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Next generation. As OE turns 40 this year, we wanted to pay homage to our very first cover depicting Britain's first offshore oil field, Argyll, which similarly turned on its taps in 1975. This portrait, painted by Sage Hansen – a 3D animator at NOV who contributed our June 2014 cover – recalls the scene from 1975 and updates it with more modern, next-generation equipment.
What is the biggest challenge facing the global offshore oil and gas industry in 2015?

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Publisher's Column
Blast from the past. Brion Palmer reflects on the year that was... 1975.

ThoughtStream
John Drake of Ake Group lays out the global risk outlook for 2015.

Global Briefs
News from the around the world, including discoveries, field starts, and contracts.

In-Depth: Current Complexities
Elaine Maslin reports on how some companies are attempting to better understand the region west of Shetland.

Automation
Gregory Hale reports on how new age technologies block failures, and boost bottom line.

Solutions
An overview of offshore products and services.

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Company updates from around the industry.

Spotlight
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Alternate view. As we consider the health of the rig market, we feature Maersk Drilling's DNV-classed Maersk Interceptor on the cover. The Gusto MSC CJ70-X150MD, ultra-harsh environment unit is to work on Det norske's Ivar Aasen development in the Norwegian North Sea under a five-year contract. Photo from Maersk Drilling.
Undercurrents
Is there a silver lining?

Voices
Our sampling of experts offer opinions.

ThoughtStream
Mike Tholen of Oil & Gas UK discusses how the falling oil price is effecting the North Sea sector.

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News from the around the world, including discoveries, field starts, and contracts.

Analysis: Lighting the way
Elaine Maslin reports on sending electricity to offshore installations on the Norwegian Continental Shelf from onshore.

Analysis: Egypt’s bid to spur oil, gas activity
Patrick Werr reports on how Egypt’s bid to pay off its debt to international oil companies and improve contract terms could create a rush of activity to make up for lost time.

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With oil prices depressed, Greg Hale argues that automation could make a much needed difference in the offshore industry.

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Faces of the Industry
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Course Must Be Completed
By March 31, 2015

IADC is discontinuing WellCAP® certification through e-learning platforms for all drilling levels. Future certifications must be completed in instructor-led classes.

Check our Web site for new and improved e-learning courses.
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26 Learning lessons learned
Is the oil industry good at lessons learned, but not at learning lessons? – Jan-Erik Nordtvedt, SPE Intelligent Energy program committee chair 2014 and President and CEO of Epsis, poses the question.

28 Transforming the future of oil
Repsol’s Director for Exploration and Production Technology Santiago Quesada discusses the company’s partnership with IBM aimed at developing cognitive technologies for better decision-making.

ON THE COVER

Long-awaited. In mid-February, Statoil and partners reached a final investment decision on the 2.35 billion bbl Johan Sverdrup field, located in the Norwegian North Sea. Discovered in 2010, the field’s development is a major success given the current reduced CAPEX climate. Wood Mackenzie recently valued the field at US$11.2 billion.
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Adaptation. When Stone Energy needed assistance intervening on its subsea well template at the deepwater Pompano field in the Gulf of Mexico, the company worked in collaboration with Cross Group to find a solution that would allow access to the field's through-flowline subsea system. The end result allowed flexibility for both risered or riserless intervention. See more of the story on page 50 of this issue of OE.
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Improved chelant stimulation treatments deliver sustained production gains
Halliburton Energy Services' Harvey J. Fitzpatrick, Jr. shows how wellbore stimulation fluids can increase production.

Advances in technologies for additives and fluids
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Laser-like precision
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From Russia with tough love
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(Em)Bracing innovation
By taking onshore cable stay engineering design concepts for use subsea, the Siri platform will be able to continue production. Elaine Maslin takes a look.

Taking the load
Elaine Maslin reports on the new solution found to calibrate the 64 load cells on the Snorre A tension leg platform.

Safety from a design consideration
Preventing corrosion is necessary to avoiding production failures. Leokadia Rucinski and Genesis' Binder Singh provide details.

