

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY^{1/}

Core samples from Colony Development Company Corehole 1-2 drilled in 1973
in SW1/4NE1/4NW1/4 (3,654 ft N 65° 40' W from E 1/4 corner) of
sec 1, T 5 S, R 96 W, Garfield County, Colorado

Surface elevation: 7,626 feet
Cored interval: 30 to 1,600 feet

From	To	Description
30.0	31.3	Marlstone: Buff and gray buff to light and rare medium brownish gray, slightly silty. Faint to moderately distinct very fine laminae. Irregular to regular thick to thin parting; some rubble at top and bottom.
31.3	34.0	Missing.
34.0	37.4	Mudstone and siltstone: Yellowish buff to orange brown. Variegated; some faint irregular to contorted bedding. Mostly rubble and irregular core pieces.
37.4	37.8	Missing.
37.8	40.0	Siltstone and very fine sandstone: Light gray to gray buff. Massive with some faint streaks and irregular layers. Irregular parting and fracture. Rare black carbonaceous specks.
40.0	42.0	Siltstone and mudstone: Gray buff and light gray to yellowish buff and orangish tan. Massive to variegated; some faint regular to distorted bedding in middle part. Irregular parting and fracture.
42.0	62.2	Siltstone: Light gray to buff white, some very fine sandy-textured zones. Massive; some faint contorted bedding. Irregular parting and fracture; some rubble. Some fine streaks to thick irregular zones of buff to light brownish-gray marlstone in lower part. Some fine carbonaceous specks.
62.2	64.3	Marlstone: Buff to light and rare medium brownish gray, slightly silty in parts. Faint to moderately distinct laminae. Irregular to regular thick to medium parting; irregular to slightly conchoidal fracture. Light gray very fine-grained sandstone at 62.7-63.2. Rare thin siltstone stringers in lower part. Sample of marlstone from 64.2 feet: X-ray - dolomite, analcime, quartz, feldspar.
64.3	74.2	Siltstone and very fine sandstone: Light gray to gray buff. Massive with rare faint contorted to regular bedding. Irregular to fairly regular thick parting. Rare carbonaceous specks. Some 1/2- to 2-inch marlstone bands in lower 2 feet. Sample of gray-buff siltstone from 69.6 feet: X-ray - Na and K feldspars, quartz, dolomite.

^{1/} By L. G. Trudell, completed October 2, 1973.

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Core samples from Colony Development Company Corehole 1-2

From	To	Description
121.4	123.4	Marlstone (very lean oil shale): Buff to light and some medium brownish gray. Fairly distinct to faint laminae and streaked bedding. Regular to irregular thick to rare thin parting; slightly conchoidal fracture.
123.4	124.5	Oil shale: Light to medium brownish gray and some buff. Moderately distinct to faint laminae. Irregular to regular thick to medium parting; irregular to slightly conchoidal fracture. Some thin to 0.1-foot gray-buff siltstone stringers. Rare small dense gray lenses.
124.5	126.6	Siltstone: Gray buff. Faintly streaked to massive. Broken core with tar-coated vertical fracture surfaces in middle part. Few fine shredded oil-shale stringers near base.
126.6	127.4	Oil shale: Light to medium brownish gray. Faint laminae and streaked bedding. Irregular to regular thick to medium parting; slightly conchoidal to irregular fracture. Rare very fine dense gray lenses and streaks.
127.4	129.4	Oil shale: Very dark to rare medium brownish gray. Faintly streaked to laminated. Irregular to regular thick parting. Rare fine brownish-gray analcime streaks. A high angle fracture with slight calcite crusts at 127.8-128.0; a vertical fracture with bitumen coatings at 128.6-128.8.
129.4	135.0	Oil shale: Medium and rare dark brownish gray to tan and buff. Faint to distinct laminae. Irregular to regular thick to medium parting. High angle bitumen-coated fractures in upper 1.2 feet; high angle calcite-filled fracture at 134.3-134.6. Fine analcime layers at 133.3 and 134.7. Sample of very dark brownish-gray oil shale from 127.6 feet: X-ray - dolomite, quartz, analcime, calcite, feldspar.
135.0	137.0	Oil shale: Dark and some medium brownish gray; some fine satiny to resinous black layers in middle part. Fairly distinct to faint laminae in upper part to very faint banding in lower part. Fairly regular thick to rare thin parting in upper part; irregular parting and irregular to conchoidal fracture in lower part. Few very fine diagonal calcite-filled fractures at 135.5. Rare fine grayish-brown silty stringers and laminae.
137.0	140.0	Oil shale: Medium to dark brownish gray. Very faintly banded and laminated. Irregular to fairly regular thick parting; irregular to conchoidal fracture; hard and dense. Abundant fine bitumen-stained crystalline blebs and very fine lacy streaks from 137.6 to

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Core samples from Colony Development Company Corehole 1-2

From	To	Description
159.7	160.7	flecks. A 2-inch dark brownish-gray oil-shale stringer at 159.0; some fine dark to light oil-shale shreds elsewhere. Irregular slightly unconformable contact with oil shale below. Oil shale: Tan to grayish brown. Faint very fine laminae and streaked bedding. Irregular thick parting; conchoidal to irregular fracture. Rare fine buff-white silty streaks. Sharp regular contact with siltstone below.
160.7	162.0	Siltstone and oil shale: Buff-white siltstone with abundant thick hackly fingers and fine shreds of oil shale as above.
162.0	165.0	Siltstone and some very fine sandstone: Very light buff. Irregularly streaked with abundant fine to thin light to medium grayish-brown oil-shale shreds and stringers. Irregular high angle bitumen-coated fracture at 162.9-163.7.
165.0	178.9	Siltstone: Very light buff. Irregularly streaked to massive. Some fine oil-shale streaks in upper part. Common irregular discontinuous high angle fractures with patchy bitumen coatings and some fine-grained pyrite crusts. Rare small buff to tan marlstone nodules and thin stringers. Abundant fine white blebs at 178.4-178.7. Sharp, slightly irregular contact with oil shale below.
178.9	180.3	Oil shale: Dark brownish gray to some black. Very faint streaked bedding. Irregular thick parting; slightly conchoidal to irregular fracture. Abundant fine to small brown to milky white mineral blebs and streaks at 179.0-179.1, 179.8-180.0, and 180.1-180.3; rare fine to small dense brown lenses elsewhere. A thin diagonal vermiform light brownish-gray mudstone stringer at 179.4-179.5. A thin lenticular silty to very fine blebby-textured buff dolomite (?) stringer at 180.0. Sample of oil shale with abundant mineral blebs from 179.8 feet: X-ray - quartz, analcime, dolomite, calcite, feldspar.
180.3	183.5	Oil shale: Medium to some light and dark brownish gray. Faint and some distinct fine to thin laminae and streaked bedding. Regular to irregular thick parting. Some high angle fractures with calcite crusts. Light gray to gray-buff siltstone layers at 180.9-181.0 and 182.3-182.6. Few thin zones of fine mineral blebs as above.
183.5	185.0	Siltstone: Light gray to gray buff. Massive to very faintly bedded. Few 1-inch oil-shale stringers and fine streaks. Slightly irregular upper contact; regular lower contact.

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Core samples from Colony Development Company Corehole 1-2

From	To	Description
196.9	197.9	Oil shale: Medium to some dark brownish gray and black. Faint streaked bedding and very fine laminae. Irregular to regular thick to thin parting; slightly conchoidal to irregular fracture.
197.9	200.0	Oil shale: Dark and rare medium brownish gray to some black. Faint very fine to thin laminae and some streaked bedding. Regular to irregular thick parting; slightly irregular to conchoidal fracture.
200.0	204.0	Oil shale: Medium and rare dark brownish gray with light brownish-gray zones becoming fairly abundant in middle and lower parts. Faint laminae and streaked bedding commonly in moderately distinct thin to thick lighter and darker zones. Regular to irregular thick to rare thin parting; slightly conchoidal to irregular fracture. Rare very fine medium to high angle calcite-filled fractures in upper part. A thin irregular buff dolomite layer at 203.9.
204.0	234.0	Oil shale: Dark to some medium brownish gray and black. Faint laminae and some streaked bedding. Regular to irregular thick to some medium parting; slightly irregular and conchoidal fracture. Rare medium to high angle natural fractures. Rare fine to small gray to buff mineral lenses. Thin buff dolomite layers at 219.0 and 233.0.
234.0	240.4	Oil shale: Dark to medium brownish gray. Faintly laminated. Regular to some irregular thick medium parting; slightly irregular and conchoidal fracture. A 1-inch dense blebby dark brownish-gray to black dolomite (?) lens at 235.6. A thin buff silty tuff stringer at 237.4. A 3/4-inch tan tight silty-textured tuff (?) with abundant very fine irregular cavities at 240.0.
240.4	243.6	Oil shale: Dark to some medium brownish gray and rare black. Faint very fine laminae. Regular to slightly irregular thick parting; fairly regular fracture.
243.6	245.7	Oil shale: Dark to medium brownish gray. Faintly laminated. Regular to some irregular thick parting; fairly regular fracture.
245.7	247.8	Oil shale: Medium to some dark brownish gray. Faint very fine laminae and streaked bedding. Fairly regular thick parting; fairly regular fracture. Rare fine dark gray silty streaks in upper part.
247.8	248.8	Oil shale: Medium to dark brownish gray. Faint to moderately distinct laminae. Fairly regular parting and fracture.
248.8	250.9	Oil shale: Dark brownish gray to some black; rare satiny luster in upper part. Faint laminae and some streaked bedding; some

