

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

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6 drilled in 1972 in NE1/4SW1/4NW1/4 (1,760 feet S of N line and 1,226 feet E of W line) of sec 25, T 23 N, R 109 W, Sweetwater County, Wyoming

Surface elevation: 6,353 feet

Cored interval: 402.0 to 834.0 feet

From	To	Description
LANEY MEMBER OF GREEN RIVER FORMATION		
402.0	408.0	Oil shale: Medium olive gray (5Y 4/1 and 4/2-5/1 and 5/2), slightly to moderately calcareous. Faintly laminated; some very fine distinct buff to tan earthy streaks and laminae. Regular thick to medium parting; fairly regular fracture. A fine dense gray crystalline lamina at 405.9. Rare ostracods. Part of a small fish at 407.3. Sample of olive-gray oil shale from 406.6 feet: X-ray - quartz, illite, calcite, feldspar, analcite, pyrite.
408.0	409.0	Oil shale: Medium brownish gray (2.5Y to 10YR 4/1-4/2), calcareous. Faintly laminated; some very fine distinct buff to tan streaks and laminae. Regular thick to medium parting; fairly regular fracture. Some ostracods. Sample of brownish-gray oil shale from 408.4 feet: X-ray - quartz, illite, calcite, analcite, feldspar, pyrite.
409.0	411.3	Oil shale: Olive gray and brownish gray (5 to 2.5Y 4/1-5/1), slightly to moderately calcareous. Faintly laminated with abundant very fine distinct buff laminae and streaks. Regular thick to thin parting; regular to slightly hackly fracture. Rare ostracods. A 2-inch massive light gray silty tuff band at 410.0; biotite becoming very abundant toward base. Sample of biotitic tuff from 410.1 feet: X-ray - biotite, feldspar, calcite, analcite.
411.3	413.4	Oil shale: As above with very abundant very fine buff laminae and streaks. Some papery parting. A 1/4-inch dense gray calcareous band at bottom. Sample of brownish-gray oil shale with abundant very fine buff laminae and streaks from 412.0 feet: X-ray - quartz, aragonite, analcite, illite, feldspar, calcite, pyrite.
413.4	415.5	Oil shale: Medium to dark olive gray and brownish gray (5 to 2.5Y 4/1-3/1), calcareous. Distinctly laminated with very

^{1/} By L. G. Trudell, completed January 17, 1973

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From	To	Description
		abundant very fine buff earthy layers. Regular thin to rare thick parting; regular to slightly hackly fracture. Abundant ostracods in some parts. Rare very fine dark to medium gray, dense to prismatic crystalline layers.
415.5	417.6	Oil shale: Dark to medium brownish gray and olive gray (2.5Y 3/1-4/1, some 2/1 and 5/1), calcareous. Distinctly laminated with very abundant fine buff to light brownish-gray laminae and streaks. Regular thick to thin parting; regular to some slightly hackly fracture. Rare ostracods. A 1/2-inch dark and medium gray laminated silty tuff band at 415.9; fine gray silty layers at 415.7 and 416.6. Sample of dark and medium gray laminated tuff band from 415.9 feet: X-ray - quartz, calcite, feldspar, analcite, illite, pyrite, dolomite.
417.6	419.6	Oil shale: Medium to very dark brownish gray and neutral gray (2.5Y 4/1-2/1 and N4-2), calcareous to noncalcareous. Distinctly laminated with buff to light brownish-gray layers; very dark oil shale with very faint very fine laminae in lower 0.3 foot. Regular thick to medium parting; regular to some irregular fracture. Sample of black oil shale from 419.6 feet: X-ray - quartz, illite, feldspar, analcite, dolomite, pyrite.
419.6	420.3	Marlstone: Buff to some olive gray (5Y 7/2-6/2, some 5/2) and medium to dark neutral gray (N5-3), dolomitic to noncalcareous, earthy in lighter parts. Faint to distinct laminae; rare thin to fine loop structures and displacements. Regular to irregular thick parting; slightly irregular and conchoidal fracture. Sample of buff earthy marlstone from 419.8 feet: X-ray - dolomite, quartz, analcite, feldspar, illite.
420.3	421.1	Oil shale: Black to dark brownish gray and neutral gray (2.5Y 1/1-2/1 and N1-3), dolomitic. Faintly laminated; very fine distinct buff laminae becoming abundant in lower half. Irregular to regular, thick to thin parting; regular to some irregular fracture. Some ostracods in lower part.
421.1	421.6	Missing.
421.6	424.0	Shale (oil shale in part): Medium to dark gray and brownish gray (N5-3 and 2.5Y 4/1-3/1, rare 2/1), slightly calcareous, silty

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From	To	Description
		in parts. Faintly laminated; abundant very fine distinct buff earthy laminae and streaks. Regular thick to thin parting; slightly irregular fracture. Rare ostracods. Sample of gray shale from 422.3 feet: X-ray - quartz, illite, feldspar, analcite, calcite.
424.0	425.4	Oil shale: Dark to medium brownish gray and neutral gray (2.5Y 3/1-5/1, rare 2/1, and N3-5), slightly calcareous, slightly silty in parts. Faintly laminated; abundant very fine buff laminae and streaks in upper part becoming sparse in lower part. Regular to some irregular, thick to thin parting; regular to some irregular and slightly hackly fracture. Rare ostracods.
425.4	427.1	Oil shale: Medium to some dark brownish gray and gray (2.5Y 4/1-5/1, some 3/1, and N5-4, rare 3), slightly calcareous, silty in parts. Faint to moderately distinct laminae; rare very fine buff streaks. Regular thick to medium parting; slightly irregular fracture. Very rare ostracods.
427.1	428.7	Siltstone: Medium to light brownish gray and some brown (2.5Y and 10YR 4/1-6/1, some 4/2-5/2), slightly calcareous. Very faintly bedded to massive. Fairly regular thick parting; regular to slightly conchoidal fracture. Sample of medium to light brownish-gray massive siltstone from 428.5 feet: X-ray - quartz, feldspar, analcite, illite, calcite, pyrite.
428.7	430.8	Oil shale: Like 525.4-527.1. Commonly silty. Slightly distorted and commonly displaced laminae in upper part; irregular thick gray silty stringers with shredded oil-shale stringers in lower half foot.
430.8	431.8	Siltstone: Medium to light brownish gray and rare buff (2.5Y 5/1-6/1 and 6/2, rare 7/2), slightly calcareous. Very faint slightly irregular bedding and rare displaced laminae. Irregular thick parting; regular to irregular fracture.
431.8	432.9	Mudstone, siltstone, and some oil shale: Medium to some light and dark gray (N4-5, some 6 and 3; some very slight brown tint) and rare brownish gray (2.5Y 4/1-5/1), calcareous. Thick faintly bedded to massive zones alternating with laminated zones with common fine displacements. Regular thick parting; slightly irregular fracture. Rare ostracods.
432.9	433.4	Siltstone and very fine sandstone: Medium to light gray (N5-6 and 2.5Y 6/1), calcareous. Massive to indistinctly layered. Some very fine oil-shale shreds near top.

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From	To	Description
433.4	436.9	Oil shale and mudstone: Medium to dark brownish gray (2.5Y 5/1-3/1, some 2/1) and light to medium gray (N6-4); slightly to moderately calcareous. Faint to distinct laminae with some thin to thick mudstone and siltstone bands; some fine loop structures and displacements. Regular to some irregular, thick to medium parting; fairly regular to some irregular and conchoidal fracture. Abundant very fine buff earthy streaks and laminae in some zones. Abundant ostracods. A thin to fine gray crystalline stringer at 434.9. Some uneven sample split.
436.9	437.7	Oil shale: Medium to very dark brownish gray (2.5Y 5/1-2/1), slightly calcareous to dolomitic. Moderately distinct to very faint laminae; abundant very fine buff laminae from top to 437.4. Regular thin to thick parting; irregular to coarse hackly fracture; broken core in upper 0.3 foot. Rare ostracods. Fine medium to light gray, dense and blebby to silty laminae at 437.3 and 437.5. Sample of fine gray blebby to silty lamina with some oil shale from 437.3 feet: X-ray - analcite; some feldspar, quartz.
437.7	438.4	Marlstone: Tan to buff (2.5Y 6/2 and 6/3-7/2), earthy, dolomitic. Faintly laminated; some fine to thin loop structures; some fine distinct dark oil-shale laminae in upper part. Slightly irregular thick to thin parting; regular to slightly hackly fracture.
438.4	440.4	Oil shale: Medium to dark brownish gray (2.5Y 5/1-3/1, some 2/1), dolomitic to calcareous. Faintly laminated with some very fine distinct buff earthy laminae; common fine displacements; small folds at 438.8 and 438.9. Regular thick parting; regular to slightly hackly fracture. Some ostracods. Some gray mudstone streaks and laminae in upper 0.3 foot; abundant in lower 0.5 foot. Sample of medium to dark brownish-gray oil shale from 439.2 feet: X-ray - aragonite, quartz, illite, feldspar, analcite, dolomite, pyrite.
440.4	441.1	Siltstone: Brownish gray (10YR 4/1-5/1; almost neutral gray in upper part), slightly calcareous. Massive to very faintly bedded. Few fine to thin regularly laminated oil-shale layers in lower half.
441.1	442.8	Oil shale: Dark to light neutral gray to brownish and some olive gray (N3-6 and 2.5Y 3/1-5/1, some 5Y 4/1-5/1), calcareous.

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From	To	Description
		Faint to fairly distinct laminae; abundant very fine buff laminae in upper part. Regular thick to rare thin parting; slightly hackly to regular fracture. Rare ostracods.
442.8	443.9	Oil shale and marlstone: Medium and rare dark brownish gray to buff (2.5Y 4/1-7/2, rare 3/1), dolomitic to slightly calcareous, earthy in lighter parts. Faint to distinct laminae in upper and lower parts; faintly bedded marlstone from 443.1 to 443.5. Regular to slightly irregular, thick to medium parting; slightly irregular and conchoidal fracture. A 1/4-inch gray silty layer at top.
443.9	445.8	Oil shale: Medium olive gray and brownish gray (5 to 2.5Y 5/1 and 5/2-4/1 and 4/2), dolomitic to calcareous. Faintly laminated. Regular thick to thin parting; slightly hackly fracture. Some ostracods. Sample of olive-gray oil shale from 445.4 feet: X-ray - quartz, aragonite, illite, analcite, feldspar, dolomite, calcite, pyrite.
445.8	447.5	Oil shale: As above with zones of buff slightly earthy marlstone at 445.8-446.0, 446.3-446.4, and 447.3-447.5.
447.5	448.0	Oil shale: Dark neutral gray (N3-2) and some dark to light brownish gray (2.5Y 3/1-6/2), dolomitic to calcareous. Faint laminae and streaked bedding; some thin irregularly bleached zones. Slightly irregular to regular, thick to thin parting; slightly conchoidal to very slightly hackly fracture.
448.0	449.2	Oil shale: Medium to light brownish gray and olive gray (2.5 to 5Y 4/1-6/2, rare 7/2), dolomitic to calcareous. Moderately distinct to faint laminae. Regular thick to medium parting; regular to very slight hackly fracture.
449.2	451.4	Oil shale: Medium brownish gray and olive gray (2.5 to 5Y 5/1 and 5/2-4/1 and 4/2), calcareous. Faintly laminated in upper part; very fine distinct buff earthy laminae and streaks becoming abundant in lower part. Regular thick to medium parting; regular to slightly hackly fracture. A 3-inch faintly layered light to dark gray silty tuff at top. A fine dense gray blebby layer at 451.2. Sample of gray silty tuff from 449.4 feet: X-ray - quartz, feldspar, analcite, illite, pyrite.
451.4	452.5	Oil shale: Medium to some dark and light brownish gray and olive gray (2.5 to 5Y 4/1 and 4/2-5/1 and 5/2, some 3/1 upper part, some 6/1-6/2 lower part), moderately to slightly calcareous.

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From	To	Description
		Moderately distinct to faint laminae. Regular medium to thick parting; regular to slightly conchoidal fracture. A 3/4-inch silty tuff band at 451.8: dark slightly brownish gray in upper half and medium gray in lower half.
452.5	453.5	Oil shale: Medium to rare dark olive gray (5 to 7.5Y 5/2-4/2 and 4/1, rare 3/1), calcareous. Faintly laminated; very fine buff earthy laminae and streaks becoming abundant in lower part. Regular thick parting in upper part to shaly and papery parting in lower part; slightly irregular to hackly fracture. Rare very fine light gray silty laminae in upper part; a 1/4-inch brownish-gray silty layer at 453.0 with a fine brittle black organic seam at top. Sample of papery shale with very fine buff earthy laminae and streaks from 453.3 feet: X-ray - quartz, aragonite, calcite, dolomite, analcite.
453.5	454.5	Oil shale: Medium to dark olive gray (5Y 4/2-3/2 and 3/1), calcareous. Faint laminae to very faint streaked bedding; some very fine buff earthy laminae and streaks near base. Regular thick to medium parting becoming papery near base; slightly irregular fracture. Rare very fine gray silty laminae. Very rare fine tan earthy blebs.
454.5	456.2	Oil shale: Medium to dark olive gray to brownish gray (5Y to 10YR 4/2-3/2 and 3/1), calcareous. Distinctly laminated with very abundant very fine buff earthy layers and streaks. Regular thin to papery parting; hackly fracture. A 1/2-inch gray silty to very fine sandy-textured band at 455.8. A fine buff-white porous silty-crystalline lamina at 455.9. A very fine dense slightly olive-gray crystalline lamina at base. Sample of thin gray band from 455.8 feet: X-ray - analcite, quartz, feldspar, pyrite. Sample of fine buff-white lamina with some oil shale from 455.9 feet: X-ray - analcite, quartz, aragonite, pyrite, calcite.
456.2	457.5	Oil shale: Medium to dark brownish gray (10YR to 2.5Y 4/2 and 4/1-3/2 and 3/1), calcareous. Moderately distinct to very faint laminae. Regular thin to thick parting; regular to slightly hackly fracture. Rare very fine dark gray silty laminae. Sample of very fine dark gray silty lamina from 457.05 feet: X-ray - analcite, quartz, dolomite, pyrite, feldspar.

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From	To	Description
457.5	458.5	Oil shale: Dark brownish gray (10YR to 2.5Y 3/2 and 3/1-2/1), slightly calcareous to dolomitic. Faint <u>very</u> fine laminae and streaked bedding. Regular medium to thin parting; slightly irregular and some hackly fracture. A fine dark gray dense silty layer at 458.1; unidentified fossil on top of layer. Sample of dark brownish-gray oil shale from 457.9 feet: X-ray - aragonite, quartz, analcite, calcite, illite, feldspar.
458.5	459.7	Oil shale: Dark to medium olive gray (5Y 3/1-4/2, some 2/1, rare 5/2), dolomitic. Faint to some moderately distinct laminae. Regular thick to thin parting; fairly regular to some slightly hackly fracture. Rare very fine light brownish-gray to dark gray silty-crystalline streaks and laminae. Sample of medium to dark olive-gray oil shale from 459.0 feet: X-ray - quartz, analcite, dolomite, calcite, feldspar, illite.
459.7	461.1	Oil shale: Dark to some medium olive gray and brownish gray (5 to 2.5Y 3/1-2/1, some 4/1-4/2), dolomitic. Faint streaked bedding and <u>very</u> fine laminae. Regular to slightly irregular, thick to some thin parting; slightly hackly to irregular fracture. Rare <u>very</u> fine dark dense crystalline streaks.
461.1	462.2	Oil shale: Dark olive gray and brownish gray (5 to 2.5Y 3/1-2/1), dolomitic. Very faint <u>very</u> fine laminae and streaked bedding. Regular thick to thin parting; irregular slightly hackly fracture. Fairly common <u>very</u> fine dark dense crystalline streaks. Sample of oil shale with very fine crystalline streaks from 461.6 feet: X-ray - quartz, analcite, dolomite, feldspar, illite, pyrite.
462.2	463.1	Oil shale: Dark to medium brownish gray (2.5Y 3/1-4/2, some 2/1, rare 5/2), dolomitic. Faint to some distinct, smooth to slightly distorted laminae; some very fine to thin loop structures and displacements. Regular thick parting; slightly irregular fracture. A 3/4-inch very finely laminated gray slightly silty band at 462.9. A thin slightly brownish gray silty layer near base.
463.1	463.5	Oil shale and marlstone: Grayish brown to buff (2.5Y 5/3-7/2 and 5/1-6/1), dolomitic. Faint to some distinct very fine regular to slightly crinkly laminae in 1/2- to 1-inch predominantly