Offshore heavy oil economics
Jeannie Steil looks at offshore heavy oil development economics with an eye on the current low-price environment.

Developing KMZ
Jerry Lee provides an overview of Mexico's Ku-Maloob-Zaap (KMZ) field in the Bay of Campeche.

Making light work of sand removal
Desanding to stop wellbore tubing clogging-up is nothing new but company FourPhase has developed their own technology to keep the flow going. Neil Meldrum explains.

(Em)Bracing innovation
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Enhanced IM of subsea control systems
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Putting hydrates under high-pressure
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Offshore wind turbine foundations await their future deployment offshore at Bladt Industries' 35 hectare, coastal yard in Aalborg, Denmark. Bladt Industries has been involved in the fabrication of more than 1300 foundations for the European offshore wind market. Photo by Tenna Horby from Bladt Industries/bladt.dk.
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Buoyancy and ancillary systems for the SURF sector

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44 A soft touch for heavy lifting
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46 Seeing the unseeable
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The tides are changing in many countries, which are ramping up their political policies to provide international operators the consistency and transparency needed to invest in the region. Heather Saucier reports.

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As decommissioning begins in earnest in the UK North Sea, the real cost of decommissioning is starting to be seen. Elaine Maslin reports on a study conducted to assess the increasing costs.

36 Jack of all trades
Decommissioning, plugging and abandonment, well workovers, EOR, and even offshore renewables maintenance could be performed from the dual decks of the CDC Heron. Elaine Maslin reports.

ON THE COVER
Night moves. OE’s July cover features workers on the rig floor of Seadrill’s West Gemini drillship. The vessel was one of two drillships contracted for Total’s CLOV development in Block 17 offshore Angola. See the full story of CLOV’s development on page 18. Photo courtesy of Total/Gonzalez Thierry.
Undercurrents
The North Sea's confidence in the industry is at an all-time low.

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InterMoor's Jim Macklin discusses decommissioning in the 21st century.

Global Briefs
News from the around the world, including discoveries, field starts, and contracts.

Field of View: The golden block
Block 17 has shone brightly for French operator Total and its partners. Now with the fourth development – CLOV – in production, Audrey Leon details how lessons learned and local content proved to be key to Total's success offshore Angola.

In-Depth: Realizing CCS's potential
Could the North Sea become a CO2 storage site? Elaine Maslin takes a look at two proposed projects and some of the challenges involved.

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Spotlight: Meet Granherne's Richard D'Souza
Richard D'Souza's career reads like a history of offshore energy development. Jeannie Steil gets his perspective.
Shell's 4D optimizes Brazil waterflood project
Shell's second waterflood monitor survey offshore Brazil shows technical success. Jeannie Steil reports.

Integrating MPD into existing rig systems
Revamping older offshore rigs with modern technology positions them for more efficient and safer drilling to target depth. Weatherford's James Onifade and Turkish Petroleum Oilfield Services' Yılmaz Kum and Benhur Sahin explain.

Designing for tight spaces
Designing a tightly packed, complex turret system is one thing. Designing so it can be built and then maintained without causing hiccups is another. Carlo Pellegrino of Italy's RINA Services sets out the details.

Innovation – in all its forms
Standardization has been high on the agenda at the Underwater Technology Conference (UTC) in Bergen for the past two years. Elaine Maslin reports on innovations discussed and on show.

Boosting in the deep
The rewards on offer from subsea boosting technology were spelled out at the MCE Deepwater Development Conference in London this spring by Arne B. Olsen, sales director, pumps and subsea processing at OneSubsea. Meg Chesshyre reports.

Corrosion fatigue behavior of high-strength steel wire
Applying materials and corrosion science to the study of corrosion fatigue in high-strength steel wire aids flexible riser performance understanding. Intertek's Peter Barnes explains.

Southeast Asia in focus
Despite the downturn, plenty of development is underway in Southeast Asia. Audrey Raj sets out the detail.