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
270.4	271.5	Oil shale: Dark to medium grayish brown. Faintly laminated. Regular to irregular thick parting. A very fine gray silty tuff lamina at 271.0.
271.5	275.0	Oil shale: Medium and some dark grayish brown. Faint very fine laminae and streaked bedding. Fairly regular thick to some thin parting. A fine light gray to white silty tuff with very fine disseminated pyrite at 271.9. A 1-inch dense light brownish-gray dolomite band with some fine braided oil-shale layers at 274.7.
275.0	276.7	Oil shale: Medium to some light and rare dark grayish brown. Faint streaked bedding and very fine laminae. Fairly regular to irregular thick to medium parting. Irregular to regular vertical fracture with very slight earthy coatings in upper part; very fine vertical calcite-filled fracture below 276.0.
276.7	279.0	Oil shale: Dark to medium brownish gray, rare black in upper part. Faint very fine laminae and streaked bedding. Fairly regular thick parting. Rare fine brown dolomite laminae in upper part.
279.0	283.5	Oil shale: Medium grayish brown. Faint streaked bedding and very fine laminae. Regular to some irregular thick to rare thin parting. Some very fine white to gray slightly silty to dense streaks (commonly pyritic). Abundant dark plant debris and possible insect larvae on some parting surfaces.
283.5	284.6	Oil shale: Medium to some light grayish brown. Faint to moderately distinct laminae. Fairly regular thick parting. High angle fracture with some patchy calcite crusts and very fine pyrite at 283.6-283.8. Abundant plant debris and insect larvae.
284.6	286.8	Oil shale: Very dark to some medium brownish gray. Faint streaked bedding and some laminae. Regular to some irregular thick parting. Rare fine brownish-gray to buff crystalline streaks and blebs.
286.8	287.9	Oil shale: Dark to medium grayish brown. Faint very fine laminae and streaked bedding. Fairly regular thick to medium parting.
287.9	291.4	Oil shale: Medium to rare light and dark grayish brown. Faint streaked bedding and very fine laminae. Regular to some irregular thick to medium parting. Abundant dark debris and rare recognizable insect larvae on parting surfaces. A very fine slightly irregular calcite and pyrite-filled vertical fracture from 289.0 to 289.7. Rare fine gray pyritic streaks.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
311.2	312.0	Oil shale: Dark brownish gray to black; some satiny to resinous luster. Faint laminae and streaked bedding. Regular thick to medium parting; some vuggy rubble near top.
312.0	313.3	Oil shale: Dark to rare medium grayish brown. Very faintly laminated to nearly massive. Irregular thick to medium parting; conchoidal fracture.
313.3	317.4	Oil shale: Grayish brown. Faint to rare moderately distinct laminae and some very faint streaked bedding. Irregular to regular thick to medium parting. A short diagonal fracture with slight dark brown organic stains near top; abundant very fine lacy calcite-filled fractures at 313.8-314.0; some thin porous calcite stringers and fine fracture fillings at 314.3-314.6.
317.4	318.4	Oil shale: Dark brownish gray to tan. Faint to distinct laminae. Regular to irregular thick to medium parting. A very fine buff-white silty to earthy tuff (?) layer at base.
318.4	319.5	Oil shale: Medium to dark grayish brown. Faint very fine laminae. Fairly regular thick to medium parting. Fine gray-buff slightly earthy stringers at 318.6 and 319.4. Fine dense white mineral streaks at 318.8.
319.5	322.5	Oil shale: Dark grayish brown. Faint very fine laminae and some streaked bedding. Regular to some irregular thick to medium parting; slightly conchoidal to irregular fracture. A thin tan silty tuff band at 319.9.
322.5	327.5	Oil shale: Dark to medium grayish brown. Faint to rare distinct laminae and streaked bedding. Regular to irregular thick to medium parting. Tan to buff silty tuff stringers at 323.3-323.5, 324.7-324.8, and 325.4-325.5; few thin stringers and lenses elsewhere above 325.5.
327.5	328.7	Oil shale: Dark brownish gray to black; some satiny luster. Faintly streaked to laminated. Regular to irregular thick parting; slightly irregular and conchoidal fracture.
328.7	329.8	Oil shale: Medium grayish brown to black. Faintly laminated. Fairly regular thick parting. A very thin buff tuff stringer at 329.5 and some very thin lenses 1/2 inch lower.
329.8	332.3	Oil shale: Dark to medium grayish brown. Regular to irregular thick to medium parting; slightly conchoidal to irregular fracture. Very fine irregular calcite-filled fracture at 330.2-330.5. Rare fine gray pyritic streaks in lower part.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
355.3	359.2	Oil shale: Dark grayish brown with some medium to light zones in lower half. Faint very fine laminae and streaked bedding. Irregular to regular thick parting. Rare very fine calcite-filled fractures. Rare buff streaks and stringers in light zones.
359.2	370.7	Oil shale: Dark grayish brown; some medium to light zones from 361.2 to 365.7. Faint very fine laminae and streaked bedding. Some fine to 1-inch buff streaks and stringers in lighter zones.
370.7	372.7	Oil shale: Medium to some dark to rare light grayish brown. Faint very fine laminae and streaked bedding. Some thin to 1-inch brownish-gray to buff tuff layers in upper part.
372.7	375.0	Oil shale: Dark grayish brown to rare black. Faint laminae and streaked bedding. Irregular to regular thick parting.
375.0	379.0	Oil shale: Dark to medium grayish brown becoming progressively lighter in lower part; some tan at 375.2-375.3 and 378.4-378.6. Faint laminae and streaked bedding. Fairly regular to some irregular thick parting; slightly irregular and conchoidal fracture. Some fine gray-buff silty tuff streaks in light zone at 375.2-375.3; a thin light brownish-gray silty tuff layer at 378.5.
379.0	381.0	Oil shale: Medium and rare dark grayish brown to tan and rare buff. Faint to some moderately distinct laminae. Irregular thick to medium parting; slightly conchoidal to some irregular fracture. Rare fine white to buff silty to earthy streaks. A very fine calcite-filled vertical fracture from 380.0 to 380.3.
381.0	382.0	Oil shale: Medium to some dark brown and grayish brown. Faint laminae and streaked bedding. Irregular to regular thick to medium parting. Diagonal fracture with patchy calcite and black organic coatings at top.
382.0	383.0	Oil shale: Dark and rare medium grayish brown; a very thin black satiny to resinous layer at 382.5. Faint streaked bedding and very fine laminae. Slightly irregular thick parting; slightly irregular to irregular and conchoidal fracture.
383.0	392.0	Oil shale: Dark to medium grayish brown; some brown to rare tan in lower part. Faint streaked bedding to faint and rare distinct laminae. Irregular to some regular thick to rare thin parting. Some fine irregular discontinuous fractures with calcite and pyrite fillings at 385.5-385.7; very fine diagonal calcite-filled fractures at 388.8-389.0 and 389.7-389.9; irregular vertical fracture with muddy coatings from 390.8 to 391.7.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
		to medium parting; slightly irregular and conchoidal fracture. Rare short high angle fractures with very slight mineral coatings. A fine brown to gray dense to blebby stringer at 425.1. Sample of light to medium grayish-brown oil shale from 425.2 feet: X-ray - dolomite, quartz, analcime, feldspar.
429.0	433.0	Oil shale: Dark to some medium grayish brown. Faint laminae and streaked bedding. Regular to irregular thick parting; slightly conchoidal fracture. Rubble with abundant mineral blebs and rare very small cavities at 430.0-430.2.
433.0	440.6	Oil shale: Medium and some dark grayish brown. Faint laminae and streaked bedding to some massive zones. Regular to irregular thick parting; some conchoidal fracture.
440.6	441.8	Oil shale: Dark grayish brown and some black; some satiny to resinous luster. Faintly laminated. Fairly regular thick parting. A high angle fracture with very fine disseminated pyrite in upper 0.3 foot.
441.8	448.5	Oil shale: Medium and dark grayish brown. Faint laminae and some very faint streaked bedding. Irregular to fairly regular thick parting; conchoidal to fairly regular fracture.
448.5	449.8	Oil shale: Medium to rare dark grayish brown and some brown to tan. Faint to some distinct laminae. Irregular to regular thick parting; fairly regular fracture. A thin irregular dense to blebby gray mineral lens at 449.2. Sample of oil shale with thin gray mineral lens from 449.2 feet: X-ray - dolomite, quartz, feldspar, fluorite, calcite, analcime.
449.8	451.2	Oil shale: Dark grayish brown to black; some satiny to resinous luster. Faint laminae and some streaked bedding. Regular to irregular thick parting; slightly irregular and conchoidal fracture. Fine buff silty tuff laminae and lenses at 450.4; a thin dark brownish-gray silty lens at 450.1.
451.2	454.2	Oil shale: Dark to medium grayish brown. Faint laminae and streaked bedding. Regular to irregular thick parting; slightly conchoidal fracture. Small light gray dense mineral blebs at 451.6. A thin dense brown layer at 452.9.
454.2	455.2	Oil shale: Grayish brown to some tan; some dark grayish brown to black in lower part. Faint to moderately distinct laminae. Slightly irregular thick to medium parting; slightly conchoidal fracture.

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Core samples from Colony Development Company Corehole 1-2

From	To	Description
473.1	477.0	Oil shale: Medium and some dark grayish brown to tan and rare buff. Faint to some distinct laminae. Regular to irregular thick to medium parting. Some fine to 3/4-inch brownish-gray to gray-buff tuff streaks and stringers below 474.2. Vertical fracture with chalky coatings at 475.7-475.9.
477.0	478.0	Oil shale: Medium to some light and dark grayish brown, rare black in lower part. Fairly distinct to faint laminae. Regular thick to some thin parting. A 3/4-inch buff-white to light brownish-gray tuff at 477.1; a 1-3/4-inch light to medium brownish-gray tuff at 477.9; few fine tuff layers and streaks elsewhere.
478.0	479.0	Oil shale: Dark and rare medium brownish gray to some black. Faintly laminated. Regular thick to rare thin parting. Abundant fine to thin light brownish-gray and light gray tuff layers; light brownish-gray to buff tuff with some fine contorted oil-shale stringers at 478.5-478.7 (irregular fractured and broken core pieces).
479.0	480.0	Oil shale: Dark brownish gray and rare black. Faintly laminated. Slightly irregular thick parting. Some fine to thin tuff layers and lenses.
480.0	482.6	Oil shale: Medium and some dark grayish brown; some tan and rare buff below 482.0. Faint to some fairly distinct laminae. Irregular to regular thick to medium parting. Light brownish-gray to buff tuff with rare fine oil-shale streaks in upper 0.3 foot. Vertical fracture with slight chalky coatings from 480.7 to 481.5.
482.6	483.7	Oil shale: Dark and some medium brownish gray to rare black. Faintly laminated. Regular thick to medium parting. Some fine to very thin diagonal to horizontal streaks of soft gray to black gritty porous pyritic material at 483.0-483.1. Some thin to fine tight slightly brownish gray silty layers and streaks below 483.1.
483.7	484.8	Oil shale: Dark brownish gray to some black and dark brown; some satiny to resinous luster. Faint to some moderately distinct laminae. Regular to irregular thick to medium parting. A 1-inch buff to light brownish-gray slightly wavy tuff at 484.1; few very fine tuff layers from 484.0 to 484.3.
484.8	485.9	Oil shale: Very dark brownish gray to dark and rare medium brown. Faint streaked bedding and some displaced laminae. Slightly irregular thick parting. <div style="margin-left: 40px;">Sample of dark brown oil shale from 485.7 feet: X-ray - dolomite, quartz, aragonite, analcime, feldspar, calcite.</div>

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Core samples from Colony Development Company Corehole 1-2

From	To	Description
		fillings and some black pyritic material from 500.6 to 500.9. Regular to slightly irregular thick parting except in fractured zone.
		Sample of tan oil shale with mineral-filled fractures from 500.8 feet: X-ray - quartz, dolomite, calcite, feldspar, analcime.
		Sample of medium to dark grayish-brown oil shale from 501.2 feet: X-ray - dolomite, quartz, feldspar, calcite, analcime, ferroan, pyrite.
502.2	503.5	Oil shale: Very dark brownish gray to dark and rare medium brown. Faintly laminated in upper and lower parts; finely streaked from 502.4 to 503.1. Fairly regular thick parting.
503.5	504.7	Oil shale: Very dark brownish gray. Faint very fine streaked bedding and some laminae. Fairly regular thick parting.
504.7	505.7	Oil shale: Very dark to some medium brownish gray and some black. Faint to some moderately distinct laminae. Regular to some irregular thick parting. A 1-inch brownish-gray tuff nodule at 504.8. A very thin buff fine-grained dolomite (?) stringer at 504.95. Abundant very fine lacy fractures with white mineral fillings at 505.2-505.4.
505.7	506.4	Oil shale: Very dark to medium grayish brown and some tan to buff. Faint to distinct laminae. Regular thick parting.
506.4	507.5	Oil shale: Dark brownish gray; common satiny to resinous luster. Very faint streaked bedding. Irregular thick to thin parting; some hackly fracture. Rare fine brown streaks. Sample of dark brownish-gray oil shale from 507.1 feet: X-ray - dolomite, quartz, feldspar, calcite.
507.5	508.4	Oil shale: Dark and some medium brownish gray to rare black. Faintly laminated. Regular thick parting. Sample of dark to medium brownish-gray oil shale from 507.6 feet: X-ray - dolomite, quartz, feldspar, calcite, analcime, pyrite, ferroan.
508.4	511.4	Mahogany bed (oil shale): Black to dark and some medium grayish brown; nearly all has resinous to waxy luster. Faint to moderately distinct laminae; abundant very distinct brown to tan laminae from 509.0 to 509.9; some thin loop structures and displacements. Regular to some irregular thick to thin parting; irregular conchoidal to some coarse hackly fracture. Small buff to gray dense to silty lenses at 509.3. Few partly open low angle fractures at 511.3.