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From	To	Description
		<p>brown, buff, and gray zones. Regular thick parting; slightly irregular fracture. Some very fine dark brownish-gray to black oil-shale laminae and streaks mostly in upper half.</p> <p>Sample of grayish-brown oil shale from 463.2 feet: X-ray - dolomite; trace quartz, feldspar, calcite.</p>
463.5	464.6	<p>Siltstone and very fine sandstone: Gray to medium and light brownish gray (N4 upper part to 2.5Y 5/1 and 5/2-6/2 lower part), calcareous. Abundantly interbedded with fine slightly wavy laminae to 0.1-foot zones of very dark to medium brownish-gray oil shale in upper 0.4 foot; massive to very faintly bedded in lower part. Regular to slightly irregular, thick and some thin parting; slightly hackly to regular fracture. Some very fine buff earthy streaks and laminae in oil shale in upper part. Sharp smooth contact with oil shale below.</p> <p>Sample of medium to light brownish-gray sandstone from 464.5 feet: X-ray - Na feldspar, quartz, dolomite, calcite, illite, pyrite, hornblende.</p>
464.6	465.6	<p>Oil shale: Dark and rare medium brownish gray (2.5Y to 10YR 3/2-2/1, rare 4/2), calcareous to dolomitic. Moderately distinct to faint laminae; some distorted zones in lower part. Regular thick to rare thin parting; regular to very slightly hackly fracture. Rare very fine tan to buff slightly earthy streaks and laminae. Few fine dark to medium gray silty laminae from 464.9 to 465.1. Some very thin to fine slightly wavy dense grayish-brown dolomite streaks in lower part. Articulated vertebrae and ribs of a small fish on parting surface near base.</p> <p>Sample of dark brownish-gray oil shale from 465.2 feet: X-ray - aragonite, quartz, analcite, feldspar, calcite, dolomite, pyrite.</p>
465.6	465.9	<p>Siltstone: Slightly brownish gray (10YR 4/1-5/1), slightly calcareous. Very faint streaked bedding. Sharp regular contacts at top and bottom.</p>
465.9	466.6	<p>Oil shale: Dark to medium brownish gray (10YR to 2.5Y 3/1-4/2, some 2/1 upper part), calcareous. Faint to moderately distinct laminae. Regular thick parting; fairly regular fracture. Very fine crystalline streaks becoming very abundant in lower part. A thin light to medium gray, silty to very fine sandy-textured layer at 466.0. A thin dark gray silty layer at 466.2.</p>

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From	To	Description
		A very thin granular analcite layer at base. Rare very small clams.
		Sample of thin gray silty to sandy layer from 466.0 feet: X-ray - analcite, quartz, calcite, feldspar, pyrite, hornblende.
		Sample of thin dark gray silty layer from 466.2 feet: X-ray - calcite, quartz, analcite, pyrite, feldspar.
		Sample of oil shale with very fine crystalline streaks from 466.5 feet: X-ray - calcite; trace quartz, analcite.
466.6	467.0	Siltstone: Slightly brownish gray (10YR 5/1-4/1), slightly calcareous. Faintly variegated and mottled; some very faint streaked bedding. Sharp regular contacts at top and bottom.
		Sample of siltstone from 466.9 feet: X-ray - quartz, feldspar, analcite, illite, calcite, dolomite, pyrite.
467.0	467.3	Oil shale: Medium and some dark grayish brown (2.5Y 5/2-4/2, some 3/2-2/1), calcareous. Moderately distinct to faint laminae. Regular thick parting; regular fracture. Abundant very fine crystalline streaks in dark parts (like 466.5).
467.3	468.0	Oil shale: Dark brownish gray (10YR to 2.5Y 1/1-3/1, becoming almost olive gray near base), dolomitic. Faintly laminated in upper part to very faint streaked bedding in lower part. Regular to irregular thick parting; slightly hackly to fairly regular fracture. Some very fine crystalline streaks near top. Rare very fine disseminated pyrite crystals. A 1-1/2-inch gray silty band at 467.5; becoming brownish-gray and very biotitic in lower half inch. A thin very dark gray silty biotitic band at 467.85; fine irregular yellowish-tan marly zone at top of band.
		Sample of gray to brownish-gray biotitic tuff from 467.5 feet: X-ray - quartz, feldspar, hornblende, analcite, biotite, pyrite.
TOP OF WILKINS PEAK MEMBER		
468.0	469.4	Oil shale: Olive gray (5 to 7.5Y 4/2-5/2), dolomitic. Faint streaked bedding and rare laminae to some massive. Fairly regular to irregular thick parting; irregular to conchoidal fracture. Some thin coarsely crystalline colorless calcite streaks and patches.

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From	To	Description
		Sample of olive-gray oil shale from 468.1 feet: X-ray - dolomite, quartz, feldspar, calcite, illite.
		Sample of oil shale with coarse crystals from 468.3 feet: X-ray - calcite, quartz, analcite, dolomite, illite, feldspar, pyrite.
469.4	470.8	Oil shale: Olive gray (5Y 4/2-5/2), dolomitic. Faint streaked bedding and rare laminae. Irregular thick parting; irregular to conchoidal fracture. Abundant very fine disseminated pyrite in some zones. Rare very regular fine sparry calcite layers. Uneven sample split. Sample of oil shale with abundant disseminated pyrite from 469.9 feet: X-ray - dolomite, quartz, feldspar, calcite, illite.
470.8	471.8	Oil shale: Medium to dark brownish gray (2.5Y 5/1 and 5/2-2/1), brownish-black (10YR 1/1-2/1) oil shale with satiny luster at 470.95-471.05; dolomitic to slightly calcareous. Faint to fairly distinct laminae. Fairly regular thick to medium parting; regular to very slightly hackly fracture. Abundant very fine disseminated pyrite.
471.8	472.8	Oil shale: Dark brownish gray (2.5Y 3/1-2/1, some slight olive tint), a thin black satiny zone at base, calcareous to dolomitic. Faintly laminated. Regular thick to thin parting; slightly hackly to irregular fracture. Abundant disseminated pyrite. A fine light brownish-gray dolomite lamina at 472.2. Very abrupt conformable change to marlstone at base. Sample of oil shale from 472.5 feet: X-ray - illite, quartz, analcite, dolomite, feldspar.
472.8	473.8	Marlstone and oil shale: Tan and buff to medium and rare dark grayish brown (2.5Y 7/2-5/2, some 8/2, rare 4/2-3/1), dolomitic. Faint and some distinct, regular to slightly irregular laminae and bands. Irregular thick to rare thin parting; conchoidal to regular fracture. Some thin to fine, buff to gray-buff silty calcareous streaks and layers.
473.8	474.8	Mudstone, siltstone, and some oil shale: Olive gray to gray buff (5 to 7.5Y 4/2-7/1), dolomitic. Faint streaked bedding and some faint to rare distinct regular to irregular laminae. Irregular to regular, thick to medium parting; regular to irregular fracture; some broken core. A 0.1-foot irregular dark brownish-gray tight very fine-grained layer with abundant fine tarry

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		blotches at base; cut by some very fine light brownish-gray marlstone fracture fillings. Uneven sample split. Sample of dark brownish-gray layer from 474.7-474.8 feet: X-ray - quartz, dolomite, calcite, feldspar.
474.8	477.1	Oil shale: Dark to some medium brownish gray and olive gray (2.5 to 5Y 2/1-3/1 and 3/2, some 4/2 and 1/1), dolomitic. Moderately distinct to faint, fairly regular to distorted streaked bedding. Irregular thick parting; irregular slight to moderately coarse hackly fracture. Some fine to small brownish-gray silty to dense blebs, lenses, and streaks. Some very fine disseminated pyrite blebs. Some fine buff marlstone stringers and a very irregular light gray silty crack filling near top. Sample of dark to medium brownish-gray oil shale from 476.1 feet: X-ray - dolomite, quartz, feldspar, calcite, analcite, illite.
477.1	477.3	Tuff: Yellowish buff to gray buff (5Y 7/2-8/1), silty. Irregular 1-1/2- to 2-inch layer. Faintly streaked to finely speckled. Abundant very fine dark gray specks and streaks. A 1/2- to 1-inch wavy layer of dark to medium brownish-gray oil shale at base. Sample of tuff from 477.1-477.3 feet: X-ray - quartz, analcite, pyrite.
477.3	478.0	Oil shale: Medium to light olive gray (5 to 7.5Y 5/2-6/2, some 4/2), dolomitic. Faint to moderately distinct streaked bedding. Slightly irregular thick parting; slightly conchoidal fracture. A 1-inch wavy stringer of tan to buff marlstone at top. A 2-inch zone of distinctly laminated tan to brown calcareous oil shale at base.
478.0	478.4	Tuff: Gray buff and light gray (5 to 2.5Y 7/1 and N7-8), silty. Very thin to fine commonly displaced tuff layers separated by fine light to medium olive-gray and brownish-gray oil-shale layers in upper and lower parts; thick irregular tuff layer at 478.2-478.3. Irregular thick to thin parting; coarse hackly to irregular fracture. Fairly abundant very fine black grains. Sample of light gray tuff with abundant black grains from 478.2-478.3 feet: X-ray - quartz, analcite, feldspar, biotite, hornblende.
478.4	479.3	Oil shale and some mudstone: Medium to some light olive-gray oil shale (5Y 5/2, some 6/2, rare 4/2), dolomitic. Faintly

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From	To	Description
		laminated to very faintly bedded. Irregular thick to medium parting; irregular hackly fracture. Some thick to fine gray-buff to buff mudstone layers; occasionally with very fine black grains.
479.3	480.5	Marlstone and claystone (lean oil shale?): Medium to light olive gray (5 to 2.5Y 5/1 and 5/2-6/1 and 6/2; some almost neutral gray), dolomitic. Faintly laminated zones and thick massive zones. Irregular thick parting; slightly conchoidal to irregular fracture. Common fine to thin light gray to buff mudstone layers with abundant pyrrhotite (?); irregular diagonal stringer at 479.4-479.6. Sample of mudstone with abundant pyrrhotite (?) from 479.3 feet: X-ray - quartz, analcite, feldspar, dolomite, calcite, pyrrhotite. Sample of almost neutral gray claystone from 479.7 feet: X-ray - dolomite, quartz; some feldspar, calcite.
480.5	482.7	Mudstone and marlstone: Slightly olive and brownish gray (5 and 2.5Y 5/1-4/1), dolomitic. Very faintly streaked to massive with some laminated zones. Irregular thick parting; irregular to conchoidal fracture; broken core and rubble below 481.6. Abundant disseminated pyrrhotite (?); some thin light silty layers with very abundant pyrrhotite in lower part. Partly grab sampled.
482.7	483.8	Marlstone: Medium to light olive green (7.5 to 10Y 5/2-6/2), dolomitic. Finely streaked with calcareous siltstone in upper part becoming massive in lower part. Irregular thick parting; irregular to conchoidal fracture; rubble in lower 0.4 foot. Abundant disseminated pyrrhotite. Partly grab sampled. Sample of marlstone with very fine pyrrhotite (?) from 483.3 feet: X-ray - dolomite, quartz, calcite, feldspar, analcite, illite.
483.8	502.0	Missing.
502.0	504.8	Siltstone: Medium to light gray and brownish gray (N5-6 and 10YR 5/1 and 5/2-6/1 and 6/2, rare 4/1), slightly calcareous. Massive to faintly bedded with some laminae and thin bands. Irregular to fairly regular thick parting; slightly irregular fracture. Abundant very fine submetallic platy flecks (biotite?). Light gray fine-grained sandstone in lower 0.1 foot. Sample of light gray fine-grained sandstone from 504.7-504.8 feet: X-ray - quartz, calcite, dolomite, feldspar.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
504.8	506.5	Mudstone and marlstone (lean oil shale): Medium to light brownish gray and olive gray (2.5 to 5Y 4/1-6/1 and 6/2), dolomitic to slightly calcareous. Faintly streaked to laminated. Irregular to fairly regular thick parting; slightly irregular fracture. Abundant very fine brownish-black to bright metallic specks. Abundant fine to thick gray to gray-buff siltstone stringers and layers in upper part becoming rare in lower part.
506.5	508.0	Marlstone and mudstone (lean oil shale): Olive gray (5 to 7.5Y 5/1 and 5/2-4/1 and 4/2), dolomitic. Faint streaked bedding and rare laminae. Irregular thick parting; irregular fracture. Abundant very fine disseminated pyrite (and pyrrhotite?). Some fine gray streaks and laminae in lower part.
508.0	509.1	Oil shale: Olive gray (5 to 7.5Y 4/1 and 4/2-5/1 and 5/2), dolomitic. Faint streaked bedding and some laminae. Irregular to fairly regular, thick to medium parting; irregular to some hackly fracture. Abundant very fine disseminated pyrite (and pyrrhotite?). A very thin light brownish-gray silty-textured pyritic layer at 508.9. Sample of olive-gray oil shale from 508.6 feet: X-ray - calcite, dolomite, quartz, feldspar.
509.1	509.8	Oil shale: Olive gray to olive green (7.5 to 10Y 4/2 and 4/1-5/2 and 5/1), dolomitic. Faint to some moderately distinct streaked bedding and rare laminae. Slightly irregular thick parting; slightly hackly fracture. Abundant disseminated pyrite. Some very fine light brownish-gray silty streaks.
509.8	510.6	Oil shale: Medium and rare light olive (7.5 to 5Y 5/2-4/2, rare 6/2), dolomitic. Faint to moderately distinct streaked bedding; some faint laminae and irregular banding in lower part. Slightly irregular thick parting; irregular hackly fracture. Fairly abundant very fine pyrite. Some light brownish-gray silty streaks. Rare fine dense tan dolomite laminae and streaks. A small gray-buff silty biotitic nodule at 510.4. Rare very small brown calcite (?) blebs at 510.45.
510.6	511.1	Oil shale: Medium to light olive (5Y 5/2-6/2), dolomitic. Very faintly bedded to laminated; some distinct thin to fine buff dense to slightly silty marlstone laminae and lenses. Rare very fine disseminated pyrite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
511.1	511.6	<p>Oil shale and siltstone: Medium to dark olive-gray silty oil shale (5Y 5/1-3/1) and light olive gray to gray-buff siltstone (5Y 6/1-7/1), calcareous. Distinct to faint alternating oil-shale and siltstone laminae. Slightly irregular thick parting; slightly irregular and hackly fracture. Some pyrite (and pyrrhotite?). Wavy and slightly interfingered contact with tuff below.</p> <p>Sample of interlaminated siltstone and oil shale from 511.2 feet: X-ray - quartz, dolomite, calcite, feldspar, analcite, illite.</p>
511.6	512.6	<p>Tuff: Light brownish gray to buff (2.5Y 6/2 and 6/1-7/2, rare 6/3), gray buff and light to rare medium gray in lower 3 inches (2.5Y 7/1 and N7-6, rare 5), slightly calcareous, silty. Variegated and mottled with some indistinct layering. Irregular thick parting; irregular to fairly regular fracture. Abundant <u>very</u> fine dark grains (biotite in part). A thin white slightly silty marlstone lamina at base.</p> <p>Sample of buff tuff from 512.2 feet: X-ray - quartz, analcite, trace calcite.</p>
512.6	515.1	<p>Marlstone (lean oil shale): Medium to very light olive gray (5 to 7.5Y 5/1 and 5/2-8/1; some slight brownish tint in upper part), dolomitic. Faint laminae to 2-inch massive bands; rarely distorted. Irregular to regular thick parting; regular to some irregular and conchoidal fracture. Some thin wavy and rarely displaced gray siltstone layers in upper 0.4 foot. Thin to 1-inch zones of slightly distorted dark olive-gray and brownish-gray oil-shale streaks and laminae at 513.8 and 514.4. Abundant very fine white calcite blebs and streaks at 513.9-514.1. Some very fine disseminated pyrite or pyrrhotite in upper part.</p> <p>Sample of light olive-gray marlstone with very fine white blebs from 513.9 feet: X-ray - dolomite, quartz, calcite, feldspar, analcite, illite.</p>
515.1	516.9	<p>Oil shale: Medium to light olive and olive green (7.5 to 10Y 5/2-6/2, some 7/2 upper part and 4/2 lower part), dolomitic to calcareous. Faint to some moderately distinct streaked bedding. Irregular thick parting; irregular to conchoidal fracture. Rare fine gray to gray-buff pyritic streaks and blebs; some disseminated pyrite near base. Thin irregular white to</p>

