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The Barracuda and Roncador Giant Fields, Deep Water Campos Basin, Brazil

The Barracuda Field was discovered by the 4-RJS-381 well in April, 1989, and is located in the south-central portion of the basin, about 95 km offshore of Rio de Janeiro State, Brazil, at water depths ranging between 600 and 1,200 meters. The field was discovered after a successfull seismic-based exploration deep-water campaign and covers an area of 157 km2. Seismic attribute analysis discriminates oil-saturated Paleocene, Eocene and Oligocene sandstones encased in shale and marls mainly in stratigraphic traps. The reservoirs are turbidite sandstones, deposited in bathyal settings controlled by halokinetic-generated depocenters and grabens. Unspite there are four stacked reservoirs of Late Paleocene, Middle Eocene (2 zones) and Late Oligocene age, the main oil zones are the Oligocene reservoir with 56% and the lowermost Middle Eocene with 36% of the original oil-in-place volume. This giant oilfield contains in place volumes of 2,250 MMboe and the total and proved reserves are respectively 659.0 and 580.1 MMboe. The oil is 26 degrees API and production started through the 1-RJS-383 in September of 1997. The Barracuda Field Pilot is under development together with the Caratinga Field Pilot due to their geographic proximity. Barracuda development strategy foresees the ongoing pilot system and a definitive one expected to start in 2002. The pilot system, meant to collect informations and to support the planning of the subsequent phase, started production in 1997 and should produce 45,000 b/d of oil and 950,000 m3/d of gas from 11 wells (eight from Barracuda and three from Caratinga) through a FPSO type Stationary Production Unity. The oil stored in the FPSO is offloaded to a tandem moored shuttle tanker and sent to the continent. The gas is sent to a platform 21 km far, where it joins the pipeline system to the shore. The pilot system is expected to operate for about five years, when the definitive system will start up. The Barracuda definitive system is expected to start in december of 2002 and comprehends 20 production and 11 injection wells. The loading, processing and offloading of the oil and gas from the field will be through a FPSO Unity with processing capacity of 150,000 b/d of oil and 4.8 MMm^3/d of gas. The peak production is expected in 2005.

The Roncador Field was discovered by the 1-RJS-436A wildcat concluded in October 1996. It is located in the northern part of the Campos Basin, 130 km off the Rio de Janeiro State and it was drilled in a water depth of 1853 m. After ten more wells drilled, the main characteristics of the field were defined. The field contains 9.2 and 2.6 BBOE of in place oil and reserves, respectively. The oil entrapment is composed by structural and stratigraphic elements. Hydrocarbon accumulation is in the Carapebus Formation, which is comprised of reservoir rocks from Miocene to Lower Maastrichtian/Campanian ages. Commercial production comes from the later and the lithology is turbidite sandstone deposited in a paleotopography strongly controlled by salt movement. The Maastrichtian Roncador reservoir comprises ten sandstone units and high-continuity mudstone beds that can be grouped into three depositional sequences each one assigned by one unconformity at the bottom. Confined lobes of unconsolidated coarse sand to conglomerate (30% of porosity and 1000 to 3000 mD) and interbedded mudstones compose the lower (retrogradational) sequence. The middle sequence (retrogradational) is composed by confined conglomerate at the bottom overlain by amalgamated fine to medium sandstone (29% of porosity and 400 mD) lobes. The upper sequence (progradational) is characterized by widespread unconfined turbidite lobes composed by fine to medium sandstones (33% of porosity and 700 mD) and interbedded mudstones. Rafting and major growth faults related to salt tectonics generated four structural blocks: the northern one (29º API) with two oil water contacts and the thinner section; the central (31º API) with the thickest oil column (215 m); the western with two sub-blocks (22 and 18ºAPI) and the southeastern one in deeper waters. Production module one (1) is being implemented to produce oil from the northern and central blocks, including 21 subsea production and five subsea water injection wells. Present production from the wildcat well 1-RJS-436 A and 7-RO-9D is around 45,000 bopd. Module two (2) will develop the western block (22 and 18º API): two production units are planned (one SPAR and one FPSO). Peak production is expected to reach 150,000 bopd from 31 wells in two years.