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Core samples from Colony Development Company Corehole 1-2

From	To	Description
		to rare medium and thin parting. A fine black pyritic stringer at 529.5; small massive marcasite (?) lenses at 532.6.
533.0	535.3	Oil shale: Dark to medium grayish brown. Faint very fine regular laminae. Regular to some irregular thick parting.
		Sample of grayish-brown oil shale from 534.8 feet: X-ray - dolomite, quartz, dawsonite, feldspar, calcite, pyrite.
535.3	537.5	Oil shale: Very dark to some medium grayish brown; some black in lower part. Faint distorted streaked bedding in upper part to faint and moderately distinct regular laminae in lower part. Irregular to regular thick to rare thin parting. Dark brownish-gray silty tuff at 536.9-537.1. A small irregular vug with some light gray porous to spongy filling at 536.7. Some broken core at base.
		Sample of dark grayish-brown to black oil shale from 536.4 feet: X-ray - dolomite, quartz, feldspar, ferroan, analcime.
537.5	538.2	Missing?
538.2	540.4	Oil shale: Dark to medium grayish brown. Faintly laminated. Irregular to regular thick to rare thin parting.
540.4	541.6	Oil shale: Grayish brown to rare tan and buff. Faint very fine laminae. Fairly regular thick parting. Some fine to thin buff dolomite (?) streaks and lenses in lower part. Very abrupt change to dark oil shale at base.
541.6	542.1	Oil shale: Dark to some medium grayish brown finely streaked with black. Faint to fairly distinct streaked bedding. Regular thick to medium parting.
542.1	543.6	Oil shale: Grayish brown; rare fine black streaks in upper part. Faint streaked bedding and very fine laminae; distorted in middle. Regular to irregular thick parting. Abrupt change to dark oil shale at base.
543.6	544.8	Oil shale: Dark to rare medium grayish brown and some black. Faintly streaked in upper part to laminated in lower part. Regular to irregular thick parting; some conchoidal fracture. A small buff tuff nodule at 544.2.
544.8	547.5	Oil shale: Dark to medium grayish brown; some light brownish gray to buff in lower part. Moderately distinct to very faint laminae. Regular to irregular thick parting; some conchoidal fracture. Rare fine buff to white calcite streaks in lower part.
547.5	549.7	Oil shale: Dark grayish brown. Very faint streaked bedding. Regular to some irregular thick parting.

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Core samples from Colony Development Company Corehole 1-2

From	To	Description
573.3	574.0	Oil shale: Dark grayish brown. Faint streaked bedding and very fine laminae. Regular thick parting.
574.0	575.7	Oil shale: Medium to light and rare dark brownish gray. Faintly laminated. Irregular to regular thick to medium parting. Some medium to high angle fractures with slight chalky coatings. Brownish-gray silty tuff at 575.0-575.3.
575.7	577.0	Oil shale: Medium to some light and dark brownish gray. Faint to distinct laminae. Regular thick to medium parting. Sample of light to dark brownish-gray oil shale from 576.5 feet: X-ray - dolomite, quartz, analcime, feldspar.
577.0	578.3	Oil shale: Black to dark and some medium brown. Very faint streaked bedding to moderately distinct laminae. Irregular to regular thick parting.
578.3	580.3	Oil shale: Medium to dark and some light grayish brown. Fairly distinct laminae. Regular thick to medium parting. A small buff silty lens with fine pyritic blebs at 578.7. Fractured vuggy (?) rubble at 580.0-580.1.
580.3	581.4	Oil shale: Medium brownish gray. Very faint to some moderately distinct laminae. Regular thick to medium parting; regular fracture.
581.4	582.5	Oil shale: Medium brown to dark brownish gray and rare black. Distinctly laminated. Regular thick parting.
582.5	584.1	Oil shale: Black to dark grayish brown; common satiny to resinous luster. Very faintly laminated. Regular thick to thin parting. Some fine buff marlstone laminae at 582.6. A fine gray-buff silty tuff layer at 582.7. Smooth vertical fracture with abundant very fine scattered pyrite crystals from 583.3 to 584.1.
584.1	586.3	Oil shale: Dark to rare medium grayish brown. Faintly laminated to nearly massive. Regular to irregular thick parting; some conchoidal fracture.
586.3	587.4	Oil shale: Grayish brown to brown and rare tan. Very faintly streaked to faintly laminated. Irregular to regular thick to thin parting. Abundant irregular fractures at 586.5-586.9 and 587.1-587.4.
587.4	588.9	Mudstone and oil shale: Buff to light and some medium grayish brown. Faint streaked bedding and irregular laminae in upper part; mudstone with fine oil-shale shreds, small to large irregular broken inclusions, and thin stringers in lower part. Irregular parting and fracture.

Illustration No. SBR-4550P (Sheet 23 of 75)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
598.8	600.4	Tuff and oil shale: Massive to faintly variegated buff tuff with a thick layer of dark to medium brownish-gray faintly laminated oil shale at 599.5-599.9. Wavy contacts at top and bottom of oil-shale layer in middle; fairly regular contact with oil shale at base. Sample of buff tuff from 599.4 feet: X-ray - K and Na feldspars.
600.4	602.0	Oil shale: Medium to dark brown and grayish brown, rare tan. Faint and rare distinct laminae. Irregular thick parting; irregular conchoidal fracture. Rare very fine high angle calcite-filled fractures in lower part. Rubble in lower 0.3 foot.
602.0	604.0	Oil shale: Rubble as above and below.
604.0	605.0	Oil shale: Medium to dark grayish brown and rare black. Faint to some moderately distinct laminae. Irregular thick parting; conchoidal to irregular fracture. Sample of medium to dark grayish-brown oil shale from 604.5 feet: X-ray - dolomite, aragonite, feldspar, calcite, quartz.
605.0	606.0	Oil shale: Rubble as above and below.
606.0	607.0	Oil shale: Medium to some dark brownish gray. Faintly laminated. Irregular thick parting; rubble with some very fine pyrite on fracture surfaces in upper 0.4 foot.
607.0	611.0	Oil shale: Medium to rare light and dark brownish gray. Faintly laminated. Irregular to regular thick to thin parting; mostly rubble in upper part; some rubble and mixed up core pieces in lower part. Some very fine pyritic streaks. Some fractures with pyrite and rare calcite. Few small rounded vuggy pieces at base.
611.0	612.0	Missing?
BOTTOM OF MAHOGANY ZONE--TOP OF B-GROOVE		
612.0	618.0	Marlstone: Buff to tan and rare medium to dark grayish brown. Faint to some moderately distinct laminae. Irregular to regular thick to rare thin parting; some rubble. Some high angle fractures with pyrite. Occasional thin to fine zones with abundant very fine gray pyritic specks. (613.5-614.5 missing?) Sample of buff to tan marlstone from 616.3 feet: X-ray - dolomite, feldspar, analcime.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
634.6	635.6	Oil shale: Dark to medium grayish brown and some black. Faintly streaked to laminated. Slightly irregular thick parting. Irregular core pieces and rubble in lower part.
635.6	636.6	Missing?
636.6	639.6	Oil shale: Medium and some dark grayish brown and brown to tan. Distinctly laminated. Regular thick parting; some rubble at top. Some very fine high angle calcite-filled fractures from 638.3 to 638.8; occasional short tight fractures elsewhere. Sample of distinctly laminated tan to brown oil shale from 639.5 feet: X-ray - dolomite, feldspar, quartz.
639.6	642.6	Oil shale: Dark to some medium grayish brown and rare black. Faint streaked bedding. Fairly regular to irregular thick parting. Irregular core pieces and some buff earthy rubble in lower 0.3 foot.
642.6	642.9	Missing?
642.9	644.1	Oil shale: Dark grayish brown to black and some medium brown. Faintly laminated. Irregular to regular thick parting.
644.1	645.1	Oil shale: Dark to medium grayish brown and brown. Moderately distinct laminae. Slightly irregular thick parting.
645.1	645.3	Missing?
645.3	645.5	Tuff (?): Very light buff, earthy. Massive; rare fine wavy oil-shale stringers. Sample of buff earthy tuff from 645.3-645.5 feet: X-ray - K feldspar.
645.5	649.0	Oil shale: Medium and rare dark brownish gray to some brown and rare tan. Faint to some moderately distinct laminae. Regular to some irregular thick to thin parting. Few discontinuous vertical and horizontal fractures with black to brown tarry coatings; very fine irregular vertical calcite-filled fracture in lower foot. A 0.1-foot light brownish-gray to buff-white silty to earthy tuff at 646.4; very irregular light brownish-gray to tan tuff (?) with very abundant fine white specks in lower 0.2 foot. Sample of light brownish-gray tuff with very fine white specks from 648.8 feet: X-ray - quartz, Na and K feldspars, dolomite, pyrite, extra peak at 4.8° 2θ.
649.0	651.4	Oil shale: Medium to some dark brownish gray. Moderately distinct to very faint laminae. Regular to irregular thick to some thin parting. Some dark brown to black stained fractures near top; rare very fine calcite-filled fractures. Thin brown silty tuff streaks at 649.4.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
671.5	672.3	Oil shale: Medium and rare dark brownish gray. Faint very fine laminae. Irregular to regular thick to thin parting. A 3/4-inch light slightly brownish gray tuff stringer at top.
672.3	673.0	Oil shale: Brownish gray to tan and buff. Faint to distinct laminae. Regular thin to thick parting. Chalky white coating on some parting surfaces near top. Rare short tight vertical fractures with chalky coatings. Rare thin dark gray discolored layers.
673.0	673.6	Missing?
673.6	674.6	Oil shale: Medium to dark brownish gray. Faint very fine laminae and streaked bedding. Regular thick parting. Tight slightly chalky high angle fracture in upper 0.2 foot.
674.6	674.9	Missing?
674.9	677.0	Oil shale: Medium to dark brownish gray, rare thin tan zones in upper part. Faint very fine laminae and streaked bedding. Irregular to regular thick to rare thin parting; rubble at bottom. A fine gray silty to blebby tuff layer at 675.1.
677.0	681.7	Missing.
681.7	682.0	Oil shale: Medium and rare dark grayish brown. Faintly laminated. A thin zone of fine platy boxworks with some gray to black pyritic linings at 681.8.
682.0	685.7	Oil shale: Dark brownish gray. Faintly laminated. Regular to irregular thick parting. A very fine buff-white silty and earthy lamina at 684.6. Dark brownish-gray tuff with fine wavy oil-shale stringers and some light gray streaks at 684.8-685.2. Sample of dark brownish-gray tuff from 685.1 feet: X-ray - Na feldspar, quartz, pyrite, extra peak at 4.8° 2θ.
685.7	686.7	Oil shale: Dark to some medium grayish brown and rare black; some satiny to waxy luster. Faintly laminated. Irregular thick parting.
686.7	688.0	Oil shale: Dark grayish brown to medium and rare light brownish gray. Faintly laminated. Regular to irregular thick to medium parting.
688.0	688.3	Oil shale: Grayish brown to buff. Distinctly laminated. Some rubble.
688.3	688.7	Oil shale: Dark grayish brown. Faint streaked bedding. Irregular thick parting.
688.7	690.0	Missing.
690.0	690.8	Oil shale: Medium and some dark grayish brown. Faint distorted streaked bedding to very faint very fine laminae. Irregular to regular thick to medium parting.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
715.3	720.0	Oil shale: Medium to light grayish brown and brown. Very faintly streaked to massive. Very abundant fine to small partly collapsed cavities. Some solid zones in lower part. (Very good core recovery, considering.) Sample of brown to tan solid oil shale from 718.5 feet: X-ray - dolomite, feldspar, quartz, calcite. Sample of brown oil shale with abundant fine cavities from 719.1 feet: X-ray - dolomite, feldspar, quartz, calcite.
720.0	721.1	Oil shale: Dark grayish brown; rare satiny luster in lower part. Faint streaked bedding and rare laminae. Irregular to regular thick parting. Small vug with brown papery boxworks at 720.7; rare fine cavities with radiating boxworks or black pyritic fillings in upper part. Abrupt change to lighter oil shale at base.
721.1	722.0	Oil shale: Medium to some dark and rare light grayish brown. Faint very fine laminae. Regular to irregular thick to thin parting.
722.0	725.5	Missing?
725.5	727.0	Oil shale: Medium and some dark grayish brown. Faint streaked bedding and rare laminae. Mostly discontinuous core pieces and rubble. Some high to low angle fractures with abundant pyrite. Some vuggy pieces.
727.0	728.4	Missing?
728.4	732.2	Oil shale: Dark grayish brown to some black. Faint streaked bedding. Irregular thick parting. Rare fine to small vugs.
732.2	735.8	Oil shale: Medium to some dark grayish brown and brown. Very faint streaked bedding to faint and some moderately distinct laminae; bedding gradually becomes inclined and rather abruptly increases to nearly vertical between 733.3 and 733.8 and then gradually flattens out in lower part. Irregular to regular thick parting. Rounded vuggy core piece at 735.0. Rare fine tan to buff dense to silty streaks and lenses in lower part. (0.2 foot missing?)
735.8	736.8	Oil shale: Medium to dark grayish brown. Faint laminae and streaked bedding. Irregular thick parting. Rare very fine pyrite streaks and blebs.
736.8	738.4	Oil shale: Dark grayish brown to black; common satiny to resinous luster. Faint streaked bedding. Fairly regular thick parting.
738.4	741.0	Oil shale: Medium to dark brownish gray; some light brownish gray in lower part. Faint to some distinct laminae. Regular to

