

Also called Watson #1

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Skyline Oil Company's J. R. Robertson No. 1 corehole drilled 2420 feet E. of W. line and 2200 feet N. of S. line of sec. 5, T. 11 S., R. 25 E., Uintah County, Utah

Surface Elevation 5533.4 feet

Mzhaqany marker 433

From	To	Description
0.0	20.0	Drilled in alluvium.
20.0	22.0	Oil shale, medium, dark gray to dark brown, poorly defined bedding, to massive.
22.0	25.0	Oil shale, lean, light brown to brown, well defined bedding. One-inch buff ash bed at 24.8 feet.
25.0	25.8	Tuff bed, light gray to white, medium grained, stringers of contorted oil shale. Tuff shows graded bedding.
25.8	29.5	Oil shale, lean, brown to gray, poorly defined bedding, common pyrite stringers, 2-inch gray tuff bed at 26.8 feet. Vertical fracture at 28.0 feet.
29.5	31.5	Marlstone, light brown to light gray, excellent bedding, common less than 1 inch buff tuff beds. Irregular contact with oil shale at bottom.
31.5	33.9	Oil shale, medium, dark brown to dark gray, faint bedding to massive, rare gray tuff stringers.
33.9	34.5	Tuff bed, tan to buff, fine grained, common pyrite, abundant contorted stringers of oil shale.
34.5	37.4	Oil shale, lean, gray to brown, poorly defined bedding, 0.4-foot tan tuff bed at 35.1 feet.
37.4	39.6	Tuff bed, gray to tan, fine grained, abundant inclusions and highly contorted stringers of tan oil shale. Two-inch medium oil-shale bed at 39.2 feet.
39.6	40.2	Oil shale, lean, brown to gray, poorly defined bedding.
40.2	40.8	Tuff bed, light gray to tan, fine grained, massive.
40.8	44.0	Oil shale, lean, brown to gray, poorly defined bedding. Common contorted gray tuff stringers, 1 to 2-inch gray tuff beds at 41.9 feet, 42.0 feet, and 43.9 feet.
44.0	49.0	Tuff bed, tan to buff, fine grained, massive. Rare oil-shale stringers. Common pyrite staining. Two-inch band tan marlstone at 49.9 feet.
49.0	51.1	Tuff bed, light gray, fine grained, massive, sharp contact with oil shale at bottom.
51.1	52.0	Oil shale, lean, gray, faintly defined bedding.

Illustration No. SER-2864P

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Core samples from Skyline Oil Company's J. R. Robertson No. 1 corehole drilled 2420 feet E. of W. line and 2200 feet N. of S. line of sec. 5, T. 11 S., R. 25 E., Uintah County, Utah (Con.)

Surface Elevation 5533.4 feet

From	To	Description
52.0	54.2	Marlstone, gray to brown, well defined bedding, good banding with thin bands of white tuff and marlstone. Three-inch gray tuff bed at 53.4 feet. One-inch gray medium grained tuff bed at 54.0 feet.
54.2	59.4	Tuff injection, gray to gray brown, fine grained, massive. Common stringers of oil shale. Three-inch oil-shale beds at 55.0 feet and 57.0 feet.
59.4	62.5	Oil shale, medium, dark gray to dark brown, poor to well defined bedding. Rare tuff stringers.
62.5	65.0	Oil shale, lean, brown to gray, poorly defined bedding, thin gray and buff tuff stringers (contorted) at 62.6 feet. Rare calcite filled cavities.
65.0	68.4	Oil shale, lean, brown to medium gray, faintly bedded to massive, two-inch calcite with bitumen saturation filled band at 65.8 feet. Rare thin tuff beds. Calcite filled cavities at 67.2 feet.
68.4	68.7	Tuff bed, light gray, fine grained, massive.
68.7	72.0	Oil shale, lean, light brown to gray, massive to faintly bedded, calcite inclusions at 68.9 feet and 71.0 feet. One-inch buff tuff bed at 69.2 feet.
72.0	75.0	Oil shale, medium, dark gray to brown, well defined bedding, poor banding, vertical fracture from 72.5 to 73.0 feet. Gilsomite stringer at 73.0 feet.
75.0	75.9	Oil shale, medium, brown, poorly defined bedding, abundant calcite after shortite crystals, bitumen saturation in middle.
75.9	80.0	Oil shale, lean, light gray to light brown, faintly bedded to massive. Rare pyrite flakes and streaks. Rare less than 1-inch ash beds.
80.0	86.8	Marlstone, light brown to gray, poorly defined bedding, calcite filled cavities at 82.0 feet. Vertical fracture 82.5 to 84.8 feet. Three-inch hard gray tuff beds at 83.8, 84.9, 85.9, and 86.8 feet.
86.8	89.5	Oil shale, lean, light brown to gray, massive to faintly bedded. Four-inch light gray hard tuff bed at 86.8 feet. Two-inch buff tuff bed at 88.2 feet.

