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novel pump systems, reliable support to help lower cost, improve reliability and deliver more production.

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improves cement performance and bonding for better zonal isolation.

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ensure the integrity of the well construction and cementing operations.

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full range of drill string components to make drilling more efficient and reduce non-productive time.

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continuous measurements to surface while drilling, satellite-based remote monitoring and certification for faster and more accurate drilling.

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improve penetration rate by inducing axial vibration in the drill string to reduce friction drag and sticking.

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Production Chemicals:
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vertical and directional motors with Sealed Bearing and Mud Lube configurations.

Stimulation Chemicals:
increase load recovery, hydrocarbon production, lower pumping friction and increase ROI.

Casing Accessories:
ensure the integrity of the well construction and cementing operations.

Drilling Motors:
vertical and directional motors with Sealed Bearing and Mud Lube configurations.

Stimulation Chemicals:
increase load recovery, hydrocarbon production, lower pumping friction and increase ROI.

Cement Additives:
improves cement performance and bonding for better zonal isolation.

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A s I write this, Brent crude is back over US$51/bbl. In case you somehow missed the news: at their recent meeting in Algiers, OPEC did the unthinkable and actually agreed to cut back on production. Iranian Oil Minister, Bijan Zanganeh, summed up the situation: “OPEC made an exceptional decision today […] After two and a half years, OPEC reached consensus to manage the market […] We have decided to decrease the production [by] around 700,000 bpd.” Such a reduction would bring the group’s total production levels down to the 32.5 – 33 million bpd range.

When the news of the proposed deal – the first in eight years – was announced, markets reacted immediately, pushing up oil prices by more than 5%. It seems that concessions made by Saudi Arabia, most notably an offer to exempt regional rival Iran from any cap, are what secured the unexpected agreement. Previous negotiation attempts had been hindered by Iran’s refusal to accept any restrictions on increasing its own output, which had been cut back significantly under the weight of US and EU sanctions. It would appear that Saudi Arabia’s increasingly urgent need to balance its budget and fund an ongoing conflict in Yemen has taken priority over limiting Iranian oil production.

However, whilst it’s certainly nice to break the US$50/bbl barrier again, aside from OPEC’s statement of intent, there’s nothing really new on the table. 700,000 bpd makes up just a few percent of OPEC’s total output and isn’t enough to counteract the current oversupply situation. As long as the market remains oversupplied, there’s little reason for a long-term rise in oil prices. What we’re seeing right now could be nothing more than the market overreacting to the acknowledgement that there’s a problem and that something needs to be done. The details of exactly who will be cutting back, and by how much, have yet to be fully ironed out, and likely won’t be agreed upon until the next OPEC meeting on 30 November. Even then, the deal is unlikely to achieve too much without the support of major non-OPEC players, like Russia. And to top it all off: even if the negotiations go smoothly, there’s no mechanism to ensure that individual OPEC members don’t cheat on their quotas.

Despite all of the above, this agreement could still mark the dawn of a recovery, albeit a long one. The very fact that OPEC members, especially rivals like Saudi Arabia and Iran, are negotiating and (at least ostensibly) agreeing to production cuts is a positive sign. The agreement itself won’t change the fundamentals at play in the market, but it does show that things can improve. Let’s hope they continue to do so!

The Oilfield Technology team will be attending ADIPEC on 07 – 10 November, so drop by our stand (121230) and let us know your thoughts on the industry!

Reference
When making energy decisions in Offshore Mexico, information is power.

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OPEC agrees to curb oil output

Oil prices have surged by more than 5% in the wake of OPEC’s announcement that it intends to cut out production for the first time in eight years. The groups’ surprise reversal of its ‘pump-at-will policy’ that was adopted in 2014 will see member countries limit total output to a range of 32.5 - 33 million bpd, effectively re-establishing OPEC production ceilings. Although modest, the deal is expected to bolster the morale of the energy industry and boost the economies of oil rich countries.

