

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY ✓

Corehole 32-36 (2-1/4" core) samples from the top section, General Petroleum Corporation, drilled 1335.07 feet N. and 1734.01 feet E. of the W. 1/4 corner, sec. 36, T. 4 S., R. 97 W., Garfield County, Colorado

Surface Elevation 8,160.52 feet

Mahogany Marker 889.0 feet

From	To	Description
0	88.0	No sample available.
88.0	89.2	Silty-marlstone, light gray, massive, with fossil plant remains, common grains 1/32" and less of pyrite.
89.2	90.8	Tuff, coarse-grained, salt and pepper, massive.
90.8	98.0	Tuff, gray, medium-grained, massive, with stringers of gray marlstone, few grains 1/32" or less of pyrite.
98.0	108.0	Tuff, as last above, with pyrite lined vug at 101.7 feet.
108.0	118.0	Tuff, medium to coarse-grained, massive, common irregular inclusions of pyrite.
118.0	128.0	Tuff, as last above.
128.0	130.9	Tuff, gray, medium-grained, with numerous stringers of light gray marlstone.
130.9	138.0	Marlstone, dirty-white to light gray, massive, with numerous fossil plant remains and irregular pyrite concretions. Few thin bands of gray, fine-grained tuff.
138.0	142.0	Marlstone and silty-marlstone, dirty-white and light gray, with irregular bands of light gray, fine-grained tuff.
142.0	150.0	Tuff, light gray, medium-grained, with common fossil plant remains.
150.0	158.0	Silty-marlstone, dirty-white to light gray, massive, common grains 1/8" or less of pyrite, some fossil plant remains.
158.0	164.0	Silty-marlstone, dirty-white to light gray, massive. A 1/4" band of pyrite occurs at 161.4 feet.
164.0	166.0	Marlstone, light gray to dirty-white, massive to poorly-defined bedding, inclusions 1/2" or less of pyrite.
166.0	176.6	Marlstone, banded, light brown, brown, and gray, well-defined bedding.
176.6	181.6	Marlstone, dirty-white, tan, and light gray, well-defined bedding.
181.6	182.4	Silty-marlstone and marlstone, alternating bands of light gray silty marlstone and tan marlstone, well-defined bedding.
182.4	185.6	Marlstone, light gray, gray, and brown, well-defined bedding. A 1/4" band of white finely-crystalline limestone occurs at 185.0 feet.

By H. N. Smith

Illustration No. SBR-2454P

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From	To	Description
185.6	189.0	Marlstone, light gray, dirty-white, and light brown, well-defined bedding.
189.0	189.3	Silty-marlstone, gray, massive, with thin stringers of tan marlstone.
189.3	197.4	Marlstone, dirty-white, and light gray, massive to well-defined bedding. A 3" band of dirty-white and light gray silty-marlstone occurs at 190.0 feet.
197.4	204.0	Silty-marlstone and tuff, alternating bands of dirty-white silty-marlstone and dirty-white to light gray tuff.
204.0	209.2	Tuff, dirty-white to light gray, medium-grained, massive, common nodules of pyrite.
209.2	228.0	Silty-marlstone and marlstone, dirty-white, light gray, and buff, generally massive, numerous grains 1/32" or less of pyrite.
228.0	238.0	Silty-marlstone, light gray, massive, with numerous fossil plant remains and grains 1/32" or less of pyrite.
238.0	241.6	Silty-marlstone as last above with nodules 1/4" or less of pyrite.
241.6	242.7	Tuff, light gray, fine-grained.
242.7	258.0	Silty-marlstone, light gray, generally massive, numerous fossil plant remains and nodules 1/8" of pyrite.
258.0	268.0	Silty-marlstone and marlstone, light gray, generally massive, with numerous fossil plant remains and grains of pyrite.
268.0	278.0	Silty-marlstone and marlstone, as last above.
278.0	292.9	Silty-marlstone and marlstone, as last above. Some crystal cavities.
292.9	302.9	Silty-marlstone and marlstone, light gray, generally massive.
302.9	314.2	Silty-marlstone and marlstone, light gray, generally massive, common crystal cavities and nodules 1/8" or less of pyrite.
314.2	334.2	Silty-marlstone and marlstone, as above. Core badly broken from 316 to 324.2 feet.
334.2	340.8	Silty-marlstone and marlstone, light gray to dirty-white, massive to poorly defined bedding, few crystal cavities of which some are filled with fine-grained pyrite.

