

BITUMEN BONANZA



A homegrown E&P startup has stepped up to take on the upstream Oil & Gas sector's most formidable challenge: Unlocking the ultra-heavy oil potential of the Habhab field in Block 71

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When a little-known Omani E&P firm won the prestigious mandate to develop Block 71, best-known for its hugely challenging, ultra-heavy Habhab oilfield, the announcement understandably caused some bewilderment and incredulity. After all, given Habhab's reputation as a hard-to-tap resource spurned even by the big boys of the global industry, it was inconceivable – or so it seemed -- that a local upstream start-up would be up to the task.

But Majan Energy, albeit a relative newcomer to the field, ticked most – if not all -- of the boxes that eventually helped it snag the coveted license of Block 71, located in the south of the Sultanate.

While it did not seem to score high on two counts, viz. big name recognition and deep pockets, it made the cut where it really mattered. It brought to the table unrivalled subject-matter expertise, fit-for-purpose technological solutions, and crucially, a small-operator ethos – the antithesis of the big operator mindset that the likes of Habhab have long defied.

On 8th February 2021, the Ministry of Energy and Minerals invited this small, but feisty, Omani-led firm to sign an Exploration and Production Sharing Agreement (EPSA) covering Block 71. Signing on behalf of the Omani government was H.E Dr. Mohammed bin Hamad Al Rumhy, Minister of Energy and Minerals. Also present were H.E Eng. Salim bin Nasser Al Aufi, Undersecretary, and Dr. Salman Al Shidi Director-General of Oil & Gas Investments. Representing Majan Energy were Eyhab Adnan Al Haj, Chairman, and Loay Al Haj, Group Technology Director.

The EPSA for the relatively tiny, 282 sq kilometer block, marked the culmination of a roughly two-year quest by the Ministry for international investors and partners to help unlock the hydrocarbon potential of what is widely tagged as one of the world's most challenging ultra-heavy oil fields. That notoriety stems from Habhab's bitumen-like properties which will require more than just thermal and other available EOR technologies to coax its contents out of the reservoir, located some 1.5 kilometers below ground.

Petroleum Development Oman (PDO), in whose license Habhab was first discovered in 1982, had devoted a concerted effort to appraise the field, and deployed multiple technologies to commercialize it, but the extraction process was deemed uneconomical at the time. Furthermore, its own efforts to secure a willing and capable partner to help with Habhab's development did not produce the desired results. Eventually carved out and repackaged as Block 71, the field was offered by the Ministry – not as part of an open licensing round – but on a bilateral basis to select international players with the proven wherewithal in unlocking ultra-heavy oil reservoirs.

Driven by Ambition

Majan, ostensibly, appeared the unlikeliest of the many local and international players that evinced interest in Block 71. But its proposal nevertheless piqued the interest of the Ministry. After all, the young company's top, all-Omani professional line-up came with an unmatched pedigree in heavy oil



development.

“Between ourselves we have amassed several decades of hands-on experience in heavy oilfield development as Oil & Gas professionals who worked previously either at PDO, the Mukhaizna heavy oilfield, or elsewhere,” Majan Energy’s Chairman Eyhab Adnan Al Haj explained. “Add to this is our unbeatable understanding and technology deployment of heavy oil developments not only in Oman but also around the world, notably in China, Canada and Venezuela, which we visited and studied in recent years to strengthen our bid for Block 71. We have also partnered with a Chinese firm that brings to the table cutting-edge EOR technologies proven to be successful in unlocking ultra-heavy oilfields that the Chinese industry giants have struggled to produce. All of these elements put together helped Majan win Block 71.”

Majan Energy is a joint venture of Majan Energy International (50 per cent), an Omani investment and business development company of like-minded professionals. Capitalizing on their experience with Hema Energy, as a sister company, the group developed a reputable brand providing niche technologies across the energy value chain. Around a decade ago, Hema Energy launched Oman’s first local flange manufacturing factory, which was held up as a singular example of In-Country Value (ICV) development at the time.



Majan Energy’s joint venture partner, with the other 50 per cent, is Junlun Petroleum, a Chinese firm that has put together a complete suite of technological solutions – including several of a proprietary nature – that will be key to unlocking Habhab economically, says Mr. Eyhab Al Haj.

Complementing its JV partner’s technological offerings will be Hema Energy’s array of smart solutions as well. The latter has a well-established reputation as a technology innovator for heavy oil fields in Oman and the wider region. Its insulated tubing, for example, continue to play an important role in helping operators conserve thermal heat necessary to enable the flow of heavy crude up the wellbore to the surface – a proprietary technology that helps producers reduce the cost of their operations.