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		slightly brownish translucent chalcedony lenses at 515.4 and a thin wavy layer at 515.8. Abundant very fine calcite specks, streaks, and patches at 515.8-515.9. Thin zones with some very fine diagonal to vertical orange-tan calcite streaks (discontinuous fracture fillings?) at 515.9 and 516.6. Sample of chalcedony layer with some oil shale from 515.8 feet: X-ray - quartz; trace dolomite, pyrite.
516.9	517.9	Oil shale: Medium to rare dark olive gray (7.5 to 5Y 5/2-4/2 and 4/1, rare 3/2-3/1), dolomitic. Fairly distinct streaked bedding. Irregular thick parting; irregular fracture. Some very fine dense tan streaks. Abundant very fine disseminated pyrite. Some very fine orange-tan calcite fracture fillings near top. A thin lenticular silty biotitic stringer at base. Sample of olive-gray oil shale from 517.5 feet: X-ray - dolomite, calcite, quartz, feldspar.
517.9	518.9	Oil shale: Medium and some dark olive gray (5Y 4/1 and 4/2-5/1, some 3/1-3/2), dolomitic. Faint to some fairly distinct streaked bedding. Slightly irregular thick parting; slightly hackly fracture. Abundant disseminated pyrite. Rare fine brownish-gray to tan marlstone streaks and lenses.
518.9	520.0	Oil shale: Medium and rare dark slightly olive gray (5Y 4/1-5/1, rare 3/1) and some brownish gray (2.5Y 4/2 and 4/1-5/2 and 5/1), dolomitic. Faintly laminated; some slightly distorted zones and rare fine displacements. Regular to irregular, thick to medium parting; irregular to some conchoidal fracture. A 1-1/2-inch brownish-gray to brown tight silty-textured band at 519.8. Sample of brownish-gray oil shale from 519.6 feet: X-ray - dolomite, quartz, calcite, feldspar, analcite. Sample of brownish-gray to brown silty tuff from 519.8 feet: X-ray - quartz, analcite, feldspar, pyrite.
520.0	521.0	Oil shale: Medium to dark brownish gray and olive gray (2.5 to 5Y 4/1-3/1, some 4/2), dolomitic. Moderately distinct to faint laminae and some streaked bedding. Regular to irregular thick parting; slightly irregular to conchoidal fracture. Rare very fine gray pyritic streaks.
521.0	522.0	Dolomitic mudstone and oil shale: Dense massive slightly brownish to neutral gray mudstone (2.5Y 4/1 to N4 and some 3) in upper

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		part to medium and dark oil shale as above in lower part with very irregular displaced contact between. A thin to fine tapering vermiform gray silty stringer from 521.0 to 521.5 (becomes line of displacement at contact between mudstone and oil shale). Irregular parting and fracture.
522.0	523.2	Oil shale: Medium brownish gray and olive gray (2.5 to 5Y 4/1 and 4/2-5/1 and 5/2; some almost neutral gray), dolomitic to slightly calcareous. Faint streaked bedding and fine laminae to thin bands; distinct light brownish-gray slightly silty laminae in lower 0.2 foot. Irregular to regular thick parting; irregular to slightly conchoidal fracture. Abundant very fine disseminated pyrite (?) in some zones.
523.2	524.4	Marlstone (lean oil shale): Medium to light olive gray and brownish gray (5 to 2.5Y 5/1 and 5/2-6/1 and 6/2, rare 4/1), dolomitic. Very faintly bedded to faintly laminated. Irregular thick parting; slightly irregular to conchoidal fracture. Rare disseminated pyrite. A 1-inch zone of buff-white marlstone laminae at 523.4. Sample of light olive-gray marlstone from 523.9 feet: X-ray - dolomite, quartz, feldspar, illite.
524.4	525.6	Oil shale: Olive gray (5Y 5/1 and 5/2-4/1 and 4/2), calcareous. A thin laminated layer of buff-white to light gray marlstone at top. Gray-buff to light olive-gray mottled siltstone band at 524.6-524.7. Finely interlaminated siltstone and oil shale at 524.7-524.8. Faintly laminated to nearly massive silty oil shale below 524.8. Irregular to regular thick parting; slightly irregular to conchoidal fracture.
525.6	526.6	Oil shale: Medium to some dark olive gray (5Y 4/2-5/2, some 3/2-3/1), dolomitic. Moderately distinct to faint slightly distorted streaked bedding. Irregular thick to medium parting; irregular to fairly regular fracture. Rare small to fine dark gray silty pyritic blebs and streaks. A fine brittle vitreous black organic streak at 525.9. Slightly brownish-gray tight calcareous siltstone with fine oil-shale shreds and streaks at 526.2-526.4.
526.6	528.3	Marlstone: Medium almost neutral gray and olive gray to tan and buff (5Y 4/1-5/1 and 5/2 to 2.5Y 6/2-7/2 and rare 6/3), dolomitic. Faintly laminated and streaked to distinctly

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		laminated and banded. Irregular thick to medium parting; irregular to conchoidal fracture. Rare fine massive pyrite streaks. Faintly bedded gray-buff siltstone in upper 2-3/4 inches. Sharp wavy contact with very dark oil shale below. Sample of gray-buff siltstone from 526.7 feet: X-ray - quartz, analcite, dolomite, feldspar.
528.3	529.8	Oil shale: Black to dark brownish gray (2.5Y and 10YR 1/1-2/1), some satiny luster, dolomitic. Faint streaked bedding. Irregular thick to medium parting; irregular slight to coarse hackly fracture. Abundant fine brownish-gray silty to very fine blebby crystalline streaks and fine to small lenses. Sample of oil shale with fine crystalline streaks from 528.8 feet: X-ray - quartz, dolomite, calcite, feldspar, illite, pyrite.
529.8	531.2	Oil shale: Very dark brownish gray and some black (2.5Y and 10YR 2/1, some 3/1 and 1/1), some satiny luster, dolomitic. Faint distorted to regular streaked bedding. Irregular to fairly regular thick parting; hackly to slightly irregular fracture. Some fine brownish-gray silty to dense streaks and blebs; some small to large silty biotitic nodules in lower 2 inches. Sharp wavy contact with olive-gray oil shale below. Sample of large silty biotitic nodule from 531.1 feet: X-ray - quartz, feldspar, biotite.
531.2	531.9	Oil shale: Medium to light olive gray and rare brownish gray (5 to 7.5Y 4/1 and 4/2-6/2, rare 2.5Y 5/2), dolomitic. Faint streaked bedding. Irregular to regular thick parting; slightly irregular and conchoidal fracture. Some fine olive-gray to gray silty calcareous streaks and thin layers in upper 0.2 foot (not biotitic).
531.9	532.4	Marlstone and some oil shale: Buff to medium and very rare dark olive gray and brownish gray (5Y to 2.5Y 7/2-5/2, some 2.5Y 4/2 and rare 3/2 lower part), dolomitic. Faint to distinct, thin to medium bands; a 1/2-inch finely laminated oil-shale zone at 532.2 and a 1-inch zone at base. Irregular to regular, thick to thin parting; irregular and conchoidal to slightly hackly fracture. Thin dense gray cherty laminae at 531.95 and 532.05. Some thin to fine, buff to tan marlstone streaks and lenses in oil shale.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		Sample of buff marlstone from 531.9 feet: X-ray - dolomite, quartz.
532.4	532.9	Marlstone: Olive gray to light slightly greenish gray (5 to 10Y 5/2 and 5/1-6/1), dolomitic. Faintly streaked and mottled. Irregular thick parting; slightly conchoidal to irregular fracture. Abundant fine irregular silty streaks and patches in lower 0.1 foot. Some fine pyrite blebs at base.
532.9	534.0	Oil shale: Medium to light olive gray (5 to 7.5Y 5/2-6/2, some 4/2), dolomitic. Faint streaked bedding. Irregular thick parting; irregular to slightly conchoidal fracture. Some small tan dolomite lenses in upper part. A thin irregular medium to dark brownish-gray, silty to very fine sandy-textured pyritic layer at 533.3. Abundant fine wavy to contorted buff earthy to silty streaks and stringers from 533.3 to 533.6. Rare fine to small massive pyrite blebs. Sample of thin silty to sandy-textured pyritic layer from 533.3 feet: X-ray - calcite, dolomite, quartz, pyrite.
534.0	535.0	Oil shale: Olive gray (7.5 to 5Y 5/2-4/2), dolomitic. Faint streaked bedding and some laminae. Irregular thick to medium parting; irregular to conchoidal fracture. Rare very fine yellow-buff marlstone streaks. Rare fine pyrite blebs and streaks. A 1-inch finely laminated gray-buff to white marlstone zone with abundant fine irregular pyritic streaks at 534.7. Sample of olive-gray oil shale from 534.2 feet: X-ray - calcite, dolomite, quartz, feldspar, analcite, illite.
535.0	536.1	Oil shale: Olive gray (5Y 4/2-5/1), dolomitic. Faintly laminated to very faintly streaked. Fairly regular to irregular thick parting; slightly conchoidal to irregular fracture. Some fine massive pyrite blebs and streaks. Irregular 2-inch layer of dense gray-buff siliceous marlstone at 535.4.
536.1	536.3	Marlstone: Light slightly olive gray to gray buff (5Y 6/1-7/1), dolomitic. Faintly layered and streaked. Dense; slightly conchoidal fracture.
536.3	538.0	Mudstone: Light to medium slightly olive gray (5Y 6/1-5/1, rare 7/1; becoming almost neutral gray in lower part), dolomitic. Faintly banded to laminated. Irregular thick parting; irregular fracture. Very abundant fine to moderately coarse transparent disseminated crystals and some very thin crystalline layers.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		Abundant pyrite with crystals. Some fine brown-stained cavities.
		Sample of gray mudstone with crystals from 537.9 feet: X-ray - dolomite, calcite, quartz, feldspar.
538.0	539.0	Marlstone (lean oil shale?): Light to medium olive gray (5Y 6/2-5/2, some 4/2), dolomitic. Faint laminae and streaked bedding. Irregular thick parting; irregular to conchoidal fracture. Fairly abundant crystals as above in upper half.
539.0	539.5	Oil shale: Olive gray and brownish gray (5 to 2.5Y 5/2, some 4/2), dolomitic. Faint slightly distorted streaked bedding to very fine smooth laminae. Irregular parting and fracture. Abundant fine to small brown-stained crystalline blebs and patches. A thin irregular dense light brownish-gray dolomite layer at 539.3.
539.5	540.1	Oil shale: Dark brownish gray (2.5Y 3/2-2/1), dolomitic. Faint slightly distorted streaked bedding. Irregular thick parting; irregular slightly hackly fracture. Abundant fine brown crystalline streaks and patches. Sample of dark brownish-gray oil shale with crystalline streaks from 539.6 feet: X-ray - calcite, dolomite, quartz, feldspar, pyrite.
540.1	541.1	Oil shale: Dark to medium brownish gray (2.5Y 2/1-4/2, rare 5/2), dolomitic. Faint streaked bedding to very fine distinct laminae. Rare thin to fine dense brown dolomite lenses. A thin dark brownish-gray silty lens at 540.5.
541.1	542.1	Oil shale: Olive gray and some brownish gray (5Y 4/1 and 4/2-5/1 and 5/2, some 2.5Y 4/2 in upper part), dolomitic. Faintly laminated to banded. Irregular thick parting; irregular to conchoidal fracture. Rare fine massive pyrite streaks. A thin irregular broken and displaced dense brown dolomite stringer at base.
542.1	543.1	Marlstone: Medium to light slightly brownish and olive gray (2.5 to 5Y 5/1-6/1), dolomitic. Faintly laminated and banded. Irregular thick parting; conchoidal to irregular fracture. Abundant very fine gray calcareous pyritic crystalline streaks and lacy patches.
543.1	544.4	Oil shale: Medium to rare dark olive gray and brownish gray (5 to 2.5Y 5/2-4/2, rare 3/2-2/1), dolomitic. Faint laminae to

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		faint and some moderately distinct streaked bedding. Irregular thick parting; irregular to some hackly fracture. Rare fine tan to brown dolomite streaks and lenses.
544.4	545.7	Oil shale: Medium to very dark brownish gray and some black (2.5Y 4/2-2/1, some 1/1 lower part), dolomitic. Faint distorted to smooth streaked bedding. Irregular thick parting; irregular to coarse hackly fracture. Some fine to thin, gray to brown dolomite streaks and lenses in upper part. Sample of very dark oil shale from 545.4 feet: X-ray - dolomite, calcite, quartz, feldspar, illite, pyrite.
545.7	545.9	Oil shale: Medium and some dark brownish gray (2.5Y 4/2, some 3/2). Faint streaked bedding. A fine silty tuff layer with hornblende in a thin buff marlstone lamina at top.
545.9	547.0	Oil shale: Olive gray (5 to 7.5Y 5/2, rare 4/2), dolomitic. Massive to faintly streaked and laminated. Irregular thick parting; conchoidal to irregular fracture. Rare buff to tan marlstone lenses and streaks. Abundant commonly diagonal brown crystalline streaks in lower half; fairly common pyrite.
547.0	548.9	Mudstone: Medium to light slightly olive and brownish gray (5 to 2.5Y 5/1-6/1), dolomitic. Faintly laminated to nearly massive. Irregular to fairly regular thick parting; irregular to conchoidal fracture. Abundant fine silty-crystalline calcareous pyritic streaks and layers. Sample of light gray mudstone from 547.5 feet: X-ray - dolomite, quartz, feldspar, illite.
548.9	549.7	Marlstone: Light and rare medium brownish gray and olive gray to buff (2.5 to 5Y 6/2-7/2, some 8/1, rare 5/2-4/2), dolomitic. Faintly laminated and banded. Regular thick parting; slightly conchoidal to regular fracture. Some very fine silty biotitic layers and streaks from 549.2 to 549.4; a 1/2-inch buff biotitic tuff band at 549.4. A 3/4-inch dense tan dolomite band at base overlain by a very thin wavy oil-shale layer. Sample of thin buff biotitic tuff from 549.4 feet: X-ray - Na and K feldspars, dolomite, hornblende, biotite, pyrite.
549.7	551.7	Oil shale: Brown to very dark brownish gray (10YR 4/2-2/1), rare satiny to resinous black streaks, dolomitic. Distinct smooth to very distorted streaked bedding. Irregular to wavy thick parting; irregular and slightly hackly fracture. Abundant small porous pale yellow crystalline patches at 550.8-551.0.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		Sample of oil shale with crystalline patches from 550.9 feet: X-ray - calcite, dolomite, quartz, feldspar, analcite.
		Sample of dark to medium brown oil shale from 551.4 feet: X-ray - calcite, dolomite, quartz, feldspar, pyrite, illite.
551.7	551.9	Oil shale: Olive gray (5Y 4/2-5/2 and 5/3), dolomitic. Faintly streaked to massive. Very abundant coarse colorless to pale yellowish-brown crystals. Sharp slightly wavy contact with marlstone below.
551.9	553.8	Marlstone: Gray buff and some buff white to slightly olive and brownish gray (5 to 2.5Y 7/1-5/1, some 8/1 lower part), dolomitic. Massive to very faintly laminated and streaked in upper part; distinct irregular buff-white laminae and streaks in lower part. Fairly regular to irregular thick parting; slightly conchoidal to irregular fracture. Abundant fine to coarse crystalline blebs, streaks, and thin layers; a 1/4- to 1/2-inch irregular crystalline crack filling from 552.3 to 552.8. Sample of coarsely crystalline crack filling from 552.4-552.5 feet: X-ray - calcite, dolomite, quartz, pyrite. Sample of gray-buff to buff-white very fine-grained crystalline streak from 553.6 feet: X-ray - calcite, dolomite, quartz, feldspar.
553.8	555.0	Oil shale: Dark brownish gray and some brown (2.5Y to 10YR 3/2-2/1, some 4/2 near top), rare satiny to waxy black streaks. Faint regular to wavy streaked bedding. Irregular to wavy thick parting; irregular to hackly fracture. Some small to large massive to blebby grayish-brown dolomite lenses in upper part. Coarsely crystalline blebs and streaks becoming abundant in lower part.
555.0	556.1	Oil shale: Medium to dark grayish brown and olive gray (10YR to 5Y 4/2-2/1), dolomitic. Faint smooth to distorted streaked bedding. Slightly wavy to irregular thick parting; irregular fracture. Abundant coarse to fine crystalline blebs and patches. Sample of oil shale with coarsely crystalline blebs from 555.2 feet: X-ray - calcite, dolomite, quartz, feldspar, biotite, hornblende.
556.1	556.6	Oil shale: Grayish brown to olive gray (2.5Y 4/2 and 4/3-5/2 and 5/3 to 5Y 4/2-5/2), dolomitic. Massive to faintly