The agreement was made possible by Saudi Arabia’s offer to curb its own output by up to 350 000 bpd while allowing its arch-rival Iran to continue producing. It is hoped that Saudi Arabia’s willingness to compromise signals a new phase of relations between the two member states who have historically disagreed on oil policy.

The idea of introducing a country quota for oil output has long been in circulation, however, exactly how much each country will produce will not be decided until the next formal OPEC meeting in November. However, it will be important for OPEC to convince producers outside the group, such as Russia, to cap their output in order to truly kick start an oil price recovery.

It remains to be seen whether the optimism that has sparked the increase in oil price will stabilise the market. The global oil industry currently produces a 1.5 million bpd more than needed, and a 700 000 bpd cut will certainly not eliminate the supply glut, which has persisted since 2014. However, the agreement is a positive step towards reducing the economic uncertainty that has plagued oil producers over recent years.

ACE Winches delivers subsea infrastructure project

ACE Winches has completed a scope of work for Technip as part of a subsea infrastructure project in the Loyal field, west of the Shetland Islands. Quad2014 is the redevelopment of the Schiehallion and Loyal fields, located 175 km west of Shetland and 15 km north of the Foinaven field.

The complete project will see an existing floating production storage and offloading FPSO vessel replaced with a larger, purpose-built FPSO to accommodate new field tie-ins. The development of additional wells and the installation of new subsea infrastructures in neighbouring fields are also planned.

The solution includes a hydraulic drum winch, overboard system and spooling gear, designed and manufactured at the company’s facilities in Aberdeenshire and developed in line with its requirements for riser installation on board the FPSO. The system was designed by ACE Winches’ engineering division, which has previous experience of working on large-scale subsea projects.

Drilling begins on Culzean project

Drilling of the first production well has begun on the Maersk Oil-operated field in the UK.

The well is the first of six production wells to be drilled on the high pressure/high temperature (HPHT) field, with continuous drilling activity planned over the next five years. First gas is expected to be produced from Culzean in 2019.

The Maersk Highlander rig is drilling the first production well through a wellhead platform (WHP) jacket and well access desk (WAD), which were successfully installed on location at the field in the spring of 2016. When the three topsides are installed in 2018 and hooked up in 2019, three of the six production wells will be ready for first gas. The WHP jacket and WAD were constructed in the Netherlands and Hartlepool, UK, with construction of the wellhead topsides ongoing in Singapore. The drilling campaign will be supported by more than 30 UK-based well service companies.

Indonesia

PT Perusahaan Gas Negara (Persero) Tbk (PGAS), through its subsidiary PT Saka Energi Indonesia (SEI), has once again found oil and gas reserves in an exploration well Sidayu-4V, Pangkah Block, offshore East Java. This exploration activity has been carried out to follow the discovery of oil and gas in the exploration well Sidayu-3ST1 last year, and proved the extension of the oil and gas baring reservoir (Tuban, Kujung-1 and Ngimbang) in the Sidayu structure. The potential oil and gas resources of the Tuban, Kujung-1 and Ngimbang layers along the JS-1 (JS-1 Ridge) is estimated to be in the range of 300 million boe.

Mexico

Independent subsea remotely operated vehicle (ROV) service provider ROVOP has expanded its fleet of ROVs for the US region. The company has taken delivery of a Seaeye Leopard electric work class ROV, which will be the first of its kind for the Gulf of Mexico (GoM) and, in a direct response to market conditions, is set to help operators reduce costs by 40%.

USA

KKR and Venado Oil and Gas, LLC have announced a partnership to consolidate proven assets in the Eagle Ford Shale of South Texas. The partnership is principally funded by KKR’s Energy Income and Growth Fund I (EIGF).

