BRAZIL

Shallow water discoveries gaining importance, add to offshore Brazil’s already hectic activities

By Jeremy Cresswell, contributing editor

ONE OF THE most authoritative watchers of the Brazilian offshore industry is Mauro Andrade, Rio de Janeiro-based petroleum analyst for Deloitte. While deepwater, ultra-deepwater and sub-salt comprise a major part of his tracking work, of growing importance is the less headline-grabbing and traditionally very modest shallow water sector.

It was a shallow water project that captured Sao Paulo headlines in early April, with the news that Petrobras had declared its Piracuca gas discovery offshore this Brazilian coastal state to be commercial and of “great importance.”

The company said the January 2009 discovery of light oil and gas with the 6-BRSA-661-SPS (6-SPS-53) well drilled on Santos Basin, Block BM-S-7 in 214 m of water depth, had encountered a thick column of gas in reservoirs above the salt layer. Petrobras said in-place reserves were about 550 million boe.

Piracuca is located 200 km south of the city of Santos, which would provide a ready market for the field’s natural gas output. This latest find complements the nearby Merluza field and takes Petrobras well along the road to providing some 1.06 billion cu ft/day of gas to southeastern Brazil by the end of 2010.

Petrobras operates Block BM-S-7 and the Piracuca discovery with a 63% interest; Repsol holds the remaining 37%.

Mr Andrade notes that this story is being repeated in various locations off the Brazilian seaboard, including in the north, close to Salvador state. And there are a number of companies that appear to be enjoying growing success, in particular local company OGX and perhaps US independent El Paso too.

Starting with the latter, in March 2008, for example, El Paso said that the Petrobras-operated Tot exploration well drilled on the ES-5 block 30 km offshore had encountered hydrocarbons.

Preliminary evaluation of logs and core analysis pointed to a reservoir thickness similar to the main objective in the Camarupim development on the south end of the block.

It is currently participating in the development by ubiquitous Petrobras of the Camarupim field in the Espirito Santo Basin, with first gas output in Q2 2009.

El Paso has offshore positions along the coast of Brazil in three main basins: Potiguar, Camamu-Almada and Espirito Santo. The company says it has some 250 billion cu ft of proven reserves on its books, with “considerable upside” within that portfolio.

On the future of shallow water, which had traditionally disappointed, Mr Andrade says, “There are at least 75 wells committed by different companies to be drilled in the next two years, and the majority of these wells will be drilled by a Brazilian company called OGX, which has acquired a significant amount of acreage in the last 12-18 months. The majority of those blocks are shallow, and already OGX has committed itself to 51 wells.”

So, is the global economic slump hitting independents in Brazil? The answer appears to be, not really, or at least, not badly.

As far as Mr Andrade is concerned, more worrying than global economic issues to Brazilian independents is the power of the country’s upstream petroleum regulator, ANP. He says this government agency has considerable powers and will take action against companies that default on their license commitments.

“If companies are unable to fulfill their commitments, there is a penalty associated with that, which is probably as costly as the wells,” says Mr Andrade.

“I know that, currently, some small independent companies based in Brazil are facing difficulties to go on with their work commitments, and they’re trying to farm out some of the acreage.

“But that’s not an issue for OGX. They made a very successful IPO almost a year ago and raised more than $3 billion. So they have the cash needed to deliver on their exploration commitments to ANP.

“The timing of the IPO was perfect ... just two months before the crisis ... OGX has 22 blocks, all in shallow waters. Out of these 22, 16 are Campos (eight), Espirito Santo (four) and Santos Basins (four).”

OGX says in its forward statement for 2009 that it will be drilling six wells in the Campos and Santos Basins. Drilling of the first well is scheduled for mid-year on block EM-S-29 with partner and operator, Maersk Oil.

In September, the firm expects to drill two wells in Campos and, in November, two additional wells in that basin, plus one in Santos.
Over the next four years, OGX expects to make a total investment of $3 billion, of which some $2 billion is earmarked for exploration.

Mr Andrade adds: “Those guys, they’re not facing rig problems either; because OGX has just hired four, three from Diamond Offshore and one from Pride.

“Basically, it’s been business as usual for shallow water. It helps that most of the acreage to be drilled in shallow water belongs probably to four or five companies. It is tightly regulated.”

**SUBSALT**

Turning to pre-salt (subsalt), Mr Andrade highlighted the D-MS-22 Azulao discovery operated by ExxonMobil and observed that, while oil was encountered with the first well, the partners were not under an obligation to disclose to ANP exactly what had been found, “just whether you have or have not encountered oil/gas shows during drilling.”

“All we know is that there were shows during drilling; it doesn’t mean they’ve found the jackpot. However, they’re drilling a second well back to back using the brand new rig West Polaris,” says Mr Andrade, paying no heed to speculation that Azulao was “very huge” … perhaps 8 billion barrels of oil.

ExxonMobil is the block operator with a 40% interest; partners are Hess (40%) and Petrobras (20%).

Looking at other pre-salt drilling activity, he notes that Petrobras is taking a break from drilling on Blocks BM-S-11 (Tupi and Iara); BM-S-24 (Caramba); and BM-S-10 (also Tupi).

