Despite global recession, Petrobras pushes ahead to develop prized pre-salt discoveries

By Jeremy Cresswell, contributing editor

PETROBRAS IS PUSHING ahead with an aggressive $174 billion, five-year investment plan through 2013, of which by far the largest chunk – $104.6 billion – will go to exploration and production.

At the heart of its exploration planning is a remarkable deepwater drilling campaign targeting sub salt (pre-salt) resources in ultra-deepwater, for which $29 billion is allocated.

This latest five-year plan is 55% up on the $112.4 billion over the prior five-year plan ending in 2012 (the E&P element is up 71%) and is clear evidence that Brazil’s national oil company is determined to face down the global recession in the belief that there is only one way for oil prices long-term, and that’s upwards.

However, Petrobras has not escaped the impact of the credit crunch entirely, which is reflected in rig count economies that it is seeking. But to achieve those, agreement from the Brazilian regulatory authority ANP will be required.

The company’s E&P manager Osmond Coelho told the 9th Simmons Annual Energy Conference in March 2009 that Petrobras had been considering an additional 24 rigs but has asked for and expects to receive an extension to the relevant license periods from ANP. An answer had been expected by the end of March, though there was no news at the time this report was being prepared. According to Mr Coelho, approval would enable reallocation of some of the rigs without risking loss of any of the licenses.

It should be borne in mind that ANP has a tough reputation when it comes to dealing with operators, a trait confirmed by Mauro Andrade at the Rio de Janeiro offices of accountants/analysts Deloitte. He says that, by and large, the regulator holds petroleum companies to their commitments.

On the other hand, Petrobras is the national corporation. It has opened the door to a remarkable string of discoveries, and there is a global recession. Indeed, the company signaled in mid-2008 that it had decided to postpone the issue of construction tenders for 28 deepwater drilling rigs, in part, it is believed, because of concerns about a recession, even though the oil price was riding at its near-$150-per-barrel peak at the time.

Jose Jorge de Moraes, new business manager for Petrobras’ E&P division, said at the time that the planned tenders, intended for Brazilian companies only, would be rescheduled to 2009. The current status of that review is not known.

It is also not known whether an ongoing review as to who should “own” the pre-salt resource has a bearing on the calculations of Petrobras regarding its rig programme. That may never be revealed.

The nub of the Brazilian government’s review is how to properly manage the pre-salt resource, having recognized in 2007 that the first Tupi well (then drilling), coupled with intense interest by foreign companies, signaled a potentially massive prize.

Only speculation, but Tupi is the discovery that may have had more than a little to do with the Brazilian government instructing ANP to pull 41 pre-salt prospects from the 9th petroleum bidding round of that year (2007).

There are two options for boosting the “public” take from pre-salt wins. The first, as proposed by Brazilian president Luiz Inácio Lula da Silva and energy minister Edison Lobão, is to form a state-run company that would manage exploitation of the pre-salt resource not yet auctioned through partnerships, including Petrobras, in exploring the pre-salt areas that have yet to be auctioned.

The second is to impose higher royalties and taxes on output from pre-salt developments.

PRE-SALT

Though the pre-salt story for Petrobras essentially began in 2005, it was the global headline-grabbing Tupi discovery
that tangibly signaled its potential as a new play.

November 2007 saw unusual attention paid by the international media to the uncharacteristically open revelation by Petrobras that it had located a huge offshore oil field that could contain 5-8 billion barrels of oil — enough to boost Brazil’s proven reserves by 40%-50% at a stroke.

Other statistics associated with the first block BM-S-11 success were impressive too. Tupi was found beneath 2,000-plus m of water, another 3,000 m of strata, plus a further 2,000 m of salt — a total of 7.2 km below the surface of the South Atlantic.

Today, Tupi is the subject of development studies, which are to be informed by a well test scheduled to start 21 April. This is planned to produce up to 30,000 bbl/day of 28° API sweet Santos Basin crude.

Mr Coelho told the Simmons event that the full Tupi pilot is a 100,000 bbl/day capacity FPSO scheduled to start production in December 2010 via five production wells and three injectors (2 x water and 1 x gas).

Pilot production on the subsequent Guara and Iara discoveries are mapped out for 2012 and 2013, each based on a 120,000 bbl/day FPSO-based package.

In parallel, Mr Coelho said that the pre-salt drilling campaign currently drawn up calls for 35 exploratory wells through 2013, almost three times the 12 wells noted to date.

By comparison, the Santos pre-salt cluster is twice the size of Campos, where Petrobras has 500 producing wells.

In essence, Brazil’s pre-salt play appears to be 200 km wide and 80 km long, extending north to south through the Espirito Santo, Campos and Santos basins.

Besides Tupi, other significant Petrobras-operated Santos pre-salt finds include Carioca, Guara, Jupiter, Parati, Bem-te-Vi and Caramba. To this should be added ExxonMobil’s Azulão discovery. Such discoveries are masked by some 2,000 m of salt.

Tupi turned out to be the herald of a lot more good news, albeit not until Q1 2008, when news of the Bem-te-Vi find seeped out through local newspapers carrying vague reports of the discovery.

Insiders said at the time that the find on Block BM-S-8 was made in the subsalt Bem-te-Vi prospect at a total depth of approximately 5,380 m, 310 km off the coast of the state of Rio de Janeiro and around 35 km south of the Tupi area in a water depth of 2,200 m.

