

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Corehole No. 9, National Farmers Union Exploration Company, drilled in the NW. 1/4 of sec. 32, T. 10 S., R. 25 E., Uintah County, Utah

Surface Elevation

5770 feet (barometer) Mahogany Marker not reached Total Depth 481.6 feet

From	To	Description
0	240	Air drilled - no recovery.
240	245.5	Tuff, fine-grained, light gray and dirty white, massive, common inclusions 1/2 inch and less of pyrite and calcite crystals.
245.5	248.0	Marlstone, dark brown and dark gray, poorly-defined to well-defined bedding
248.0	251.0	Marlstone, light brown and dark brown, massive to well-defined bedding. Common bands 1 inch and less of tan and light gray siltstone. A 3-inch band of light gray, very fine-grained tuffaceous sandstone occurs at 248.9 feet.
251.0	256.6	Marlstone, light brown, light gray and dark gray, well-defined bedding. A 2-inch band of contorted light brown and light gray marlstone containing calcite and black bitumen occurs at 251.5 feet.
256.6	271.5	Marlstone, light brown and dark brown, well-defined bedding. Common bands 3 inches and less of tan siltstone containing abundant calcite crystals and vugs containing pyrite and calcite crystals.
271.5	272.6	Marlstone, dark brown and dark gray, well defined bedding. A vuggy area of calcite crystals occurs between 272.3 and 272.6 feet.
272.6	278.5	Marlstone, light brown and dark brown, well-defined bedding. Numerous tiny dots of tan marlstone impart a speckled appearance to core.
278.5	282.3	Marlstone, tan and light brown, massive to poorly-defined bedding. Thickly scattered inclusions of tan and clear calcite impart a speckled appearance to core. A 2-inch band of blue-gray analcite tuff occurs at 280.3 feet.
282.3	284.8	Marlstone and calcareous mudstone, tan and light gray, massive to poorly-defined bedding. Poor recovery of core.
284.8	291.2	Marlstone, light brown, dark brown, and dark gray, massive to well-defined bedding. Irregular inclusions 1/2 inch and less of tan and clear calcite crystals scattered throughout.
291.2	292.5	Marlstone, dark gray and black, massive to well-defined bedding. Scattered clear calcite crystals.

Illustration No. SBR-2507P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Corehole No. 9, National Farmers Union Exploration Company, drilled in the NW. 1/4 of sec. 32, T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface Elevation

5770 feet (barometer) Mahogany Marker not reached Total Depth 481.6 feet

From	To	Description
292.5	300.3	Marlstone, light brown and dark brown, massive to well-defined bedding. Common irregular inclusions 1 inch and less of clear calcite. Poor recovery of core.
300.3	310.3	Marlstone, light brown, dark brown, and dark gray, well defined bedding. Thickly scattered inclusions of tan marlstone impart a speckled appearance to core.
310.3	313.2	Marlstone, light brown, dark brown, and dark gray, massive to well-defined bedding. Poor recovery of core.
313.2	316.0	Marlstone, dark brown and dark gray, well-defined bedding.
316.0	320.3	Marlstone, light brown and dark brown, well-defined bedding. A 2-inch band of light gray analcite and pyrite occurs at 319.2 feet.
320.3	324.2	Marlstone, dark brown and dark gray, well-defined bedding.
324.2	326.2	Marlstone, tan, light gray and light brown, well-defined bedding.
326.2	342.0	Marlstone, light brown, dark brown, and dark gray, massive to well-defined bedding. Rare inclusions 1 inch and less of calcite and black bitumen. Rare bands 1/2 inch and less of calcite crystals. a 2-inch band of light brown siltstone containing oil spots and pyrite flakes occurs at 334.2 feet. No recovery from 335.0 to 335.5 feet.
342.0	344.7	Marlstone, dark brown and dark gray, well-defined bedding, extensive vertical fracture.
344.7	353.1	Marlstone, dark brown and dark gray, massive to well-defined bedding.
353.1	354.0	Marlstone, light gray, tan, and light brown, well-defined bedding.
354.0	363.0	Marlstone, light brown and dark brown, well-defined bedding. A 1-inch band of black bitumen occurs at 356.7 feet.
363.0	364.2	Marlstone, dark brown and dark gray, well-defined bedding. Common 2-inch and less bands of tan and light gray marlstone with well-defined bedding.