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
759.7	762.0	Oil shale: Dark grayish brown to black; some satiny luster. Faintly streaked to laminated. Irregular to regular thick parting. Massive dark brownish-gray silty tuff at 760.3-760.6. Sample of dark brownish-gray tuff from 760.5 feet: X-ray - quartz, Na feldspar, ferroan, dolomite, biotite.
762.0	763.5	Oil shale: Dark grayish brown. Faint laminae and streaked bedding. Regular to irregular thick parting.
763.5	764.5	Oil shale: Medium and rare light grayish brown. Faint laminae and some streaked bedding. Irregular to regular thick to medium parting. Thin buff-white silty and earthy lenses at 764.0.
764.5	767.4	Oil shale: Light to medium and some dark grayish brown. Faint streaked bedding. Irregular thick to thin parting; some rubble. Very abundant fine cavities; some small vugs with platy boxworks from 766.0-766.7.
767.4	768.5	Oil shale: Brownish gray. Rubble; some buff earthy patches.
768.5	769.3	Missing?
769.3	770.0	Oil shale: Medium to some dark brownish gray. Faintly streaked. Irregular parting and fracture; some rubble. Very abundant tight irregular fractures.
770.0	771.6	Oil shale: Dark grayish brown. Faint streaked bedding. Irregular thick to thin parting. Abundant fine partly collapsed cavities and rare small vugs.
771.6	777.0	Oil shale: Medium to some dark and light grayish brown. Faint laminae and some streaked bedding. Regular to irregular thick to rare thin parting. Diagonal fracture with brown to black patchy coatings at 772.4-772.6. Rubble and very fractured core pieces at 775.0-775.4.
777.0	778.0	Oil shale: Dark to some medium brownish gray. Faint very fine laminae. Slightly irregular thick to medium parting. Some very fine pyritic streaks. Sample of dark brownish-gray oil shale from 777.3 feet: X-ray - Na and K feldspars, dolomite, ferroan, pyrite.
778.0	780.3	Oil shale: Medium to dark and rare light brownish gray. Faint to some moderately distinct laminae. Slightly irregular thick to medium parting. Some very fine pyritic streaks. Irregular slightly mineralized vertical fracture at 779.0-779.3.
780.3	781.0	Oil shale: Tan to some medium and dark grayish brown. Faintly laminated. Regular thick to medium parting.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
808.3	811.8	Oil shale: Dark and some medium grayish brown to brownish gray. Faint laminae and some very faintly streaked bands. Regular to irregular thick parting.
811.8	815.0	Oil shale: Medium to dark and rare light grayish brown and brownish gray. Faintly laminated. Regular to irregular thick to medium parting. Some small dense gray to dark brownish-gray lenses with very fine disseminated crystals at 812.2. Abundant medium to small tan dense silty-crystalline lenses at 814.0-814.1. (813.2-813.3 missing?) <p style="margin-left: 40px;">Sample of oil shale with small gray to dark brownish-gray lenses from 812.2 feet: X-ray - dolomite, Na feldspar, analcime, benstonite.</p> <p style="margin-left: 40px;">Sample of small tan lenses from 814.0 feet: X-ray - Na feldspar, analcime, dolomite.</p>
815.0	817.2	Oil shale: Dark to medium brownish gray. Faintly laminated. Irregular to fairly regular thick parting. Some small irregular to fine and flat cavities with drusy crystals near top.
817.2	820.7	Oil shale: Medium and some dark grayish brown to brown. Moderately distinct to faint laminae and some streaked bedding. Fairly regular to irregular thick parting. Some small to large vugs with platy boxworks in lower part.
820.7	822.4	Oil shale: Medium to some light brownish gray. Faint streaked bedding. Irregular thin to thick parting; some mixed up core and rubble. Some irregular earthy fracture surfaces. Common fine earthy porous streaks and some partly collapsed cavities with pyrite.
822.4	825.2	Missing?
825.2	826.0	Oil shale: Rubble as above.
826.0	829.0	Oil shale: Medium to dark grayish brown. Faintly streaked to laminated. Irregular to some regular thick parting. Rare very fine pyritic streaks. Small vug with radiating boxworks near top.
829.0	830.5	Oil shale: Medium to very dark grayish brown and rare black. Moderately distinct to faint laminae. Irregular to fairly regular thick parting. A fine brittle vitreous black organic streak near top. A small partly collapsed vug at 829.5. Common very fine flat cavities partly filled with white calcite at 829.5-829.6.
830.5	831.4	Oil shale: Medium and some dark grayish brown. Faintly laminated. Slightly irregular thick to medium parting. Some very fine pyritic blebs and streaks. Abundant very fine disseminated crystals in lower part.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
850.0	851.6	Oil shale: Medium to some dark brownish gray. Faint streaked bedding. Slightly irregular thick parting. Abundant fine white calcite pseudomorphs. Sample of oil shale with very fine white specks from 850.7 feet: X-ray - dolomite, Na feldspar, quartz, pyrite.
851.6	852.3	Oil shale: Light to medium brownish gray. Faint streaked bedding; rare gray pyritic laminae. Irregular thick parting; irregular to conchoidal fracture. Some fine cavities and white calcite pseudomorphs in upper part.
852.3	856.0	Oil shale: Dark to medium brownish gray. Faintly laminated. Irregular to some regular thick to rare thin parting. Some very fine pyritic streaks in upper part; small black silty pyritic nodule at 853.2.
856.0	858.9	Oil shale: Light to medium brownish gray and grayish brown. Faint streaked bedding and laminae. Irregular to regular thick to thin parting; some rubble. Abundant fine cavities and calcite pseudomorphs.
858.9	860.3	Oil shale: Medium and rare dark grayish brown and brownish gray. Faint laminae and some streaked bedding. Irregular to regular thick to some thin parting. Some fine pyritic blebs and streaks.
860.3	863.2	Oil shale: Medium to some light brownish gray; some gray laminae. Faintly laminated and banded. Regular to some irregular thick to rare thin parting. Some calcite pseudomorphs in upper part becoming very abundant in lower part.
863.2	867.5	Marlstone: Medium to light brownish to neutral gray. Faintly streaked to laminated and banded. Regular to irregular thick to thin parting. Abundant fine calcite pseudomorphs in upper part. Abundant very fine gray-buff earthy specks in lower part. Buff-white mudstone band with very fine disseminated pyrite at 866.9-867.0. Sample of light gray marlstone from 867.4 feet: X-ray - dolomite, quartz, feldspar, ferroan, biotite.
867.5	868.0	Missing.
868.0	868.5	Marlstone: Rubble as above.
868.5	869.4	Missing.
869.4	871.4	Oil shale: Medium brownish gray. Faintly streaked to laminated. Regular to irregular thick to some thin parting. Some very fine pyritic blebs and streaks. Some very fine disseminated crystals in lower part (like 831.3). Few fine to thin tan to buff marlstone layers.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
		Some very fine pyrite streaks and blebs. A thin to fine yellowish-tan silty stringer near top.
881.3	885.0	Mudstone and siltstone: Light and some medium brownish gray to gray buff. Faintly laminated and banded; some mottled zones. Regular to irregular thick to rare thin parting.
885.0	888.7	Mudstone and some marlstone: Gray buff to some light and rare medium brownish gray. Faintly laminated and banded. Regular to irregular thick to thin parting. Some silty streaks and laminae. Large massive pyrite nodule at 888.1.
888.7	892.2	Mudstone: Gray buff to light gray. Faint to some moderately distinct laminae and some thick bands. Regular to very irregular thick to thin parting; common rubble and mixed up core. Common high angle fractures with brown to black patches and some chalky white coatings.
892.2	893.3	Oil shale: Grayish brown to neutral gray. Faintly laminated. Regular to irregular thick to thin parting; some rubble and mixed up core pieces.
893.3	894.3	Oil shale: Medium to dark brownish gray and grayish brown. Faintly laminated to very faintly streaked. Regular medium to thick parting. Some very fine pyrite streaks and blebs. Some very fine disseminated crystals in lower part. A thin buff-white earthy and silty stringer at 894.1.
		Sample of thin buff-white earthy and silty stringers from 894.1 feet: X-ray - K and Na feldspars, ferroan, pyrite.
894.3	895.4	Oil shale: Dark brownish gray. Very faint very fine laminae and streaked bedding. Regular thick parting. A fine vitreous black brittle organic layer at 894.7.
		Sample of dark brownish-gray oil shale from 894.8 feet: X-ray - Na and K feldspars, dolomite, pyrite.
895.4	897.6	Oil shale: Medium to dark and rare light grayish brown and brownish gray. Very faint to some moderately distinct laminae. Regular thick to medium parting. Abundant very fine pyritic streaks in lower part.
897.6	899.6	Oil shale: Medium and rare dark grayish brown to buff. Faint and rare distinct laminae. Regular thick to medium parting.
899.6	901.3	Marlstone and some oil shale: Buff to light and some medium grayish brown. Faintly laminated. Regular to some irregular medium to thin parting. A thin buff to brownish-gray silty stringer at 900.3.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
919.3	921.0	Oil shale: Gray buff to brownish gray. Moderately distinct to faint laminae. Regular thick to medium parting.
921.0	922.3	Oil shale: Olive gray to brownish gray; very thin black layer at 921.1. Faintly laminated. Irregular to regular thick to medium parting.
922.3	923.3	Oil shale: Medium to light brownish gray and some gray buff. Faint to some moderately distinct laminae. Regular thick to medium parting.
923.3	924.6	Marlstone: Gray buff to rare light and medium brownish gray; silty in upper part. Faintly banded to laminated. Regular to irregular thick to medium parting.
924.6	925.9	Marlstone and oil shale: Gray buff to light and some medium brownish gray. Faintly laminated. Regular thick to medium parting. Sample of buff to light brownish-gray marlstone from 925.7 feet: X-ray - Na and K feldspars, dolomite, ferroan.
925.9	926.9	Oil shale: Brownish gray. Faint very fine laminae and streaked bedding. Regular to irregular thick to medium parting.
926.9	931.3	Oil shale: Medium to light brownish gray and some buff. Very faint to moderately distinct laminae. Regular to some irregular thick to medium parting.
931.3	933.8	Oil shale: Medium to dark brownish gray and grayish brown. Faintly laminated to very faintly bedded. Regular to irregular thick to medium parting.
933.8	935.1	Oil shale: Dark grayish brown. Faint streaked bedding and some very faint laminae. Irregular thick parting.
935.1	936.5	Oil shale: Dark brownish gray to some medium and rare light grayish brown. Very faintly streaked to faintly laminated. Irregular to regular thick to medium parting. Some 3/4-inch dark gray dense to silty nodules near top.
936.5	941.0	Marlstone and mudstone: Light brownish gray and buff to gray buff and some light gray. Faintly laminated and banded. Regular to irregular thick to medium parting.
941.0	942.7	Oil shale: Brownish gray to slightly olive gray and some medium to rare dark grayish brown. Faintly laminated and banded to very faintly bedded. Regular to some irregular thick to rare thin parting. Rare fine dark silty pyritic blebs and streaks.
942.7	944.0	Oil shale: Medium and rare dark grayish brown to brown. Faint laminae and streaked bedding; distorted and displaced in upper

