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SURFACE INDICATIONS OF PETROLEUM IN WYOMING

by

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INTRODUCTION

Surface indications of petroleum (oil and gas seeps, oil-stained outcrops) are common in many areas of Wyoming. Some of these features were noted by explorers as early as 1833. Most of the early oil development consisted of drilling near these seeps, and this simple exploratory method resulted in the discovery of such fields as Dallas Dome, Salt Creek, Garland, and others.

This report of the Wyoming surface indications of petroleum is a compilation of locations noted in the geological literature. Some of the locations are only approximate as most of the seeps were discovered and described in the early days before accurate maps were available.

POWDER RIVER BASIN

Sec. 1, T.27N., R.68W., Platte Co. -- Small oil and gas seeps have been reported along Little Cottonwood Creek on the southwest flank of the Hartville uplift. The surface rocks are Tertiary shales and sandstones, but Denson and Botinelly (1949) indicate that the oil migrated up from deeper rocks along the Hartville folds.

Sec. 16, T.32N., R.73W., Converse Co. -- Oil saturated sandstone was found in the "Cloverly" in an irrigation tunnel (Barnett, 1914).

Sec. 6, T.32N., R.74W., Converse Co. -- A small seep in the upper part of the Casper formation was reported by Barnett (1914). This seep and the preceding location are close to the Douglas oil field.

Salt Creek area. -- The existence of many oil seeps and ozocerite deposits in the Salt Creek area was responsible for the exploratory drilling that resulted in the discovery

of that field. These seeps and deposits are in outcrops of the Niobrara shale and Shannon sandstone (Wegeman, 1918). The more conspicuous occurrences were located in secs. 3 and 10, T.38 N., R.78 W., and secs. 11-13, 23 and 35, T.40 N., R. 79. W., Natrona County.

Powder River area. --Many oil seeps issued from outcrops of Morrison, Sundance, and Dakota in secs. 28 and 33, T.41 N., R.81 W., Natrona County. (Wegeman, 1910). During the early development, some oil was produced by means of a tunnel driven into the Morrison in sec. 33, T.41 N., R.81 W. (J.D. Love, personal communication).

Lance Creek area. --Plank and Wolf (1958) reported an oil-saturated conglomeratic sandstone lens in the White River formation about 3 miles south of Lance Creek Post Office, Niobrara County, Wyoming.

Newcastle area. --Oil springs and staining were reported in the Newcastle sandstone in T.45 N., R.62 W., Weston Co., about 2-4 miles west of Newcastle, Wyoming, (Darton, 1905).

Thornton area. --Some small seeps and stained sandstone are present in outcrops of the Carlile shale in sec. 3 T.48 N., R.66 W., Weston Co., a few miles south of the Thornton field (Hancock, 1921).

Moorcroft area. --Several seeps and oil springs issue from outcrops of the Fuson and Graneros in sec. 2, T.51 N., R.76 W., and secs. 22, 27, and 34, T.52 N., R.67 W., Crook Co. (Barnett, 1915). Residue from the area was sold in Deadwood as axle grease during the early mining days.

Sec. 9, T.52 N., R.61 W., Crook Co. --Dead oil stain was noted by Brady (1958) in the upper part of the Minnelusa formation. This outcrop is about two miles east of the abandoned Rocky Ford field.

BIGHORN BASIN

Lysite Mountain anticline. --Hewett and Lupton (1917) reported a small seep in the Frontier in sec. 21, T.42 N., R.90 W., Hot Springs Co. Fifteen dry holes have been drilled in the township.

Red Spring anticline. --A small seep of heavy oil issuing from the Chugwater was noted by Hewett and Lupton (1917) in sec. 29, T.43 N., R.93 W., Hot Springs Co. This is located between the Warm Spring and Wild Horse Butte fields.

Cottonwood anticline. --Hewett and Lupton (1917) reported a small seep in the Madison limestone in sec. 19, T.47 N., R.89 W., Washakie Co. Six dry holes have been drilled in the township, and there is no production at the present time.

Sec. 29, T.47 N., R.90 W., Washakie Co. --Washburne (1908) reported a film of oil on a mud spring in this area.

Bonanza area. --Hares (1947) reported an oil spring in the Thermopolis and Colorado shales on the north end of the Bonanza-No Wood anticline in sec. 23, T.49 N., R.91 W., Big Horn Co. The oil has a gravity of 36.2° A. P. I.

Torchlight area. --Washburne(1908) reported bitumen in the soil over Torchlight Dome in sec. 24, T.51 N., R.93 W., Big Horn Co.