Illustration No. SBR-2588P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Corehole No. 9, National Farmers Union Exploration Company, drilled in the NW. 1/4 of sec. 32, T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface Elevation

5770 feet (barometer) Mahogany Marker not reached Total Depth 481.6 feet

From	To	Description
364.2	383.1	Marlstone, light brown, dark brown, and green-brown, well-defined bedding. Extensive vertical fracture occurs between 374.0 and 375.3 feet. A 0.5 foot band of dark-gray marlstone occurs at 365.9 feet.
383.1	384.0	Marlstone, dark brown and dark gray, poorly-defined to well-defined bedding. A 1/2 inch band of dark brown (possibly bitumen impregnated) analcite occurs at 383.4 feet.
384.0	388.5	Marlstone, light brown, dark brown, and green-brown, well-defined bedding.
388.5	389.7	Marlstone, light brown and dark brown, well-defined bedding with vertical fractures. A 0.3 foot band of light gray and dark brown banded marlstone occurs at 388.5 feet.
389.7	417.4	Marlstone, light brown, dark brown, and dark gray, massive to well-defined bedding. Rare 1 inch and less bands of dark brown (possibly bitumen impregnated) analcite. A 0.2 foot band of light gray feldspar occurs at 412.5 feet.
417.4	418.2	Marlstone, dark gray, massive to well-defined bedding. Rare stringers of dark brown (possibly bitumen impregnated) and blue-gray analcite.
418.2	428.3	Marlstone, light brown, dark brown, and greenish brown, well-defined bedding.
428.3	447.3	Marlstone, dark brown and dark gray, well-defined bedding. Some vertical fracture. A 1-inch band of light brown analcite occurs at 435.3 feet.
447.3	471.2	Marlstone, light brown, dark brown, and dark gray, well-defined bedding. A 1-1/2 inch band of light gray, very fine-grained feldspathic sandstone containing abundant pyrite occurs at 450.2 feet. A 1-inch band of dark brown, oil saturated analcite occurs at 466.3 feet. Common 1/2 inch and less bands of blue-gray analcite.
471.2	472.2	Marlstone, dark gray, massive to well-defined bedding. A 1/2-inch band of dark brown, oil saturated analcite occurs at 471.7 feet.
472.2	481.6	Marlstone, light brown, dark brown, and greenish brown, well-defined bedding. A 2-inch band of light gray siltstone containing stringers of dark brown marlstone occurs at 474.6 feet. Several bands 1/2 inch and less of blue gray siltstone occur between 479.1 feet and 479.4 feet.

Illustration No. SBR-2589P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Corehole No. 9, National Farmers Union Exploration
Company, drilled in the NW. 1/4 of sec. 32, T. 10 S., R. 25 E.,
Uintah County, Utah (Con.)

Surface Elevation

5770 feet (barometer) Mahogany Marker not reached Total Depth 481.6 feet

From	To	Description
481.6		Bottom of hole.

An x-ray diffraction pattern was obtained on the following sample:

412.5	Found to be chiefly feldspar, with quartz and illite present.
-------	---

Illustration No. SBR-2590P

Laramie Petroleum Research Center, Laramie, Wyoming

January 15, 1959

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
 Corehole drilled 443 feet E/W line, 2480 feet S/N line of sec. 32,
 T. 10 S., R. 25 E., Uintah County, Utah

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
482.0	500.0	Oil shale, lean to medium, gray, poorly defined bedding. Rare tuff stringers, four-inch rich oil shale at 483.9 feet and 491.6 feet. Rare pyrite.
500.0	502.7	Oil shale, lean to medium, gray, poorly defined bedding. Common cubes and flakes of pyrite.
502.7	503.8	Oil shale, medium to rich, dark gray, massive to faintly bedded. A one-half-inch tan tuff bed at 502.7 feet.
503.8	514.5	Oil shale, lean to medium, gray to dark brown, poorly defined bedding. Rare less than one-half-inch tuff stringers. A two-inch oil saturated tuff at 511.6 feet.
514.5	515.6	Oil shale, medium to rich, dark gray, massive. Rare gray tuff stringers. A one-inch gray tuff at 515.5 feet.
515.6	517.8	Oil shale, lean to medium, gray, poor to well defined bedding. Abundant flakes of pyrite.
517.8	519.3	Marlstone, light gray, well defined bedding. No pyrite.
519.3	520.3	Oil shale, lean to medium, gray to brown, massive to poorly defined bedding.
520.3	522.3	Oil shale, medium, dark brown, massive to poorly defined bedding.
522.3	552.5	Oil shale, lean to medium, brown to gray, poorly defined bedding. Rare tuff stringers, rare pyrite. four-inch oil saturated tuff at 524.6 feet, four-inch tan tuff at 526.2 feet, two-inch light gray, speckled, tuff at 526.8 feet, three-inch oil saturated tan tuff at 529.7 feet, one-inch oil saturated tan tuff at 533.1 feet, four-inch oil saturated tuff at 534.7 feet, one-inch oil saturated tuff at 535.1 feet, four-inch oil saturated tuff at 541.5 feet, five-inch oil saturated tuff at 543.0 feet, one-inch oil saturated tuff at 546.5 feet, two-inch oil saturated tuff at 546.8 feet, one-inch oil saturated tuff at 551.1 feet.

