving the University of London with a Geology degree, John went to work offshore around Europe, North Africa and the Middle East. He started writing in 1984, first for The Oilman which was absorbed into Offshore and went freelance in the early 1980s, taking a short break to head up the Energy PR at Amec. Since then, there is hardly an oil and gas magazine that he hasn't contributed to, most

recently editing the Journal of Offshore Technology for the past 10 years. He is currently doing PR and edits UT<sup>2</sup>, the SUT publication.

#### Roger Knight - Editor & Offshore Data Manager

For the past 20 years, Roger has been responsible for the collection, validation and evaluation of the global offshore oil & gas data held on the Infield Systems database, the source of the field information used in this study. He holds a PhD in Geology and is a member of the Energy Institute. Prior to the revolution, Dr Knight worked as a university lecturer in Petrology and Structural Geology in Iran.

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Howard holds a BSc (Hons) in Economics from Warwick University. Since joining Infield Systems in 2003 he has been the lead author of the sector studies, *Global Perspectives: Subsea Production – Market Update 2004/08 & 2005/09* and the *Global Perspectives: Pipelines and Control lines – Market Update 2005/09 & 2007/11*. Howard has completed detailed studies on a number of key sectors within the offshore industry and manages ISL's Match & Track product line. In addition he co-ordinates the development of ISL's OFFPEX™ modelling and forecasting system.

#### Quentin Whitfield – Editor & Director of Data & GIS Services

For the past 19 years, Quentin has been responsible for the development of the Infield Worldwide Offshore Energy Database, analysis of the database on behalf of clients for strategic and market analysis purposes as well as developing the market for Infield's databases, data services and publications and promoting the Infield brand name to the global audience. He is also responsible for developing and implementing the EnergyGateway, Infield's new mapping and GIS system. He holds a Bsc (Hons) in Zoology and two postgraduate diplomas in marketing and is a member of the Institute of Directors and the Chartered Institute of Marketing.

The authors can be contacted by email at [data@infield.com](mailto:data@infield.com)

### **Infield Systems Limited - Company Profile**

Since 1991, Infield database has been providing accurate, timely and detailed data and information on the worldwide oil and gas industry. Now widely acknowledged as one of the definitive independent reference sources, Infield Systems has developed a range of products and services designed to assist senior executives in business decisions. Whether supplying or managing raw data for internal company use or providing high-level strategic views on global market developments, Infield Systems operates with the highest standards of accuracy, clarity and professionalism to gain results.

All of Infield Systems' products and services are supported by direct access to senior analysts and support personnel, ensuring high standards of service and responsiveness across the globe.

- **Comprehensive worldwide offshore field data**
- **Complete global offshore industry model**
- **Project databases & information**
- **Data analysis**
- **Business strategy & analysis**
- **Quantitative & qualitative surveys & analysis**
- **Global, regional & sector publications**
- **Market analysis & benchmarking**
- **Competitor analysis & monitoring**
- **Scenario development & planning**
- **Tailored research & analysis**
- **Market due diligence**
- **Online GIS & Mapping**

Infield Systems' range of in-house skills include all the major industry disciplines from Geology, Finance & Law through to Senior Operational Management, allowing for the provision of data, information and reports that are realistic, accurate and insightful. Infield Systems' reports and services are used to support business decisions at a senior level and as such are presented with a clarity and conciseness that has brought international acclaim.

As well as bespoke data and information services, Infield Systems provide packaged online databases which offer executives key information on various industry sectors:

- **Deepwater Online**
- **Subsea Online**
- **Floating Production Systems Online**
- **Fixed Platforms Online**
- **Pipelines Online**

Infield Systems data and data sets can be interrogated online or downloaded for use offline with all database and spreadsheet software packages. Data can be incorporated into companies' intranets and databases to build powerful knowledge management systems.

Bespoke databases can be drawn from the following data sets:

- **Fields**
- **Platforms**
- **Subsea Structures**
- **Pipelines**
- **Control Lines**
- **Single Point Moorings**
- **Onshore Terminals, LNG & GTL Plants**
- **Operators**
- **Field Ownership**
- **Specialty Vessels Database**

Furthermore, all of these databases can be combined with the OFFPEX™ Modelling & Forecasting System to produce specific business tools.

Infield Systems Limited is also developing the Infield EnergyGateway Mapping & GIS System which provides a geographically presented view of the Infield Offshore Energy Database



**Global Perspective Market Update** reports are range of insightful publications on key sectors of the worldwide energy industry which not only provide headline market information in a clear and concise manner, but are built with a highly advanced modelling process that allows for infinite interrogation and further analysis for those who require more detail.