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		laminated and banded; a distinct thin light slightly olive gray marlstone band at 556.4. Irregular thick parting; irregular to slightly conchoidal fracture. Abundant crystalline patches and blebs in upper 0.2 foot. Abundant coarse pyritic crystalline blebs in light gray marlstone band. Sample of grayish-brown oil shale from 556.3 feet: X-ray - dolomite, quartz, feldspar.
556.6	557.3	Marlstone (oil shale?): Medium olive gray to greenish gray (5Y 4/2 and 5/2 to 10Y 4/1 and 5/1), dolomitic. Faintly streaked to massive; few thin distinct brown streaks in upper part; thin laminated zone at base. Irregular thick to medium parting; conchoidal to irregular fracture. A 1-inch white dense to chalky marlstone band with some coarse crystals at top. Abundant coarsely crystalline blebs and streaks below 557.0. Sample of greenish-gray marlstone from 557.1 feet: X-ray - dolomite, quartz, feldspar, illite.
557.3	557.7	Marlstone: Gray buff to light slightly olive and brownish gray (5 to 2.5Y 7/1-6/1). Thin wavy to broken marlstone layers separated by coarsely crystalline layers in upper part grading to irregular to platy marlstone fragments and some coarse crystals in massive buff-white earthy to silty matrix in lower part. Sample of coarsely crystalline layer from 557.3 feet: X-ray - calcite, quartz, dolomite, feldspar, pyrite. Sample of breccia from 557.6 feet: X-ray - dolomite, quartz, feldspar, illite.
557.7	559.0	Oil shale: Medium and rare dark brownish gray to olive gray (2.5 to 7.5Y 5/2-4/2, some 10YR 4/2-3/2 near top), dolomitic. Faint to moderately distinct bands and laminae. Irregular thick parting; irregular and some conchoidal fracture. Abundant fine to thin coarsely crystalline streaks and layers; large irregular masses at 557.9 and 558.9. Some cavities and small spongy boxwork masses. Sample of large coarsely crystalline mass from 558.9 feet: X-ray - calcite, dolomite, quartz, pyrite.
559.0	560.5	Marlstone: Greenish gray to olive gray (10 to 5Y 4/1-5/1). Faintly streaked to massive becoming mottled with light brownish gray in lower part. Irregular parting and fracture. Abundant

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		fine to coarse disseminated crystals and brown-stained cavities with pyrite.
		Sample of greenish-gray marlstone with crystals and crystal cavities from 559.6 feet: X-ray - dolomite, calcite, quartz, feldspar, illite, pyrite.
560.5	561.9	Oil shale: Light to medium brownish gray and olive gray (2.5 to 5Y 6/1 and 6/2-5/1 and 5/2, rare 4/1), dolomitic. Mottled in upper part; faint to distinct distorted to contorted and displaced bands, laminae, and stringers in lower part. Irregular parting and fracture. Abundant crystals and cavities in upper part; mostly collapsed cavities in lower part. Some brown to tan dolomite layers and stringers in lower part.
561.9	564.1	Oil shale: Very dark brownish gray to black (2.5Y to 10YR 2/1-1/1, some 3/1-3/2), some satiny to resinous streaks. Faint to some moderately distinct, contorted to slightly distorted streaked bedding. Irregular to "curly," thick to rare thin parting; irregular to hackly fracture. Abundant coarse disseminated crystals, chalky white altered crystals, and empty crystal cavities. A 1-inch brown tuff stringer with abundant black grains at 564.0. Sample of oil shale with crystals and some chalky alterations from 563.6 feet: X-ray - calcite, dolomite, quartz, feldspar, illite. Sample of brown tuff from 564.0 feet: X-ray - K feldspar, biotite, hornblende.
564.1	565.1	Oil shale: Olive gray (5Y 4/2-5/2), dolomitic. Massive to faintly streaked. Irregular parting and fracture. Abundant coarsely crystalline patches. Few fine tan dolomite laminae near base.
565.1	567.6	Oil shale and marlstone: Olive gray to some neutral gray (5 to 10Y 4/2 and 4/1-5/2 and 5/1, some N5-4 in upper part), dolomitic. Faint to moderately distinct laminae and bands. Irregular to some regular thick parting; irregular to slightly conchoidal fracture. Abundant very fine pyrite blebs and streaks in some zones. Abundant coarse crystals with some chalky alteration in upper 0.4 foot. A 1-1/2-inch faintly layered buff earthy tuff with abundant very fine biotite at 566.7.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
567.6	568.6	<p>Oil shale: Gray green to olive gray (5GY to 5Y 5/2 and 5/1-4/2 and 4/1), dolomitic. Massive to faint distorted streaked bedding. Irregular thick to medium parting; very irregular and some coarse hackly fracture. Abundant disseminated and rare thinly layered coarse crystals, occasionally with chalky alteration. Some very fine pyrite.</p> <p>Sample of thin crystalline layer with some gray-green oil shale from 567.7 feet: X-ray - calcite, shortite, dolomite, quartz, pyrite, illite.</p>
568.6	570.0	<p>Oil shale: Olive gray to brownish gray (5 to 2.5Y 4/2-5/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Very abundant 1/16- to 1/4-inch crystals commonly with chalky alteration. Rare very fine pyrite. A thin wavy brownish-gray to tan dolomite layer at 569.9.</p> <p>Sample of oil shale with coarse crystals from 569.5 feet: X-ray - dolomite, quartz, shortite, feldspar, calcite.</p>
570.0	572.4	<p>Oil shale: Olive gray and some brownish gray (7.5 to 2.5Y 5/2-4/2), dolomitic. Faint streaked bedding and rare laminae. Irregular parting and fracture. Very abundant fine to 3/8-inch crystals.</p> <p>Sample of very coarse crystals from 571.8 to 572.2 feet: X-ray - shortite.</p>
572.4	573.9	<p>Marlstone and oil shale: Light to medium olive gray and brownish gray (7.5 to 2.5Y 6/2-4/2, some 7/2 in upper part), neutral gray zone at 573.3-573.6 (N6-5, rare 4), dolomitic. Faint to rare distinct laminae and bands; slightly distorted in gray zone. Irregular to regular, thick to rare thin parting; slightly conchoidal to irregular fracture. Short tight fine high angle fractures filled with tan dolomite at 572.7-572.8. Rare very fine silty biotitic streaks in middle part. Rare crystalline streaks with abundant pyrite in gray zone. Abrupt change to dark oil shale at base.</p> <p>Sample of light olive-gray marlstone from 572.9 feet: X-ray - dolomite, quartz, feldspar.</p> <p>Sample of gray marlstone from 573.4 feet: X-ray - quartz, dolomite, feldspar, illite.</p>
573.9	575.7	<p>Oil shale: Medium to dark grayish brown (10YR 4/2-2/1), dolomitic. Faint to fairly distinct slightly distorted streaked bedding. Fairly regular to irregular thick parting; irregular</p>

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		slight to rare coarse hackly fracture. Abundant coarse disseminated crystals. Sample of dark grayish-brown oil shale from 573.9 feet: X-ray - dolomite, quartz, feldspar.
575.7	576.4	Oil shale: Medium olive gray to olive green (5 to 10Y 4/2-5/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant coarse crystals.
576.4	577.4	Oil shale and marlstone: Medium to some light olive gray and rare greenish gray (5Y 5/2, some 6/2, rare 5GY 5/1), dolomitic. Massive to faintly banded and laminated. Fairly regular to irregular thick parting; slightly conchoidal to irregular fracture. Some very fine pyrite blebs in upper part. Some thin coarsely crystalline streaks, layers, and blebs below 576.8. Some thin to fine buff earthy to silty biotitic laminae, streaks, and stringers from 576.8 to 577.0. Sample of biotitic tuff with fine oil-shale laminae from 577.0 feet: X-ray - K feldspar, quartz, biotite, dolomite.
577.4	578.5	Oil shale: Medium and rare dark olive gray to brownish gray (7.5 to 2.5Y 5/2-4/2, rare 3/2-2/1 streaks in upper part), dolomitic. Faint and rare distinct streaked bedding. Irregular parting and fracture. Very abundant coarse crystals and irregular crystalline streaks; a 3/4-inch wavy layer of coarse crystals at top. Sample of coarse crystal layer from 577.4 feet: X-ray - shortite, calcite, dolomite.
578.5	579.8	Oil shale: Medium to very dark brownish gray (2.5Y to 10YR 4/2-3/2 upper part to 3/2-2/1 lower part), dolomitic. Faint fairly regular to very distorted streaked bedding. Irregular parting and fracture. Abundant coarse crystals with some chalky alteration. Contorted to wavy finely interlaminated slightly reddish brown biotitic tuff and dark oil shale from 579.0 to 579.5. Some fine to small distinct brown to tan dolomite streaks and lenses in lower part. Sample of interlaminated tuff and oil shale from 579.4-579.5 feet: X-ray - dolomite, K feldspar, quartz, biotite.
579.8	580.0	Missing.
580.0	580.5	Oil shale: Olive gray (5Y 4/2), dolomitic. Very faint streaked bedding; rare dark streaks in upper part. Irregular parting

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		and fracture. Abundant coarse crystals with some chalky alteration.
580.5	581.5	Oil shale: Olive green in upper part to greenish gray in lower part (7.5Y 4/2 to 5GY 4/1), dolomitic. Very faintly streaked to massive. Irregular parting and fracture. Abundant very coarse crystals.
581.5	582.5	Marlstone: Greenish gray (5GY 4/1-5/1), some medium to light olive gray in lower part (7.5Y 5/2-6/2), dolomitic. Faint to some moderately distinct bands and laminae. Irregular to fairly regular thick parting; slightly irregular fracture. Moderately abundant coarse crystals becoming concentrated in thin layers in lower part. Sample of thin crystalline layer from 582.3 feet: X-ray - shortite, quartz.
582.5	584.2	Oil shale: Olive green to medium and very rare dark grayish brown (10Y 5/2 and 5/3 to 2.5Y 5/2-4/2 and rare 3/2-2/1). Faint distorted to regular streaked bedding in upper part with some distinct fine to small tan dolomite streaks and lenses; distinct interlayered oil-shale and dolomite bands and laminae in lower part. Irregular to some regular thick parting; irregular fracture. Very abundant coarse crystals in oil shale. A 0.1-foot faintly bedded tan silty to very fine-grained crystalline band near top. Sharp smooth contact with tuff below. Sample of tan very fine crystalline band from 582.6 feet: X-ray - dolomite, quartz, feldspar, montmorillonite. Sample of thin dense tan dolomite layer from 583.8 feet: X-ray - dolomite, quartz, feldspar.
584.2	585.2	Main tuff: White and some very light buff (N9-8, some 10YR 8/2-9/1 in upper 0.3 foot), slightly calcareous, silty to earthy. Faintly layered in upper part to massive in lower part; very faint tight breccia in lower 0.3 foot. Irregular thick parting; slightly irregular fracture. Abundant biotite in some zones. Rare very fine pyritic streaks and layers. Sharp smooth contact with oil shale below. Thick coating of thermonatrite on outside of core. Sample of tuff from 584.9 feet: X-ray - quartz, K feldspar, biotite.
585.2	586.2	Oil shale: Olive gray and some olive green (5Y to some 10Y 4/2-5/2), grayish brown zone at 585.9-586.1 (2.5Y 5/2-4/2),

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		dolomitic. Nearly massive to faintly streaked. Fairly regular to irregular thick parting; irregular and some slightly conchoidal fracture. Abundant very coarse crystals with some chalky alteration. Abundant perfect pyrite cubes on parting surface at top. Sample of very coarse partly altered (chalky) crystals from 585.4-585.6 feet: X-ray - calcite, dolomite, quartz, shortite.
586.2	588.3	Marlstone (lean oil shale?): Olive green to greenish gray (7.5Y 5/2 to 5GY 5/1 and 4/1), dolomitic. Massive and variegated to very faintly streaked and layered. Irregular parting and fracture. Abundant very coarse to some fine crystals; very few crystals from 587.4 to 587.8. Sample of olive-green marlstone from 587.6 feet: X-ray - dolomite, quartz, feldspar.
588.3	589.3	Oil shale: Olive green to olive gray (10 to 5Y 5/2-4/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Very abundant coarse crystals.
589.3	590.7	Oil shale: Medium to dark olive gray (5Y 5/2-3/2, some 2/2-2/1 in lower part), dolomitic. Faint streaked bedding and some displaced laminae. Irregular thick parting; irregular and some coarse hackly fracture. Abundant moderately coarse crystals commonly in irregular discontinuous high angle stringers. Abundant very fine pyrite with crystals and some in oil shale. Sample of very dark oil shale with high angle crystalline stringers and some disseminated crystals from 590.4 feet: X-ray - dolomite, quartz, feldspar, shortite, illite, pyrite.
590.7	591.9	Marlstone: Medium to dark slightly olive and greenish gray (7.5Y to 10GY 5/1-3/1), dolomitic. Faintly streaked to massive. Irregular parting and fracture. Very abundant crystals and crystalline stringers as above. A 1-inch dark brown tight silty to sandy-textured tuff at 590.8.
591.9	592.9	Oil shale: Medium and rare dark olive gray to greenish gray (5 to 7.5Y 4/2, rare 3/2 near top and 5GY 4/1-4/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant crystals and crystalline stringers in upper part becoming zoned in lower part. Sample of greenish-gray marlstone from 592.8 feet: X-ray - dolomite, quartz, feldspar, illite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
592.9	593.5	Oil shale and marlstone: Olive gray to medium and rare light olive (5Y 4/2-5/2 and 5/3, rare 6/3), dolomitic. Faintly streaked to banded and laminated. Fairly regular thick to rare thin parting; irregular to conchoidal fracture. Abundant crystals in upper 0.2 foot. Dense marlstone with few fine to very thin dark oil-shale partings in lower part.
593.5	595.0	Oil shale: Olive gray and olive green to some greenish gray (5 to 10Y 4/2-5/2, some 5GY 4/2-4/1), dolomitic. Faint streaked bedding and rare laminae. Irregular thick to rare thin parting; slightly conchoidal to irregular fracture. Rare pyritic streaks in upper part. Abundant crystals and crystalline stringers below 594.3.
595.0	596.5	Marlstone (lean oil shale?): Slightly olive and greenish gray (10Y to 10GY 4/1-5/1, rare 4/2-5/2), dolomitic. Faint streaked bedding and some very faint laminae. Irregular parting and fracture. Abundant coarse crystals and some high angle crystalline stringers.
596.5	598.0	Oil shale: Olive gray (5 to 7.5Y 4/2-5/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant coarse crystals becoming zoned in lower part. Few thin irregular tan dolomite streaks and layers in upper part.
598.0	599.5	Marlstone (lean oil shale?): Greenish gray and some olive green (5 to 10GY 4/1-5/1, some 10Y 5/2 upper part), dolomitic. Faint streaked bedding and some laminae. Irregular parting and fracture. Abundant coarse crystals, commonly in irregular discontinuous high angle stringers. Some very fine pyrite.
599.5	600.4	Oil shale: Medium to rare light olive green and some slightly greenish gray (10 to 7.5Y 5/2-4/2, rare 6/2, some 10GY 5/1 lower part), dolomitic. Faint to moderately distinct, fine to thin laminae and some streaked bedding. Irregular to some fairly regular thick parting; slightly conchoidal to irregular fracture. Very rare crystals; some high angle crystalline stringers in lower 0.1 foot. Rare thin zones of fine to very small gray-buff silty pyritic blebs in lower part.
600.4	601.8	Oil shale: Greenish gray to olive green (5GY to 7.5Y 5/1-5/2 and 4/2), dolomitic. Faint streaked bedding and some laminae. Irregular parting and fracture. Abundant fairly coarse crystals and some high angle crystalline stringers.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
601.8	602.8	Oil shale: Medium and rare light olive gray (7.5 to 5Y 5/2-4/2, rare 6/2 upper part), dolomitic. Faint streaked bedding and some very faint laminae. Irregular thick parting; irregular and some coarse hackly fracture. Abundant fairly coarse crystals and irregular discontinuous high angle crystalline stringers (some with brown to reddish-brown stains in lower part). A thin pinched out brown biotitic tuff layer at 602.6. Sample of brown-stained crystalline stringer with some oil shale from 602.6-602.7 feet: X-ray - dolomite, quartz, shortite, feldspar, illite.
602.8	603.8	Oil shale: Medium to some dark olive gray and brownish gray (5 to 2.5Y 4/2-5/2, some 3/2), dolomitic. Faintly streaked and laminated. Irregular to fairly regular thick parting; irregular slight to rare coarse hackly fracture. Abundant fine to very coarse crystals and rare brown-stained crystalline stringers. Sample of dark brownish-gray oil shale with crystals from 603.3 feet: X-ray - dolomite, quartz, shortite, feldspar.
603.8	604.8	Oil shale: Medium to some dark olive gray and brownish gray (5 to 2.5Y 5/1 and 5/2-4/1 and 4/2, some 3/1-2/1), dolomitic. Faintly laminated and streaked. Irregular to slightly irregular thick parting; irregular slight to coarse hackly fracture. Abundant coarse crystals. Thin irregular grayish-brown to tan biotitic tuff layers at 603.9 and 604.0. Sample of thin grayish-brown to tan tuff from 604.0 feet: X-ray - K feldspar, biotite.
604.8	607.1	Oil shale: Olive gray to greenish gray (5 to 10Y 4/1 and 4/2-5/1 and 5/2), dolomitic. Faintly laminated to very faintly streaked. Slightly irregular to irregular thick parting; irregular and some coarse hackly fracture. Abundant coarse crystals, crystalline patches, and irregular high angle crystalline stringers.
607.1	608.9	Marlstone: Medium to rare light and dark slightly olive and greenish gray (7.5Y to 10GY 4/1-5/1, rare 6/1 and 3/1), dolomitic. Faint to some moderately distinct laminae and bands. Abundant disseminated crystals and high angle crystalline stringers in upper part becoming mostly thin coarse to fine-crystalline streaks and layers in lower part (fine-grained streaks

