

# **Production Heterogeneity in Naturally Fractured Reservoirs: Data from Fort Liard**

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The Fort Liard Gas Field in Northern Canada is a classic example of a naturally fractured reservoir and its history, along with that of the fields surrounding it, provides uncommon insight into the nature and behavior of fractured reservoirs. Fort Liard consists of an uplifted thrust complex of hydrothermally dolomitized Middle Devonian carbonates. The initial two wells on the structure, drilled in the early 1980's, each encountered very thin pay intervals, very low average porosities, and had disappointing gas deliverabilities. The field remained undeveloped until the late 1990's when Chevron drilled two very prolific wells into the structure. Recognition of the field as a naturally fractured reservoir was the key step in transforming it from a banished field to a news-headline maker.

Near Fort Liard are two structurally analogous NFR fields that produce from the same reservoir formation. Although outwardly similar, the three fields display distinctly different characteristics when it comes to the production performance of the fracture network. Importantly, and due largely to the interplay of development strategy and the fractured nature of the reservoirs, Fort Liard was an economic success, whilst its analogues produced very poor financial results. This paper will examine the relationship between fracture networks and production performance at Fort Liard and the surrounding fields as it is expressed at the field, well, and producing zone levels, with emphasis on the very high degree of heterogeneity expressed in the region.