PRUDHOE BAY, AURORA OIL

Reference List

Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 457, available online at:
http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_499/co457.htm

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Bakun, F.E. and Pospisil, G., 2001, Testimony before the Alaska Oil and Gas Conservation Commission in support of the Application of BP Exploration (Alaska) Inc. to Define the Aurora Oil Pool, July 24, 2001, AOGCC Conservation Order No. 457 file.

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Aurora Oil Pool

Summary

The Aurora Oil Pool ("AOP") is located within the current boundaries of the Prudhoe Bay Unit ("PBU"), and it lies within the Kuparuk River Formation ("Kuparuk"). The pool comprises the accumulation of hydrocarbons that is common to, and correlates with, the interval between 6859' and 7254' measured depth in PBU V-200.[1] The structure lies between 6450' and 6850' below sea level.[2] The pool was discovered in 1969 by the Mobil Oil Corporation Mobil-Phillips North Kuparuk State No. 26-12-12, where the same accumulation lies between the depths of 6,765' and 7,765'.[3]

Geology

Within the pool, the Kuparuk comprises Early Cretaceous-aged marine shoreface and offshore sediments that consist very fine to medium grained, quartz-rich sandstone with interbedded siltstone and mudstone. The Kuparuk is stratigraphically complex, characterized by multiple unconformities, changes in thickness and sedimentary facies, and local diagenetic cementation. In the AOP, the Kuparuk reservoir is divided into three stratigraphic intervals, that are named, from deepest to shallowest, A, B and C. The A interval contains two reservoir quality sub-intervals, the A-4 and A-5 sands, which are typically 30' and 20' thick, respectively. The B interval is dominated by siltstone and sandy mudstone with numerous discontinuous thin sandstone lenses, which are up to 3' thick. The C interval contains the primary reservoir sands of the pool, and it consists of thick, amalgamated sands, with high net to gross ratios. Average layer properties range between 16% for the A sand net pay interval, and 25% for C sand net pay intervals. The average permeabilities for these layers range from 12 md to 158 md.[4] The AOP structure is a NW to SE-trending ridge that is broken by N-S trending faults[5] having vertical displacements ranging up to hundreds of feet.[6] The traps for oil and gas are created by a combination of structural and stratigraphic features: the accumulation is bounded to the W by several faults, to the E and SE by unconformities, and to the SW and N by oil-water contacts.[7] The reservoir is compartmentalized, and fluid contacts (oil-water and gas-oil) appear to be variable across the pool.[8] The reservoir temperature is about 150 degrees F at 6700' true vertical feet subsea.[9] Oil gravity ranges from 25.2 to 29.1 degrees API. Original oil in place ("OOIP") is estimated to be 110 to 146 MMSTB.[10]

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[1] Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 457, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_499/co457.htm

[2] Cerveny, P.F., 2001, Testimony before the Alaska Oil and Gas Conservation Commission in support of the Application of BP Exploration (Alaska) Inc. to Define the Aurora Oil Pool, July 24, 2001, AOGCC Conservation Order No. 457 file.

[3] Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 457, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_499/co457.htm

[4] Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 457, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_499/co457.htm

[5] Cerveny, P.F., 2001, Testimony before the Alaska Oil and Gas Conservation Commission in support of the Application of BP Exploration (Alaska) Inc. to Define the Aurora Oil Pool, July 24, 2001, AOGCC Conservation Order No. 457 file.

[6] Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 457, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_499/co457.htm

[7] Cerveny, P.F., 2001, Testimony before the Alaska Oil and Gas Conservation Commission in support of the Application of BP Exploration (Alaska) Inc. to Define the Aurora Oil Pool, July 24, 2001, AOGCC Conservation Order No. 457 file.

[8] Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 457, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_499/co457.htm

[9] Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 457, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_499/co457.htm

[10] Alaska Oil and Gas Conservation Commission, 2001, Conservation Order No. 457, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_499/co457.htm