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
963.0	964.1	Oil shale (?): Medium and some light almost neutral to brownish gray. Faintly laminated to very faintly bedded. Regular to irregular thick parting.
964.1	965.1	Oil shale: Medium to dark brownish gray. Faintly laminated to very faintly streaked. Regular to irregular thick to medium parting.
965.1	967.6	Oil shale: Dark grayish brown. Faint streaked bedding. Irregular thick to medium parting. Rare fine dense dark brownish-gray streaks and lenses. A 1-inch gray tight silty-textured band at 967.5 with a thin pinched out yellowish-buff stringer on top and small brownish-gray nodules below; tar-stained vertical fracture through band. Sample of gray band with small amount of buff stringer from 967.5 feet: X-ray - Na and K feldspars, ferroan, analcime, pyrite.
967.6	968.6	Oil shale: Black to dark brownish gray. Faintly streaked to laminated. Slightly irregular thick parting. Rare fine dense dark brownish-gray streaks. Sample of very dark brownish-gray oil shale from 968.0 feet: X-ray - analcime, quartz, dolomite, feldspar, pyrite, ferroan.
968.6	970.8	Oil shale: Dark to some medium brownish gray and rare black (some very slight olive tint). Very faint streaked bedding and some laminae. Irregular to fairly regular thick to medium parting. A very fine waxy black organic layer at 970.7.
970.8	971.1	Oil shale: Medium and rare dark brownish gray. Faintly laminated and streaked.
971.1	974.8	Mudstone and marlstone: Gray buff and some light brownish gray. Faint to rare distinct laminae and some bands. Irregular thick parting.
974.8	976.8	Marlstone and mudstone: Gray buff and light gray to light brownish gray; a thin dark brownish-gray oil-shale band at 976.7. Faintly laminated to streaked. Irregular to fairly regular thick to medium parting.
976.8	980.4	Oil shale: Dark brownish gray and grayish brown. Faint streaked bedding and some very fine laminae. Irregular to regular thick to some thin parting; some coarse hackly fracture. Some very fine dense crystalline streaks. A fine brittle vitreous black organic layer at 979.3.
980.4	983.7	Marlstone and mudstone: Tan and some grayish brown to buff and rare light gray. Faint streaked bedding and irregular laminae to

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,002.0	1,003.0	Oil shale: Medium to some light and dark grayish brown. Faintly laminated. Irregular thick to thin parting. Irregular 1-inch gray silty layer at 1,002.8 with fine stringers extending into oil shale below. Sample of gray silty layer from 1,002.8 feet: X-ray - pyrite, marcasite, Na feldspar, quartz, analcime.
1,003.0	1,003.6	Oil shale: Dark to some medium grayish brown and rare black. Faint laminae and streaked bedding. Irregular thick to thin parting; some coarse hackly fracture.
1,003.6	1,006.3	Oil shale: Light and medium grayish brown to brownish gray. Faintly laminated to very faintly streaked; distorted bedding near base. Irregular thick parting; slightly conchoidal fracture.
1,006.3	1,008.5	Oil shale: Medium to some dark and rare light grayish brown; some very slight olive tint in lower part. Fairly distinct streaked bedding. Fairly regular to irregular thick parting. Rare small dark dense to silty-crystalline blebs. Few medium to small dense brownish-gray dolomite nodules at 1,007.1-1,007.3.
1,008.5	1,011.1	Oil shale: Medium to dark grayish brown. Moderately distinct to faint streaked bedding and some laminae. Irregular to some regular thick to rare thin parting.
1,011.1	1,014.1	Oil shale: Dark brownish gray; some black in upper part. Faint very fine laminae and streaked bedding. Regular to irregular thick to thin parting.
1,014.1	1,016.1	Oil shale: Dark to rare medium brownish gray. Very faint streaked bedding. Irregular thick to medium parting.
1,016.1	1,017.3	Oil shale: Almost neutral gray in upper 0.2 foot; medium to light brownish gray and tan in other parts. Faint streaked bedding to faint and some moderately distinct laminae. Irregular thick parting. A 2-inch coarse-grained analcime stringer with tar-stained porosity at 1,016.4. Rare fine dense dark gray streaks and lenses in lower part. Sample of thick coarse-grained stringer from 1,016.4 feet: X-ray - analcime, quartz.
1,017.3	1,018.5	Oil shale: Medium to rare dark brownish gray. Faintly streaked and laminated. Irregular thick to medium parting. A thin gray silty stringer near base (probably like 1,002.8).
1,018.5	1,019.5	Oil shale: Medium to dark grayish brown and brown. Faint streaked bedding. Irregular to regular thick to medium parting.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,035.4	1,036.8	Oil shale: Medium to dark brownish gray. Faint laminae and streaked bedding. Regular to irregular thick to rare thin parting; some coarse hackly fracture. A 0.1-foot dark brownish-gray fine sandy-textured tar-stained tuff at 1,035.7. Some very irregular fine massive pyrite streaks at 1,036.6-1,036.7.
1,036.8	1,038.8	Mudstone and marlstone: Gray buff, buff, light gray, and light to some medium brownish gray. Faint to distinct laminae; distorted and displaced from 1,037.1 to 1,037.7. Fairly regular to irregular thick parting; some rubble with high angle fractures at base.
1,038.8	1,040.8	Oil shale: Dark brownish gray. Faint streaked bedding. Irregular to regular thick to thin parting; some coarse hackly fracture. Rare fine brown to tan silty stringers and streaks.
1,040.8	1,041.3	Dolomite (?): Tan to brownish gray, dense, massive. Sample of dolomite from 1,040.9 feet: X-ray - dolomite, quartz, analcime, feldspar, illite.
1,041.3	1,042.0	Missing.
1,042.0	1,042.4	Rubble: As above and below.
1,042.4	1,043.2	Oil shale and mudstone: Brownish gray to gray buff. Very faint streaked bedding to faint and some moderately distinct laminae. Slightly irregular thick parting.
1,043.2	1,044.0	Missing.
1,044.0	1,044.9	Mudstone: Gray buff to light and some medium olive gray and brownish gray. Faintly laminated. Irregular thick parting.
1,044.9	1,046.0	Missing.
1,046.0	1,046.6	Mudstone: Light to rare medium olive gray and brownish gray. Faintly laminated and streaked. Irregular thick parting.
1,046.6	1,048.0	Missing.
1,048.0	1,048.8	Mudstone: As above. Mostly rubble.
1,048.8	1,050.0	Missing.
1,050.0	1,050.5	Rubble: As above and below.
1,050.5	1,053.3	Missing.
1,053.3	1,054.3	Mudstone: Gray buff to light brownish gray. Moderately distinct to faint laminae and streaked bedding; common small displacements in upper part. Irregular thick parting; some rubble at top and bottom.
1,054.3	1,056.3	Oil shale: Dark to rare medium brownish gray. Faintly streaked to laminated. Irregular to fairly regular thick to some thin parting; some coarse hackly fracture. Natural (?) vertical fracture in upper half foot. Rare fine gray silty pyritic streaks and laminae.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,077.6	1,079.3	Oil shale: light to medium olive gray and some medium to rare dark grayish brown. Moderately distinct laminae to very faint streaked bedding. Irregular to rare regular thick to thin parting. A 1/2-inch dense brownish-gray dolomite lens or tapered layer at 1,078.2.
1,079.3	1,080.3	Oil shale: Medium grayish brown; dark grayish brown to rare black at 1,079.5-1,079.8. Faint streaked bedding to very fine laminae. Irregular to fairly regular thick to medium parting.
1,080.3	1,082.4	Oil shale: Dark grayish brown to some black. Very faint streaked bedding. Irregular thick to rare thin parting. Rare thin to fine brownish-gray silty streaks.
1,082.4	1,083.5	Oil shale: Medium to rare dark and light grayish brown; some slightly olive gray in lower part. Faintly streaked to laminated. Irregular medium to thick parting; some very irregular coarse hackly fracture.
1,083.5	1,088.8	Oil shale: Light to some medium brownish to neutral gray and some buff. Faint to fairly distinct laminae. Irregular thick to medium parting.
1,088.8	1,089.9	Oil shale: Tan and buff to medium and rare dark grayish brown. Faint to distinct laminae. Irregular thick parting.
1,089.9	1,092.9	Oil shale: Brownish gray to buff with very dark zones at 1,089.9-1,090.2, 1,090.8-1,090.9, and 1,092.7-1,092.8. Distinct to some faint laminae; very faint streaked bedding in dark zones. Irregular thick to medium parting. Few small dolomite lenses and nodules in dark zones.
1,092.9	1,094.5	Oil shale: Black to dark and rare medium grayish brown. Faint streaked bedding. Fairly regular to irregular thick parting; some coarse hackly fracture in lower part.
1,094.5	1,095.2	Oil shale: Dark to medium grayish brown with some very fine light streaks. Faint to moderately distinct streaked bedding and very fine laminae. Slightly irregular thick to medium parting.
1,095.2	1,096.6	Oil shale: Medium to light and rare dark brownish gray to medium and light slightly olive gray and some gray buff. Moderately distinct to faint laminae and some very faint streaked bedding. Irregular thick parting.
1,096.6	1,098.0	Oil shale: Medium to dark grayish brown and some brownish gray. Faint streaked bedding and rare laminae. Irregular thick to rare thin parting. Some small dense dolomite nodules.
1,098.0	1,101.7	Oil shale: Very dark brownish gray to black. Very faint streaked bedding and some very fine laminae. Irregular to fairly regular