Description continued from SBR-2587-90P. Corehole deepened. Survey and elevation data from Ross Cons. Co., April 1959.

Illustration No. SBR-3173P

Laramie Petroleum Research Center, Laramie, Wyoming

March 31, 1960

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 413 feet E/W line, 2430 feet S/N line of sec. 32,
T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description	
552.5	553.5	Marlstone, light gray, well defined bedding.	
553.5	560.5	Oil shale, lean to medium, dark brown. Common pyrite stringers, 0.5-foot missing at 556.5 feet.	
560.5	562.5	Tuff, light gray to tan, massive, with abundant contorted beds of lean oil shale.	
(Upper wavy bed)	562.5	570.5	Oil shale, lean to medium, gray to brown, poorly defined bedding. Rare pyrite streaks.
570.5	572.0	Oil shale, lean to medium, brown, well defined bedding, faint banding.	
572.0	577.0	Oil shale, lean to medium, brown to gray, massive to faintly bedded.	
577.0	578.6	Oil shale, as above, well defined bedding, poor banding.	
578.6	580.9	Oil shale, lean to medium, dark brown, poorly defined bedding.	
580.9	583.2	Oil shale, lean, tan to brown, well defined bedding, good banding.	
583.2	584.4	Oil shale, medium, dark gray, massive, satiny luster.	
584.4	589.5	Oil shale, lean, tan to brown, well defined bedding, excellent banding. Rare tuff streaks.	
589.5	592.5	Oil shale, medium, dark brown, massive to poorly defined bedding.	
591.5	592.4	Oil shale, lean, tan to brown, well defined bedding, excellent banding in lower part.	
592.4	593.9	Oil shale, medium, dark gray to brown, tuffaceous in upper half.	
(Top A-groove 593.9 feet)	593.9	596.0	Marlstone, light gray, well defined bedding, good banding.
596.0	599.4	Marlstone, tan to buff, massive. Rare streaks of medium oil shale.	
599.4	603.4	Marlstone, light gray, poor to well defined bedding. Grades into lean oil shale at base.	
(Bottom A-groove 603.4 feet)	603.4	605.6	Oil shale, lean to medium, brown to gray, poorly defined bedding.
605.6	607.7	Oil shale, medium, dark brown, well defined bedding. Common oil saturated tuff stringers.	
607.7	610.4	Oil shale, lean, tan to gray, well defined bedding, good banding. Common tan tuff stringers.	
610.4	612.5	Oil shale, lean to medium, brown to gray, well defined bedding. A four-inch tuff bed at 610.9 feet. Common gray tuff stringers.	

