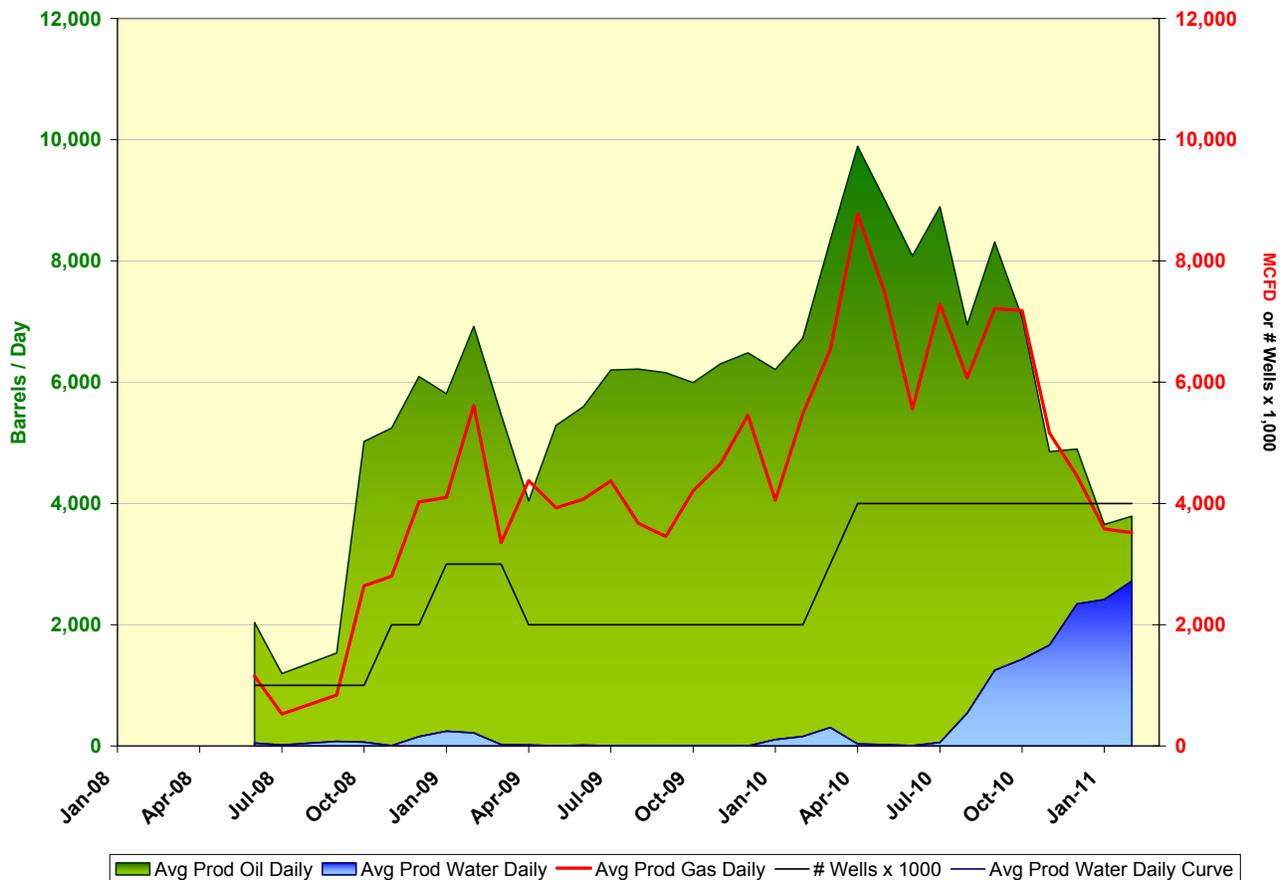


Oooguruk Unit, Oooguruk-Kuparuk Oil Pool

Summary

Discovered in 1992 by ARCO Alaska, Inc.'s Kalubik No. 1 exploratory well, this pool lies in the Beaufort Sea, northeast of the Colville River Delta. The Oooguruk-Kuparuk Oil Pool is the accumulation of hydrocarbons common to, and correlating with, the interval between the measured depths of 6,083' and 6,121' on the Dual Laterolog/Micro Laterolog recorded in Kalubik No. 1.¹ Pioneer Natural Resources Alaska, Inc. began development drilling within the pool during March of 2008, and regular production began in June 2008. Average daily oil production peaked during April 2010 at a rate of 9,889 barrels per day. For the first two months of 2011, oil production averaged 3,720 barrels per day from four production wells.²