Tensleep tar sand area. --An oil saturated outcrop of Tensleep sandstone in secs. 32 and 33 T.52 N., R.89 W., Big Horn Co. has been known for many years (Darton, 1906; Washburne, 1908; Hares, 1947). Edward Mosher (personal communication) reports the following data concerning the outcrop:

Length	-1500 ft.
Width	-2000 ft.
Thickness	- 20 ft.
Porosity	- 26 %
Gravity	- 23.6° A. P. I.

There is no nearby oil production. This outcrop is quarried by local residents for use as road metal.

Sec. 35, T.54 N., R.94 W., Big Horn Co. -- Bitumen in cavities and cracks in the Madison limestone was reported by Washburne (1908). Local residents told him that there had been an oil spring near the location which had been covered by the railroad.

Garland area. -- Gas seeps were reported in sec. 35, T.56N., R.97W., Big Horn County in the Garland gas field. These seeps were reported to issue from alluvium in the Shoshone River valley, but probably the gas originated in the Frontier or Cloverly formations (Washburne, 1908; Hares, 1947).

Oregon Basin area. -- Hares (1947) reported a small gas seep in sec. 29, T.52 N., R.100 W., Park County, at the north end of the Oregon Basin field.

Absaroka area. -- Hewett (1911, 1914) reported a nitrogen gas seep along Sunlight Creek and an oil seep along Sweetwater Creek in the Absaroka Mountains. Both of these seeps appear to issue from Tertiary volcanics.

WIND RIVER BASIN

Rattlesnake Mountains area. -- Many oil springs and seeps are present along the northeast flank of the Rattlesnake Mountains in an area extending from sec. 34, T.34 N., R.88 W. to sec. 26, T.32 N., R.86 W., Natrona County (Hares, 1916). All units from the Chugwater to the Dakota show evidence of oil; seeps and stain are also present in the Frontier and Mesaverde formations. Phayles reef in secs. 4, 5, and 9, T.33 N., R.87 W. is an oil-saturated outcrop of the Teapot member of the Mesaverde formation. Asphalt from the seeps in this area was used as axle grease by the wagon trains.

Sec. 13, T.27 N., R.95 W., Fremont County. -- J.D. Love (personal Communication) reported a small seep of aromatic oil from rocks of the Wasatch group.

Sec. 28, T.33 N., R.82 W., Natrona Co. -- An oil spring apparently issues from a fault in Lower Cretaceous conglomerate (Hares, 1916).

Burley anticline area. -- Asphalt residue in Middle Eocene gravels and in rhyolite bombs in the White River formation was reported by Hares (1916) and Van Houten (1954).

These occurrences are exposed on the flank of an anticline in secs. 3, 4, 10, and 11, T. 32 N., R. 94 W., Fremont Co.

Dutton Dome area. -- Oil staining in sandstones of the Frontier and Mowry formations in sec. 13, T. 33 N., R. 90 W., Fremont Co., has been reported by Hares (1916) and Zeller, et. al. (1956). There is no nearby production; nine dry holes have been drilled in the township.

Alkali Butte area. -- Hares (1916) reported some small seeps in the Frontier around the Alkali Butte anticline in T. 33 N., R. 94 W., Fremont Co. Fifteen dry holes have been drilled in the township without finding production.

Lander area. -- The oil springs and seeps on the flank of the Wind River Mountains in the vicinity of Lander, Wyoming, have been known for many years. The largest spring, Great Tar Spring or Washakie Spring, in secs. 13, 14, and 24, T. 32 N., R. 99 W., was visited by Captain Bonneville and his exploring party in 1833. Drilling near the spring in 1884 resulted in the discovery of Dallas Dome field, Wyoming's first oil field. The locations of other springs and seeps of this area are: secs. 22, 27, 32, 35, T. 1 N., R. 1 W.; sec. 1, T. 1 S., R. 1 W.; secs. 7 and 26, T. 1 S., R. 1 E.; secs. 3 and 26, T. 33 N., R. 99 W., all in Fremont County. These seeps issue from outcrops of Mesozoic rocks (Jameson, 1911).

Sec. 23, T. 38 N., R. 87 W., Natrona County. -- Tourtelot (1953) reported oil staining in the Frontier formation.