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		and layers are gray-buff to nearly white with abundant very fine pyrite).
608.9	610.0	Sample of marlstone with very fine crystalline pyritic layer from 608.2 feet: X-ray - dolomite, calcite, shortite, quartz, pyrite, feldspar, illite. Marlstone: Light to medium olive green (10Y 6/2-5/2, rare 4/2), dolomitic. Very faintly banded and laminated to streaked. Irregular parting and fracture. Abundant coarse crystals and rare fine-grained layers as above.
610.0	612.1	Sample of olive-green marlstone from 609.3 feet: X-ray - dolomite, quartz, feldspar, illite. Oil shale: Olive green (7.5 to 10Y 5/2-4/2), dolomitic. Very faint streaked bedding and rare laminae. Irregular parting and fracture. Very abundant coarse (up to 1/2 inch) disseminated shortite crystals; few gray-buff to white very fine-grained crystalline streaks and layers in upper part (like 608.2); thin irregular discontinuous diagonal to vertical crystalline crevice fillings in lower half foot.
612.1	613.5	Oil shale: Medium to dark olive green (7.5 to 10Y 4/2-3/2, rare 3/1-2/1), dolomitic. Faint streaked bedding. Irregular to slightly irregular thick parting; irregular slight to some coarse hackly fracture. Abundant coarse disseminated shortite. Sample of dark olive-green oil shale with shortite from 612.8 feet: X-ray - dolomite, quartz, feldspar, illite, shortite.
613.5	615.8	Oil shale: Medium to rare light olive green (7.5 to 10Y 4/2-5/2, rare 5/1 and 6/2 in lower part), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant coarse crystals and irregular discontinuous high angle crystalline stringers. Abundant very fine pyrite. A thin irregular brown to tan dolomite layer at 615.5.
615.8	616.0	Dolomite breccia: Closely spaced thin to fine dense buff (2.5Y 7/2-8/2) platy to irregular dolomite fragments in tight gray silty pyritic matrix. Irregularly laminated marlstone in lower half inch. Sample of dolomite breccia from 615.9 feet: X-ray - dolomite, quartz, pyrite, feldspar.
616.0	618.0	Oil shale: Medium to light olive (7.5 to rare 5Y 5/2-6/2), dolomitic. Very faintly streaked to massive with rare faint

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		bands and laminae. Irregular parting and fracture. Abundant coarse (up to 1/2 inch) disseminated shortite crystals. A 1/2-inch buff dolomite layer at 616.1, and very thin layers at 616.2 and 616.4.
618.0	619.1	<p>Sample of light olive oil shale with some shortite from 616.6 feet: X-ray - dolomite, quartz, shortite, feldspar.</p> <p>Oil shale: Medium to light olive green (7.5 to 10Y 5/2-6/2, rare 4/2), dolomitic. Massive to very faintly laminated. Irregular parting and fracture. Abundant coarse shortite crystals. Gray-buff fine-grained crystalline streaks at 618.8 (like 608.2). A very fine regular gray silty pyritic lamina at 618.5.</p> <p>Sample of gray silty lamina with some oil shale from 618.5 feet: X-ray - quartz, feldspar, shortite, dolomite, pyrite.</p>
619.1	620.2	<p>Oil shale: Medium to light olive green to gray green (7.5Y to 5GY 5/2-6/2), dolomitic. Faintly laminated and banded. Irregular to slightly irregular, thick to medium parting; irregular and some slightly conchoidal fracture. Abundant coarse shortite becoming sparse in lower part. Few fine gray silty pyritic laminae and streaks at 619.9. A thin irregular white very fine-grained pyritic crystalline stringer with some coarser very platy crystals at base.</p> <p>Sample of very fine-grained stringer with platy crystals from 620.2 feet: X-ray - shortite, dolomite, calcite, quartz.</p>
620.2	621.2	<p>Marlstone: Light to medium olive green and rare gray green (7.5 to 10Y 7/2-5/2, rare 10GY 5/2), dolomitic to very slightly calcareous. Faintly laminated and banded; very slightly cross laminated near base. Irregular to fairly regular, thick to medium parting; conchoidal to irregular fracture.</p> <p>Sample of very light olive-green marlstone from 620.6 feet: X-ray - dolomite, quartz, feldspar.</p>
621.2	622.9	<p>Marlstone: Medium and light gray green to almost neutral gray (10Y to 5G 5/1-6/1), dolomitic. Faintly banded and laminated to streaks. Fairly regular to irregular thick parting; slightly conchoidal and irregular fracture. Abundant coarse disseminated crystals and some crystalline streaks with common pyrite.</p>

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
622.9	625.2	<p>Sample of gray marlstone with abundant crystals from 622.7 feet: X-ray - dolomite, quartz, shortite, feldspar.</p> <p>Marlstone: Medium to light gray green and olive gray (5GY to 7.5Y 5/1 and 5/2-7/2, some 4/1 lower part), dolomitic. Faintly to distinctly laminated. Irregular to some regular thick parting; conchoidal to some irregular fracture. Abundant fine to coarse crystals, mostly concentrated in thick to thin zones. Abundant pyrite. A thin buff very biotitic tuff layer at 624.2. Becoming irregularly bedded with some buff to white marlstone streaks and lenses in lower 0.4 foot.</p>
625.2	626.8	<p>Sample of distinctly laminated marlstone from 624.3 feet: X-ray - dolomite, quartz, feldspar.</p> <p>Oil shale: Greenish gray and olive gray to some grayish brown and tan (5GY 5/1-4/1 and 7.5 to 5Y 5/2-4/2, some 2.5Y 5/2-6/3), dolomitic. Faint distorted streaked bedding to fairly regular laminae. Irregular parting and fracture. Very abundant very coarse crystals; some chalky alteration in upper part. Some tan dolomite streaks near top. A thin buff biotitic tuff with some fine dark blebs at 625.4; thin to fine vermiform stringers extending 2 inches into oil shale below. A thin gray biotitic tuff at 626.0.</p>
626.8	627.8	<p>Sample of buff biotitic tuff with some fine dark blebs from 625.4 feet: X-ray - K feldspar, biotite.</p> <p>Oil shale: Light to dark olive gray and brownish gray (7.5 to 2.5Y 6/2-2/1, some 2.5Y 6/3-5/3 lower part), dolomitic. Faint to moderately distinct laminae; some displacements and poorly formed loop structures. Irregular parting and fracture. Abundant coarse crystals concentrated in thick zones; common chalky alteration in lower part.</p>
627.8	628.8	<p>Sample of dark to medium brownish-gray oil shale from 627.1-627.2 feet: X-ray - dolomite, quartz, calcite, feldspar, pyrite, illite.</p> <p>Sample of oil shale with coarse partly altered crystals from 627.6 feet: X-ray - dolomite, calcite, quartz, ferroan, feldspar, pyrite.</p> <p>Oil shale: Medium to dark brownish gray and olive gray (2.5Y 4/2-2/1 in upper part to 7.5Y 4/1-3/1 in lower part), dolomitic. Faint and rare distinct slightly irregular laminae to very faint</p>

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		streaked bedding. Irregular parting and fracture. Abundant coarse crystals with some chalky alteration.
628.8	629.9	Oil shale: Dark to some medium olive gray (5 to 7.5Y 3/1, some 4/1-4/2 lower part). Very faint streaked bedding. Irregular parting and fracture. Very abundant coarse to fine crystalline blebs, patches, and stringers. Sample of dark oil shale with very abundant coarse to fine crystalline blebs, patches, and streaks from 629.2-629.3 feet: X-ray - dolomite, shortite, quartz, gaylussite, calcite.
629.9	631.1	Oil shale: Light to medium olive gray (10Y 6/2-4/2). Faint streaked bedding. Irregular parting and fracture. Very abundant coarse disseminated crystals.
631.1	632.1	Marlstone: Light to medium olive green and gray green (10Y to 5GY 6/2-5/2, rare 7/2, some 6/1-5/1 lower part), dolomitic. Faintly laminated and banded. Irregular thick parting; slightly irregular to conchoidal fracture. Some very thin to fine buff layers and streaks. Rare coarse crystals near top. Very fine dark metallic pyrrhotite (?) blades and blebs becoming abundant in lower part. Sample of light gray-green marlstone with abundant pyrrhotite (?) from 631.6 feet: X-ray - dolomite, quartz, feldspar, illite, pyrrhotite.
632.1	633.1	Marlstone: Medium and light gray to light olive green (N5-6, rare 4 to 10Y 6/2-7/2), dolomitic. Faint and rare distinct bands and laminae. Irregular to regular thick parting; regular to conchoidal fracture; chalky coating on outside of core. Abundant very fine pyrrhotite to 632.7. Abrupt change to oil shale at base.
633.1	633.6	Oil shale: Light to medium olive gray (7.5 to 5Y 6/2-5/2, rare 4/2) and rare medium to dark grayish brown near top (2.5Y 4/2-3/2), dolomitic. Faintly laminated and streaked. Irregular thick parting; slightly conchoidal to irregular fracture. Abundant fine tan silty-crystalline streaks and blebs in upper inch. Very coarse shortite crystals becoming abundant in lower part.
633.6	635.0	Oil shale: Medium to some light and dark olive gray and olive green (7.5 to 10Y 4/2 and 4/1-5/2, some 6/2 and 3/1), dolomitic. Faintly streaked and laminated. Irregular parting

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		and fracture. Very abundant coarse crystals with some chalky alteration.
635.0	636.1	Oil shale: Medium to dark olive gray and brownish gray (7.5 to 2.5Y 4/2-2/1), dolomitic. Faint slightly distorted and displaced laminae and streaks. Irregular to slightly irregular thick parting; irregular and slightly hackly fracture. Moderately abundant coarse crystals in upper part becoming very sparse in lower part. Sample of dark brownish-gray oil shale from 635.6 feet: X-ray - dolomite, calcite, quartz, feldspar, pyrite.
636.1	637.1	Oil shale: Medium to dark olive gray (5Y 4/2 and 4/1-3/1), dolomitic. Faintly streaked to massive. Irregular parting and fracture. Abundant coarse disseminated crystals in upper part becoming concentrated in irregular stringers and patches in lower part. Sample of crystalline patches and stringers with some oil shale from 636.7-636.8 feet: X-ray - calcite, gaylussite, dolomite, quartz, pyrite.
637.1	639.7	Marlstone (and claystone?): Medium to light gray (N5-6, some 4 upper part), dolomitic to very slightly calcareous. Faint to rare distinct laminae and bands. Irregular thick parting; conchoidal fracture. Some coarse crystals in upper 0.4 foot. Abundant very fine white calcite blebs in some zones in lower part. Thin conglomeratic zones with very pyritic patches at 639.5 and 639.6. A 1-inch buff-white to tan wavy marlstone stringer at base. Sample of gray claystone (?) from 637.8 feet: X-ray - dolomite, quartz, feldspar, calcite, illite.
639.7	640.7	Oil shale: Medium to dark olive gray and brownish gray (5 to 2.5Y 4/2-2/1), dolomitic. Faint to moderately distinct streaked bedding. Slightly irregular thick parting; slightly hackly fracture. Abundant fine brown blebs and blebby streaks in upper part. Some coarse crystals near base. Sample of oil shale with abundant fine brown blebs from 639.8 feet: X-ray - dolomite, calcite, quartz, feldspar.
640.7	641.8	Oil shale: Dark to medium olive gray and brownish gray (5 to 2.5Y 2/1-4/2), dolomitic. Faint streaked bedding. Fairly regular to irregular thick parting; slightly hackly to irregular

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		fracture. Abundant coarse crystals with some chalky alteration. Rare fine to thin tan marlstone streaks.
641.8	643.8	Oil shale: Medium to dark olive gray (5Y 4/2-3/1, some 2/1), dolomitic. Faint streaked bedding and rare laminae. Slightly irregular to irregular, thick to rare medium parting; slightly hackly to irregular fracture. Abundant coarse crystalline blebs, streaks, stringers, and patches.
643.8	645.0	Marlstone: Light and some medium olive gray to buff (5 to 10Y 6/1-7/2, some 5/2-4/2 upper part), dolomitic. Faintly laminated and banded. Irregular to fairly regular, thick to some thin parting; irregular to slightly conchoidal fracture. Fairly abundant coarse crystals in upper half.
645.0	646.5	Marlstone: Light and rare medium olive gray to buff (5 to 7.5Y 6/1-7/2, rare 5/1-5/2), dolomitic. Faint commonly distorted streaks and stringers. Irregular parting and fracture. Abundant coarsely crystalline patches, stringers, and blebs. Sample of marlstone with crystalline patches and stringers from 645.4 feet: X-ray - calcite, dolomite, quartz, pyrite.
646.5	648.6	Oil shale: Medium olive gray (5 to 7.5Y 4/2), dolomitic. Faint streaked bedding; contorted stringers at 647.1-647.4. Irregular thick to rare thin parting; irregular and some coarse hackly fracture. Abundant coarse crystalline blebs and some stringers.
648.6	649.6	Oil shale: Medium to dark olive gray (5 to 10Y 4/2-3/2 and 3/1, some 2/1), dolomitic. Faint streaked bedding. Slightly irregular thick parting; slightly hackly fracture. Some brown-stained crystalline stringers in upper part. Abundant fine disseminated crystals and crystalline streaks in lower part. Sample of dark olive-gray oil shale with fine disseminated crystals and crystalline streaks from 649.3 feet: X-ray - calcite, dolomite, feldspar, quartz, pyrite, illite.
649.6	650.6	Oil shale: Medium to dark olive gray (5 to 10Y 4/2-3/2 and 3/1), dolomitic. Faint streaked bedding. Regular to irregular thick parting; slightly hackly to irregular fracture. Very abundant fine crystals and crystalline streaks; some coarse crystalline stringers and patches in middle part.
650.6	651.7	Oil shale: Medium to light and rare dark olive green (7.5 to 10Y 4/2-6/2, rare 3/1), very slightly calcareous. Faint

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

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From	To	Description
		streaked bedding and some very fine laminae. Irregular thick parting; irregular to fairly regular fracture. Abundant fine to coarse crystalline streaks and patches. Fairly abundant pyrite.
651.7	653.9	Mudstone (oil shale in part): Slightly brownish and olive gray to gray buff (2.5 to 5Y 4/1-7/1), dolomitic to very slightly calcareous. Very faint streaked bedding to faint and distinct laminae and thin bands. Irregular to rare regular thick parting; irregular to slightly conchoidal fracture. Abundant disseminated pyrrhotite. A thin white earthy tuff stringer at base.
653.9	655.9	Oil shale: Medium to dark brownish-gray and olive gray (2.5 to 5Y 4/2-2/2, some 5/2 upper part). Faint to some distinct streaked bedding. Slightly irregular thick parting; irregular and some slightly hackly fracture. Some very fine disseminated pyrite. Rare small light brownish-gray to buff dolomite lenses and nodules.
655.9	656.9	Oil shale: Dark to medium olive gray (5Y 3/2-5/2), dolomitic to slightly calcareous. Very faintly streaked to faintly laminated. Irregular thick parting; slightly irregular fracture. Abundant fine disseminated crystals and prismatic crystalline streaks. Abundant very fine disseminated pyrite. Few thin tan to buff marlstone streaks in middle. Sample of oil shale with disseminated crystals from 656.6 feet: X-ray - calcite, dolomite, quartz, feldspar.
656.9	657.5	Oil shale: Olive gray (5 to 7.5Y 4/2-4/1), dolomitic to slightly calcareous. Faint streaked bedding. Irregular thick parting; slightly irregular fracture. Abundant crystals and crystalline patches as above.
657.5	658.5	Oil shale: Medium to some light olive green (7.5 to 10Y 4/2-5/2, some 6/2 lower part), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant fine disseminated crystals and lacy pyritic crystalline stringers.
658.5	660.9	Marlstone: Medium to light gray (N4-6, some 7 lower part; common slight olive to green tint), dolomitic to very slightly calcareous. Slightly irregular thick to rare thin parting; irregular to slightly conchoidal fracture. Very abundant fine disseminated pyrrhotite. Sample of gray marlstone with abundant pyrrhotite from 658.8 feet: X-ray - dolomite, quartz, calcite, feldspar, illite, pyrrhotite.