Petrobras said nothing initially except that it notified the government agency ANP. This was the ninth successful exploration well drilled in what has come to be known as the Carioca area, though not all have been tested.

The Carioca area extends over four exploration blocks in what is called the Sao Paulo section of the Santos Basin, Blocks BM-S-8 (Bem-te-Vi discovery), BM-S-9 (Sugar Loaf discovery), BM-S-10 and BM-S-11 (Tupi discovery). Shell and Galp Energia are Petrobras’ partners in these blocks.

Just in: more discoveries

The very latest pre-salt success (reported 9 April) appears to be Corcovado on Block BM-S-52. Operator BG reported to the ANP that exploration well 6-BG-6P-SPS (Corcovado-1) encountered hydrocarbons. Operations on the Santos Basin probe were continuing at the time of writing, and the well has a planned TD of 5,715 m.

Additionally, Petrobras has made another Santos Basin pre-salt oil find. The company said the discovery was made in Block BM-S-9 with its Iguacu-1 well.

It said that the block is divided into two assessment areas, the area where the Carioca discovery was made with well 1-BRSA-491-SPS (1-SPS-50), and the area where the Guara discovery was made with well 1-BRSA-594-SPS (1-SPS-55).

Iguacu is located in the Carioca area (1-SPS-50) and the well was drilled with Diamond Offshore’s drillship Ocean Clipper.

Industry circles in Rio have suggested Carioca area reserves alone could be as much as 25-40 billion barrels.
Galp CEO Manuel Ferreira de Oliveira indicated at the time that the possibility of there being 2 billion barrels of reserves. Another nearby block, he said, Block BM-S-21, was the location of the Caramba (BM-S-21) and Jupiter (BM-S-24) discoveries, with recoverable reserves of another 5-8 million boe.

Take Jupiter, for example. This was located on Santos’ BM-S-24 Block, which is mainly natural gas. There is a deliberate vagueness about the scale of Jupiter, said to be spatially on par with Tupi. The latest news is that it is due onstream in 2017 to 2018, boosting Petrobras’ gas output to 2.8 billion cu ft/day in 2020 versus 1.76 billion cu ft/day at present.

Four further finds to note are: Guara, the initial well for which was drilled on Block BM-S-9 to test the Iguacu Complex; the Sugar Loaf appraisal on BM-S-22; Iara on Block BM-S-11; and Tupi Sul probe.

Regarding Iara, which is the most recent of the Petrobras-led discoveries, it is a light oil find announced on 7 August 2008, since when it has emerged that the reservoir would appear to cover some 300 sq km and contain oil of 26-30° API quality.

Iara is the sixth consecutive drilling success in the deepwater, pre-salt Santos Basin since Petrobras and its various partners began their drilling programme in 2005.

In general, it appears that Santos pre-salt oil found thus far is around 28-30° API, but with a high CO2 content. It means that theGOR of the various discoveries presents significant challenges, which are being worked on. Temperatures are high but “not on a different gradient than is experienced in Campos,” according to Mr Coelho.

There is a secondary pre-salt play emerging that should not be overlooked. It is in Campos, where the salt mask appears to vary 200-400 m. There, on 2 September 2008, first pre-salt Campos crude was produced in the Jubarte field via a tie-in to the FPS4 production unit.

The grand development strategy – and this signals the sheer scale of the drilling endeavour required to achieve the pre-salt objective of producing 1.8 million bbl/day gross by 2020 – is typically ambitious.

According to Mr Coelho, from 2015-2016, the plan is to launch eight standard FPSOs under pre-salt Phase 1A. Thereafter, in 2017, Phase 1B is expected to get under way, with focus on pulling together all the production technology required to optimize production of the oil prize. Petrobras is looking at the merits of dry completions as an alternative to subsea.

Production targets are: 100,000 bbl/day in 2010; 219,000 bbl/day by 2013; 1 million bbl/day by 2017 and 1.8 million bbl/day by 2020.

A slightly different set of numbers and different detail emerged from a Petrobras briefing in Rio de Janeiro in February 2009, namely that spending on pre-salt will total $111 billion from 2009 to 2020, with $88.8 billion going to Santos and $22.6 billion being allocated to the Espirito Santo basin.

It also emerged then that Petrobras plans to install 23 floating production units and two hubs in the Santos Basin by 2020. Two further units would be established in Espirito Santo.

For the economists among DRILLING CONTRACTOR’s readership and according to Mr Coelho, it is useful to note that the threshold barrel price for its pre-salt ambition is $45, though it applies to all new projects. In other words, the play is commercially viable at current oil prices. However, it should be noted that the threshold range is currently $30-60 depending on discovery size and characteristics.

This is quite a shift from Mr de Moraes’ November 2008 comment that the oil price at the time, around $60, was too low for the development of Santos resources.

It has been reported that analysts like UBS calculate that development of the subsalt fields of Santos – Tupi, Iara, Carioca, Parati, Jupiter and others found to date – will require capital spending in the range of $600 billion to $1.2 trillion to get them onstream. Characteristically, Petrobras reckons the cost will be a lot lower.

In the meantime, the drill bits keep on turning and will doubtless bring in further major pre-salt prizes for Brazil this year and over the next decade or so.