Illustration No. SBR-3174P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 413 feet E/W line, 2430 feet S/N line of sec. 32,
T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
612.5	614.2	Oil shale, medium, dark gray, massive to faintly bedded. Rare pyrite streaks.
614.2	615.8	Oil shale, medium to rich, dark gray, poorly defined bedding. One-half-inch tan tuff beds at 615.1, 615.3, and 615.8 feet.
615.8	618.3	Oil shale, lean to medium, brown, massive. Rare pyrite.
618.3	619.3	Oil shale, lean, tan to brown, well defined bedding, good banding.
619.3	621.0	Oil shale, medium, brown, massive.
621.0	627.5	Oil shale, lean to medium, brown to gray, well defined bedding, good banding. Rare tuff streaks. A five-inch dark gray, hard tuff bed at 623.0 feet.
(Mahogany marker 623.0 feet)		
627.5	629.0	Oil shale, rich, dark gray, massive, satiny luster.
629.0	630.8	Oil shale, medium, dark brown, massive. Rare pyrite streaks.
630.8	632.3	Oil shale, lean, tan to brown, well defined bedding, good banding.
632.3	636.6	Oil shale, medium, dark brown, massive to poorly defined bedding. Common tuff stringers. A four-inch lean zone at 635.0 feet.
636.6	637.6	Oil shale, rich, dark gray, poorly defined bedding, satiny luster. Common tan tuff stringers.
637.6	643.3	Oil shale, medium to rich, dark brown, poorly defined bedding. Common very rich zones. A one-inch tuff at 642.9 feet. A three-inch "curly" bed at 641.0 feet.
643.3	649.2	Oil shale, medium, brown to light brown, well defined bedding, good banding. A six-inch rich zone at 647.2 feet.
649.2	652.3	Oil shale, medium, dark brown, massive. A one-inch tuff at 650.4 feet.
652.3	654.0	Oil shale, lean, tan to brown, well defined bedding.
654.0	655.3	Oil shale, medium, dark brown, massive.
655.3	657.5	Oil shale, lean, tan to brown, well defined bedding, poor banding.
657.5	659.5	Oil shale, medium to rich, dark brown, massive. Common tuff stringers.
659.5	663.4	Marlstone, tan to brown, well defined bedding, good banding. Rare tuff stringers.

Illustration No. SBR-3175P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 413 feet E/W line, 2480 feet S/N line of sec. 32,
T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
663.4	670.0	Oil shale, lean to medium, dark brown, massive to poorly defined bedding. Rare tuff stringers.
670.0	675.8	Oil shale, lean, tan to brown, well defined bedding, fair banding. Rare tuff streaks.
675.8	676.5	Oil shale, medium to rich, dark brown, poorly defined bedding. A one-half-inch tuff bed at 676.2 feet.
676.5	678.0	Oil shale, lean, tan to gray, well defined bedding.
678.0	681.5	Marlstone, tan to buff, massive to well defined bedding, good banding in part.
681.5	683.0	Oil shale, lean, brown, well defined bedding, poor banding.
683.0	685.0	Marlstone, tan to gray, massive to well defined bedding in lower part. A five-inch dark gray hard tuff bed at 683.6 feet.
685.0	687.0	Oil shale, lean to medium, dark brown, tuffaceous in upper part.
687.0	688.7	Marlstone, gray to tan in lower part, well defined bedding, excellent banding.
688.7	689.7	Oil shale, lean to medium, brown, well defined bedding, poor banding.
689.7	691.1	Oil shale, rich, dark brown. A tuffaceous zone at 690.0 feet.
691.1	695.0	Marlstone, tan to gray, massive to poorly defined bedding, good banding in part.
695.0	696.2	Oil shale, medium, brown, poorly defined bedding.
696.2	697.7	Tuff, light gray, massive. Rare contorted stringers of lean oil shale.
(Lower wavy bed)	697.7	
697.7	698.8	Oil shale, medium, dark gray, poorly defined bedding.
698.8	707.5	Marlstone, tan to gray, massive to poorly defined bedding, good banding in part.
707.5	712.0	Marlstone, gray to light gray, massive to faintly bedded.
712.0	718.0	Marlstone, tan to light gray, massive, faintly bedded. A two-inch oil saturated tuff at 712.9 feet.
718.0	720.5	Marlstone, tan to buff, well defined bedding, good banding. A two-inch oil saturated tuff at 718.1 feet.