Boundary disputes: South China Sea
Offshore assets in the South China Sea are ripe for further development, but territorial challenges are common. Jeannie Steil reports on the conditions affecting Vietnam.

Understanding the changing workforce
Social collaboration brings context to data and helps find experts. Tom Franklin reports.

ON THE COVER
Blue skies ahead. This month's cover features the Q6000 from Helix Energy Solutions. The DP3 well intervention vessel will arrive in Galveston, Texas, the first week of August for final commissioning. This just happens to coincide with OE’s Deepwater Intervention Forum, also in Galveston. Read more about the forum on page 24. Cover photo and photo on top of page by Neil M. Johnston.
Undercurrents
OE examines Mexico's highly anticipated Round One.

ThoughtStream
Douglas Westwood looks at two geopolitical issues affecting the oil price: Greece's possible exit from the Eurozone and the Iran nuclear deal.

Global Briefs
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Field of View: Two for one
Audrey Leon reports on how Anadarko's Lucius field, which went into production in January, came to be.

In-Depth: Big data gets even bigger
Elaine Maslin takes a look at other areas, such as condition monitoring, where the industry could make significant gains.

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Spotlight
Eugene Gerden discusses Lukoil's current and future strategy with president Vagit Alekperov.

“What's the greater challenge for deepwater intervention - technology or best practice?”

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Buoyancy and ancillary systems for the SURF sector

Balmoral SURF products use materials originally developed for Formula 1 racing cars
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A team of subsurface and facilities engineers have been working together to create a viable, small footprint solution for a string of sour fields in the UK's Outer Moray Firth. Mike Cooper explains.

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Drilling on Statoil's Mariner will be a mega project - but Statoil is looking to lighten the load in ways that could only be done on such a large project. Elaine Maslin found out more.

**50 Designer mud**  
Designer mud is helping Total tap pressure depleted HPHT reservoirs in the UK North Sea. Elaine Maslin takes a look.

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Weatherford's Steve Rosenberg and Ming Zo Tan demonstrate how drilling-with-liner technology isolated a depleted sand section in deepwater Gulf of Mexico well in one trip.

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An approach to modeling and simulation combining subsea electrical and fluid systems can facilitate a better understanding of the interaction of long-distance tiebacks supplied by step-outs. ABS' Milton Korn explains.

**58 Making it simple**  
Hurricane Energy has proven commercial oil can flow from its fractured basement oil reservoirs West of Shetland. Its next job is finding an economical solution to get it to market. Elaine Maslin reports.

**62 Making waves**  
Assumptions around tidal arrays need to be rethought, according to Professor Stephen Salter. Emma Gordon reports.

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**64 Systematic evaluation of platform life**  
Getting to grips with the condition of older assets can be a difficult task. Stefano Copello outlines RINA's approach to revitalization.

**68 Carbon sense**  
Flow visualization in horizontal wells is being improved thanks to carbon composite rods. Elaine Maslin takes a look.

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**FEATURE FOCUS: FPSO**

**26 FPS market expected to rise**  
Spending on floating production systems is expected to increase 73% in 2015-2019, with US$81 billion due to be spent over that period. Douglas Westwood analyst Ben Wilby sets the scene.

**30 FPSOs shine bright in down market**  
In advance of OE's 2015 Global FPSO Forum, in Galveston, Texas, Audrey Leon spoke with the event's co-chairs—SBM Offshore's Jim Wodehouse and Endeavor Management's Bruce Crager—to discuss topics affecting the FPSO sector.

**34 A stabilizing design**  
Audubon Companies' Denis Taylor and LLOG Exploration's Craig Mullett discuss changing design considerations for condensate stabilization on the Delta House FPS in the Gulf of Mexico.

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**ON THE COVER**  
Through the looking glass. OE is not the only one celebrating its 40th birthday this year. The iconic Forties field in the UK North Sea, too, began production in 1975. We take a look back on the history of the field and its future. Photo reproduced with permission of BP Archive.