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,118.0	1,119.0	Oil shale: Dark to some medium brownish gray and grayish brown. Faint streaked bedding and some faint to moderately distinct laminae. Fairly regular to irregular thick parting; some coarse hackly fracture. A small dense dark brownish-gray nodule at 1,118.8.
1,119.0	1,120.0	Oil shale: Medium to dark brownish gray and some light brownish gray to buff. Faint to moderately distinct displaced laminae and streaked bedding. Slightly irregular to irregular thick parting. Small dense grayish-brown dolomite lens at 1,119.7.
1,120.0	1,121.6	Oil shale: Medium to dark grayish brown becoming very dark in lower 0.3 foot. Faint streaked bedding and some very fine discontinuous laminae. Fairly regular to irregular thick to rare medium and thin parting. A 1-1/2-inch dense brown to dark brownish-gray stringer at 1,120.5; lenticular to nodular in upper part and faintly crossbedded in lower part. A thin to fine dark brownish-gray dolomite (?) stringer at 1,121.4. Sample of dense brown to dark brownish-gray dolomite (?) stringer from 1,120.5 feet: X-ray - dolomite, quartz, analcime, feldspar.
1,121.6	1,124.2	Marlstone (lean oil shale): Light slightly olive gray to gray buff and some light to rare medium grayish brown. Faint to some moderately distinct laminae. Irregular to rare regular thick parting; regular to slightly conchoidal fracture.
1,124.2	1,127.3	Oil shale: Dark and medium grayish brown to brownish gray; rare black in lower part. Faint streaked bedding and some laminae. Irregular to rare regular thick to some thin parting; some coarse hackly fracture. Few very thin tan slightly silty marlstone streaks at 1,124.4. A thin broken dense laminated dolomite band at 1,125.4; oil-shale bedding wedged apart around broken end.
1,127.3	1,133.0	Oil shale and marlstone: Light and some medium slightly olive gray and brownish gray to buff and gray buff. Faint to some fairly distinct laminae. Irregular thick parting. Fine gray silty streaks becoming fairly abundant in lower part.
1,133.0	1,135.0	Oil shale: Medium to dark grayish brown. Faint to some distinct streaked bedding and rare laminae. Irregular thick to some medium parting. Thin irregular dense brownish-gray dolomite stringers at 1,133.9 and 1,134.7.
1,135.0	1,136.3	Oil shale: Dark to some medium brownish gray and rare black. Faint to moderately distinct laminae; contorted bedding in lower

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,151.5	1,153.8	Oil shale: Medium to some light and rare dark brownish to slightly olive gray. Faintly laminated. Regular to irregular medium to thick parting. Diagonal fractures with very fine slickensides at 1,152.0 and 1,152.3. Rare very fine gray pyritic streaks in lower part. Sample of brownish to slightly olive gray oil shale from 1,152.5 feet: X-ray - dolomite, quartz, illite, analcime, calcite, feldspar.
1,153.8	1,160.0	Oil shale and marlstone: Light to medium slightly olive and brownish gray to some buff and rare medium to dark grayish brown. Faint to some moderately distinct laminae. Fairly regular to irregular thick to rare thin parting.
1,160.0	1,162.2	Oil shale: Light to rare dark brownish gray; some buff near top. Faintly laminated. Irregular to some regular thick to thin parting; some rubble in lower part. A thin dense tan layer at 1,161.3.
1,162.2	1,163.2	Oil shale: Dark grayish brown. Faint streaked bedding and rare laminae. Irregular thick to thin parting. Some very fine crystalline streaks in lower part. Sample of oil shale with some very fine crystalline streaks from 1,163.1 feet: X-ray - quartz, illite, dolomite, analcime, feldspar.
1,163.2	1,164.2	Oil shale: Medium and rare dark brownish gray. Faint laminae and streaked bedding. Irregular thick to medium parting; slightly unctuous.
1,164.2	1,166.2	Claystone and some mudstone (very lean oil shale?): Light to medium slightly brownish gray. Faintly laminated to nearly massive. Irregular thick parting; some very conchoidal fracture.
1,166.2	1,169.3	Oil shale: Medium and rare light grayish brown in upper part becoming medium to dark in lower part. Faint laminae and some streaked bedding. Irregular thick to medium parting; some very irregular coarse hackly fracture. A fine vitreous black organic streak at 1,166.7. Some very fine buff blebby laminae and streaks and a fine vermiform stringer at 1,169.0-1,169.1.
1,169.3	1,170.0	Oil shale: Medium to light and rare dark almost neutral to brownish gray. Very faintly laminated. Irregular thick to medium parting.
1,170.0	1,172.5	Mudstone: Buff to light and rare medium brownish gray. Very faint to some moderately distinct laminae; very faint curved broken laminae at 1,170.6-1,170.8. Irregular to some regular thick