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From	To	Description
660.9	661.4	Oil shale: Medium to dark brownish gray (2.5Y 5/2-3/1, rare 2/1). Faint to rare distinct streaks and laminae. Irregular thick parting; slightly irregular fracture. Abundant fine dense brown crystalline blebs. Thin massive pyrite streaks near top.
661.4	662.4	Oil shale: Dark to some medium brownish gray (2.5Y to 10YR 3/2-2/1, some 4/2-5/2), dolomitic. Faint and rare distinct streaked bedding. Slightly irregular thick parting; slightly irregular and rare hackly fracture. Abundant fine disseminated crystals and crystalline blebs and streaks.
662.4	663.0	Oil shale: Medium to dark brownish gray and olive gray (2.5 to 5Y 5/2-3/2, some 2/1). Faint distorted streaked bedding. Irregular parting and fracture. Abundant fine to coarse disseminated crystals and crystalline patches. Sample of oil shale with coarse crystals from 662.6 feet: X-ray - calcite, dolomite, quartz, feldspar.
663.0	664.2	Oil shale: Olive green (7.5 to 5Y 5/2-4/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant fine lacy crystalline streaks and stringers with moderately abundant pyrite. Abundant fine disseminated pyrrhotite (?) near base. Sample of oil shale with lacy crystalline stringers from 663.3 feet: X-ray - calcite, dolomite, quartz, feldspar, illite, pyrite.
664.2	666.4	Marlstone and mudstone: Light to dark almost neutral to greenish gray (7.5Y to 5GY 6/1-4/2 and 3/1), dolomitic to slightly calcareous. Faint to some moderately distinct laminae and bands. Irregular to fairly regular, thick to medium parting; irregular to slightly conchoidal fracture. Abundant very fine disseminated pyrrhotite. Some fine silty-crystalline streaks and laminae.
666.4	670.9	Marlstone and mudstone: Light to medium slightly greenish gray (10Y to 5GY 5/1-7/1, some 4/1-4/2 upper part), dolomitic. Faint and rare distinct laminae and bands to very faint streaked bedding. Irregular to fairly regular, thick to rare medium and thin parting; fairly regular to irregular fracture. Abundant fine to fairly coarse crystalline blebs, streaks, and stringers. Abundant pyrite and pyrrhotite in some parts.
670.9	672.1	Oil shale: Medium olive gray and brownish gray in upper and lower parts (5 to 2.5Y 5/2 and 5/1-4/2 and 4/1), mostly dark

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

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From	To	Description
		brownish gray from 671.2 to 671.8 (2.5Y 2/1-3/2), dolomitic. Faint streaked bedding. Irregular thick parting; slightly conchoidal to irregular fracture. Abundant fine and some coarse disseminated crystals in lower part. Sample of dark brownish-gray oil shale from 671.5 feet: X-ray - dolomite, quartz, feldspar, pyrite.
672.1	674.9	Marlstone: Light to medium slightly greenish gray (7.5Y to 5GY 6/1-5/1, rare 7/1) with some olive gray in upper part (5Y 5/2-6/2), dolomitic. Faint to rare distinct laminae and bands. Irregular to fairly regular thick parting; irregular to slightly conchoidal fracture. Abundant fine-grained pyritic crystalline streaks and blebs in upper part. Some fine to thin, silty to very fine sandy-textured streaks and layers in lower part. Sample of marlstone with silty to very fine sandy-textured streaks and layers from 674.2 feet: X-ray - calcite, dolomite, quartz, feldspar.
674.9	675.7	Oil shale: Medium to dark brownish gray and olive gray (2.5Y to 10YR 4/2-3/2 and 5Y 4/2-4/1); dolomitic. Faint streaked bedding. Irregular thick parting; irregular and rare hackly fracture. Abundant fine lacy pyritic crystalline streaks and stringers.
675.7	678.9	Missing.
678.9	680.4	Oil shale: Medium and some dark olive gray (5Y 5/2-4/2, some 3/2-2/1 upper part), dolomitic. Faint to moderately distinct streaked bedding. Irregular thick parting; irregular to slightly hackly fracture; irregular core pieces and some rubble in upper 0.5 foot. Abundant very fine disseminated pyrite. Abundant fine crystals and lacy crystalline stringers in some parts. A thin gray-buff biotitic tuff streak at base.
680.4	682.1	Oil shale: Medium to some light olive gray and rare medium to dark brownish gray (5 to 7.5Y 4/2-5/2, some 6/2-7/1, rare 2.5Y 4/2-3/2), dolomitic to very slightly calcareous. Faint to moderately distinct streaked bedding and some laminae and bands. Irregular parting and fracture. Some fine disseminated crystals in upper part. Abundant disseminated pyrite in some zones.
682.1	683.1	Marlstone: Light slightly greenish and rare olive gray (10Y 6/1-7/1, some 7.5Y 6/2-5/2 near top), dolomitic; some fine to thin

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From	To	Description
		silty calcareous layers. Faintly banded and laminated. Slightly irregular thick parting; irregular to slightly conchoidal fracture.
683.1	683.7	Oil shale: Medium to rare dark olive gray and brownish gray (5 to 2.5Y 4/2-5/2, rare 3/2), dolomitic. Faint streaked bedding. Irregular thick parting; irregular to slightly hackly fracture. Abundant fine to coarse crystalline blebs. Thin buff to tan marlstone stringers at 683.3 and 683.65. Sample of oil shale with fine brown crystal blebs from 683.2 feet: X-ray - dolomite, quartz, calcite, feldspar.
683.7	684.6	Oil shale: Medium to dark olive gray and brownish gray (5 to 2.5Y 4/2-3/2, some 2/1), dolomitic. Faint to some moderately distinct streaked bedding. Irregular parting and fracture. Abundant coarse disseminated crystals. Abundant very fine disseminated pyrite. Sample of oil shale with coarse crystals from 683.9 feet: X-ray - dolomite, calcite, quartz, feldspar.
684.6	685.3	Oil shale: Olive gray and brownish-gray (7.5 to 2.5Y 4/2-5/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant coarse crystals and fine pyrite.
685.3	687.3	Oil shale: Olive gray to olive green (5 to 10Y 4/2-5/2 and 5/1), dolomitic to very slightly calcareous. Faint streaked bedding; becoming very faintly laminated in lower 0.6 foot. Irregular parting and fracture. Abundant coarse crystals and crystalline patches to 686.6. Some very fine pyrite.
687.3	688.4	Marlstone: Light to medium olive green (10Y 6/2-5/2, rare 7/2), dolomitic, slightly silty. Faintly banded and laminated to very faintly streaked. Irregular to regular, thick to medium parting; conchoidal to irregular fracture. Some fine to thin buff silty-crystalline layers. Abundant moderately coarse crystalline streaks and irregular layers in lower 0.3 foot.
688.4	689.2	Marlstone: Medium greenish gray (5GY 5/1-4/1), dolomitic. Very faintly streaked and laminated. Slightly irregular thick parting; irregular to slightly conchoidal and some slight hackly fracture. Fairly abundant coarse crystalline streaks and blebs. Sample of greenish-gray marlstone from 688.6 feet: X-ray - dolomite, quartz, illite, feldspar, pyrite.
689.2	690.4	Marlstone: Olive gray to buff (7.5 to 5Y 5/2 and 5/1-7/2, rare 4/2), dolomitic. Very faintly banded and laminated. Irregular

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From	To	Description
		to fairly regular, thick to rare medium and thin parting; slightly irregular and hackly fracture. Fairly abundant coarse to fine disseminated crystals and crystalline streaks. Sample of light olive-gray marlstone with crystals from 689.8 feet: X-ray - dolomite, calcite, quartz, feldspar, pyrite.
690.4	691.2	Marlstone: Slightly greenish to neutral gray (5GY 5/1 to N5), dolomitic. Massive to faintly streaked. Irregular thick parting; conchoidal to irregular and some very slight hackly fracture. Fairly abundant crystals and few irregular crystalline layers. Sample of thin irregular crystalline layer from 690.7 feet: X-ray - calcite, quartz, dolomite, pyrite.
691.2	692.2	Oil shale: Medium and rare light olive green (10 to 7.5Y 5/2, some 4/2, rare 6/2), dolomitic. Faint streaked bedding and rare laminae and thin bands. Irregular to slightly irregular thick parting; irregular to some slightly hackly and conchoidal fracture. Abundant coarse disseminated crystals and rare crystalline streaks.
692.2	694.8	Marlstone and shale: Medium to light greenish gray (5 to 10GY 5/1-6/1, some 5/2, rare 4/1-4/2), dolomitic to very slightly calcareous. Faintly streaked to laminated; abundant distinct fine to thin gray-buff silty-crystalline layers from 692.8 to 693.8. Irregular to fairly regular, thick to thin parting; irregular and slightly conchoidal to hackly fracture. Abundant fine to thin fairly coarse crystalline layers in upper 0.5 and lower 0.6 foot.
694.8	695.8	Oil shale: Olive gray and brownish gray (7.5 to 2.5Y 5/2-4/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant coarse disseminated crystals. Some fine buff marlstone streaks at 695.4.
695.8	696.8	Oil shale: Olive gray and some brownish gray (7.5 to 5Y 5/2-5/1, some 2.5Y 5/2-4/2), dolomitic. Faint streaked bedding. Irregular parting and fracture. Abundant coarse disseminated crystals.
696.8	698.2	Oil shale: Olive gray to greenish gray and rare medium to dark brownish gray (5Y to 5GY 5/2 and 5/1-4/2 and 4/1, rare 2.5Y 4/2-3/1), dolomitic. Faint streaked bedding. Irregular thick parting; irregular to slightly irregular fracture. Abundant coarse

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From	To	Description
		disseminated crystals and some small crystalline blebs and patches. A 1/2-inch layer of fine platy buff marlstone fragments at top.
698.2	699.0	Marlstone (lean oil shale?): Medium to light olive gray and olive green (7.5 to 10Y 5/2 and 5/1-6/2, rare 7/2), dolomitic. Faint streaked bedding and rare laminae. Fairly regular to irregular thick parting; slightly irregular and conchoidal fracture. Abundant fairly coarse disseminated crystals.
699.0	700.0	Marlstone: Light and some medium olive gray to buff (10 to 7.5Y 6/1 and 6/2-7/2, some 5/1-5/2), dolomitic. Faint to distinct laminae and some bands. Slightly irregular to regular, thick to rare medium and thin parting; irregular to slightly conchoidal fracture. Abundant fairly coarse crystals concentrated in thick to thin zones. Abrupt change to oil shale at base.
700.0	700.9	Oil shale: Dark to medium olive gray (5 to 7.5Y 3/2 and 3/1-4/2, some 5/2, rare 2/1), dolomitic. Faint streaked bedding. Irregular to slightly irregular thick parting; irregular to slightly hackly fracture. Abundant fairly coarse disseminated crystals.
700.9	702.9	Oil shale: Medium and rare dark olive gray (5 to 7.5Y 4/2-5/2, rare 3/2-2/1 lower part), dolomitic. Faint streaked bedding and some very fine laminae. Irregular to slightly irregular thick parting; slightly irregular and hackly fracture. Abundant fairly coarse disseminated crystals. Sample of oil shale with very abundant crystals from 702.5 feet: X-ray - calcite, dolomite, quartz, feldspar, illite, pyrite.
702.9	703.4	Oil shale: Medium to some light olive gray (5 to 10Y 5/2-5/1, some 6/1, rare 4/2), dolomitic. Faint streaked bedding and rare laminae. Irregular thick parting; slightly irregular and hackly fracture. Abundant crystals as above.
703.4	706.0	Marlstone: Light to medium slightly olive gray (7.5 to 10Y 6/1-5/1), dolomitic. Faintly streaked to banded and laminated. Slightly irregular to regular thick parting; slightly irregular and conchoidal fracture. Abundant moderately coarse disseminated crystals and fine crystalline streaks. Thin to fine interbedded layers of buff marlstone and medium to dark brownish-gray oil shale at 704.2-704.4; with numerous fine crystalline layers and streaks.

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From	To	Description
706.0	707.9	<p>Marlstone and mudstone: Light to medium slightly olive gray and buff (10Y 7/1-5/1, and 7/2-8/2), dolomitic. Faint to distinct bands and laminae. Irregular to regular, thick to some thin parting; slightly conchoidal and some slightly hackly fracture. Some coarse to fine crystals concentrated in thick to very thin zones and layers. Abrupt change to oil shale at base.</p> <p>Sample of light gray to gray-buff mudstone from 707.3 feet: X-ray - dolomite, quartz, feldspar.</p>
707.9	708.9	<p>Oil shale: Olive gray and some medium to dark brownish gray (7.5 to 5Y 5/2-4/2, some 2.5Y 4/2-2/1 in middle part), dolomitic. Faint to some distinct streaked bedding. Irregular thick to rare thin parting; irregular and slightly hackly fracture. Abundant fairly coarse crystals in most parts.</p> <p>Sample of olive-gray oil shale from 708.2 feet: X-ray - dolomite, quartz.</p>
708.9	709.9	<p>Oil shale: Medium to light olive gray (7.5Y 5/2-6/2 and 6/1), dolomitic. Faintly streaked to laminated and banded. Irregular thick parting; irregular to slightly conchoidal fracture. Fairly abundant fine crystalline streaks and stringers--some cutting across bedding.</p>
709.9	711.9	<p>Marlstone (lean oil shale in part): Light to medium slightly olive gray (7.5 to 10Y 6/1-5/1, rare 7/2 upper part), dolomitic to slightly calcareous. Very faintly banded and laminated; speckled with abundant very fine buff to white crystal blebs from 710.7 to 711.4. Irregular to fairly regular thick parting; slightly conchoidal to irregular fracture; slightly unctuous in some parts. A thin buff earthy biotitic tuff at 710.5.</p> <p>Sample of thin buff biotitic tuff from 710.5 feet: X-ray - K feldspar, calcite, biotite.</p> <p>Sample of light olive-gray marlstone from 711.7 feet: X-ray - dolomite, quartz, calcite, feldspar, pyrite.</p>
711.9	713.2	<p>Claystone and marlstone: Light gray to buff (N6-7 and 5Y 7/1-8/1), dolomitic to slightly calcareous. Faintly laminated and banded. Irregular to regular, thick to medium parting; conchoidal to fairly regular fracture; slightly unctuous in upper part. Abundant fine to moderately coarse crystals concentrated in thin to 1-inch layers in lower half.</p>

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From	To	Description
713.2	714.2	Marlstone (lean oil shale in part): Medium to some light olive gray and greenish gray (10Y to 5GY 5/1-4/1, some 6/1, some 5Y 5/2-6/2 near top), dolomitic. Faintly laminated and banded. Irregular to regular, thick to some thin parting; irregular to some coarse hackly fracture. Abundant fine crystalline blebs, streaks, and fine to very thin layers. Sample of greenish-gray marlstone with abundant fine crystals from 714.1 feet: X-ray - dolomite, calcite, mixed layer clay, feldspar.
714.2	715.8	Marlstone: Medium to rare dark greenish gray (5 to 10GY 5/1-4/1, rare 3/1), shaly in some parts, dolomitic to very slightly calcareous. Faint streaked bedding. Slightly irregular to regular, thick to some thin parting; irregular coarse to sharp hackly fracture. Fairly abundant fine to moderately coarse crystals; abundant thin to 1-inch crystalline layers below 715.0.
715.8	716.8	Marlstone: Medium and some light olive green and olive gray (10Y 5/2 and 5/1-4/2 and 4/1, some 6/2 in upper part), dolomitic. Faintly streaked and laminated with abundant distinct thin to fine gray-buff fine to medium-grained crystalline layers and streaks. Slightly irregular thick to thin parting; slight to coarse hackly fracture. Sample of crystalline layers from 716.1 feet: X-ray - calcite, dolomite, mixed layer clay.
716.8	718.8	Marlstone: Medium to light gray (N5-7; very slight green tint), dolomitic. Faintly laminated and banded. Fairly regular to irregular, thick to rare thin parting; slightly irregular to some irregular coarse hackly fracture. Abundant thin to fine crystalline layers and streaks, and moderately coarse disseminated crystals.
718.8	721.3	Oil shale: Medium and some light olive green and olive gray (10 to 5Y 5/2-4/2, some 6/2-7/2 mostly in lower part), dolomitic. Faint to rare distinct streaked bedding. Irregular to some fairly regular thick parting; irregular and some coarse hackly fracture. Abundant moderately coarse disseminated crystals commonly concentrated in thin streaks and small patches.
721.3	722.3	Marlstone and mudstone: Light slightly olive gray (7.5Y 7/1-7/2, rare 6/1-6/2), dolomitic to very slightly calcareous. Faintly

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From	To	Description
		laminated and banded. Irregular to fairly regular thick parting; irregular to slightly conchoidal fracture. Fairly abundant fine to thin, buff-white to gray-buff silty-crystalline layers. Some moderately coarse disseminated crystals near base.
722.3	723.3	Oil shale: Light to medium olive green and rare medium to dark olive gray (7.5 to 10Y 6/2-4/2, rare 7/2 upper part; rare 5Y 4/2-3/2 in middle), dolomitic. Faint to some moderately distinct streaked bedding. Slightly irregular thick parting; slightly hackly fracture. Abundant fine buff-white to tan crystalline blebs. Sample of oil shale with buff to tan crystals from 722.9 feet: X-ray - calcite, dolomite, feldspar, illite.
723.3	727.6	Marlstone (lean oil shale in part): Medium to light olive green and greenish gray (7.5Y to 10GY 5/1 and 5/2-6/1 and 6/2, rare 7/1 and 4/2), dolomitic to very slightly calcareous, slightly silty in parts. Faint to some moderately distinct streaked bedding. Irregular thick parting; irregular to slightly conchoidal fracture. Abundant moderately coarse disseminated crystals in upper part. Some fine tan to buff, dense to silty-crystalline streaks and blebs in lower part. Some very irregular fine buff-white biotitic tuff streaks and stringers at 723.4.
727.6	729.3	Marlstone: Buff to light and rare medium olive gray (7.5Y 7/2-6/2, some 8/2 and 6/1, rare 5/2), dolomitic, slightly silty in grayer parts. Faintly banded and laminated. Regular to some irregular, thick to medium parting; slightly irregular and conchoidal fracture. Sample of buff marlstone from 728.3 feet: X-ray - dolomite, quartz, ferroan, illite, calcite, feldspar.
729.3	730.4	Marlstone and some sandy mudstone: Light and some medium olive green and olive gray to buff (10 to 5Y 6/2-7/2, some 5/2, rare 8/2), dolomitic. Faint to some distinct laminae and bands. Regular to some irregular, thick to thin parting; conchoidal and some slightly hackly fracture. Few fine dark olive-gray oil-shale laminae. Sample of light olive-green sandy mudstone from 729.5 feet: X-ray - dolomite, quartz, calcite, feldspar, pyrite, montmorillonite, illite.