Venado is led by CEO Scott Garrick and a core team of individuals who have operated in the Eagle Ford since the play’s inception. Venado intends to apply its expertise to acquire and enhance Eagle Ford assets through a focus on operational efficiency, technical innovation and strong community relations.
**Diary dates**

24 - 26 October, 2016
**Arctic Technology Conference**
St John’s, Canada
E: convene@aapg.org
www.arctictechnologyconference.org

24 - 27 October, 2016
**Rio Oil & Gas**
Rio De Janeiro, Brazil
E: adriene.kfur@ibp.org.br
www.riooilgas.com.br/en

07 - 10 November, 2016
**ADIPEC**
Abu Dhabi, UAE
E:MercedesDeriada@dmgeventsme.com
www.adipecom

15 - 17 November, 2016
**PETEX 2016**
London, UK
E:events@pesgb.org.uk
www.petex.info

29 November - 02 December, 2016
**OSEA**
Marina Bay Sands, Singapore
E: osea@sesallworld.com
www.osea-asia.com

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**Condor initiates Shoba oil production**

Condor Petroleum Inc. has announced that it began commercial oil production at the Shoba oilfield in Kazakhstan on 18 September 2016. Current stabilised production is exceeding 500 bpd as forecast, and oil sales are expected to resume in Q4 2016. During Q2 2016, Condor received US$20.21/bbl wellhead price for Shoba oil previously held in inventory.

The Taskuduk Production Contract is expected to be signed in Q4 2016 and will provide for additional commercial production at the company’s 100% owned Taskuduk oilfield in Kazakhstan.

The Poyraz 5 well in Turkey has reached a total depth of 1878 m and wireline operations are underway. Poyraz 5 will be cased and suspended as a future gas producer. The next well to be drilled in the Poyraz Ridge development plan is expected to be spud by mid-October. The Poyraz Ridge development continues to target first gas in mid-2017, providing access to gas flow from a region with strong domestic gas demand and pricing. ?

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**Trelleborg partners with Unique Group**

Unique Group’s India office has been selected by Trelleborg’s offshore operation as one of its agents in India. As part of the agreement, Unique Group’s base in India will offer the full range of solutions from Trelleborg’s offshore operation to customers within the region.

The decision was based on Unique Group’s track record and their dedicated, proactive team in the region.

Trelleborg’s Andy Hey commented: “We are glad to partner with Unique Group’s India office as they have been our value added partner for the Middle East region for several years now. […] we are confident that Trelleborg’s offshore operations will have an even greater presence in the Indian market over the years to come.”

Sharad Kumar at Unique Group’s India office added, “Our team in India is continually growing its presence in the region. India is a strategic market for the offshore industry and our partnership with Trelleborg will help us strengthen our global reach.” ?

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**Apache discovers ‘Alpine High’ play**

Apache Corporation’s recent announcement that it had made a significant new oil and gas discovery in the southern portion of the Delaware Basin in West Texas has strengthened industry interest in the emerging sub-play, but previous well results from other operators in the immediate area have been poor, according to analysis conducted by IHS Markit.

The Apache discovery, which has been dubbed the ‘Alpine High’ play, lies primarily in Reeves County, Texas, not far from the New Mexico border, but still within the prolific Permian Basin. Apache has secured more than 300 000 contiguous acres, which the company claims holds an estimated 75 trillion ft³ of gas and 3 billion bbls in the Barnett and Woodford shales alone. The company also sees significant oil potential in the shallower Pennsylvanian, Bone Springs and Wolfcamp formations.

“While this new find is significant and Apache is deservedly excited about its new discovery in this relatively untapped part of the Delaware Basin, previous well results in the immediate area have been poor. It has been hit or miss,” said Senior Consultant Imre Kugler. “Nearly 10 years ago, several Permian Basin specialist companies left the area after drilling a handful of unsuccessful wells. Admittedly, unconventional drilling and completion technology has advanced a good bit since then, but well performance is critical, particularly in the current oil price environment. You don’t have as much of a cushion or tolerance for failure or poor performance at today’s prices as you did at US$120/bbl.” ?

