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Deep Panuke: A Jurassic Abenaki Formation gas discovery, offshore Nova Scotia Canada

The Panuke oilfield was discovered in 1986 and was one of the two fields that comprised the Cohasset Project in which light gravity oil was produced from the Early Cretaceous shallow marine shoreline sandstones.

In 1989 and the early 1990's the Province of Nova Scotia undertook some technical work on the play associated with the deep carbonate development in the Baccaro Member of the Late Jurassic Abenaki Formation in an effort to entice industry to take a closer look at this play.

It was not until 1998 that PanCanadian Energy drilled the wildcat Panuke PP3C well to evaluate this deep carbonate potential. The well resulted in a major gas discovery in what was previously considered non-productive carbonates.

The Jurassic carbonate complex is a major reef trend that extends from Eastern Canada to the Bahamas. On the Scotian Shelf the Jurassic is an extensive carbonate with clastics to the north and northeast. Gas is trapped in the dolomitized and leached limestone reefal facies of the carbonate margin. A detailed sequence stratigraphic framework was completed using all available well data and incorporating both 2D and 3D data.

Additional drilling of seven exploratory/appraisal wells in the last three years has helped further delineate the pool. The gas pool is a combined stratigraphic and structural trap and has a complex diagenetic history with multiple phases of dolomitization and dissolution. Porosities range from 3 - 40+% with permeabilities of one md to several darcies, with net pay values ranging from 30 to 100 m.