Illustration No. SPR-3176P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 413 feet E/W line, 2430 feet S/N line of sec. 32,
T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
720.5	730.0	Marlstone, tan to light gray, poorly defined bedding, poor banding. A three-inch oil saturated tuff at 722.3 feet.
730.0	737.2	Marlstone, tan in upper part to light gray in lower, well defined bedding to massive. Rare bands of medium oil shale.
737.2	739.0	Oil shale, lean, dark brown, poorly defined bedding.
739.0	740.5	Oil shale, medium to rich, dark brown, massive to faintly bedded.
740.5	743.5	Marlstone, brown to gray, well defined bedding, excellent banding.
743.5	744.0	Oil shale, rich, dark gray, massive, satiny luster. A one-half-inch tan oil saturated tuff at 743.6 feet.
744.0	746.2	Oil shale, lean to medium, brown, well defined bedding, good banding. A two-inch gray tuff at 745.8 feet.
746.2	750.4	Marlstone, brown to gray, well defined bedding, good to excellent banding. A one-inch tan tuff at 746.3 feet, and a two-inch tan tuff at 748.2 feet. Common pyrite flakes.
750.4	754.0	Marlstone, tan to buff, massive to faintly bedded. A two-inch gray tuff at 751.6 feet.
754.0	758.7	Marlstone, brown to light gray, well defined bedding, excellent banding.
758.7	760.0	Oil shale, lean, brown to dark brown, well defined bedding. Common tuff stringers and one-inch gray tuff at 759.8 feet.
760.0	769.1	Marlstone, tan to buff and gray, well defined bedding, excellent banding. Common bands of medium oil shale, and six-inch tan marlstone at 765.0 feet.
769.1	769.6	Tuff, gray, massive, hard. Irregular contacts.
769.6	770.3	Oil shale, lean to medium, dark brown, well defined bedding.
770.3	773.8	Marlstone, tan to brown, well defined bedding, excellent banding. Rare tuff stringers.
773.8	775.0	Oil shale, lean to medium, dark brown, poorly defined bedding. A two-inch tan tuff at 774.4 feet. Rare tuff stringers.
775.0	777.8	Marlstone, tan to brown, well defined bedding, good banding. Common bands of medium oil shale.

Illustration No. SBR-3177P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 413 feet E/W line, 2430 feet S/N line of sec. 32,
T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
777.8	778.9	Oil shale, medium, dark gray, poorly defined bedding. A one-half-inch gray tuff bed at bottom.
778.9	781.4	Marlstone, tan to gray, poorly defined bedding.
781.4	782.0	Oil shale, medium, dark gray, massive.
782.0	785.0	Marlstone, tan to gray in lower part, massive to faintly bedded. Abundant tilted bedding and small faulting from 782.5 to 784.5 feet. A two-inch gray tuff injection at 784.6 feet.
785.0	786.0	Oil shale, lean to medium, gray, massive to poorly defined bedding. Rare tuff stringers.
786.0	788.0	Marlstone, gray, massive. Rare tuff stringers, one-inch rich oil shale at bottom.
788.0	790.0	Marlstone, tan to brown, well defined bedding, poor banding.
790.0	791.2	Oil shale, dark brown, poorly defined bedding. Common tuffaceous zones.
791.2	797.0	Marlstone, gray to tan, massive to poorly defined bedding.
797.0	800.6	Oil shale, lean to medium, brown to gray, massive to poorly defined bedding.
800.6	804.0	Marlstone, tan to light gray, poorly defined bedding, poor banding. Common pyrite stringers in lower part.
804.0	820.3	Marlstone, light gray, silty, massive to faintly bedded. Rare pyrite streaks.
820.3	824.0	Oil shale, lean to medium, dark gray, poorly defined bedding. Rare tuff and pyrite streaks.
824.0	825.6	Marlstone, dark gray, well defined bedding. Rare bands of oil shale.
825.6	828.6	Marlstone, tan, poorly defined bedding. Rare oil-shale bands.
828.6	832.0	Oil shale, lean to medium, gray, massive to faintly bedded, tuffaceous. A one-inch oil saturated tuff at 831.7 feet.
832.0	833.7	Marlstone, tan, massive, silty.
833.7	835.2	Marlstone, gray, well defined bedding.
835.2	837.7	Oil shale, medium, dark gray, massive. Common tuffaceous streaks.
837.7	841.7	Marlstone, gray to tan in lower part, massive to faintly bedded.
841.7	844.7	Marlstone, dark blue gray, poorly defined bedding.