Illustration No. SBR-2865P

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From	To	Description
89.5	90.8	Oil shale, medium, dark brown to dark gray, poorly defined bedding to massive. Abundant calcite crystals.
90.8	93.6	Oil shale, lean, brown to gray, faintly bedded to massive, abundant calcite occurring in alternating bands of closely clustered small crystals and widely spaced large crystals.
93.6	96.0	Marlstone, tan to light gray, poorly defined bedding, rare small calcite crystals.
96.0	99.8	Marlstone, tan to light gray, faintly bedded to massive, abundant calcite crystals closely spaced.
99.8	101.0	Marlstone, tan, massive to faintly bedded, common buff tuff stringers. One-half-inch tuff bed at bottom.
101.0	107.0	Oil shale, lean, brown to gray, massive to faintly bedded, abundant calcite in large scattered crystals, rare tuff stringers.
107.0	109.0	Oil shale, lean, brown to gray, poorly defined bedding, common very small, closely spaced calcite crystals.
109.0	110.0	Oil shale, medium, dark gray to brown, faintly bedded to massive, common calcite crystals.
110.0	118.6	Oil shale, lean, tan to brown and light gray, massive to poorly defined bedding. Common calcite crystals, finely disseminated and as large feathery patches.
118.6	121.5	Oil shale, lean, brown to gray, poorly defined bedding, speckled appearance due to spots of tan marlstone in matrix of oil shale.
121.5	131.0	Oil shale, medium, dark brown to dark gray, massive to faintly bedded, rare tuff stringers, 0.5-foot brecciated tan tuff bed at 126.5 feet.
131.0	135.0	Oil shale, lean, gray to light brown, poorly defined bedding, common pyrite streaks and lenses (turns from reddish-brown to gray-brown after exposed to air 24 hours).
135.0	139.0	Oil shale, medium, dark gray to brown, massive to faintly bedded. Common specks of tan marlstone in lower part.
139.0	140.5	Marlstone, tan, poorly defined bedding.

Illustration No. SBR-2866P

Laramie Petroleum Research Center, Laramie, Wyoming September 30, 1959

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Surface Elevation 5533.4 feet

From	To	Description
140.5	145.0	Oil shale, lean, brown to gray, poorly defined bedding to massive, specks of tan marlstone near bottom. Three-inch bitumen saturated tuff bed at 144.5 feet.
145.0	167.3	Oil shale, medium, brown to dark gray, massive to faintly bedded. Four-inch brown bitumen coated tuff bed at 149.0 feet. One-inch buff tuff bed at 157.2 feet. One-inch buff tuff bed at 162.0 feet. Rare tuff stringers, rare pyrite streaks and lenses, bitumen coated vertical fracture at 160.0 feet.
167.3	168.2	Oil shale, lean, tan to brown, poorly defined bedding. Rare streaks of medium oil shale.
168.2	176.8	Oil shale, medium, brown to dark gray, massive to faintly bedded. Rare pyrite lense, vertical fracture from 173.8 to 175.0 feet.
176.8	178.2	Oil shale, lean, tan to brown, faintly bedded to massive, poor banding, rare tuff streaks.
178.2	181.0	Oil shale, medium, dark gray to brown, massive to faintly bedded. Three-inch rich oil shale at 179.8 feet.
181.0	196.8	Oil shale, lean, gray to brown, poorly defined bedding to massive. Rare tuff streaks with bitumen saturation. Rare pyrite. (Changes color from red-brown to gray after breaking and exposure to air 24 hours.)
196.8	198.0	Oil shale, medium, brown to dark gray, massive to faintly bedded. Rare pyrite.
198.0	202.6	Oil shale, lean, gray to medium brown, poorly defined bedding, rare pyrite lense and streaks.
202.6	203.6	Oil shale, medium, dark brown to dark gray, poorly defined bedding.
203.6	230.5	Oil shale, lean, gray to brown, massive to faintly bedded. Rare brown, bitumen saturated tuff beds. Two-inch rich shale at 218.5 feet. Three-inch banded zone at 220.1 feet. Vertical fracture 213.8 to 214.2 feet. Common pyrite lenses. (Color change.)
230.5	231.5	Oil shale, medium, dark gray to brown, poorly defined bedding. Contains rare bitumen.
231.5	283.0	Oil shale, lean, brown to gray, faint to poorly defined bedding. Common bitumen saturated tuff stringers less than 1-inch wide. Common pyrite flakes becoming abundant in lower part.