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**Statoil: high activity in deep water**

Statoil: high activity in deep water

**Emerson to acquire Permasense Ltd**

Emerson to acquire Permasense Ltd

**Intellian Technologies receives Vinasat**

Intellian Technologies receives Vinasat

**Aker Solutions wins subsea contracts for Dvalin gas field**

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**Web news highlights**

- Aker Solutions wins subsea contracts for Dvalin gas field
- Intellian Technologies receives Vinasat order
- Emerson to acquire Permasense Ltd
- Statoil: high activity in deep water

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DVL GL announces potential rig modifications
The semisubmersible rig COSLInnovator was drilling for Statoil in the Troll field when it was hit by a large, steep wave. Several windows on the rig’s two lower decks were shattered. One person was killed.

“Since the incident, we have made great efforts to identify what happened, understand how this could happen and, most importantly, implement actions to prevent similar incidents from occurring again,” said Ernst Meyer, DNV GL Director for Offshore Classification. “We have been working with rig owners, designers, operators and authorities towards a common goal; to ensure the safety of all those working on board the rigs.

The incident investigation report presented by the Norwegian Petroleum Safety Authority in April 2016 concluded that the incident involving COSLInnovator has provided new knowledge that must be utilised in order to prevent similar incidents in the future. DNV GL therefore published a new technical guideline (OTG-13 – Prediction of air gap for column-stabilised units) as early as in June 2016. This gives a consistent and updated approach for calculating the air gap – the clearance between the highest wave crest and the bottom of the deck box in all relevant sea conditions.

DNV GL has asked all owners of DNV GL-classed semisubmersible rigs to provide updated documentation of each rig’s air gap.

Rigs that, based on the new technical guideline (OTG-13), can confirm a positive air gap, will be able to operate as before without reinforcement or operational limitations. This is expected to apply to most of the semisubmersible rigs operating on the Norwegian shelf.

MISC Berhad’s FPSO sails away
MISC Berhad has celebrated the sail away of its Marginal Marine Production Unit, a fit-for-purpose FPSO for the development of marginal fields, in a ceremony today in MMHE East Yard, Pasir Gudang.

The first deployment of MaMPU 1 will be at the Anjung Kecil oilfield, offshore Sarawak, which is currently being operated by Vestigo Petroleum Sdn.Bhd, on behalf of PETRONAS Carigali Sdn. Bhd.

The ceremony was attended by MISC’s Vice President of Offshore Business Unit, Tuan Syed Hashim Syed Abdullah, Mr. Keith Collins – CEO, Vestigo Petroleum Sdn. Bhd, as well as management and representatives from PETRONAS, MISC, MBH, NGL Tech Sdn. Bhd. and other guests.

MaMPU 1 was converted from an oil tanker and has a storage capacity of 318 000 bbls, and is designed to produce 15 000 bpd with 25 million ft3/d of gas handling capacity.

Wood Group opens data analytics centre
Wood Group has established a new data analytics centre of excellence at its office in Galway, Ireland. The centre, which is supported by the Department of Jobs, Enterprise & Innovation through IDA Ireland, broadens Wood Group’s capabilities in advanced data analytics to support the oil and gas, industrial, utility and power generation sectors.

The Mayor of Galway City, Councillor Noel Larkin joined Wood Group’s CEO of Specialist Technical Solutions, Bob MacDonald at an event marking the official launch of the centre.

Enhancing Wood Group’s digital solutions capabilities, a key focus of the centre will be the innovative application to the energy industry, of data analytics technologies developed and deployed across other industries.

Wood Group is looking to grow the data analytics team to ten people by year end with the intention of developing further employment opportunities next year.

Schlumberger releases well test design software
Schlumberger has announced the release of GeoTesting geology-based well test design and interpretation services.

GeoTesting services, built in the E&P software platform, maximise the value of well tests by integrating geological and geophysical models with dynamic well test data in a shared earth model for more accurate interpretation compared with conventional analysis limited to geometrical models.

“GeoTesting services bring a new level of certainty to reservoir characterisation with optimised well test designs that validate and calibrate reservoir models using dynamic measurements,” said Wallace Pescarini, President, Testing Services, Schlumberger. “With high-quality data and analysis representative of the reservoir, customers can [...] improve production forecasting, determine reservoir connectivity and identify sweet spots.”

