

MCARTHUR RIVER, MIDKENAI GAS

Reference List

Alaska Oil and Gas Conservation Commission, 1969, Conservation Order No. 80, McArthur River Field, Middle Kenai Gas Pool, Middle Kenai "G" Oil Pool, Hemlock Oil Pool, West Foreland Oil Pool

Alaska Oil and Gas Conservation Commission, 1987, Conservation Order No. 228, McArthur River Field, Middle Kenai Gas Pool,

Alaska Oil and Gas Conservation Commission, 2005, Well and Production Information Database

Anderson, R.T., 1990, Trading Bay Unit, State of Alaska, Revised Conservation Orders Nos. 80 and 228; in Alaska Oil and Gas Conservation Commission, 1987, Conservation Order No. 228 File

Nelson, K., 2003, State Approves Trading Bay Expansion in Cook Inlet, in Petroleum News, Vol. 8, No. 28, week of July 13, 2003, available online at: <http://www.petroleumnews.com/pnads/675629129.shtml>

State of Alaska Department of Administration, Office of Tax Appeals, 1991, Marathon Oil Company, Oil Production Tax, Amended Findings of Fact, Conclusions of Law and Order 1, online at <http://www.state.ak.us/admin/ota/marathon.htm>

Thomas, C.P., Doughty, T.C., Faulder, D.D., and Hite, D.M., 2004, South-Central Alaska Natural Gas Study, U.S. Department of Energy, National Energy Technology Laboratory, Arctic Energy Office, Contract DE-AM26-99FT40575

UNOCAL, 1990, Engineering and Geologic Report, Exhibit A submitted in support of in expanding the Middle Kenai Gas Pool, Conservation Order No. 228

McArthur River, Middle Kenai Gas Pool

Pool Summary

Production from the Middle Kenai Gas Pool began in December 1968 from the Grayling Platform, followed shortly thereafter by production from the Dolly Varden and King Salmon Platforms.¹ The initial production consisted of "wet" gas, which contains appreciable amounts of natural gas liquids produced in association with oil from the West Foreland, Hemlock and Middle Kenai G oil pools. Most of the associated gas produced from McArthur River prior to 1988 was not sold commercially; it was used to fuel lease operations and provide gas lift.² In 1988, the Steelhead Platform was constructed to produce "dry" gas (methane) from the Grayling Gas Sands.³ Production from the pool peaked at 225 billion cubic feet per day in November 1997. During December 2004, production from the platform averaged 92.5 million cubic feet per day.⁴ About 4% of the gas from this pool is now used for lease operations,⁵ and the remainder is sold commercially.⁶

The Middle Kenai Gas Pool is defined as the accumulation of gas common to, and correlative with, the accumulation found in the Marathon Trading Bay Unit wells between the measured depths of 1,518' in well M-1 to 8,982' in well M-14.⁷ The Middle Kenai Gas Pool (also known as Grayling Gas Sands) is located within the Upper Middle Miocene Chuitna and Middle Ground Shoal members of the Tyonek Formation, which are part of the Kenai Group.⁸ The reservoir sands occur in a continuous sequence that contains the gas accumulations.⁹ As currently defined, the Middle Kenai Gas Pool consists of the Upper A series, Zones A through F, and the G-O series, which lies above the G Zone Oil Pool.¹⁰

In the vicinity of the Steelhead Platform, the non-marine sediments of the Middle Kenai Gas Pool were deposited in fluvial-alluvial meander belts. The sand/shale sequences within this portion of the Tyonek Formation are interbedded with distinctive coal layers, suggesting low energy, swamp-like conditions. Sand units are often conglomeratic, generally thin (20 to 50 feet thick), and may not persist laterally. Porosity ranges from 12 to 32 percent. The McArthur River Field structure is an asymmetric anticline that is oriented approximately north 20° east. The structure is cut by two normal faults that do not affect the limits of the hydrocarbon reservoirs.¹¹

McArthur River original gas in place is estimated to be 1.35 TCF.¹²

¹ Alaska Oil and Gas Conservation Commission, 2005, Well and Production Information Database

² State of Alaska Department of Administration, Office of Tax Appeals, 1991, Marathon Oil Company, Oil Production Tax, Amended Findings of Fact, Conclusions of Law and Order 1, online at <http://www.state.ak.us/admin/ota/marathon.htm>

³ State of Alaska Department of Administration, Office of Tax Appeals, 1991, Marathon Oil Company, Oil Production Tax, Amended Findings of Fact, Conclusions of Law and Order 1, online at <http://www.state.ak.us/admin/ota/marathon.htm>

⁴ Alaska Oil and Gas Conservation Commission, 2005, Well and Production Information Database

⁵ Thomas, C.P., Doughty, T.C., Faulder, D.D., and Hite, D.M., 2004, South-Central Alaska Natural Gas Study, U.S. Department of Energy, National Energy Technology Laboratory, Arctic Energy Office, Contract DE-AM26-99FT40575, p. 160.

⁶ State of Alaska Department of Administration, Office of Tax Appeals, 1991, Marathon Oil Company, Oil Production Tax, Amended Findings of Fact, Conclusions of Law and Order 1, online at <http://www.state.ak.us/admin/ota/marathon.htm>

⁷ Anderson, R.T., 1990, Trading Bay Unit, State of Alaska, Revised Conservation Orders Nos. 80 and 228; in Alaska Oil and Gas Conservation Commission, 1987, Conservation Order No. 228 File

⁸ UNOCAL, 1990, Engineering and Geologic Report, Exhibit A submitted in support of in expanding the Middle Kenai Gas Pool, Conservation Order No. 228

⁹ UNOCAL, 1990, Engineering and Geologic Report, Exhibit A submitted in support of in expanding the Middle Kenai Gas Pool, Conservation Order No. 228

¹⁰ UNOCAL, 1990, Engineering and Geologic Report, Exhibit A submitted in support of in expanding the Middle Kenai Gas Pool, Conservation Order No. 228

¹¹ UNOCAL, 1990, Engineering and Geologic Report, Exhibit A submitted in support of in expanding the Middle Kenai Gas Pool, Conservation Order No. 228

¹² Thomas, C.P., Doughty, T.C., Faulder, D.D., and Hite, D.M., 2004, South-Central Alaska Natural Gas Study, U.S. Department of Energy, National Energy Technology Laboratory, Arctic Energy Office, Contract DE-AM26-99FT40575, p. 166.