

Arun and North Sumatra Offshore Carbonate Gas Fields, North Sumatra Basin, Indonesia

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The Arun and North Sumatra Offshore (NSO) gas fields are located onshore and offshore respectively, near the northern tip of Sumatra Island, within the prolific North Sumatra Basin hydrocarbon province. The gas reservoirs are Early to Middle Miocene carbonate build-ups on basement horst blocks associated with Paleocene-Oligocene rifting. In the last stage of carbonate development, several sea-level falls resulted in enhanced permeability within the upper reservoirs. Middle-Late Miocene marine shales seal the reservoirs.

The Arun giant gas field was discovered in 1971 and came on stream in 1975 with gas supply mainly to Arun LNG. This field is defined by eighteen 2-D seismic lines and one hundred eighteen wells. Hydrocarbon recovery is extremely high, approximately 15.0 TCF of dry gas produced from an OGIP of 16.8 TCF. Reservoir management of the field has changed focus in response to the highly depleted reservoir pressure and falling production rates. An infill drilling campaign in 2002-2003 using big bore wells was successfully implemented and significantly increased field deliverability.

The NSO gas field was discovered in 1972 and production commenced in 1999, with the gas used to supply Arun LNG. The field is well defined by a 3-D survey and sixteen wells. The reservoir contains north-south oriented spires and walls of tight dolomite that may act as lateral baffles resulting in lower reservoir connectivity. The highly permeable and compressive reservoir is developed through horizontal wells with ~300 ft stand-off from the GWC. The OGIP for the NSO field is 2.7 TCF (dry gas).