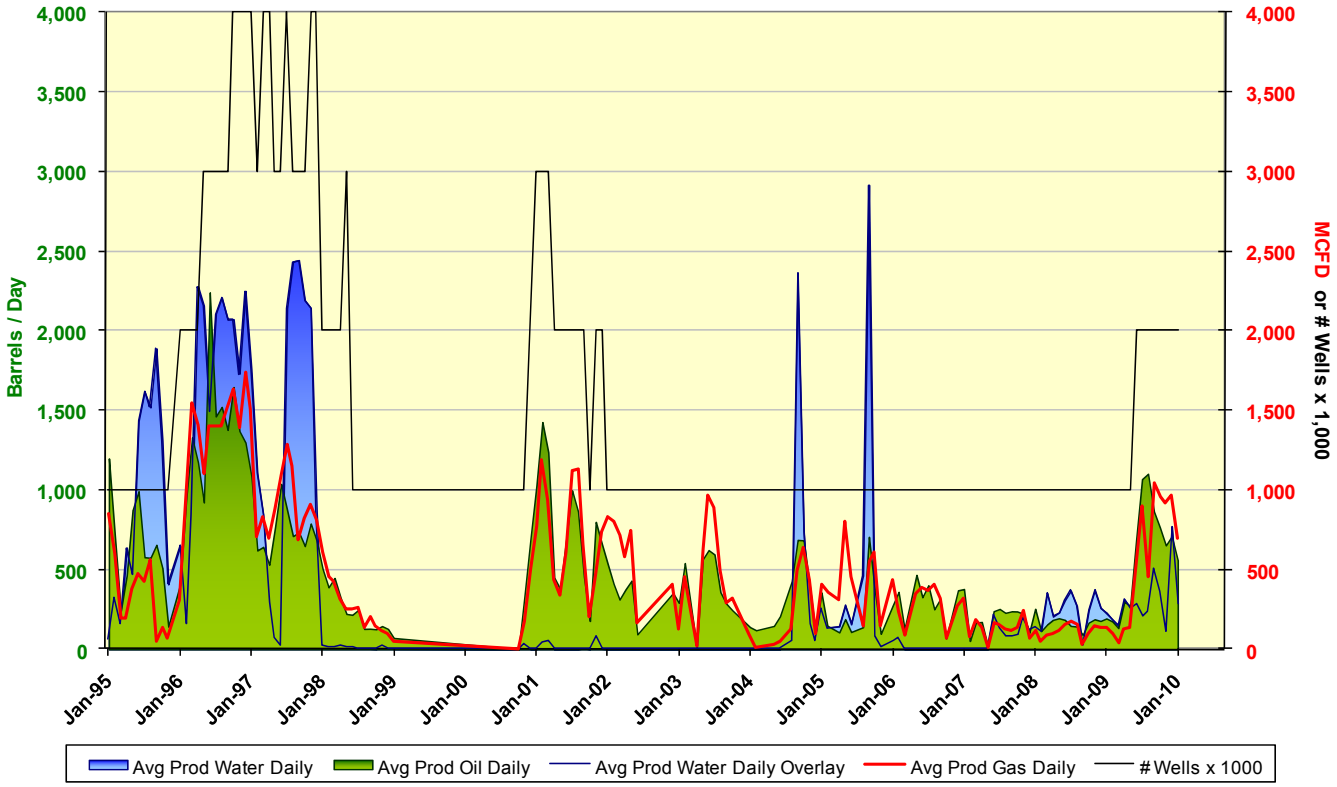
Milne Point, Sag River Oil

Summary

The Sag River Oil Pool was discovered in 1965 by Standard Oil Company of California's Kavearak Point 32-25 exploratory well. The pool was first successfully tested in 1980 by Conoco Inc.'s MPU A-01 well, which yielded a twelve-hour stock tank average rate of 440 barrels of oil per day (BOPD).[1] Oil gravity in the Sag River is about 39 degrees API.[2] The pool is defined as the accumulation of hydrocarbons common to, and correlating, with the interval between the measured depths of 8,810' and 8,884' in the MPU A-01 well. It is developed on 40- acre spacing.[3]