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70 Life extension or decommissioning? 
Understanding your asset is vital before making the big decision. Clurus Subsea's Vineyak Patil and John MacDonald explain the key challenges of subsea integrity management in the Gulf of Mexico.

74 Robotic intervention 
Offshore workers could soon find themselves sharing their facilities with robots, particularly in remote, harsh or hazardous environments. Elaine Maslin looks at the Argos Challenge.

76 Overcoming obsolescence
There is a big risk circling mature production installations where hardware that was once state of the art now poses a problem for managers on late-life assets; that risk is obsolescence. John Bradbury reports.

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84 Current North Sea major projects
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86 Adding EOR to Quad 204
BP has been making strides in LowSal enhanced oil recovery techniques and Bright Water. It now has its sights set on polymerized water for its Quad 204 development. Elaine Maslin reports.

88 Busy work
Introducing a new FPSO into a brownfield while overhauling the subsea infrastructure led to a complex multi-year SIMOPS campaign for Technip. Elaine Maslin sets out the details.

90 Focusing on efficiency
High oil prices in a mature basin led to a tight market and cost escalation. With low oil prices, the industry is working hard to rein in spending. Elaine Maslin speaks with Oil & Gas UK CEO Deirdre Michie on some of the initiatives underway.

OE Region: Dutch Offshore
Leveraging strength. The cover of OE's special report on the Dutch offshore sector features the Dockwise Vanguard carrying its first ever ship-shaped FPSO cargo, the Armada Intrepid—one of the largest cargoes ever transported. The Dockwise Vanguard successfully delivered the FPSO to Batam, Indonesia, on 8 July 2015, just two months after it set sail from Rotterdam's Caland Canal. OE Regions: Dutch Offshore begins after page 94.

JUST PLUG IT IN!
Advantageous approach to the construction of living quarters. Piikkio Works is the world's leading manufacturer of prefabricated modular cabins. Over the past 30 years the company has delivered more than 130 000 cabins and bathrooms for marine and offshore applications.

www.piikklioworks.fi
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Gregory Hale explains how avoidable downtime costs producers billions every year, with equipment failures being the most common culprit.

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Gregory Hale shows how web-based software utilizes high definition photos and video to extend the life of aging assets.

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A new offshore play is emerging in the oil and gas exploration business - deepwater contourites, Elaine Maslin explains.

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Gregory Hale looks at how automation capabilities are removing guess work and allowing real-time decision-making.

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Jerry Lee investigates the use of hydraulic submersible pumps as an alternative to the common ESP for artificial lift operations.

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Despite rapid progress in the 80s and 90s, ROV technology development has ground to a halt, according to some. Elaine Maslin reports.

54 Sparking a ROVolution
Subsea robotics firm FMC Technologies Schilling Robotics has a vision, which it thinks could overturn the way subsea equipment is designed.

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Applying university research to an industry challenge has helped create new solutions for Aberdeen's Hydrasun, Elaine Maslin explains.

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Brazil will need to drill around 300 development wells in deepwater in order to sustain and reach its production target. Douglas Westwood's Mark Adeosun takes a look at what is at stake.

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The safe installation of the first tension-leg wellhead platform offshore Brazil could pave the way for future similar developments, says DNV GL's Mike Roberts and David Ryan.

68 Tackling the deep
Brazil's deepwater offers huge opportunities, but also big technology challenges. The Industry Technology Facilitator's Paddy O'Brien and Arthur Braqa explain.

70 What's in the car wash?
Robert Gordon University's William Craig discusses the federal corruption investigation Operation Car Wash and its effects on Brazil's oil and gas sector.

ON THE COVER
Hustle & bustle. This month's OE highlight's Brazil Offshore sector. InterMoor supplied 15 conductors for the Papa Terra project in 2012, examined on page 66. The cover photo, provided by InterMoor, shows well conductors for Papa Terra being loaded on a barge for installation at the Port of Rio de Janeiro.