Illustration No. SBH-2867P

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Core samples from Skyline Oil Company's J. R. Robertson No. 1 corehole drilled 2420 feet E. of W. line and 2200 feet N. of S. line of sec. 5, T. 11 S., R. 25 E., Uintah County, Utah (Con.)

Surface Elevation 5533.4 feet

From	To	Description
283.0	284.0	Oil shale, medium, brown to dark gray, massive to faintly bedded. One-half-inch tuff bed bleeding oil at 283.5 feet.
284.0	308.4	Oil shale, lean to medium, brown to dark gray, poorly defined bedding, common tuff stringers, rarely saturated or bleeding oil. 0.5-foot zone of good banding at 296.8 feet. 0.5-foot rich oil shale at 305.5 feet and 312.5 feet. Abundant pyrite flakes and rare pyrite stringers (color change), 2-inch gray ash bed at 305.8 feet.
308.4	309.4	Oil shale, rich, dark gray to dark brown, massive, rare pyrite.
309.4	314.5	Oil shale, lean, gray to brown, faintly bedded, common pyrite flakes. One-inch buff, oil saturated tuff bed at 314.4 feet.
314.5	315.5	Oil shale, rich, dark gray to dark brown, massive.
315.5	329.5	Oil shale, lean, gray to brown, poorly defined bedding. Common tuff beds less than 1 inch. Two-inch tuff bed bleeding oil at 322.6 feet. Six-inch rich oil shale at 326.8 feet, common pyrite.
329.5	331.0	Marlstone, gray to tan, faintly bedded to massive. Grades into lean oil shale.
331.0	337.5	Oil shale, medium, brown to dark gray, poorly defined bedding, rare pyrite flakes, 2-inch tuff beds bleeding oil at 335.3 feet and 336.0 feet.
337.5	338.2	Tuff bed, buff to gray, fine grained, massive, minor oil saturation, no bleeding oil, fractured.
338.2	356.0	Oil shale, lean to medium, gray to dark brown, poorly defined bedding to massive, rare tuff streaks, common pyrite flakes. One-inch buff tuff bed at 338.4 feet. Two-inch tuff bed bleeding oil at 340.8 feet. One-inch tuff bed bleeding oil at 343.8 feet. Four-inch tuff bed bleeding oil at 345.2 feet. One-inch tuff beds bleeding oil at 347.3 feet and 351.0 feet. Two-inch tuff bed bleeding oil at 352.5 feet. Three-inch tuff bed bleeding oil at 354.0 feet.
356.0	362.0	Oil shale, lean, brown to gray, faintly bedded to massive, common pyrite flakes and stringers. One-inch tuff beds bleeding oil at 357.0 and 357.4 feet. Two-inch tuff bed bleeding oil at 361.5 feet. Vertical fractures at 361.8 feet.

Illustration No. SBR-2868P

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Surface Elevation 5533.4 feet