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
		medium parting; some coarse hackly fracture. Few fine very pyritic blebs, streaks, and vermiform stringers.
1,184.0	1,185.2	Oil shale: Dark to medium brownish gray. Faint very fine laminae and streaked bedding. Fairly regular to irregular thick to some thin parting; some coarse hackly fracture. A 1-inch dense light brownish-gray dolomite lens at 1,185.1.
1,185.2	1,186.4	Oil shale: Light to rare dark slightly olive gray to brownish gray. Faintly laminated. Irregular thick parting; slightly conchoidal to irregular fracture. Silty in upper part. Few thin dolomite lenses.
1,186.4	1,187.6	Oil shale: Medium to dark grayish brown. Faint laminae (commonly discontinuous or displaced). Irregular to fairly regular thick to thin parting; irregular fine to coarse hackly fracture.
1,187.6	1,189.2	Oil shale: Dark grayish brown to black. Faintly laminated to very faintly bedded. Irregular to fairly regular thick to thin parting; some coarse hackly fracture. Rare fine massive pyrite blebs and streaks near 1,188.9. Sample of black oil shale from 1,188.4 feet: X-ray - quartz, illite, analcime, ferroan, feldspar, dolomite.
1,189.2	1,190.0	Oil shale: Dark to medium grayish brown. Faint streaked bedding. Broken core with artificial (?) high angle fractures. Thin brown dolomite stringer near base.
1,190.0	1,193.4	Oil shale: Medium and some dark to rare light olive gray and brownish gray. Faintly laminated. Regular to irregular thick to rare thin parting. Wavy bedded buff marlstone at 1,192.7-1,192.8. Sample of olive-gray oil shale from 1,191.3 feet: X-ray - quartz, illite, dolomite, analcime, feldspar, pyrite.
1,193.4	1,196.9	Marlstone: Buff to light and rare medium grayish brown; slightly silty in upper part. Faint and some moderately distinct laminae; some thick very faintly bedded to massive zones in lower part. Irregular thick parting; fairly regular to conchoidal and irregular fracture.
1,196.9	1,198.1	Oil shale: Buff to medium and rare dark grayish brown. Faint to some fairly distinct laminae. Irregular thick to medium parting.
1,198.1	1,200.0	Oil shale: Medium and some light brownish gray in upper part to medium and some dark in lower part. Faintly laminated; some streaked zones in upper part. Irregular to some fairly regular thick to rare medium parting. Few thin dolomite lenses at 1,198.8-1,199.0.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,219.2	1,220.0	Oil shale: Dark brownish gray to black. Very faint streaked bedding. A 2-inch medium brownish-gray slightly silty tuff (?) band at 1,219.4 and a thin layer at 1,219.7.
1,220.0	1,224.0	Oil shale: Dark brownish gray. Faint streaked bedding and very fine laminae. Irregular to fairly regular thick to some thin parting; slight to coarse hackly fracture. Some fine brown to tan silty streaks at 1,223.4-1,223.5. A 3/4-inch dense grayish-brown band at 1,223.9.
1,224.0	1,225.0	Oil shale: Dark brownish gray to black and rare dark to medium grayish brown. Faint streaked bedding and very fine laminae. Regular to irregular thick to medium parting; some coarse hackly fracture. Abundant ostracods (?) on some parting surfaces. Fine pyritic streak near base.
1,225.0	1,226.0	Oil shale: Dark brownish gray. Faint streaked bedding. Fairly regular to irregular thick parting; rare low angle glossy shear surfaces. One gar scale (?) at 1,225.3.
1,226.0	1,226.9	Oil shale: Dark to some medium brownish gray (some very slight olive tint). Faint streaked bedding and some very fine laminae. Irregular to fairly regular thick to medium parting.
1,226.9	1,228.3	Marlstone and mudstone: Light to medium olive gray and brownish gray to very light buff. Faintly laminated and streaked. Irregular thick parting; irregular and slightly conchoidal fracture. Thin conglomeratic marlstone zone at base.
1,228.3	1,231.1	Oil shale: Grayish brown to tan with some thick dark zones; some buff near top. Faint streaked bedding and some faint to moderately distinct regular to displaced laminae. Irregular to fairly regular thick parting. Irregular 1-inch dense grayish-brown dolomite layer at 1,230.3.
1,231.1	1,232.5	Oil shale: Dark brownish gray to black. Faint very fine laminae and streaked bedding. Regular to irregular thick to thin parting; some irregular coarse hackly fracture. Rare medium to low angle glossy shear surfaces. Gar scales at 1,231.9. Sample of dark brownish-gray oil shale from 1,232.4 feet: X-ray - quartz, illite, dolomite, analcime, ferroan, feldspar.
1,232.5	1,233.6	Oil shale: Dark to some medium brownish gray. Faintly laminated and streaked. Irregular to regular thick to thin parting; hackly fracture. A 1-inch dense grayish-brown dolomite band at top and a 3/4-inch band at 1,233.3. A very thin vitreous black organic streak at 1,233.5.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,249.6	1,251.1	Oil shale: Very dark to rare medium grayish brown. Faint streaked bedding. Fairly regular to irregular thick to some medium parting; some slight hackly fracture. A 1-1/4-inch dense dark brownish-gray dolomite band and some 1/2-inch to fine lenses in upper 0.2 foot; rare small lenses elsewhere. Sample of dense dark brownish-gray band from 1,249.7 feet: X-ray - dolomite, quartz, analcime, feldspar.
1,251.1	1,252.7	Oil shale: Dark to some medium brownish gray (some very slight olive tint). Faint streaked bedding and very fine to thin laminae. Irregular to some regular thick to thin parting. Fossil fragments (gar?) at 1,251.7.
1,252.7	1,254.0	Oil shale: Very dark to some medium grayish brown and brownish gray. Broken core and rubble; grab sampled.
1,254.0	1,256.0	Oil shale: Medium to some light and rare dark brownish gray and olive gray. Faint to some moderately distinct laminae. Irregular and rare regular thick parting; some natural (?) high angle fractures near top and at 1,255.1-1,255.7. A dense buff dolomite (?) band at 1,254.8-1,255.0 (slightly silty).
1,256.0	1,258.0	Oil shale: Medium to some light and rare dark grayish brown. Moderately distinct to faint laminae. Irregular thick to some medium parting. A 1-inch dense grayish-brown dolomite band at 1,256.9; 3/4-inch light brownish-gray lens at 1,257.6. Sample of medium to light grayish-brown oil shale from 1,256.8 feet: X-ray - dolomite, quartz, illite, calcite, analcime, feldspar.
1,258.0	1,259.0	Oil shale: Medium to dark grayish brown and some black. Faint streaked bedding. Irregular thick to medium parting.
1,259.0	1,260.0	Oil shale: Dark brownish gray (slight olive tint) with few medium to thin grayish-brown to tan layers. Very faint to rare distinct laminae. Regular to irregular thick to rare thin parting.
1,260.0	1,263.0	Oil shale: Medium to some dark and rare light olive gray and brownish gray. Moderately distinct to faint laminae and some streaked bedding. Regular to irregular thick to medium parting.
1,263.0	1,264.0	Oil shale: Medium to very dark brownish gray. Faint laminae and streaked bedding. Fairly regular to irregular thick to rare thin parting. A thin to fine vermiform brownish-gray marlstone stringer from 1,263.1 to 1,263.5. Rare fish scales.
1,264.0	1,266.5	Oil shale: Dark and rare medium brownish to slightly olive gray. Faint streaked bedding and very fine laminae. Irregular to very

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
		Faintly laminated and banded fairly dense buff to light brownish-gray marlstone in lower 0.3 foot.
		Sample of dense buff marlstone from 1,283.1 feet: X-ray - dolomite; trace quartz, feldspar.
1,283.2	1,286.0	Oil shale: Dark to rare medium brownish gray. Faint streaked bedding and very fine laminae. Irregular to regular thick to thin parting. Very thin buff marlstone layer at 1,283.6. A 1-inch dense grayish-brown dolomite band at 1,284.4 and a 1-inch faintly laminated light brownish-gray band at 1,285.3. Very thin gray claystone layers at 1,284.9 and 1,285.1.
1,286.0	1,290.0	Oil shale: Dark to medium brownish gray. Faintly laminated. Irregular to regular thin to rare thick parting; hackly fracture. A thin grayish-brown dolomite band at 1,286.5 and a 0.1-foot band at 1,286.9-1,287.0.
1,290.0	1,291.5	Oil shale: Medium to some dark brownish and olive gray. Faintly laminated. Irregular to regular thick to thin parting; hackly fracture.
1,291.5	1,291.8	Missing?
1,291.8	1,293.3	Oil shale: Dark to medium brownish gray. Faintly laminated. Irregular to regular thick to thin parting; some coarse hackly fracture. Gar scales at 1,292.0.
1,293.3	1,293.6	Missing?
1,293.6	1,299.0	Marlstone (very lean oil shale?): Medium to light slightly brownish and olive gray to some buff. Faint to some moderately distinct laminae. Regular to irregular thick to rare thin parting. A very fine slightly irregular pyrite-filled vertical fracture from 1,294.3 to 1,294.8.
1,299.0	1,300.7	Oil shale: Medium to light olive gray and brownish gray. Faintly laminated. Irregular to fairly regular thick parting. Rounded core pieces and rubble of dark to medium grayish-brown oil shale and rare buff to tan marlstone at 1,300.0-1,300.3.
1,300.7	1,302.0	Marlstone: Buff to light and rare medium brownish and olive gray. Faintly laminated with few massive bands. Regular to irregular thick parting. Fairly abundant fine gray silty calcareous streaks and laminae in upper part.
1,302.0	1,304.3	Oil shale: Medium to light slightly brownish and olive gray and some buff. Faint to some moderately distinct laminae. Irregular thick parting.
		Sample of medium to light brownish-gray oil shale from 1,303.4 feet: X-ray - dolomite, quartz, calcite, illite, feldspar.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,323.0	1,324.1	Oil shale: Medium and some light to rare dark grayish brown. Faint very fine laminae and streaked bedding. Irregular to fairly regular thick parting. Abundant fine to thin gray-buff to brownish-gray silty blebs, streaks, and stringers. Sample of oil shale with abundant silty streaks and blebs from 1,323.5 feet: X-ray - dolomite, quartz, feldspar, analcime.
1,324.1	1,326.1	Oil shale: Medium to very dark grayish brown. Faint very fine laminae and streaked bedding. Regular to irregular thick to medium parting; some coarse hackly fracture. A fine vitreous black organic streak at 1,324.5.
1,326.1	1,328.3	Oil shale: Light to medium brownish gray. Faintly laminated. Irregular thick parting. Abundant gray silty blebs, streaks, and stringers.
1,328.3	1,329.4	Oil shale: Medium to very dark grayish brown; some light in upper part. Fairly distinct to faint laminae. Irregular to regular thick parting.
1,329.4	1,332.0	Oil shale: Medium to rare light and dark brownish gray. Faintly laminated. Irregular thick parting. Rare fine gray silty streaks and blebs.
1,332.0	1,334.3	Oil shale: Medium to some dark and rare light brownish gray. Faintly laminated. Regular to irregular thick to medium parting.
1,334.3	1,335.5	Oil shale: Medium to dark grayish brown. Faintly laminated. Regular to irregular thick to some medium parting.
1,335.5	1,336.4	Oil shale: Medium to light and rare dark brownish gray. Faintly laminated. Regular to irregular thick parting.
1,336.4	1,337.3	Mudstone: Light to some medium brownish gray. Faintly laminated to streaked. Irregular thick parting. Some gray silty streaks and vermiform stringers. Conglomerate of curved and platy to nodular buff algal marlstone fragments in silty matrix in lower 3 inches.
1,337.3	1,338.3	Oil shale: Medium grayish brown to black. Moderately distinct to faint laminae. Regular and some irregular thick to medium parting. Some fine light brownish-gray silty vermiform stringers in upper 3 inches.
1,338.3	1,339.4	Oil shale: Very dark brownish gray to black; some medium brownish gray in upper part. Distinct to very faint laminae. Regular to slightly irregular thick to thin parting. Rare fish fragments.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
		part. Regular to irregular thick to thin parting in upper part; irregular thick parting in lower part.
1,364.0	1,367.0	Marlstone (oil shale in part?): Light to medium almost neutral to slightly brownish gray. Faint to moderately distinct commonly displaced laminae. Irregular thick parting.
1,367.0	1,378.0	Marlstone (oil shale?): Light to medium and some dark slightly brownish gray. Distinct to some faint laminae and rare bands. Regular to some irregular thick to rare thin parting. Sample of distinctly laminated light to dark brownish-gray oil shale from 1,373.4 feet: X-ray - dolomite, quartz, analcime, illite, feldspar, calcite.
1,378.0	1,379.0	Oil shale: Medium to dark and some light brownish gray. Distinct to faint laminae. Irregular to regular thick to medium parting. A very fine vitreous black organic streak at 1,378.8.
1,379.0	1,380.0	Oil shale: Medium to light grayish brown, some dark in upper part. Faint to moderately distinct laminae. Regular to irregular thick to medium parting. A 1-inch grayish-brown dolomite band at top; some organic blebs and fine-grained drusy patches on upper parting surface. Buff conglomeratic marlstone at 1,379.3-1,379.4 with a thin tapering vermiform stringer extending to 1,379.9.
1,380.0	1,384.0	Oil shale and some marlstone: Grayish brown to tan and buff; some dark brownish gray near base. Fairly distinct to very faint laminae and some streaked bedding. Fairly regular to irregular thick to rare medium parting. Few zones of gray to light brownish-gray silty blebs and short vermiform stringers. A 1-inch dense grayish-brown dolomite band near top.
1,384.0	1,385.0	Oil shale: Dark and rare medium grayish brown to black. Faintly laminated in lighter parts to very faintly bedded in black zones. Regular to some irregular thick to some medium parting. A very fine dark brownish-gray dense crystalline stringer at 1,384.7.
1,385.0	1,386.0	Oil shale: Dark to rare medium grayish brown. Faint laminae and streaked bedding. Irregular to regular thick to medium parting. Sample of dark grayish-brown oil shale from 1,385.5 feet: X-ray - quartz, dolomite, analcime, illite, calcite, feldspar.
1,386.0	1,389.8	Oil shale: Tan and buff to medium and very rare dark grayish brown. Fairly distinct to faint laminae. Irregular to regular thick to rare medium parting. Some thin to fine buff to gray marly to silty vermiform stringers and blebs below 1,387.1.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,412.3	1,413.0	Oil shale and some marlstone: Medium and rare dark brownish gray to light brownish gray and buff. Faint to moderately distinct laminae. Regular thick to thin parting.
1,413.0	1,416.0	Mudstone and marlstone: Light slightly brownish gray to gray buff. Faint very fine laminae and streaked bedding. Fairly regular thick parting. A very fine vitreous black organic streak at 1,414.2. Sample of mudstone from 1,413.7 feet: X-ray - calcite, dolomite, quartz, feldspar, analcime, illite.
1,416.0	1,419.0	Marlstone and mudstone: Gray buff to light and rare medium brownish gray. Faint to some moderately distinct laminae; some small displacements. Irregular to some regular thick to rare thin parting.
1,419.0	1,420.0	Marlstone (lean oil shale?): Light to medium slightly brownish gray and some gray buff. Fairly distinct to faint laminae. Regular thick to rare thin parting. Some small displacements along a tight high angle fracture in upper part.
1,420.0	1,421.0	Oil shale (?): Medium to some light and dark slightly brownish and olive gray. Faint to some moderately distinct laminae. Regular medium to some thin parting.
1,421.0	1,422.0	Oil shale as above becoming interlaminated with abundant gray shale as below.
1,422.0	1,424.7	Shale: Medium gray to medium and some light slightly brownish gray. Faint to some moderately distinct laminae. Regular thick to some thin parting.
1,424.7	1,425.7	Oil shale (?): Medium to light brownish gray and some gray buff. Faint to moderately distinct laminae. Regular thick to rare thin parting.
1,425.7	1,426.7	Oil shale: Medium to dark brownish gray. Faintly laminated. Regular to irregular thick to rare thin parting.
1,426.7	1,428.5	Oil shale: Medium and some dark brownish gray to tan and some buff. Moderately distinct to faint laminae and some streaked bedding. Regular to irregular thick to some medium parting. A very irregular thin buff marlstone stringer from 1,427.7 to 1,427.9 and a thick stringer in lower 0.2 foot. Some oily stains on outside of core in lower part.
1,428.5	1,429.5	Oil shale: Medium and some dark grayish brown to some tan; dark grayish-brown to black zone at 1,428.7-1,428.9. Faint to moderately distinct laminae. Irregular to regular thick parting. Thin vermiform buff marlstone stringer from above tapers out at 1,428.8.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
		limestone band at top. A 1-inch dense light gray slightly calcareous dolomite band at 1,441.4.
1,441.6	1,443.0	Marlstone and claystone: Light gray to medium slightly brownish and olive gray. Faint to some moderately distinct laminae. Regular to irregular thick to thin parting. Sample of gray marlstone from 1,442.1 feet: X-ray - dolomite, calcite, quartz, feldspar, analcime, illite, pyrite.
1,443.0	1,444.6	Shale (oil shale?): Dark to some light brownish to neutral gray. Faint to distinct laminae. Regular to irregular medium to thin parting; some irregular coarse hackly fracture. Rare low angle glossy shear surfaces. Sample of brownish to neutral gray shale from 1,443.9 feet: X-ray - quartz, analcime, dolomite, illite, calcite, feldspar.
1,444.6	1,445.6	Oil shale: Dark to medium brownish gray. Faintly laminated. Regular to irregular thin to medium parting. Some dense gray-buff marlstone laminae in upper part.
1,445.6	1,446.6	Oil shale: Medium to light and rare dark brownish gray. Faintly laminated. Irregular thick parting. Rare fine light gray silty streaks.
1,446.6	1,448.0	Marlstone (very lean oil shale?): Medium to light slightly brownish and olive gray; slightly silty. Faint laminae and streaked bedding; few thin to medium slightly tan bands in upper part. Irregular to fairly regular thick parting. Some fine gray silty streaks and stringers in middle part.
1,448.0	1,452.9	Marlstone (lean oil shale?): Light to medium brownish gray and grayish brown. Very faint to rare moderately distinct laminae. Irregular to fairly regular thick parting; slightly conchoidal fracture. Some fine to rare thin gray silty streaks and laminae. Vertical fracture with rare brown-stained patches in upper part. Thin yellow-buff earthy marlstone streaks and irregular inclusions at 1,448.6-1,448.7.
1,452.9	1,454.6	Marlstone (some oil shale): Light to medium and rare dark brownish gray and some gray buff. Fairly distinct to faint laminae and streaked bedding; some fine to small displacements. Irregular thick to medium parting.
1,454.6	1,455.7	Oil shale: Very dark to some medium brownish gray. Faintly laminated. Regular to irregular thick to thin parting. A 1-1/2-inch massive medium brownish-gray oil-shale band near top. Few fine to thin tan to gray-buff marlstone streaks and layers in lower part.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Core hole 1-2