GM Deep Sea Mooring secures Det norske contract
Global Maritime Deep Sea Mooring has signed a contract with Norwegian operator Det norske oljeselskap to support Prosafe’s semisubmersible Safe Zephyrus accommodation rig in the Ivar Aasen North Sea field. The contract also includes support to the Maersk Interceptor ultra-harsh environment jack-up rig.

Deep Sea Mooring, which has already installed the pre-lay system, will supply mooring and pre-lay equipment; offshore personnel; mobilisation and demobilisation services; and operational planning for the Safe Zephyrus accommodation vessel in one of the world’s harshest offshore environments 175 km offshore Norway. The vessel is scheduled to stay in the Ivar Aasen field until the end of January 2017 with an option to extend until June 2017. The mooring of the Maersk Interceptor is also in the same field.
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IRAN’S REVIVAL AT RISK

Ali Al-killedar, GlobalData, UK, explains why political wrangling leaves Iran’s long term future in doubt.
Iran’s upstream sector has been opening up to foreign investment since the implementation day of the Joint Comprehensive Plan of Action (JCPOA). However internal power struggles, a lack of clarity on residual sanctions and the absence of the finalised terms of the Iran Petroleum Contract (IPC) are hampering progress. Currently, most IOC activity has been limited to non-binding agreements, leaving the upstream sector at a standstill. Analysis conducted on the reported IPC fields has shown significant upside potential, but this can only be realised if the terms of the contracts include adequate remuneration fees, license durations and cost recovery mechanisms to justify investment.

**Upstream performance**

Iran’s liquid production reached peak levels of 6 million bpd in 1974. This level of production was short lived and fell to 1.3 million bpd by 1981. Despite some dips in following years, Iran steadily increased production to 4 million bpd by 2005. This level was maintained until 2009, when production fell to 3.6 million bpd. The tightening of sanctions and an embargo in 2010 and 2011 led to a further decrease in production levels, falling to 3.2 million bpd by 2014. The National Iranian Oil Company (NIOC) attributed this decrease in production to delays and cancellations of upstream projects as a result of IOCs leaving the country. Additionally, a large number of wells were shut-in, as the embargo substantially reduced Iran’s available liquid export market.

Prior to the implementation of the JCPOA, Iranian production had not been able to meet its pre-sanction levels despite measures in place to offset the challenges presented by the sanctions and embargo. However, since its implementation in January of this year, the JCPOA has allowed Iran to restart its oil shipments to European countries such as France via Total, Spain via Repsol and the Netherlands via Royal Dutch Shell. Renewed access to this export market and state of the art technology has allowed Iran to ramp up production from approximately 3.2 million bpd in 2015 to 3.85 million bpd by August 2016. Forecast near-term production is expected to continue to increase and the growth of production has been established based on three factors. The first factor is the speed at which Iran can bring greenfields online and ramp up production. By 2020 these fields are expected to contribute to approximately 1.5 million bpd of the country’s production. The second factor is how quickly Iran can restart shut-in wells from the time of the embargo. Shut-in wells are expected to contribute to approximately 0.9 million bpd of production. The final factor that will dictate near-term performance is the country’s ability to mitigate the natural decline rates of its mature fields, which are expected to decline to just under 2 million bpd by 2020.