- **Deep & Ultra-deepwater Market Update**
- **Fixed Platforms Market Update**
- **Floating Production Market Update**
- **Subsea Production Market Update**
- **Pipelines and Control Lines Market Update**

**Global Perspective Technologies & Projects** reports provide a comprehensive insight to the technologies employed in industry. They are designed for executives entering the sector for the first time who need a fast and clear understanding and for seasoned individuals who need to keep abreast of new advancements, new technologies and companies entering and leaving the sector.

- **Deep & Ultra-deepwater Technologies & Projects**

### **Analytical & Consultancy Services**

Infield's analytical team works on an independent and strictly confidential basis. The non-exhaustive list below outlines the capabilities of the Analytical Services team.

**Project databases, information & research:** Collating, verifying and providing specific project data and information by sector, geographic location or company. Detailed company information is maintained on many of the world's oil & gas operators, contractors, key suppliers as well as extensive records of specific and generic assets. Dedicated research of new business concepts or products, diversification opportunities or even acquisition targets.

**Data analysis:** Providing statistical analysis of offshore data for existing or prospective new markets.

**Business strategy & analysis:** Supporting senior executives with strategic decision making and analysis.

**Scenario development & planning:** Development of long-term scenarios and base-case assessments of countries, fields and players. Including macro-economic, geo-political and energy mix analysis to aid strategic, business model, marketing and investment planning.

**Market analysis & benchmarking:** Comprehensive market information to allow for business development or diversification. Using multiple inputs to develop advanced market models either as an industry 'snapshot' or as a corporate benchmark for further internal assessment. Available as stand-alone reports or a part of a strategic planning or development exercise

**Competitor analysis & monitoring:** Detailed assessment of key competitors and prospective competitors including market share, strategic developments and financial performance. Continual monitoring service of key competitors, sectors, assets and or new offshore market developments.

**Quantitative & qualitative surveys & analysis:** Confidential or independent in-depth surveys of key sectors or aspects of the oil & gas industry on a national, regional or international basis.

**Market due diligence:** Assisting investment banks and other financial institutions through the provision of independent market assessments for products and services. Deal size undertaken to-date ranges from \$0.5m to \$1.2bn and includes new product launches, company formation, mergers, acquisitions and divestitures. Provision of independent market view of markets, sectors and companies including market share, market positioning, customer perceptions, competition issues, threats and opportunities.

# Deep & Ultra-deepwater Technologies & Projects 2008/12

The First Edition of the Global Perspectives Deep & Ultra-Deepwater Technologies & Projects Report, published by Infield Energy Analysts, provides an in-depth independent analysis and review of the technologies employed to develop prospects in water depths of 500 metres and greater.

## Report Overview:

As many of the world's more easily accessible offshore hydrocarbon deposits have been discovered and produced successfully over the past five decades, the industry has required itself to explore in progressively more inaccessible locations in its search for further oil and gas reserves. This search has precipitated a movement into progressively deeper waters, to the point where deepwater activity has, over the past ten years, evolved from a frontier activity into an intrinsic and strategically important element of most global offshore operator's asset portfolios.

Indeed, the growth and development of deepwater (defined as water depths of between 500 and 1,499 metres) and ultra-deepwater (defined as water depths of 1,500 metres and more) activity is, and is expected to remain, a key element of the continued expansion of the offshore oil and gas industry. Furthermore, the significance of this activity has been heightened by the recent increases in commodity prices and growing concern over future reserves and supply

The surge in deep and ultra-deepwater activity has fuelled a drive by many service companies to invest in adding deepwater capability. Indeed, there is very little of the service industry that has not been touched directly or indirectly by this push to deepwater. In spite of this added capability it still seems likely that the industry is going to reach certain choke points, particularly regarding deepwater pipelay and heavy lift capability.

At present, the ultra-deepwater exploration limits exceed those of ultra-deepwater production, which means that at certain depths, a successful find may be technically unexploitable. However, the expectation is that with improvements in technology, understanding and the availability of equipment more and more finds will become economically recoverable, facilitating the continued growth of the deep and ultra-deepwater sector through to 2012 and beyond.

The *Deep & Ultra-deepwater Technologies & Projects Report 2008/12* profiles offshore oil & gas exploration, development and production activity in each of the major global deepwater provinces over the period to 2012

**Who should buy this report?** Infield's reports have been purchased by senior managers, analysts, consultants, government bodies from a wide spectrum of organisations.

## Why you should buy this report:

- The report provides an in-depth analysis and profile of deep and ultra-deepwater fields forecast to come onstream over the period to 2012, including an analysis of levels of reserves onstream, development types utilised and participating operators.
- Profiling of the key technologies that are expected to play an increasingly prominent role within the exploration, development and production of deep and ultra-deepwater oil and gas reserves through to 2012
- Specific project case studies are provided, detailing offshore field developments where these technologies have been or are intended to be deployed and the key differentiating factors driving their implementation.