From	To	Description
1,477.0	1,479.0	Marlstone and mudstone: Medium to light slightly brownish and olive gray and some gray buff. Faint to moderately distinct laminae. Regular to irregular thick to medium parting.
1,479.0	1,480.7	Marlstone: Gray buff to some medium slightly brownish gray. Faint to some distinct laminae. Regular to irregular thick to medium parting. A 2-inch gray-buff oolitic mudstone band at 1,480.5.
1,480.7	1,493.0	Claystone and shale: Medium and rare dark gray; some light marly zones in upper part. Faintly laminated to massive. Regular to some irregular thick to thin parting. Sample of gray shale from 1,491.1 feet: X-ray - quartz, illite, calcite, feldspar, ferroan, analcime, pyrite.
1,493.0	1,502.0	Shale and claystone: Medium to some light gray (some very slight green to brown tint). Faintly laminated. Regular to irregular thin to thick parting; common slight to coarse hackly fracture. Occasional thin to 1-inch dense gray-buff marlstone layers.
1,502.0	1,512.0	Shale: Medium to rare light and dark gray. Faintly laminated. Regular to irregular thin to rare thick parting; common coarse hackly fracture. Rare thin gray-buff marlstone layers in lower part.
1,512.0	1,516.0	Shale and claystone: Medium to some dark gray with some very fine medium to dark brownish-gray laminae. Faintly laminated. Regular to irregular thin to thick parting; common coarse hackly fracture. Very rare fish scales and other fine fossil fragments. Abundant thin dense gray-buff marlstone laminae in lower 0.2 foot.
1,516.0	1,517.0	Shale and marlstone: Medium to light and rare dark neutral to slightly brownish gray. Faint to fairly distinct laminae. Regular to irregular thin to thick parting. Very rare fine fossil fragments.
1,517.0	1,518.0	Marlstone: Medium to light slightly brownish gray and rare gray buff. Moderately distinct to faint laminae. Regular to irregular thick parting. Sample of medium to light slightly brownish-gray marlstone from 1,517.8 feet: X-ray - dolomite, quartz, illite, calcite, analcime, feldspar.
1,518.0	1,527.0	Marlstone and some mudstone: Light and rare medium very slightly brownish gray to gray buff. Faintly laminated. Irregular to some regular thick parting.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,547.4	1,549.3	Oil shale and marlstone (becoming shaly in lower part): Medium and some dark brownish gray to buff becoming slightly olive gray in lower part. Faint and some moderately distinct laminae. Regular to irregular thick to thin parting.
1,549.3	1,553.6	Marlstone and oil shale: Buff to medium and rare dark brownish gray. Moderately distinct to faint laminae and rare faintly streaked bands; abundant fine to small displacements. Irregular to regular thick parting.
1,553.6	1,554.6	Oil shale: Light to very dark brownish gray and rare buff. Faint and rare distinct laminae to some very faint streaked bedding. Irregular to some regular thick to thin parting. Sample of medium to light brownish-gray oil shale from 1,553.8 feet: X-ray - dolomite, quartz, illite, analcime, feldspar.
1,554.6	1,555.6	Oil shale: Medium to dark and rare light brownish gray. Faint laminae to very faint streaked bedding. Regular and some irregular thick to medium parting.
1,555.6	1,556.7	Oil shale: Light to dark brownish gray and rare buff. Faintly laminated. Regular and some irregular thick to thin parting.
1,556.7	1,557.7	Marlstone: Light to medium brownish gray and some light almost neutral gray. Faint to moderately distinct laminae. Regular thick to medium parting.
1,557.7	1,558.1	Oil shale: Medium to dark and some light brownish gray. Moderately distinct to faint laminae. Regular to some irregular thick to thin parting.
1,558.1	1,559.4	Marlstone and claystone: Light to medium brownish to almost neutral gray and some buff. Faintly laminated; common fine displacements. Irregular thick to medium parting.
1,559.4	1,561.0	Marlstone (oil shale?): Medium and rare dark brownish gray to some buff. Faint commonly displaced laminae and streaked bedding. Irregular thick to medium parting.
1,561.0	1,564.5	Marlstone: Light to medium brownish gray and some buff. Moderately distinct to faint laminae and rare faintly streaked bands. Regular to irregular thick to rare thin parting.
1,564.5	1,566.9	Marlstone and some oil shale: Buff to medium and rare dark brownish gray. Moderately distinct to faint laminae and some streaked bedding. Regular to irregular thick to some medium parting.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Colony Development Company Corehole 1-2

From	To	Description
1,589.0	1,594.0	Oil shale: Dark to some medium brownish gray; some almost neutral gray in upper part. Faint to some moderately distinct laminae. Irregular to regular very thin to medium parting. A 1-inch dense light brownish-gray dolomite band at 1,589.5; abundant thin to fine buff laminae from 1,590.4 to 1,591.7; a 1-1/2-inch band at 1,593.3.
1,594.0	1,594.95	Oil shale: Dark and rare medium brownish gray to black. Very faint and rare moderately distinct laminae. Irregular to regular medium to very thin parting.
1,594.95	1,595.05	Tuff: Light to medium gray. Slightly wavy band. Silty in upper part to dense near base. Abundant very fine biotite. Sample of gray biotitic tuff from 1,595.0 feet: X-ray - Na and K feldspars, montmorillonite, analcime, biotite, kaolin.
1,595.05	1,597.0	Oil shale: Medium to dark and some light brownish gray. Moderately distinct to very faint laminae. Irregular to regular thin to rare thick parting. A 1-1/2-inch dense grayish-brown dolomite band near top.
1,597.0	1,600.0	Shale (oil shale?): Dark to medium and some light slightly olive gray and brownish gray. Faint and rare fairly distinct laminae. Regular to irregular thin to thick parting. A 1-inch dense buff dolomite band near top; laminated dolomite and light to medium marly oil shale at 1,599.5-1,599.7; a 1-1/2-inch buff dolomite band near base. Sample of dense buff dolomite from 1,599.9 feet: X-ray - dolomite, quartz, analcime, feldspar.
Bottom of core.		

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