Southeast Owl Creek area. -- Many oil seeps occur in rocks on the southeast flank of the Owl Creek Mountains (Tourtelot, 1953; Tourtelot & Thompson, 1948; Hares, 1916). Oil staining is present in Upper Eocene andesite tuffs in sec. 2, T. 39 N., R. 90 W., and secs. 3 and 16, T. 39 N., R. 92 W., Fremont Co. Cretaceous or Tertiary gravels have oil staining in sec. 10, T. 39 N., R. 91 W., Fremont County. The Flathead sandstone in sec. 6, T. 39 N., R. 91 W., Fremont Co. contains a small oil seep.

Oil from that seep has a gravity of 13.2° A.P.I. (Tourtelot, 1953). Trumbull (1916) reported unusual oil seeps in the pre-Cambrian crystalline rocks of Copper Mountain in T.39 N., R.92 W. The brea was used for fuel by shepherders in the early days.

Circle Ridge area. -- The Chugwater outcrop around Circle Ridge dome is heavily oil stained (Collier, 1920).

TETON AND GROS VENTRE RANGES

The Phosphoria formation in T.42 N., R.114 W., Teton County, contains oil-filled vugs (Love, et. al. 1951).

Gas seeps issue from outcrops of the Cody shale and Bacon Ridge sandstone in sec. 31, T.44 N., R.112 W. and secs 3 and 36, T.44 N., R.113 W. (Love, et. al., 1951).

Love (personal communication) said that there are many springs containing active bubbling gas seeps in the southern part of Yellowstone Park, but it was not known if this is inflammable gas. Captain Bonneville and his exploring party in 1833.

Oil staining is common in outcrops of the Bighorn, Darby, Madison, Phosphoria, and Frontier formations along the east and southeast sides of the Gros Ventre Range. (Love, et. al., 1951).

Schultz (1907) reported that he saw oil slicks on water during a reconnaissance trip through T.39 N., R.116 W., Teton County.

According to Baker (1946), the Darby formation in T.38 N., R.109 W., Sublette County, has a great amount of oil staining.

Love (personal communication) said that local residents reported an oil seep in Mesozoic rocks in T.37 N., R.110 W., Sublette County, but that he had not been able to find it.

GREEN RIVER BASIN

Sec. 9, T.15 N., R.88 W., Carbon Co. --Love (personal communication) reported oil staining in the Browns Park formation.

Cow Creek area. --Jameson (1913) reported gas seeps from the Lewis shale in sec. 27, T.16 N., R.91 W., Carbon County.

Muddy Creek area. --Heavily oil saturated basal Wasatch sandstone is present in secs. 3, 10, and 15, T.17 N., R.92 W. and in sec. 34, T.18 N., R.92 W., Carbon Co. The oil-stained bed in sec. 10, T.17 N., R.92 W. is about 28 feet thick (Jameson, 1913).

Shell Creek area. --The Green River or Browns Park formation contains slightly saturated sandstone in sec. 9, T.12 N., R.98 W., Sweetwater Co. (Sears, 1924).

Hilliard Flat area. -- Asphalt from seeps near Aspen Wyoming, was used as axle grease by the Mormon immigrants (Veatch, 1907). These seeps are in the Frontier and Aspen formations and issue along the trace of the Oil Springs fault, a branch of the Absaroka fault. The locations of the larger seeps are: sec. 4, T.13 N., R.119 W.; sec 7, T.14N., R.118 W.; sec 33 T.14 N., R.119 W.; sec 31, T.15 N., R.118 W., all in Uinta County.

In 1901 the Union Pacific Railroad drove a tunnel through a ridge of Frontier and Aspen in sec. 12, T.14 N., R.119 W. Oil oozed from the rocks of the tunnel at the rate of 2-3000gallons/day for a short time (Veatch, 1907).

Fossil area. -- A group of oil springs along Twin Creek in T.21 N., R.117 W., Lincoln Co. was reported by Veatch (1907). These springs are in Wasatch beds and appear to be related to a fault.

Quealy area. --Schultz (1907) reported a rumored gas seep in T.23 N., R.116 W., Lincoln County, but that he was not able to find it.

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LaBarge area. --According to Schultz (1907) oil oozed from surface flocks into a dug pit in sec. 34, T.27 N., R.113 W., Sublette Co. He also reported a group of oil springs east of LaBarge ridge but did not give their exact location. *Sharp*

HANNA BASIN

Troublesome Creek area. --An oil-saturated sandstone bed about 30 feet long and 8 feet thick in the base of the Medicine Bow formation crops out in the center of sec. 17, T.24 N., R.81 W., Carbon County (H.D. Thomas, personal communication).

OTHER BASINS

No surface indications of petroleum have been reported from the Shirley, Laramie, or northern Denver Basins.

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