



First production from Iracema

Fourth FPSO to start up in Santos Basin pre-salt area of Iracema Sul

BG Group has announced the early start of production from the Iracema area in block BM-S-11, one of the Group's and its partners' significant discoveries in the Santos Basin, offshore Brazil. The *Cidade de Mangaratiba* floating production, storage and offloading (FPSO) vessel is the first unit deployed on the Iracema development and the fourth FPSO to date to have started up across the partners' interests in blocks BM-S-9 and BM-S-11 in the first phase of development of the pre-salt Santos Basin.

BG Group Chief Operating Officer, Sami Iskander said: 'The start-up of the *Cidade de Mangaratiba* FPSO marks first production from the Iracema discovery... With the *Cidade de Ilhabela* FPSO starting production by the end of the year, these vessels will add 82,500 b/d of capacity net to BG Group. Like the Lula and Sapinhoá developments, Iracema enters commercial production only around five years after its discovery. This fast-paced development in the Santos Basin reflects the quality of the reservoir and our ongoing close working relationship with Petrobras.'

The *Cidade de Mangaratiba* can process 150,000 b/d of oil and 283mn cf/d of gas, making it the FPSO with the highest production capacity to be brought on in the Santos Basin to date, according to



Source: Petrobras

BG Group. The FPSO will be connected to eight production wells and eight injections ones over the coming months. The oil produced from Iracema is high quality and of medium density (30° API). Gas not used for reinjection will be transferred to shore through the Santos Basin pipeline system. Plateau production is expected in 2016.

BG Group has a 30% interest in block BM-S-9, partnered by Petrobras (operator, 45%) and Repsol Sinopec Brasil (25%). It also

has a 25% interest in block BM-S-11, partnered by Petrobras (operator, 65%) and Petrogal Brasil (10%).

The estimated local content for the development of the Iracema Sul area is 42%, according to Petrobras, higher than the 30% minimum local content specified by Brazil's National Petroleum, Natural Gas and Biofuels Agency (ANP) for block BM-S-11.

Exploration and development

Saudi assets lead global recoverable reserves

The Khurais and Manifa projects in Saudi Arabia have the most recoverable reserves among the world's top 100 upstream developments, with approximately 19.4bn boe and 13.7bn boe, respectively, according to research and consulting firm GlobalData. The company's latest report states that these assets boast substantial recoverable crude oil reserves, with Khurais having 18.2bn barrels and Manifa holding 13.5bn barrels. The projects also have recoverable natural gas reserves of 6.8tn cf and 1.4tn cf, respectively.

Robert Stevens, GlobalData's Lead Upstream Analyst covering the Middle East and North Africa, says that despite these impressive

reserves, Saudi Aramco, which owns both fields, has encountered a number of difficulties during their development. 'The Khurais project has the distinction of being one of the largest oil development projects in the world. The most recent activity saw 12 drilling rigs running simultaneously between 2006 and 2009, creating about 300 wells, with production beginning in June 2009. A major challenge for operations in the Khurais field is to increase the recovery rate of crude, but given the field's vast size, even a 1% increase in recovery rate would result in millions of additional barrels. Security is also a problem for Khurais, despite the sustained efforts of the Saudi Arabian

government and Saudi Aramco.'

A different set of issues faced the Manifa field, where most drilling activities and the construction of the central processing facility for crude oil production were undertaken on the coast. Stevens comments: 'Saudi Aramco and the contractors of the Manifa field confronted numerous environmental and economic obstacles during the development of the field. Environmental issues in the Arabian Gulf include earthquakes, which the contractors had to ensure the structures could withstand during construction.'