Illustration No. SBR-3178P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 113 feet W/N line, 2430 feet S/N line of sec. 32,
T. 10 S., E. 1/4 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
544.7	851.1	Marlstone, tan to gray, well defined bedding, poor banding.
851.1	854.2	Marlstone, tan in upper part to gray in lower, massive.
854.2	866.0	Marlstone, gray, well defined bedding. Rare pyrite.
866.0	867.0	Siltstone, light gray, poorly defined bedding. Contains irregular lenses of oil saturation.
867.0	869.1	Siltstone, as above, no oil saturation. Calcareous in bottom.
869.1	874.1	Oil shale, lean, gray, massive to poorly defined bedding. Abundant pyrite.
874.1	882.0	Marlstone, dark gray, poorly defined bedding. Common bands of lean oil shale.
882.0	892.0	Marlstone, gray to dark gray, massive to poorly defined bedding in lower part.
892.0	894.8	Marlstone, tan to brown, well defined bedding, poor banding. Common tuff stringers.
894.8	903.5	Oil shale, lean, gray, poorly defined bedding. Abundant pyrite flakes. A one-inch oil saturated tuff at 899.7 feet.
903.5	907.0	Marlstone, gray, massive.
907.0	910.0	Marlstone, medium gray, poorly defined bedding. A one-half-inch gray tuff at 909.0 feet.
910.0	912.0	Marlstone, tan, silty, massive.
912.0	914.0	Marlstone, tan to brown, poor to well defined bedding, good banding.
914.0	917.8	Marlstone, brown to gray, massive to poorly defined bedding. A two-inch gray tuff bed at 917.6 feet.
917.8	919.8	Marlstone, gray, poorly defined bedding, massive in lower part.
919.8	920.5	Marlstone, light brown to brown, massive.
920.5	922.5	Marlstone, gray to brown, well defined bedding. Rare tuff stringers. A one-inch gray tuff bed at 921.6 feet.
922.5	928.0	Marlstone, gray, silty, massive.
928.0	931.3	Marlstone, gray, poorly defined bedding. Rare pyrite.
931.3	933.2	Oil shale, lean, brown to gray, poorly defined bedding. Abundant pyrite. Two-inch gray tuff beds at 932.4 and 933.0 feet.

Illustration No. SRR-3179P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 413 feet E/W line, 2460 feet S/N line of sec. 32,
T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
933.2	944.0	Marlstone, tan to gray, massive to well defined bedding in part. Four feet lost due to core barrel jamming.
944.0	947.1	Marlstone, tan to gray, well defined bedding, good banding.
947.1	949.5	Marlstone, light gray, silty, massive.
949.5	951.7	Marlstone, gray to brown, well defined bedding.
951.7	958.4	Marlstone, tan to light gray, silty, massive to poorly defined bedding.
958.4	961.5	Marlstone, dark gray, well defined bedding. Rare oil-shale bands.
961.5	966.0	Marlstone, gray, well defined bedding, poor banding.
966.0	967.0	Marlstone, tan to brown, faint bedding.
967.0	968.5	Marlstone, light gray, massive.
968.5	973.4	Marlstone, gray to dark gray, massive. Rare pyrite.
973.4	974.3	Oil shale, brown to gray, well defined bedding, poor banding.
974.3	976.8	Marlstone, tan to brown, well defined bedding, poor banding.
976.8	977.8	Oil shale, medium, dark brown, poorly defined bedding.
977.8	981.7	Marlstone, light gray, massive, sandy in part. Poorly defined bedding in lower part.
981.7	983.8	Oil shale, medium, dark brown, poorly defined bedding.
983.8	985.5	Marlstone, gray, massive. Contains vertical stringer of oil shale.
985.5	989.8	Oil shale, medium, dark brown, massive, poorly defined bedding. Rare tan tuff injections.
989.8	990.5	Marlstone, light gray, poorly defined bedding.
990.5	991.8	Oil shale, lean, brown to gray, poor to well defined bedding. Rare coal stringers.
991.8	994.0	Marlstone, light gray, massive, silty, tuffaceous in middle.
994.0	995.6	Marlstone, light tan, to gray in lower, massive to poorly defined bedding.
995.6	999.5	Marlstone, gray, poorly defined bedding. Rare tuffaceous streaks.
999.5	1004.5	Marlstone, tan, massive to poorly defined bedding, silty in part. Rare white tuffaceous zones.

Illustration No. SBF-3180P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 423 feet N/W line, 2430 feet S/W line of sec. 32,
T. 10 S., R. 25 E., 11th E. County, Utah (Con.)