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30 Living in a material world
Nanotechnology is a wide and growing field being researched and developed by both academia and industry alike. Elia Barnett spoke with researchers at University of Houston, Rice University, and service company Halliburton to see how far the technology has come.

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ThoughtStream
Halliburton's Abdalla Awara says innovation is the key to unlocking Brazil's deepwater reserves.

Global Briefs
News from the around the world, including discoveries, field starts, and contracts.

Field of view: Bringing Perla online
Shreeram Lom, Aaron Rampersad, and Juan Martínez, of Repsol, discuss the Perla development, which came online offshore Venezuela in July.

In-Depth: Supply and demand
When the oil price drops, people want to know how long the decline will last and when it will go back to "normal." Audrey Leon reports on how market watchers and researchers tried to make sense of the downturn at this year's SPE Offshore Europe.

Voices
Our sampling of leaders offers guidance.

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An overview of offshore products and services.

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Company updates from around the industry.

Spotlight: Tyler Schilling
Another firm marking a milestone anniversary this year, like OE, is Schilling Robotics – now FMC Technologies Schilling Robotics. Elaine Maslin profiles co-founder Tyler Schilling.

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Varel produced what it believes to be the largest drill bit in the world – it was nicknamed Monster by the drilling engineer who used it on its first outing this year, Elaine Maslin reports.
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ROV technology developers gave an update on their progress at the Subsea UK ROV Conference. Elaine Maslin reports on some progress, as well as where one operator thinks ROV and AUV technology could improve.

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The Mediterranean and North African region is largely considered to be a promising frontier oil and gas area, and yet, border tensions, and internal disputes have seriously held back exploration efforts. Audrey Leon surveys the prospects.

54 Surveying Mediterranean prospects
Jerry Lee reports on all the exploration and production activity currently ongoing in the Mediterranean and North Africa.

ON THE COVER

A whole new reality.
Companies such as Oceaneering International, are using next-generation training techniques to get their employees ready before they get into the field and have to deal with real life equipment and situations. Find out more in our cover story on page 28. Image rendered by Luis Parada - Pereira from Abyssal, courtesy of Oceaneering International, Inc.
Can cost efficiency and safety be complementary?

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For the offshore floating rig market, the downturn presented the perfect storm: too many rigs, not enough demand, and with some 200 newbuilds set to enter the market over the next decade. Audrey Leon reports.

59 Automation: Understanding pore pressure
Gregory Hale discusses how managed pressure drilling helps to eliminate the guess work.

60 Solutions
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62 Spotlight: A treasure TROV
Jim McFarlane introduced ROVs to the North Sea industry in the 1970s and went on to pioneer AUV development. Elaine Maslin learned more from the still active industry veteran.

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66 Asset of the Month: Fit at 30!
It was the first floating production unit in the North Sea and it’s still going strong – with a deployment to its latest field, on its 12th contract, due to start next year. Elaine Maslin looks at Teekay Offshore’s Petrojarl I.
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Using steam to help increase oil recovery, particularly from heavy oil, is a well tried and tested technology, but not quite so offshore. Elaine Maslin looks at a bid to change that.

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Despite the massive cut backs the industry is facing, including cuts to exploration programs, drill bits continued to spin in 2015. Elaine Maslin reports.

54 This is 40
When OE turned 10 in 1985, we invited the leading figures in the offshore industry to reflect on highlights from the previous decade. Now that we’re older and wiser, we decided to yet again reach out to some familiar and not so familiar faces to not only reflect on the past, but to ponder the challenges yet to come.

56 Hard at work
OE asked readers to send in their offshore photos, and send they did!

ON THE COVER
Turning up the heat. Despite being a mature province, the North Sea continues to reap rewards for those willing to go into new plays and expand the limits of technology. Maersk Oil’s high-pressure, high-temperature Culzean field, a Maersk Oil artist’s visualization of which adorns our cover, is an example. Read more on page 18. Photo courtesy of Maersk Oil.

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Getting HPHT right is a real challenge for today’s industry, involving finding new materials, setting new standards and building competence in the industry. Elaine Maslin reports.

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