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From	To	Description
730.4	731.1	<p>Oil shale: Dark and some medium brownish gray (2.5Y to 10YR 3/2-2/1, some 4/2), dolomitic. Faint streaked bedding; rare distinct brown to tan streaks. Slightly irregular thick parting; slightly irregular and hackly fracture. Some moderately coarse crystals concentrated in fine to thin streaks. A very fine brittle vitreous black organic streak at 730.85. Very sharp regular contact with marlstone below.</p> <p>Sample of very dark brownish-gray oil shale from 731.0 feet: X-ray - dolomite, quartz, feldspar.</p>
731.1	733.0	<p>Marlstone: Light and rare medium olive green in upper part to light and medium neutral gray in lower part (10Y 6/1 and 6/2, rare 5/2 upper part to N6-5 lower part), dolomitic to slightly calcareous. Faintly banded and laminated; distinct fine to thin gray-buff silty to very fine sandy-textured layers and streaks becoming abundant in lower part. Irregular to regular, thick to medium parting; slightly conchoidal to irregular fracture.</p>
733.0	733.4	<p>Marlstone: Buff to light and some medium olive gray (5Y 7/2-6/2, some 5/2 near base), dolomitic. Faint streaked bedding and rare laminae. Fairly regular thick parting; regular fracture. Abundant fine buff-white mineral blebs; a thin buff-white silty-crystalline stringer at 733.3.</p>
733.4	734.3	<p>Oil shale: Dark brownish gray and some medium olive gray (2.5Y 3/2-2/1, some 7.5 to 10Y 4/2-5/2 in upper and lower parts), dolomitic. Faint to some distinct streaked bedding. Slightly irregular thick parting; very slight and rare coarse hackly fracture. Speckled with very abundant grayish-brown to tan crystal blebs. Rare very fine vitreous black organic streaks.</p> <p>Sample of oil shale with abundant fine brown crystal blebs from 733.9 feet: X-ray - dolomite, quartz, calcite, feldspar, pyrite.</p>
734.3	735.1	<p>Oil shale grading to marlstone: Medium olive gray to light greenish gray (5 and 7.5Y 4/2-5/2 in upper part to 10Y and 5GY 6/2-6/1 in lower part), dolomitic to slightly calcareous. Faintly streaked to laminated and banded. Slightly irregular thick parting; slightly irregular to conchoidal fracture. Some fine to small tan dolomite streaks and lenses in upper part. Some thin zones with abundant very fine gray-buff mineral blebs in lower part.</p>

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
735.1	736.9	<p>Marlstone (and mudstone?): Light and rare medium greenish gray in upper part to neutral gray in lower part (10Y and 5GY 7/2-6/1, rare 5/1-5/2 upper part to N6 lower part), very slightly calcareous. Faintly laminated to nearly massive. Fairly regular to irregular, thick to medium parting; fairly regular to irregular and conchoidal fracture. Some thick to fine silty calcareous zones and streaks in upper part. Sharp slightly wavy contact with oil shale below.</p> <p>Sample of light gray mudstone (?) from 736.4 feet: X-ray - quartz, calcite, dolomite, feldspar, illite, montmorillonite, pyrite, ferroan.</p>
736.9	737.6	<p>Oil shale: Dark to medium brownish gray (2.5Y 3/2-4/2, some 2/1). Distorted streaked bedding with <u>very</u> abundant light buff (2.5Y 8/2) silty to earthy blebs and some stringers. Irregular thick to thin parting; irregular hackly fracture.</p> <p>Sample of oil shale with very abundant buff blebs from 737.4 feet: X-ray - calcite, dolomite, montmorillonite, quartz, illite.</p>
737.6	738.5	<p>Oil shale: Light olive gray to buff in upper 0.3 foot (5Y 6/2-7/2, some 8/2), medium greenish to olive gray in lower part (10Y 5/2 and 5/1 to 5Y 5/2), dolomitic to moderately calcareous, slightly silty. Faint streaked bedding to massive. Irregular thick parting; slightly irregular fracture. Abundant very fine white mineral blebs in upper 0.3 foot. Abundant fine disseminated colorless crystals in lower part.</p>
738.5	739.4	<p>Oil shale: Medium to light olive green (7.5 to 10Y 5/2-6/2, some 4/2-4/1 lower part), dolomitic. Faintly streaked to thinly laminated. Fairly regular thick to some thin parting; irregular slight to sharp hackly fracture. Abundant fine to moderately coarse disseminated crystals and fine to thin buff to light gray crystalline layers.</p>
739.4	742.7	<p>Marlstone: Medium to light slightly olive gray (10Y 5/1-6/1), very slightly calcareous, slightly silty. Faintly laminated to massive. Irregular thick to medium parting; irregular to conchoidal fracture. Abundant fine to thin light gray silty to very fine sandy-textured laminae in upper part; some streaks and laminae in lower part. Sharp slightly irregular contact with oil shale below.</p>

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From	To	Description
742.7	743.8	Oil shale: Black to dark brownish gray with some dark to medium olive-gray streaks (2.5Y to 10YR 1/1-2/1, some streaks of 5 to 7.5Y 3/2-5/2), rare satiny luster. Faint very fine streaked bedding with some distinct fine to thin olive-gray streaks. Irregular to fairly regular, thick to rare medium and thin parting; irregular to slightly hackly fracture. Fairly abundant fine crystalline blebs and streaks in lower part. Sample of very dark oil shale with rare fine crystalline blebs from 743.5 feet: X-ray - dolomite, quartz, calcite, feldspar, pyrite.
743.8	744.4	Oil shale: Medium olive gray (7.5 to 10Y 5/2-5/1, some 5Y 4/2 near top), dolomitic. Faint streaked bedding. Irregular thick to medium parting; irregular to conchoidal fracture. Abundant fine disseminated crystals in upper part.
744.4	746.2	Marlstone (lean oil shale): Light and some medium olive gray to buff (5 to 7.5Y 6/2-7/2, some 5/2 and 5/1-6/1), dolomitic. Faintly banded and laminated to streaked. Irregular thick to rare thin parting; conchoidal to irregular fracture. Abundant fine-grained crystalline blebs, streaks, stringers, and thin layers in some zones. Several 1/2- to 1-inch dense light gray to yellowish-buff dolomite (?) lenses at 745.9-746.1.
746.2	747.2	Marlstone (lean oil shale?): Light to medium olive gray (10 to 7.5Y 6/1-5/1, some 6/2-4/2), dolomitic. Faint to rare distinct bands and laminae. Fairly regular to irregular, thick to medium parting; irregular to slightly conchoidal fracture. Abundant fine white to buff mineral blebs and streaks. A 0.1-foot buff-white silty and earthy tuff band with very fine black grains at 746.7; smooth upper contact and irregular wavy lower contact. Sample of buff-white tuff from 746.7 feet: X-ray - K feldspar, calcite, biotite.
747.2	748.5	Marlstone: Buff to light gray (5Y 8/2-6/1, some N6 lower part), dolomitic, slightly silty. Faintly banded and laminated. Regular to irregular, thick to some thin parting; regular to slightly hackly fracture. Abundant fine white mineral blebs and some streaks.
748.5	748.9	"Sandstone" (?): Light brownish gray to some tan (5 to 2.5Y 6/1 and 6/2-7/1 and 7/2, some 6/3 lower part), very calcareous,

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From	To	Description
		massive. Tightly packed fine to 1/2-mm crystals with fine patches and streaks of silty to earthy matrix. Indistinct wavy broken contact with oil shale below. Some fine to rare small cavities.
		Sample of "sandstone" from 748.7 feet: X-ray - calcite, quartz, dolomite, feldspar.
748.9	749.2	Oil shale: Medium to rare dark olive green (10 to 7.5Y 5/2-4/2, rare 3/2). Faint to distinct streaked bedding. Abundant moderately coarse disseminated crystals.
749.2	750.5	Oil shale: Medium and some light olive green (10 to 7.5Y 5/2, some 6/2), dolomitic, slightly silty. Faint streaked bedding and some very faint thin laminae. Irregular parting and fracture. Abundant fine disseminated crystals.
750.5	751.1	Oil shale: Medium to rare light and dark greenish gray (10Y to 5GY 5/1 and 5/2-4/1, rare 6/2 and 3/1), dolomitic. Faint streaked bedding to some fairly distinct laminae. Irregular to regular, thick to thin parting; slightly conchoidal to coarse hackly fracture. Some fine to thick, silty to sandy-textured layers. Some fine disseminated crystals.
751.1	754.1	Claystone and mudstone: Medium to light gray (N5-6, rare 4) and light to medium olive gray (10 to 7.5Y 7/1-5/1 and 5/2), very slightly calcareous. Distinct to faint laminae, bands, and streaks. Irregular to some regular, thick to medium parting; fairly regular to conchoidal and irregular fracture. Sample of slightly silty gray claystone from 753.7 feet: X-ray - K and Na feldspars, dolomite, montmorillonite, illite, calcite.
754.1	755.4	"Sandstone" and claystone: Thick to thin, buff to light olive-gray, fine to fairly coarse crystalline layers (like 748.5-748.9) alternating with neutral to slightly greenish-gray claystone as above.
755.4	756.4	Oil shale: Medium to some light olive green and olive gray (10 to 7.5Y 5/2-4/2 and 4/1, some 6/2), dolomitic to slightly calcareous. Faint streaked bedding. Irregular to fairly regular thick parting; irregular to slightly conchoidal fracture. Abundant very fine disseminated crystals and some crystalline streaks in upper 0.3 foot. A thin dark brownish-gray oil-shale laminae at base.

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From	To	Description
		Sample of olive-gray oil shale from 755.8 feet: X-ray - dolomite, calcite, quartz, feldspar, montmorillonite, illite, pyrite.
756.4	767.6	Siltstone, fine sandstone, and mudstone: Light olive and brownish gray to buff in coarser parts (5 to 2.5Y 6/2 and 6/1-7/2 and 7/1), light to medium slightly olive to neutral gray in finer parts (5 to 7.5Y 6/1-5/1 and N6-5, rare 4), calcareous. Faintly streaked to massive with some medium to very thick banding and rare faintly laminated zones; mostly regular bedding; rare slight cross bedding in lower part. Irregular to some regular thick parting; slightly irregular to some irregular and conchoidal fracture.
		Sample of buff sandstone from 764.5 feet: X-ray - quartz, feldspar, calcite, illite.
767.6	770.0	Marlstone and mudstone: Medium to some light olive gray (7.5 to 10Y 5/1 and 5/2-4/1 and 4/2, some 6/1), very slightly calcareous. Very faint streaked bedding. Irregular to rare regular thick parting; irregular to conchoidal fracture. Light brownish-gray to buff siltstone and fine sandstone at 768.1-768.6.
770.0	777.0	Mudstone, siltstone, and marlstone: Like 756.4 to 770.0.
777.0	781.0	Mudstone, claystone, and siltstone: Medium to light gray (N4-6; slight olive tint in upper part); slightly to moderately calcareous. Faint to moderately distinct, regular to slightly irregular laminae and bands; distinct fine to 1-inch light brownish-gray siltstone and fine sandstone layers becoming abundant in lower foot. Irregular to rare regular thick parting; irregular to conchoidal fracture.
781.0	782.2	Mudstone, siltstone, sandstone, and marlstone: Light slightly brownish-gray to buff mudstone, siltstone, and fine sandstone (2.5Y 6/1-7/1 and 7/2), some thick layers of brownish-gray slightly silty marlstone in lower part (2.5Y 5/1-4/1); moderately to slightly calcareous. Faintly laminated and banded. Fairly regular to irregular thick parting; slightly irregular to irregular fracture.
782.2	783.2	Oil shale grading to marlstone: Tan to brown and some dark brownish gray in upper 0.3 foot (2.5Y 6/3-4/3, some 3/2), medium to light olive green in lower part (7.5 to 10Y 5/2-7/2

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From	To	Description
		and 7/1), dolomitic. Faint streaked bedding and rare bands. Fairly regular to irregular thick parting; slightly irregular and conchoidal fracture. A 1-inch buff calcareous silty to fine sandy-textured layer at 782.6.
783.2	785.8	Marlstone and mudstone: Light to medium greenish to almost neutral gray (10Y to 5GY 6/1 and 6/2-5/1 and 5/2, some 4/1-4/2), dolomitic. Faintly streaked and laminated. Irregular to fairly regular, thick to rare thin parting; slightly irregular to irregular and some hackly fracture. Abundant fine to thin light gray silty layers and streaks. Abundant very fine disseminated pyrite in some parts. Irregular 3/4-inch buff-white earthy biotitic tuff at 785.6.
785.8	787.3	Oil shale: Light to medium olive green (10 to 7.5Y 6/2-5/2, rare 7/2 and 4/2), dolomitic. Faint to fairly distinct streaked bedding and some laminae. Slightly irregular to irregular thick parting; irregular slightly hackly fracture. Very abundant very fine dolomite (?) grains give most of section silty to fine sandy texture. Sample of oil shale with very abundant very fine mineral grains from 785.9 feet: X-ray - dolomite, calcite, quartz, feldspar.
787.3	788.4	Marlstone (lean oil shale): Light to some medium olive gray (7.5Y 6/2-6/1, some 5/2-5/1), dolomitic. Faint streaked bedding and some thin laminae and bands; rare very fine distinct dark oil-shale laminae. Irregular thick parting; irregular to conchoidal fracture. Some very fine dark gray silty streaks in upper part. Some fine gray-buff silty-crystalline layers in lower part.
788.4	789.9	Marlstone and oil shale: Light to medium and rare dark olive gray (7.5 to 10Y 8/1 and 7/2-4/2, rare 3/2), dolomitic in upper part becoming silty and slightly calcareous in lower part. Faint to distinct laminae; some bands in lower part. Fairly regular to irregular, thick to medium parting; slightly irregular to irregular and hackly fracture. Some fine silty-crystalline layers and disseminated crystals in upper part. Some thin to thick, silty to sandy calcareous layers in lower part.
789.9	790.9	Oil shale: Medium to light olive gray (7.5Y 5/2-6/2 and 6/1, rare 5Y 5/2-4/2), slightly to moderately calcareous. Faint