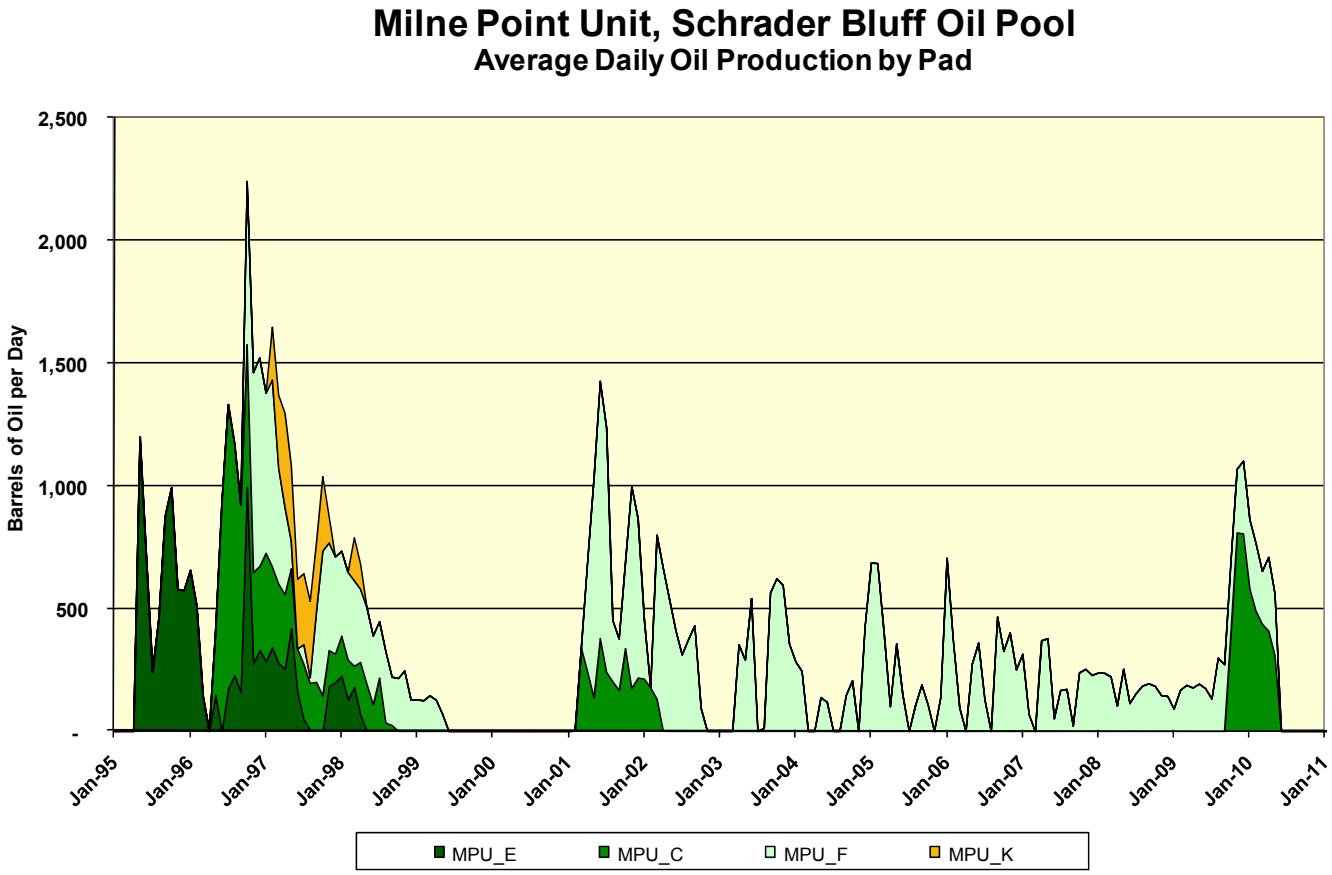
Average Daily Production Rates



Regular production from the pool began in 1995. Five wells, C-23, E-13A, F-33, F-33A and K-33, have produced from the pool, and one well, F-73A, has been used as a water-alternating-gas and water injector.[4] Between 2002 and mid-2009, F-33A was the only active producer. Water-alternating-gas injection began in F-73A during July 2002 in support of the F-33A producer, but injection was halted in May 2004. In June 2007, BP began regular water injection into F-73A. During October 2009, C-23 was re-activated as a producer, causing average oil production to jump quickly from 272 BOPD in September 2009 to 1069 BOPD in November 2009. By April 2010, production from the pool had dropped to an average of 710 BOPD.[5]

Geology

The Sag River consists of late Triassic to early Jurassic-aged, thin marine shelf sediments. At Milne Point, the Sag River is divided into four laterally extensive zones that are named, from deepest to shallowest, A through D. Zone D is non-reservoir siltstone and shale at the top of the Sag River; and its average gross thickness is about 21 feet. Zone C is the uppermost sandstone interval, which is



generally of poor reservoir quality with porosity to 17%, permeability to 2.9 millidarcies, and an average gross thickness of 10 feet. Zone B is the primary reservoir interval, with porosity to 21%, permeability to 23 millidarcies, and an average gross thickness of 30 feet. Zone A is the basal sandstone unit, which is composed almost entirely of non-reservoir sandstone, with porosity to 18%, permeability to 1.2 millidarcies, and an average gross thickness of about 16 feet. Zone A unconformably overlies the Shublik Formation.

At Milne Point, the moderate to good porosity and poor permeability observed in zones A through C are the result of bioturbation and diagenesis. The trapping mechanism observed in the pool is predominately structural, consisting of three-way anticlinal closures sealed against the downthrown side of faults, with throws generally greater than 50 feet. Within the MPU development area, an orthogonal fault pattern segments the oil accumulation into three known equilibration regions, with known oil-water contacts at 9,150', 9,050', and 8,950' true vertical depth subsea.[6]

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Revised 6/30/2010

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[1] Conoco Inc., 1980, DST 2 Final Report, March 22, 1980, in Well History File 179-040, p. 105.
[2] Alaska Oil and Gas Conservation Commission, 2003, Conservation Order No. 423, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_449/co423.htm
[3] Alaska Oil and Gas Conservation Commission, 2003, Conservation Order No. 423, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_449/co423.htm
[4] Alaska Oil and Gas Conservation Commission, 2010, Production Database
[5] Alaska Oil and Gas Conservation Commission, 2010, Production Database
[6] Alaska Oil and Gas Conservation Commission, 2003, Conservation Order No. 423, available online at: http://www.state.ak.us/local/akpages/ADMIN/ogc/orders/co/co400_449/co423.htm