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340.8	341.4	Tuff, light gray, fine-grained.
341.4	358.0	Silty-marlstone and marlstone, light gray to dirty-white, massive to poorly defined bedding. A 2" band of pyrite occurs at 345.8 feet. A 2" band of black marlstone occurs at 356.6 feet.
358.0	369.3	Marlstone and silty-marlstone, light gray and buff, massive to poorly defined bedding.
369.3	380.1	Silty-marlstone and marlstone, light gray, massive to poorly defined bedding. Bands 1/4" or less of fine grained pyrite occur at 372.1, 375.4, and 377.1 feet. A 3" pyrite lined vug occurs at 379.3 feet.
380.1	381.2	Marlstone, tan, contorted bedding.
381.2	395.6	Silty-marlstone and marlstone, dirty-white to light gray, massive to contorted bedding, numerous nodules 1/2" or less of pyrite.
395.6	396.6	Marlstone, tan, well-defined bedding, rare nodules 1/2" or less of pyrite, some vertical fracture with fracture faces lightly coated with small grains of pyrite.
396.6	397.4	Mudstone, tan, soft, massive.
397.4	405.0	Silty-marlstone and marlstone, light gray, generally massive, common fossil plant remains and crystal cavities.
405.0	409.9	Marlstone, banded tan and brown, well-defined bedding, some vertical fracture with fracture faces coated with crystals 1/32" or less of quartz.
409.9	410.3	Marlstone, black, well-defined bedding. This occurs in a section of poor recovery and could possibly be a couple of feet thicker.
410.3	418.5	Marlstone, tan and light brown, well-defined bedding, some vertical fracture.
418.5	433.5	Silty-marlstone, light gray and gray, generally massive, few bands of tan marlstone with contorted bedding, few nodules 1" or less of pyrite, some vertical fracture with fracture faces coated with crystals 1/32" or less of quartz and pyrite.
433.5	451.6	Marlstone and silty-marlstone, light gray, dirty-white, and gray, generally massive, some contorted bedding, rare nodules 1" or less of pyrite.
451.6	459.0	Marlstone and silty-marlstone, dirty-white and light gray, generally massive, rare crystal cavities and grains of pyrite.

Illustration No. SBR-2456P

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From	To	Description
459.0	464.7	Tuff, dirty-white and light gray, medium-grained.
464.7	477.6	Silty-marlstone and marlstone, dirty-white and light gray, generally massive, some thin irregular bands of tan marlstone with contorted bedding, some thin irregular bands of dirty-white tuff, nodules 1/4" or less of pyrite.
477.6	483.6	Marlstone, buff to tan, well-defined to contorted bedding, common fossil plant remains, common calcite crystals.
483.6	487.0	Silty-marlstone, light gray, massive, common crystal cavities.
487.0	493.6	Marlstone, tan and light brown, wavy bedding.
493.6	503.2	Marlstone and silty-marlstone, dirty-white, light gray, and gray, generally massive, some contorted bedding, numerous nodules 1/2" or less of pyrite.
503.2	506.6	Marlstone, buff and light tan, wavy bedding.
506.6	511.6	Marlstone and silty-marlstone, dirty-white, buff, and light gray, generally massive, common nodules 1/4" or less of pyrite.
511.6	523.6	Tuff, dirty-white, fine-grained, massive. A .5 foot band of gray, massive, barren marlstone occurs at 516.7 feet. A 3" vug occurs at 517.3 feet. Vertical fracture from 517.3 to 521.6 feet.
523.6	527.6	Marlstone, tan, light brown, and light gray, contorted bedding, few nodules 1/4" or less of pyrite.
527.6	532.4	Marlstone, tan, light brown, and brown, well-defined bedding.
532.4	533.6	Marlstone, light gray, generally massive, with thin stringers of tan marlstone.
533.6	537.0	Marlstone, brown, dark gray, and black, well-defined bedding.
537.0	547.1	Tuff, light gray, fine-grained, massive, common nodules 1/4" or less of pyrite, some vertical fracture with fracture faces coated with barite crystals (barite by x-ray diffraction). A 3" band of analcite tuff and bitumen occurs at 543.1 feet.
547.1	554.4	Marlstone, tan and light brown, well-defined bedding, some vertical fracture with fracture faces coated with black pyrobitumen.
554.4	556.8	Marlstone, black, well-defined bedding, some vertical fracture with fracture faces coated with black pyrobitumen.