Natural gas is an abundant commodity in Iran with 2016 production forecast at 25 billion ft³/d. The South Pars gas field will remain the major contributor, with more than 14 billion ft³/d yet to come online. Production from this field will provide natural gas for domestic demand and enhanced oil recovery, as well as gas and condensate for the export and petrochemical sectors. The development of remaining phases has been fast tracked by the Pars Oil and Gas Company (POGC), a subsidiary of the NIOC, shifting the expected completion dates for the final phases to 2018. As a result of the sanctions, the NIOC relied on inexperienced and less equipped Iranian contractors to continue with the field developments, resulting in delays of a minimum of 3 - 5 years. The POGC has attributed its ability to fast track the South Pars developments to being able to source more sophisticated European equipment directly from manufacturers, as a result of the JCPOA.
Apart from the JCPOA Iran has also unveiled preliminary terms of a new contract, which has the objective of attracting financing and technical experience to the upstream industry. 51 oil and gas fields are expected to be offered under the framework of this new contract, referred to as the IPC. Although the terms of the IPC are yet to be ratified, it is expected to offer more flexible terms and reduced risk in comparison to the preceding buy-back contracts.

**Licensing process**

The route to being awarded one of the 51 oil and gas fields has commenced via an ongoing process referred to as the ‘expression of interest phase’. Here potential investors sign a memorandum of understanding (MoU) and engage in direct negotiations with the NIOC. The latter has potential to offer preferential treatment to companies which remained active in Iran during the sanctions period. Only around 37 oil and gas companies currently possess the necessary criteria to participate in the bidding process. Operators expect the pre-qualification procedure to continue over the next year and half, with projects offered in stages. South Azadegan is expected to be the first field on offer, in a closed bidding process starting this quarter. This will allow the ministry to gauge investor interest and refine the bidding process. Further projects are expected to be offered from 2017, but it remains unclear whether the process will involve closed bidding, open licensing rounds or a mixture of the two.

The initial licensing rounds are expected to target 17 high priority fields shown in Table 1. These fields are prioritised because they are shared fields with neighbouring countries and/or are high impact fields which are expected to contribute to significant production growth. Examples of shared fields include the South Pars Phase 11 and the South Pars Oil layer, shared with Qatar, North and South Azadegan shared with Iraq, Salman shared with the UAE and Farzad-A shared with Saudi Arabia. As well as the risk of depleted remaining recoverable reserves of 40 billion boe.

---

**Table 1. Priority NIOC upstream projects**

<table>
<thead>
<tr>
<th>Priority</th>
<th>Recoverable reserves - STOIP/OGIP</th>
<th>Source</th>
<th>NIOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ahwaz- Bangestan</td>
<td>(2955 million bbls - 31 570 million bbls)</td>
<td>[Source: NIOC]</td>
<td></td>
</tr>
<tr>
<td>South Azadegan</td>
<td>(3462 million bbls - 25 642 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Danor (3rd Phase)</td>
<td>(238 million bbls - 7945 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dehloran</td>
<td>(363 million bbls - 5184 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salman (2742 million bbls - 4148 million bbls)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foroozan</td>
<td>(583 million bbls - 3432 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Pars Phase 11</td>
<td>(470 million boe - 3355 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changueke (273 million bbls - 2367 million bbls)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khami Fields</td>
<td>(377 million boe - 2183 million boe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farzad-A</td>
<td>(499 million boe - 1748 million boe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arvand</td>
<td>(345 million bbls - 1114 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Paydar</td>
<td>(62 million bbls - 1077 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paydar</td>
<td>(53 million bbls - 1047 million boe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balal Gas Field</td>
<td>(177 million boe - 1042 million boe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sohrab</td>
<td>(120 million bbls - 736 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aban</td>
<td>(4 million bbls - 138 million bbls)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Table 2. Other NIOC upstream projects**