From	To	Description
362.0	363.0	Marlstone, gray to tan, poorly defined bedding.
363.0	369.8	Oil shale, medium, brown to gray, massive to faintly bedded, common pyrite one-half-inch tuff bed bleeding oil at 369.2 feet.
369.8	371.8	Tuff bed, light gray to buff. Fine grained, massive, common stringers of contorted oil shale. Very irregular contact at bottom.
	Upper wavy bed	
371.8	376.5	Oil shale, medium, brown to dark gray, faintly bedded to massive. Vertical fractures from 375.0 to 376.0 feet.
376.5	385.2	Oil shale, lean, gray to brown, poorly defined bedding, rare pyrite, vertical fracture from 377.2 to 377.6 feet. (Color change in lower part.)
385.2	386.6	Marlstone, tan to gray, well defined bedding, poor banding, grades into lean oil shale.
386.6	391.0	Oil shale, lean, tan to gray, poorly defined bedding.
391.0	392.2	Oil shale, rich, dark brown to dark gray, massive to faintly bedded.
392.2	396.8	Oil shale, lean, tan to brown, well defined bedding, good banding, rare tuff stringers.
396.8	398.0	Oil shale, medium, brown to gray, faintly bedded, rare pyrite.
398.0	401.2	Oil shale, lean, light brown to gray, poorly defined bedding, 0.5 foot of banded shale at 399.0 feet.
401.2	406.8	Marlstone, tan to light gray, poor to well defined bedding, good banding. Two-inch pumicite bed at 404.2 feet. Three-inch pumicite bed at 406.0 feet. Irregular contact at bottom.
	Top A-groove 401.2	
406.8	411.2	Marlstone, light gray to medium gray. Well defined bedding, poor banding.
411.2	416.8	Oil shale, lean, light brown to gray, poorly defined bedding. 0.5-foot rich oil shale at 414.0 feet. One-inch tan tuff bed at 415.8 feet.
416.8	418.4	Marlstone, tan to gray, well defined bedding, good banding, rare tuff stringers, rare pyrite, 2-inch buff tuff bed at 418.2 feet. One-inch gray tuff stringer at 418.3 feet.

Illustration No. SBR-2869P

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From	To	Description
418.4	421.0	Oil shale, rich, dark gray to dark brown, poorly defined bedding to massive. Common tuff stringers. One-inch oil saturated tuff bed at 419.2 feet. Two-inch tuff bed bleeding oil at 419.8 feet. Common pyrite lenses and streaks.
421.0	423.0	Oil shale, medium, brown to gray, poorly defined to well defined bedding. Rare tuff stringers, rare pyrite.
423.0	424.5	Oil shale, rich, dark gray to dark brown, poorly defined bedding. One-inch buff tuff bed at 424.0 feet.
424.5	430.4	Oil shale, lean, gray to light brown, faintly bedded, 1-inch buff tuff beds at 424.5 and 425.0 feet. Common pyrite streaks.
430.4	433.0	Oil shale, lean, gray to tan, poorly defined bedding, wide bands of dark and light shale.
433.0	433.6	Probable Tuff bed, buff to tan, fine grained, massive, highly contorted with vertical fractures.
433.6	438.0	Mahogany marker Oil shale, lean, gray to brown in lower part, well defined bedding, excellent banding in lower part, rare pyrite.
438.0	439.0	Oil shale, very rich, black to dark gray, massive, to faintly bedded.
439.0	440.0	Oil shale, medium, brown to gray, faintly bedded.
440.0	441.5	Oil shale, lean, tan to gray, poor to well defined bedding, good banding.
441.5	460.1	Oil shale, rich, dark gray to dark brown, poorly defined bedding to massive. Two-inch brown oil saturated tuff bed at 442.8 feet. One-inch buff tuff beds at 447.2 feet and 459.0 feet. Abundant tuff stringers less than one half-inch wide. Six-inch fault zone at 445.0 feet, highly contorted beds and slickensides. Six-inch lean oil shale at 456.8 feet.
460.1	461.9	No → Curly bed → Oil shale, lean, tan to gray, well defined bedding, poor banding.
461.9	463.0	Oil shale, medium, dark gray to brown, faintly bedded to massive.
463.0	465.7	Oil shale, lean, tan to light brown, well defined bedding, good banding.

Illustration No. SHR-2870P

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From	To	Description
465.7	468.0	Oil shale, medium, dark gray to brown, poor to well defined bedding. Common tuff stringers. One-inch gray tuff bed at 467.1 feet.
468.0	470.0	Oil shale, lean, tan to light brown, well defined bedding, good banding.
470.0		Bottom of core.

X-ray identifications made on core:

404.0	Calcite crystals (pseudomorphs after shortite?)
406.0	Purpocite.

Illustration No. SBR-2871F

Laramie Petroleum Research Center, Laramie, Wyoming September 30, 1959