Gauntlet of Challenges

But Block 71, located approximately 150 kilometers in the hinterland of Duqm, promises to be no cakewalk even for an intrepid and nimble E&P startup like Majan Energy. Habhab’s hydrocarbons are accumulated in a thinly laminated sandstone reservoir with an oil column thickness of approximately 100 meters with the reservoir depth starting at 1,550 meters and deeper.

Habhab’s crude is officially termed as ‘bitumen-like’, making the extraction process potentially cost-intensive and



technologically challenging. On the viscosity scale, the crude oil is estimated at more than 1,500,000 centipoise. Adding to the complexity of the reservoir is the relatively tight hydrocarbon bearing rock in which hydrocarbon is trapped, potentially calling for multiple technologies to produce this extremely viscous crude.

This is where the ‘small-operator’ mindset comes into play, according to Mr. Al Haj. Where the big player would typically see a hugely complex endeavor, requiring big budgets, full-fledged master-planning and large-scale manpower recruitment, the small operator sees a series of bite-sized challenges that need to be tackled one step at a time.

“**If your country’s prosperity is your main drive, every step of the journey is a success.**”

“This ‘small operator’ mindset is one of our fortes,” noted the Chairman. “Our immediate goal is to get the crude to the surface as economically as possible with the array of technologies and expertise that are at our disposal. While other aspects of the business, such as transportation of the heavy crude from the field to market, and so on, will be on our radar, they will not weigh us

down immediately. This ‘small operator’ approach is perfect for challenging fields like Habhab especially in the current difficult economic environment.”

As part of its EPSA commitments, Majan Energy has three years – extendable by a further two years – to pilot new technologies and production methodologies to get the field to yield its hydrocarbon resources. To this end, the company – which is also the operator of the Block – will try to stimulate a number of existing wells previously drilled by PDO. It also has the option to drill one or two new wells if the legacy wells fail to yield the desired results.

Once brought to the surface, Habhab’s bitumen-like crude is set to pose a different set of challenges for the operator.



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Sending it flowing through a pipeline would require investment in a specially designed thermal pipeline system that will keep the ultra-heavy crude from turning viscous and clogging the pipe. All transportation options are “in play” at this stage, spanning from traditional trucking to piping or even “in-field” refining, Mr. Al Haj points out.

Hydrocarbon Prize

While the challenges posed by Habhab are undoubtedly immense, so are the rewards in store! Indeed, unlocking the field promises to deliver a great sense of accomplishment for Majan Energy, and an impetus for further growth. Initial estimates place the field’s heavy crude potential at a world-leading 2.4 billion barrels (stock tank oil initially in place – STOIP), as an identified base case. When fully appraised, the estimate could potentially be larger than the current projection, thus promising rewards that far outweigh the associated risks for the operator.

“It is this tantalizing promise of success followed by overcoming the huge challenge that has got us excited and all fired up,” said the Chairman. “Success for Majan Energy will also be a greater triumph for our country, because Habhab will put Oman on the global map. Habhab will serve as a steppingstone to other ultra-heavy oilfields that may be discovered in the country in the future. With Habhab under its belt, Oman will also be able to offer its specialist expertise to countries that have similar challenging fields.”

Majan Energy also envisions for the emergence of a new Centre of Excellence driven by the Habhab Field. “As soon as we start producing from Block 71, my vision is to set up an institute dedicated to driving efficiency for ‘Difficult Energy’, be it unconventional resources, and so on. This facility will provide a platform for Omani professionals specializing in heavy oil development to organize conferences, conduct lectures and programs, and engage in knowledge sharing,” Mr. Al Haj stated.

Boding well for success is not only Majan’s access to cost-effective

technologies and domain expertise, but crucially, also its unorthodox business philosophy. “As a lean organization, we are going to operate Block 71 without big budgets, large manpower and heavy overheads. We are going to do things economically. Our studies show that we can accomplish a great deal by doing things simply, effectively, speedily and thus economically.”

In the quest to keep costs low, localization and ICV development will not be compromised, the Chairman stresses. “We are committed to these objectives not because they are mandated, but because they make abundant sense to our business. If we engage Omanis, SMEs and the local community, then success for all can be achieved easier.”

Majan Energy thanked the Ministry of Energy and Minerals for its confidence in them to unlock Habhab economically. Mr. Al Haj added in conclusion: “If your country’s prosperity is your main drive, every step of the journey is a success...”

By Conrad Prabhu