<table>
<thead>
<tr>
<th>Others</th>
<th>Recoverable reserves - STOIP/OGIP</th>
<th>Source</th>
<th>NIOC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferdowsi Oilfield</td>
<td>(2181 million bbls - 31 700 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mansuri-Bangestan</td>
<td>(9786 million bbls - 15 142 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sorosh</td>
<td>(569 million bbls - 14 230 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ab-Teymour</td>
<td>(5539 million bbls - 12 202 million bbls)</td>
<td></td>
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</tr>
<tr>
<td>Darood</td>
<td>(2642 million bbls - 11 007 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Pars</td>
<td>(5992 million bbls - 9511 million boe)</td>
<td></td>
<td></td>
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<tr>
<td>Kish</td>
<td>(825 million bbls - 5167 million boe)</td>
<td></td>
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<tr>
<td>Susangor</td>
<td>(490 million bbls - 6996 million bbls)</td>
<td></td>
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<tr>
<td>Golshan oilfield</td>
<td>(2692 million bbls - 4505 million bbls)</td>
<td></td>
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<tr>
<td>Aghra</td>
<td>(546 million bbls - 4298 million bbls)</td>
<td></td>
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<tr>
<td>Noroz (378 million bbls - 4201 million bbls)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golshan gas field</td>
<td>(2296 million bbls - 3750 million boe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Danan</td>
<td>(262 million bbls - 3738 million bbls)</td>
<td></td>
<td></td>
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<tr>
<td>Jufar</td>
<td>(351 million bbls - 3514 million bbls)</td>
<td></td>
<td></td>
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<tr>
<td>Band-e-Kakhsh</td>
<td>(381 million bbls - 3468 million bbls)</td>
<td></td>
<td></td>
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<tr>
<td>Cheshmeh-Khus</td>
<td>(646 million bbls - 3232 million bbls)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferdowsi Gas Field</td>
<td>(351 million boe - 1467 million boe)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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*Recoverable reserve estimates are based on recovery factors of analogous fields.*
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Investment challenges

Further short-term challenges facing potential investors include the uncertainty looming over of the IPC. The internal conflict between the conservative party and Rouhani’s cabinet has caused delays and substantial variation to the framework of the licensing contracts. In addition to the IPC contracts, reports cite the potential for the NIOC to offer fields under the previous Engineering Procurement Construction and Financing (EPCF) and buy-back contracts. The buy-back contracts are expected to have improved terms, extending the contract from around seven years to 20 years and being rebranded an ‘advanced buy-back contract’. The publicly available data provided by the NIOC is also very limited and of poor quality, making it very difficult for those evaluating prospects to assess the economics of investing in a field. More detailed field data is only offered to IOCs at the discretion of the state, and many fields still lack technical evaluation. This issue leads on to the potential of over- or underestimating biddable parameters during the bidding process, such as the plateau production target or remuneration fee.

The threat of sanctions continues to present a challenge as the current agreement can be reversed, particularly as a result of a change of US or Iranian foreign policy. The current status can significantly change based on the outcomes of the US and Iranian presidential elections over the next two years. The current détente could be derailed by continued hostilities between various governments. Iran has also continued to test its ballistic missiles and according to a German domestic intelligence company, has continued to attempt to buy nuclear reserves from shared fields as a result of competitive draining from the neighbouring country, most fields on offer also contain poor quality hydrocarbons. 20 of the 29 oilfields contain heavy or ultra-heavy oil and 18 of the 22 gas fields contain a high proportion of hydrogen sulfide, resulting in increased corrosion of field facilities and risk of leaks. Additionally the conditions present at offshore developments will also present a risk of hydrate formation. If untreated, hydrates can cause blockages in pipelines and equipment. These operational challenges require constant monitoring and additives to minimise their impact.

Upside potential

Despite these challenges the country does have a host of benefits which make it appealing from an investment perspective. From a medium-term point of view, the fields offer a variety of opportunities with 18 exploration blocks, 33 greenfields and 18 brownfields, producing crude oil, condensates, NGLs, natural gas and LNG. Companies with a particular focus such as exploration, production and/or enhancement, will be able to apply their expertise to target specific fields of interest.

Operators in Iran share the underlining sentiment that the lack of progress on the bid round, such as the contract terms and dates, and the lack of clarity over the residual sanctions, have delayed the progress of foreign investment. However given time, both counts are expected to diminish and local operators believe the prospects on offer have substantial value. The JCPOA has granted Iran the ability to showcase its investment opportunities, which are expected to be lucrative ventures. However, progress is highly dependent on short to mid-term challenges being addressed and the final terms of the contracts.
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