Average Daily Production Rates



Geology

The Oooguruk-Kuparuk Oil Pool encompasses early Cretaceous-aged (Neocomian), transgressive sediments deposited within a marine shelf and shoreface environment directly atop the Lower Cretaceous Unconformity. This interval of bioturbated sandstones, siltstones and mudstones correlates directly to the basal portion of the Kuparuk C unit within the adjacent Kuparuk River Unit, and to the Kuparuk C interval in the Colville River and Milne Point Units. Within the Oooguruk Unit (OU), the

Kuparuk C is generally concentrated and preserved in structural depressions and grabens on the downthrown side of syndepositional faults, which range up to 200' in vertical displacement.

Within the OU, the Kuparuk C interval ranges from 0' to about 55' in thickness. Along with mudstone and siltstone, it consists of very fine- to coarse-grained, fining-upward sandstone that has 5% to 25% glauconite, 10% to 35% siderite cement, and up to 50% clay matrix. Here, the Kuparuk C appears to have been deposited as part of a transgressive marine shoreface and shelf system. These sediments thicken locally on the downthrown side of the northwest-trending normal faults that occur within the Affected Area. On the upthrown side of these same faults, and away from them, the Kuparuk C decreases in reservoir quality and becomes thin to absent. Kuparuk C porosity ranges from 13% to 32%, and averages approximately 17%. Permeability ranges from 0.5 millidarcies to 500 millidarcies and averages approximately 50 millidarcies to 100 millidarcies. Average water saturation is about 30%.

Within the Oooguruk-Kuparuk development area, the structure at Kuparuk level is a northwest-plunging anticlinal nose centered in the southeastern most corner of the OU, to the east of Colville Delta No. 3 and to the southeast of Colville No. 2. The flanks of this structure are cut by northwest-trending normal faults that are more commonly downthrown toward the northeast. These faults were active during early Cretaceous time, and created accommodation space for accumulation of the Kuparuk C sediments.

Well log and seismic data indicate that the Kuparuk C reservoir at the OU is best developed on the downthrown side of northwest-trending normal faults within the Affected Area. The trapping mechanisms for oil within the Kuparuk reservoir are juxtaposition against non-reservoir rock across the northwest-trending normal faults and stratigraphic pinch-outs into very fine-grained, non-reservoir rock.

Analyses of reservoir fluid samples recovered from the Kalubik No. 1 and Kuukpik No. 3 exploratory wells in the Oooguruk-Kuparuk Oil Pool indicate that the trapped oil is similar to that of the Kuparuk River Oil Pool of the Kuparuk River and Milne Point Units. These two crude oil samples measured between 23° and 26° API gravity, with 1.5% sulfur content. The solution gas-oil ratio (GOR) for a drill-stem test sample in the Kalubik No. 1 well measured 450 standard cubic feet per stock tank barrel. Well test records from the Kalubik No. 1 well indicate that the pressure of the Oooguruk-Kuparuk reservoir is about 3,150 psi at about 6,050' true vertical depth subsea (TVDSS). The bubble point pressure is about 2,600 psi. The fluids in the underlying Oooguruk-Nuiqsut Oil Pool differ in API gravity, viscosity, GOR, and saturation pressure, indicating that the Kuparuk and Nuiqsut reservoirs are not in communication.³ The average temperature of the reservoir is about 160°F.⁴

SFD

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¹ Alaska Oil and Gas Conservation Commission, 2008, Conservation Order No. 596, Oooguruk Field, Oooguruk Unit, Oooguruk-Kuparuk Oil Pool

² Alaska Oil and Gas Conservation Commission, 2011, Well and Production Information Database

³ Alaska Oil and Gas Conservation Commission, 2008, Conservation Order No. 596, Oooguruk Field, Oooguruk Unit, Oooguruk-Kuparuk Oil Pool

⁴ Pioneer Natural Resources Alaska, Inc., 2010, Reservoir Properties reported annually by operator (see Reservoir Properties table on page 3 of this summary).