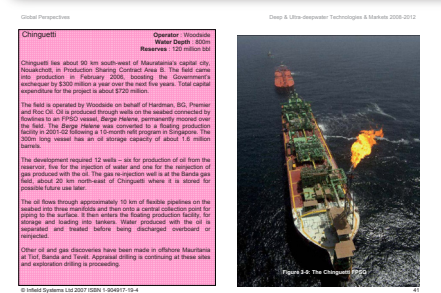
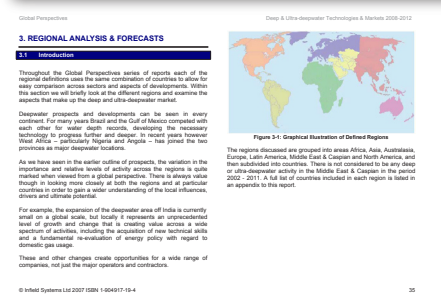
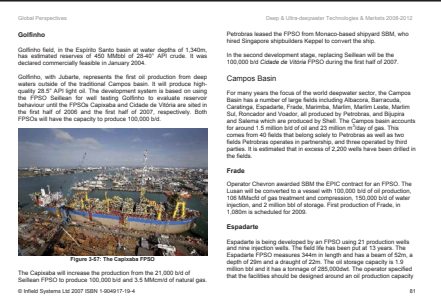
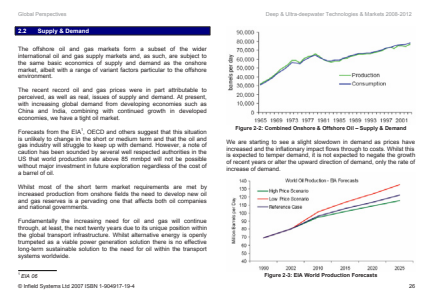
## Report Contents

- **Summary & Conclusions** provides an executive overview of the deepwater arena in terms of field numbers and total reserves from 1989 through to 2012.
- **Global Market Context** looks at the supply and demand issues, commodity pricing, growth of global GDP, prices versus activity and geopolitical issues. It also looks at deepwater prospects in terms of size, development scenario, operator and participant.
- **Regional Analysis & Forecasts** provides for each region (Africa, Asia, Australasia, Europe, Latin America, and North America) an overview, field case studies, key project listings and project maps.
- **Deep & Ultra-deepwater Exploration** provides a review the technologies and issues of deepwater exploration, including satellite tracking, licencing, seismic survey, well planning, top hole drilling, dual gradient drilling and tender assisted drilling
- **Deep & Ultra-deepwater Production** This section provides a review of production development technologies including fixed platform facilities, floating production systems, deepwater moorings, deepwater anchors, subsea equipment, riser systems, production pipelines, seabed processing, separation, pumping and compression, subsea intervention and subsea tiebacks.

## GLOBAL PERSPECTIVES

### Deep & Ultra-deepwater Technologies & Projects 2008/2012

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## Searchable Online Projects Database

Purchasers of the Global Perspectives Deep & Ultra-deepwater Technologies & Markets Report will receive 12 months free access to the Infield Deepwater ProjectBase which lists all deepwater fields being developed over the next five years in water depth of 500 metres and greater, worldwide.

Details about each project include:

- Operators
- Project Name
- On Stream, Discovered & Depletion Dates
- Reserves & Production Rates
- Water Depths
- Project Status
- High Temperature & High Pressure

Subscriptions can be upgraded to include other fields, including operational developments and shallow water developments or other data sets from the Infield Offshore Energy Database.

## The Infield Energy Data Analysts

Infield has been providing accurate, timely and detailed data and information on the worldwide oil and gas industry since 1986. Now widely acknowledged as one of the definitive independent reference sources, Infield has developed a range of products and services designed to assist senior executives with their business decisions;

- Databases
- Publications
- Analytical Services
- GIS & Mapping

**Global Perspectives Reports:** This is only one in a series of reports for the oil and gas industry. Others include:

- Deep & Ultra-deepwater Market Update
- Subsea Market Update
- Floating Production Market Update
- Fixed Platforms Market Update
- Pipelines & Control Lines

## Offshore Energy Database

The Infield Worldwide Offshore Database provides detailed and up to date information about all offshore fields, worldwide. The earliest project on Infield is Bibi Eibat which came on stream in 1923 in Azerbaijan. The furthest ahead are decommissioning projects not expected to proceed for several decades. Infield comprises 7,734 offshore fields in 127 countries, involving over 700 operators and more than 1,100 participant companies. Infield is updated daily so clients can expect to be kept informed of new information as and when it happens.

- Fixed Platforms
- Floating Production Systems
- Subsea Trees, Manifolds/Templates
- Rigid & Flexible Flowlines
- Control Lines & Umbilicals
- Single Point Moorings
- Specialist Vessels
- Field Operators & Ownership

# Order Form

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