“There’ll be no new wells for those areas. They are now evaluating the data obtained from the wells drilled so far,” says Mr Andrade.

“What I’ve heard is that maybe BM-S-9 (BG, Petrobras and Repsol) will be further drilled (Carioca and Guara discoveries); but I’m not sure if drilling is planned this year for BM-S-8, which is the Bem-te-Vi discovery (Shell, Petrobras and GALP).”

He added that Petrobras currently prefers to concentrate on Espirito Santo Basin resources rather than Santos because the salt overlay is much thinner in the former, making it easier to image and drill.

“Also, the objectives in Espirito Santo are slightly shallower than the objectives in Santos. It will be easier to produce the wells in Espirito Santo than Santos.”

This also has an important bearing on the cost of individual wells.

“Excluding the first well, which took more than a year and $250 million to drill, the average drilling time for the subsalt in Santos is around 75-80 days,” says Mr Andrade.

“For example, the first well in Bem-te-Vi was more than 200 days; Carioca, which was also among the first, that was about 160 days. Tupi itself was about 370 days.

“So the very first wells drilled in the Santos cluster, most were more than 140 days, and some more than a year. It

“It is really difficult to find out what ultimate recoverable reserves could be. Even on a P50 basis, the reservoirs are so heterogeneous that probably even Petrobras is struggling to figure out the volumes.”

— Mauro Andrade, Deloitte
took a helluva time to drill them. It was a learning process.

“Obviously you have to imagine that not only is there a learning process in the drilling activity itself, but also a learning process on how to manage the logistics of the equipment on board the rigs, and this is something that most people forget about.

“Of course there is a learning curve. If you take a look at BM-S 21, the discovery of the Caramba field, for example, this took 79 days, so clearly it was a learning curve. And the TD of this well was more than 5,000 m.

“Now it seems that the new wells being drilled are around 75-80 days duration, depending on the total depth. This is crucial as it’s vital to get costs down. A well that takes 75-80 days in Santos these days must cost in the range $75-100 million.”

As for what has been found by such wells, Mr Andrade says that Petrobras is being ultra-cautious and quoting an overall reserves range of 8-11 billion boe, in part because of the hype over the Tupi discovery.

He points to endless speculation in the media and among analysts, such as that the Jupiter field may hold 15 TCF of gas reserves.

“It is really difficult to find out what ultimate recoverable reserves could be. Even on a FSO basis, the reservoirs are so heterogeneous that probably even Petrobras is struggling to figure out the volumes.

“There are numbers ranging from 35-75 billion barrels of total reserves to be discovered in the Santos cluster alone. That range tells a lot.

“This is a huge area, and the uncertainties about the reservoirs are so big that they’ve (Petrobras) been cautious in announcing reserves. An example, not sub-salt, is a gas find in Santos, which, when first announced, was deemed to have 400 bcm of reserves. In the end, when they registered the reserves, it was 220 bcm, 50% of what they initially thought that could be recovered.

“It is probably a lesson that Petrobras has learned in the worst possible way, and they don’t want to repeat such mistakes in the subsalt.”

All eyes may be on pre-salt as the latest big play, but Brazil’s routine deepwater business, classic Campos, goes on apace and remains a big employer of drilling capacity.

However, Mr Andrade says the accent is very much on appraisal and development wells, rather than exploration. That said, he points out that there are still exploration blocks in ultra-deepwater Campos that will require an exploration campaign – maybe six or eight blocks.

“I can list a lot of work in Campos alone, fields that have development wells to be drilled for sure in the next two years … Roncador, Albacora, Marlin Leste, for example.

“On others like Marlim, Barracuda and Caratinga, there is always a lot of drilling in progress in an attempt to improve the recovery factor. Bear in mind that Campos is an area currently responsible for 85% of (Brazil’s) production.”

The chart shows pre-salt well clusters drilled in the Santos Basin so far. Excluding the first well, average drilling time for the new wells in Santos is estimated to be around 75-80 days.

### RIG S

Linking conventional deepwater with ultra-deepwater pre-salt (not forgetting the shallow water effort) means that Brazil’s call on rigs, especially that of Petrobras, is nothing short of “spectacular,” in Mr Andrade’s opinion.

“Petrobras currently has under contract 11 rigs capable of drilling in up to 900 m of water; 18 capable of drilling in 2,000 m water depth and five rigs capable of drilling in depths greater than 2,000 m.

“We are talking about 34 rigs under contract, as of December 21, 2008, and Petrobras aims to have 63 rigs by 2012.”

Does this tally include the intended domestic newbuilds announced a year ago by Petrobras at the Offshore Technology Conference in Houston?

“Yes,” says Mr Andrade, “though there are doubts about the time frame for delivery, rather than financing. There may be some delays.

“We already know that some of these rigs won’t be available to the market in the time frame that Petrobras wants. So that’s why they’re extending some existing contracts, especially of those rigs capable of drilling ultra-deepwater.

“Brazil’s ultra-deepwater deepwater market is particularly important, but there are still very few rigs around that can do the job, including being able to carry the amount of equipment necessary to reach the objectives.

“Petrobras has five of them under contract, which is quite remarkable. That’s 25% of the total number of rigs capable of drilling in more than 2,000 m water depth.”