Surface elevation 5,746 feet

Chogany marker at 623 feet

From	To	Description
1004.5	1010.4	Oil shale, lean, dark gray, massive to faintly bedded. Abundant pyrite flakes. Rare tuff stringers.
1010.4	1012.2	Marlstone, tan, massive to poorly defined. A two-inch gray hard tuff at 1010.4 feet.
1012.2	1017.9	Oil shale, lean, gray, poorly defined bedding. Abundant pyrite flakes. A four-inch white tuffaceous zone at 1016.4 feet and a one-inch gray hard tuff at 1017.2 feet.
1017.9	1018.9	Tuff bed, white to tan, massive to faintly bedded. Rare thin layers of brown marlstone.
1018.9	1020.5	Oil shale, medium, light brown, dark brown, and dark gray, poorly defined bedding.
1020.5	1021.5	Tuff bed, tan, fine-grained. Common irregular stringers of coarser-grained blue-gray tuff.
1021.5	1024.4	Oil shale, lean, dark brown and gray, massive to well defined bedding. Abundant flakes of pyrite.
1024.4	1026.4	Siltstone, white and tan, massive to finely-bedded. Cross-bedded.
1026.4	1028	Marlstone, tan to greenish-brown, massive to poorly defined bedding.
1028	1028.7	Oil shale, medium to rich, dark brown and dark gray, massive to well defined bedding.
1028.7	1032.8	Marlstone, light gray, tan, and light brown, massive to well defined bedding.
1032.8	1033.8	Oil shale, medium, dark brown and dark gray, massive to well defined bedding. A one-inch gray tuff bed occurs at 131.0 feet.
1033.8	1036.1	Marlstone, tan, silty. Rare white tuff beds. A one-inch bed and a one-inch inclusion of light brown chert occurs between 1034.4 and 1035.3 feet.
1036.1	1039.1	Oil shale, lean to medium, light brown, gray, and dark gray, generally massive.
1039.1	1040.2	Marlstone, silty, tan and light gray, massive to poorly defined bedding.
1040.2	1042	Oil shale, medium, brown, gray, and dark gray, massive to well defined bedding.
1042	1047.5	Oil shale, lean, brown and gray, massive to poorly defined bedding.
1047.5	1049.3	Marlstone, tan and light brown, massive to poorly defined bedding.

Illustration No. SBP-3181P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 413 feet E/W line, 2480 feet S/N line of sec. 32,
T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
1049.3	1074.2	Marlstone, tan, light gray and blue-gray, massive to well defined bedding. Abundant pyrite flakes in lower part.
1074.2	1075.2	Oil shale, lean, brown and gray, well defined bedding.
1075.2	1077.0	Marlstone, light gray and tan, massive. Rare thin bands of brown oil shale.
1077.0	1079.7	Oil shale, lean to medium, light brown and dark gray, massive to irregular, poorly defined bedding.
1079.7	1081	Marlstone, tan and light gray, massive to poorly defined bedding.
1081	1082.3	Oil shale, lean to medium, brown and dark gray, well defined bedding. Richer with abundant pyrite grains in lower part.
1082.3	1083.5	Marlstone, tan and greenish-gray, massive. Irregular contact with oil shale below.
1083.5	1086.4	Oil shale, lean, brown and gray, well defined bedding. Abundant flakes of pyrite.
1086.4	1090.2	Marlstone, tan to dark brown, massive to well defined bedding. Light gray tuff beds in lower six inches.
1090.2	1092.3	Oil shale, lean to medium, brown and dark gray, well defined bedding. A 0.2-foot blue-gray tuff occurs at 1091.0 feet.
1092.3	1093.4	Marlstone, tan and light gray, poorly defined to well defined bedding.
1093.4	1094.1	Oil shale, lean, brown, well defined bedding.
1094.1	1098.5	Marlstone, tan and light brown, massive to well defined bedding.
1098.5	1101.1	Oil shale, lean, brown and dark gray, well defined bedding. A 0.4-foot band of tan marlstone containing two one-half-inch bands of oolitic dolomite (?) occurs at 1100.0 feet.
1101.1	1103.3	Marlstone, tan and greenish-gray, well defined bedding.
1103.3	1116.0	Oil shale, lean to medium, dark brown, gray, and dark gray, poorly defined to well defined bedding. 0.4-foot beds of tan marlstone occur at 1105 feet and at 1105.3 feet. 0.3-foot light gray and tan tuff beds occur at 1108.4 feet, 1108.9 feet, and at 1103.7 feet.

Illustration No. SBR-3182P

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from National Farmers Union Exploration Company's No. 9
Corehole drilled 413 feet E/W line, 2480 feet S/N line of sec. 32,
T. 10 S., R. 25 E., Uintah County, Utah (Con.)

Surface elevation 5,746 feet

Mahogany marker at 623 feet

From	To	Description
1116.0	1121.5	Marlstone, tan, gray, and light brown, massive to well defined bedding.
1121.5	1122.5	Sandstone, light gray and blue-gray, silty in part, carbonaceous.
1122.5		Bottom of hole.

Illustration No. SBR-3133P

Laramie Petroleum Research Center, Laramie, Wyoming

March 31, 1960