Illustration No. SBR-2457P

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From	To	Description
556.8	573.0	Marlstone, brown and dark brown, well-defined bedding, common crystal cavities which are filled with black pyrobitumen and fine-grained calcite.
573.0	576.0	Marlstone, light brown, shows evidence of slumping and contains irregular angular fragments 1/2" or less of buff marlstone.
576.0	581.6	Marlstone, light brown and brown, predominantly well-defined bedding, some massive.
581.6	583.6	Marlstone, brown and dark brown, well-defined bedding.
583.6	587.6	Marlstone, black, well-defined bedding, some vertical fracture with fracture faces coated with blue clay and quartz crystals 1/16" or less.
587.6	594.6	Marlstone, brown, generally massive.
594.6	597.2	Marlstone, brown, dark brown, and dark gray, well-defined bedding.
597.2	602.2	Marlstone, light tan and light gray, generally massive.
602.2	603.3	Marlstone, banded brown and dark brown, well-defined bedding.
603.3	608.8	Marlstone, light tan and buff, generally massive.
608.8	611.6	Marlstone, dark gray and dark brown, well-defined bedding.
611.6	614.8	Marlstone, black, well-defined bedding.
614.8	618.4	Marlstone, banded light brown and brown, well-defined bedding.
618.4	631.6	Marlstone, dark brown, dark gray, and black, massive to well-defined bedding.
631.6	641.6	Marlstone, black and dark brown, well-defined bedding.
641.6	651.6	Marlstone, black and dark brown, well-defined bedding, some vertical fracture.
651.6	661.6	Marlstone, dark brown, dark gray, and black, well-defined bedding. A 3/4" band of light gray, analcite tuff occurs at 651.8 feet. A 2" band of light gray, analcite tuff occurs at 654.5 feet.
661.6	669.0	Marlstone, dark brown, dark gray, and black, well-defined bedding.
669.0	670.8	Marlstone, light tan, light brown, and buff, extremely contorted bedding.
670.8	681.6	Marlstone, dark brown, dark gray, and black, well-defined bedding.

Illustration No. SBR-2458P

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From	To	Description
681.6	691.6	Marlstone, dark brown, dark gray, and black, well-defined bedding. Bands 1" of light gray, fine-grained tuff occur at 681.7 and 688.2 feet.
691.6	701.6	Marlstone, dark brown, dark gray, and black, well-defined bedding. Bands 1" or less of light gray, analcite tuff occur at 692.9, 696.6, and 700.2 feet.
701.6	705.0	Marlstone, dark brown, and dark gray, well-defined bedding.
705.0	707.0	Marlstone, black, well-defined bedding.
707.0	711.0	Marlstone, dark brown, and dark gray, well-defined bedding, some vertical fracture with fracture faces coated with black pyrobitumen and crystals 1/16" or less of quartz and pyrite.
711.0	712.2	Marlstone, light brown, and tan, well-defined bedding.
712.2	715.3	Marlstone, black, well-defined bedding.
715.3	719.4	Marlstone, dark brown, and dark gray, well-defined bedding.
719.4	720.9	Marlstone, black, well-defined bedding.
720.9	731.6	Marlstone, dark brown, dark gray, and black, well-defined bedding, considerable vertical fracture with fracture faces coated with kaolin and calcite. A 6" zone of crystal cavities occurs at 721.9 feet.
731.6	735.6	Marlstone, light brown, and brown, well-defined bedding, with numerous small lenses of light gray, analcite tuff.
735.6	737.4	Marlstone, black, massive.
737.4	738.0	Tuff, buff, fine-grained, with thin stringers of black marlstone.
738.0	751.6	Marlstone, dark brown, dark gray, and black, well-defined bedding, considerable vertical fracture with fracture faces coated with blue clay and crystals 1/32" or less of pyrite. Bands 1 to 2" thick of buff, fine-grained tuff occur at 745.3, 745.6, 748.1, and 749.0 feet.
751.6	755.1	Marlstone, light tan and light brown, well-defined bedding. A 3" band of buff, massive, silty-marlstone occurs at 752.3 feet.
755.1	757.2	Marlstone, black, well-defined bedding.

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From	To	Description
757.2	771.6	Marlstone, light brown, brown, dark brown, and dark gray, well-defined bedding, considerable vertical fracture with fracture faces coated with black pyrobitumen, blue kaolin ? and very fine grains of pyrite. A 2" band of gray, fine-grained tuff occurs at 769.2 feet.
771.6		End of this series of samples. Deeper samples were previously assayed.

Illustration No. SBR-2460P

Petroleum and Oil-Shale Experiment Station, Laramie, Wyoming August 12, 1958