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From	To	Description
		and rare distinct laminae and streaked bedding. Irregular thick to medium parting; irregular to conchoidal fracture. Rare fine gray-buff silty streaks and stringers.
790.9	792.9	Marlstone: Light to some medium olive gray (7.5 to 10Y 8/1-6/1 and 6/2, some 5/1-5/2, rare 4/2), dolomitic. Faint to some distinct laminae and thin bands. Regular thick to some very thin parting; slightly conchoidal to some slightly hackly fracture. Abundant very fine buff to white crystalline blebs and streaks in some zones.
792.9	793.8	Oil shale: Medium to light olive gray and brownish gray (5 to 2.5Y 4/2-6/2), dolomitic to slightly calcareous. Faint to some distinct streaked bedding; faintly laminated in lower 0.3 foot. Irregular thick parting; irregular to slightly conchoidal fracture. Abundant fine gray-buff to tan mineral blebs and streaks in upper part. Few fine to thin irregular buff to slightly reddish-brown dolomite (?) lenses and streaks in middle part. Sample of olive-gray oil shale from 793.3 feet: X-ray - dolomite, apatite, montmorillonite, illite, feldspar.
793.8	794.9	Marlstone: Light and rare medium olive gray to buff white (7.5Y 6/2-9/1, rare 5/2 upper part), slightly calcareous to calcareous. Faintly laminated to thinly banded. Irregular to regular, thick to some thin parting; slightly irregular and conchoidal fracture. Some silty to sandy streaks and thin layers in lower part.
794.9	795.4	Oil shale: Light to some medium olive green and rare olive gray (10 to 7.5Y 6/2, some 5/2, rare 4/2 upper part, rare 5Y 5/2-4/2 lower part), dolomitic. Faint streaked bedding with rare distinct darker laminae. Slightly irregular thick parting; irregular fracture. A 3/4-inch buff silty-textured limestone band in middle. Abundant fine calcite blebs and streaks in lower part.
795.4	796.0	Missing.
796.0	797.0	Oil shale: Medium to light olive green (7.5 to 10Y 5/2-6/1 and 6/2, rare 5Y 5/2), slightly calcareous. Very faintly streaked to faintly laminated. Fairly regular to irregular thick parting; irregular to slightly conchoidal fracture. Abundant fine calcite blebs in upper part. Some fine buff calcareous streaks in lower part.
797.0	798.4	Marlstone: Light and rare medium olive green (10Y 6/2-7/2, rare 5/2), slightly calcareous. Faintly banded and laminated

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From	To	Description
		to streaked. Irregular to fairly regular, thick to medium parting; slightly irregular and conchoidal fracture. Some fine buff calcareous streaks. A 2-inch buff-white biotitic tuff at 798.0 (thickness uncertain because of irregular worn parting surfaces).
		Sample of buff-white biotitic tuff from 798.0 feet: X-ray - K feldspar, biotite.
798.4	800.0	Marlstone and mudstone: Buff to light and rare medium olive gray (7.5 to 5Y 8/2-6/2, rare 5/2-4/2), slightly calcareous to dolomitic. Faintly streaked and banded; rare distinct irregular laminae. Irregular thick parting; slightly irregular to irregular and conchoidal fracture. Some fine calcite blebs and streaks.
800.0	802.5	Oil shale and marlstone: Medium to light olive gray and some buff (5 to 7.5Y 5/2-6/2, some 7/2-8/2, rare 4/2), dolomitic to slightly calcareous. Faint streaked bedding with some bands and laminae. Irregular to slightly irregular thick parting; irregular to slightly conchoidal fracture. A very fine brittle vitreous black organic layer at 800.3. Abundant fine buff-white calcite blebs and streaks in lower part. Irregular 1/2-inch layer of dark brownish-gray to black oil shale at 802.0. A fine gray-buff biotitic tuff layer at 801.5.
802.5	803.5	Oil shale: Brownish-gray to rare black (2.5Y 4/2-2/1, some 5/2, rare 1/1), dolomitic. Faint to moderately distinct streaked bedding; some laminae near top and bottom. Slightly irregular thick parting; slightly irregular and hackly fracture. Abundant fine crystalline streaks and very fine disseminated crystals. Rare very small buff silty lenses. Irregular 1/2-inch buff-white biotitic tuff layer at 803.4.
		Sample of dark brownish-gray oil shale with fine disseminated crystals from 802.9 feet: X-ray - dolomite, calcite, quartz, feldspar, illite.
803.5	804.5	Marlstone: Light and rare medium olive gray to buff (5 to 10Y 6/2-7/2, rare 5/2 upper part), dolomitic to slightly calcareous. Faintly streaked to laminated and banded. Fairly regular to irregular, thick to some thin parting; slightly irregular and conchoidal fracture. Abundant thinly zoned fine buff-white calcite blebs; some fine to rare thin silty-textured calcite layers and streaks. Few very fine buff-white biotitic tuff streaks at 803.65.

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From	To	Description
804.5	804.8	Oil shale: Brownish-gray (2.5Y 5/2, some 4/2). Faintly laminated and streaked. Slightly irregular thick parting; conchoidal fracture.
804.8	805.4	Oil shale: Black to dark brownish gray with some medium brownish-gray streaks (2.5Y 1/1-3/2, some 4/2), dolomitic. Faint to distinct streaked bedding. Slightly irregular thick parting; irregular to some slightly hackly fracture. Abundant fine crystalline streaks and disseminated crystals in lower part. Sample of very dark oil shale from 804.8 feet: X-ray - dolomite, quartz, feldspar, illite, pyrite.
805.4	806.3	Marlstone: Light and some medium olive gray (7.5 to 5Y 6/2, some 7/2 and 5/2), very slightly calcareous to dolomitic. Faintly banded. Fairly regular to irregular, thick to medium parting; slightly conchoidal to some irregular fracture. A thin buff slightly lenticular marlstone layer at top. Some fine gray-buff silty-textured calcite layers and streaks; abundant fine calcite blebs in lower 0.1 foot.
806.3	806.7	Oil shale: Brown to tan and black (2.5Y 4/3 and 4/4-6/3, and 1/1-1/2), dolomitic. Thick brown zones with fine regular to wavy laminae, and fine to thick black zones with very faint streaked bedding. Slightly irregular to "curly," thick to some very thin parting; slightly irregular to hackly fracture. Some thin to fine blebby brown to tan layers, lenses, and streaks in both brown and black parts. Abundant fine disseminated crystals in black oil shale in lower part. Sample of finely laminated brown oil shale from 806.4 feet: X-ray - dolomite; trace feldspar, montmorillonite. Sample of fine blebby tan streak in black oil shale from 806.5 feet: X-ray - dolomite, feldspar, calcite, pyrite, illite.
806.7	807.0	Oil shale: Dark to medium brownish gray and some black (2.5Y 2/1-4/2, some 1/1), dolomitic. Moderately distinct very fine to rare thin laminae. Regular thick to rare thin parting; very slight hackly fracture. Very abundant fine crystalline streaks in upper 2 inches. Sample of oil shale with very abundant fine crystalline streaks from 806.9 feet: X-ray - calcite; some quartz, feldspar, dolomite, pyrite.

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From	To	Description
807.0	809.0	Marlstone and mudstone: Light and rare medium olive gray to buff (7.5Y 6/2 and 6/1-8/2, rare 5/2-4/2 upper part), slightly to moderately calcareous. Faintly banded and laminated to streaked. Irregular to regular, thick to thin parting; slightly irregular and conchoidal to rare hackly fracture.
809.0	809.9	Oil shale: Light to medium olive gray (7.5 to 5Y 6/2-4/2), dolomitic. Faint streaked bedding; some distorted zones. Irregular thick parting; slightly conchoidal to irregular fracture. Some fine buff streaks, blebs, and stringers in upper part.
809.9	811.1	Oil shale: Medium to dark brownish gray and some black (2.5Y 4/2-2/2, some 4/3 and 1/1 in lower part), dolomitic. Faint to some distinct laminae; rare small overturned folds and truncated laminae. Slightly irregular to regular thick parting; irregular to fairly regular fracture. Abundant very fine disseminated pyrite. Thin lenticular dark grayish-brown silty biotitic (?) tuff (?) stringers at top and at 810.8. Sample of small dark tuff (?) lens from 809.9 feet: X-ray - K feldspar, trace biotite.
811.1	812.6	Oil shale and marlstone: Light and some medium brownish gray and olive gray (2.5 to 5Y 6/2-6/1, some 5/2-4/2 upper part), slightly calcareous. Faint streaked bedding; some laminae near top. Irregular parting and fracture. Some very fine buff calcite streaks and blebs.
812.6	815.0	Oil shale: Light brownish gray (2.5Y 6/2), slightly calcareous. Very faintly streaked to massive. Irregular thick parting; very irregular coarse hackly fracture. (813.6-814.1 missing) Sample of massive light brownish-gray oil shale from 813.4 feet: X-ray - dolomite, quartz, calcite, feldspar, montmorillonite, illite.
815.0	816.7	Oil shale: Medium to dark and rare light brownish gray and olive gray (2.5 to 5Y 5/2-3/2, rare 2/1 and 6/2), dolomitic. Distinct to faint streaked bedding and some laminae. Irregular to fairly regular thick parting; irregular and some slight to coarse hackly fracture. Some thin to fine buff marlstone lenses, streaks, and stringers. Rare fine disseminated crystals and crystalline streaks.
816.7	818.0	Marlstone and mudstone: Buff and some light to medium olive gray (5 to 7.5Y 7/2-8/2 and 8/1, some 6/2-5/2 in upper part),

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From	To	Description
818.0	818.5	<p>slightly to moderately calcareous. Faintly laminated and banded to streaked. Regular to irregular; thick to thin parting; slightly conchoidal to irregular and some hackly fracture. A thin zone of fine silty biotitic layers at 817.5.</p> <p>Oil shale: Light to medium olive gray (7.5 to 5Y 6/2-5/2), dolomitic to very slightly calcareous. Very faint streaked bedding. Irregular thick parting; very irregular slight to coarse hackly fracture; slightly unctuous. Abundant very fine buff-white calcite streaks and blebs at 818.1-818.2.</p> <p>Sample of light olive-gray oil shale from 818.3 feet: X-ray - dolomite, quartz, montmorillonite, calcite, feldspar, illite.</p>
818.5	818.9	<p>Oil shale: Medium to dark olive gray and brownish gray (5 to 2.5Y 5/2-3/2, rare 2/1-1/1 lower part), dolomitic to very slightly calcareous. Faint to moderately distinct streaked bedding and some fine laminae. Irregular thick parting; irregular to very slight hackly fracture. Abundant fine tan to buff blebby streaks and laminae in lower half.</p>
818.9	819.4	<p>Marlstone: Light and rare medium olive gray (7.5Y 6/2 and 6/1-7/2 and 7/1, some 5Y 6/2-5/2), slightly calcareous. Faint laminae and bands. Regular to irregular thick parting; slightly conchoidal fracture. Some streaks and zones of abundant very fine calcite blebs. A 3/4-inch buff to tan, earthy and silty dolomitic marlstone layer at top; fine blebby layer with some ostracods at base.</p>
819.4	821.1	<p>Marlstone (or claystone?): Medium to light slightly olive gray (7.5 to 10Y 6/1-5/1), very slightly calcareous, slightly silty in parts. Very faintly banded and laminated to streaked. Irregular thick to medium parting; irregular to slightly conchoidal fracture; very slightly unctuous in upper part. Abundant <u>very fine</u> disseminated pyrite in lower part. Few very fine biotitic (?) streaks near top.</p> <p>Sample of marlstone from 820.3 feet: X-ray - dolomite, quartz, analcite, calcite, feldspar, pyrite.</p>
821.1	821.6	<p>Oil shale: Medium to dark olive gray and brownish gray (5 to 2.5Y 5/2-3/2, rare 2/1), dolomitic to slightly calcareous. Faint to moderately distinct streaked bedding. Irregular thick parting; irregular to slightly hackly fracture. Abundant very fine calcite blebs and streaks in lower part.</p>

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Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		Sample of dark brownish-gray oil shale with very fine calcite blebs and streaks from 821.5 feet: X-ray - calcite, dolomite, quartz, analcite, feldspar, montmorillonite, illite.
821.6	822.3	Mudstone and marlstone: Light and rare medium olive gray to buff (5 to 7.5Y 6/2-7/2, rare 5/2), slightly calcareous. Faintly streaked and laminated. Irregular to regular thick parting; slightly irregular fracture. Abundant fine gray-buff silty streaks. Abundant very fine calcite blebs from 821.8 to 822.1. Rare very fine biotitic streaks.
822.3	824.1	Marlstone and mudstone: Light slightly olive gray to buff (10 to 7.5Y 6/1-7/1 and 7/2, some 8/1 and 8/2), slightly calcareous. Faintly laminated and banded in upper 0.3 foot; very faintly streaked to massive in other parts. Irregular parting and fracture. Some very fine rounded light to medium brownish-gray and dark gray pebble inclusions mostly in lower part.
824.1	824.6	Oil shale: Tan and brown to some medium and rare dark brownish gray (2.5Y 6/3-5/3, some 4/2, rare 3/2), slightly calcareous to dolomitic. Faint slightly wavy streaked bedding and very fine laminae; cut by one or more thick to fine vermiform stringers of gray siltstone and buff marlstone; some sections show gradational bleaching lateral to thick stringer. Regular flat to wavy thick parting; irregular fracture.
824.6	825.1	Oil shale: Medium to dark brownish gray and some black (2.5Y 4/2-2/1, some 5/2 and 1/1), dolomitic. Faint to distinct, very fine to thin, wavy to flat laminae. Regular wavy to flat, thick and some thin parting; slightly hackly fracture. Thin vermiform buff to gray-buff marlstone stringer continues from above to 824.9.
825.1	826.7	Marlstone, mudstone, and siltstone: Light and rare medium olive-gray marlstone and mudstone (7.5 to 10Y 6/2-7/2, rare 5/2) and buff siltstone (5 to 2.5Y 7/2-8/2); dolomitic to slightly calcareous marlstone and mudstone, very calcareous siltstone. Faintly streaked marlstone and mudstone with fine to very thick siltstone streaks, stringers, and layers becoming very abundant in lower part. Irregular thick parting; slightly conchoidal to irregular fracture. Few fine pebbly sandstone streaks at 825.4. A 1/2-inch dense light gray cherty nodule at 825.5.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
826.7	827.8	<p>Oil shale: Medium to light and rare dark olive gray (5 to 7.5Y 5/2-6/2, some 4/2, rare 3/2-2/1), slightly calcareous. Faint to distinct streaked bedding. Fairly regular to irregular thick parting; irregular and some slightly hackly fracture. Some thin buff siltstone stringers near top; common silty zones and streaks in other parts--some with abundant very fine muscovite and biotite flakes.</p> <p style="padding-left: 40px;">Sample of light olive-gray silty oil shale with very fine mica from 827.3 feet: X-ray - dolomite, calcite, quartz, feldspar, montmorillonite, biotite.</p>
827.8	828.9	<p>Marlstone and oil shale: Light to some medium and rare dark olive gray (5Y 7/2-6/2, some 5/2, rare 4/2-3/2), slightly calcareous. Very faint to rare distinct streaked bedding. Slightly irregular thick parting; irregular fracture. Slightly silty with some very fine mica.</p>
828.9	830.3	<p>Oil shale: Medium to dark olive gray and brownish gray (5 to 2.5Y 5/2-3/2, rare 2/2-1/1), slightly calcareous. Faint to distinct streaked bedding. Irregular to fairly regular thick parting; slight to rare coarse hackly fracture. Abundant fine disseminated crystals and crystalline streaks. A 1/2-inch brownish-gray prismatic calcite layer with fine white to pale yellow rims at 829.6 and a 1-inch layer at 829.8-829.9. Rare fine buff marlstone lenses and streaks.</p> <p style="padding-left: 40px;">Sample of thin calcite layer from 829.6 feet: X-ray - calcite; trace dolomite, quartz.</p> <p style="padding-left: 40px;">Sample of medium to dark oil shale with abundant fine disseminated crystals from 830.1 feet: X-ray - dolomite, calcite, quartz, feldspar, montmorillonite, illite, pyrite.</p>
830.3	831.0	<p>Oil shale: Olive gray to olive green (5 to 10Y 5/2), thin medium to dark brownish-gray band (2.5Y 4/2-3/2) at 830.4, dolomitic to slightly calcareous. Faint thin to fine bands and laminae. Irregular thick parting; slightly irregular and conchoidal fracture. A 1/2-inch white to light gray very biotitic tuff band at top with fine buff silty to blebby marlstone layers above and below.</p> <p style="padding-left: 40px;">Sample of olive-gray to olive-green oil shale from 830.6 feet: X-ray - dolomite, calcite, quartz, feldspar, montmorillonite, illite, analcite.</p>
831.0	833.2	<p>Marlstone and mudstone: Light to some medium slightly olive and greenish gray (7.5Y to 5GY 6/1-7/1, some 5/1 lower part),</p>

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from U.S. Bureau of Mines Wyoming Corehole No. 6

From	To	Description
		slightly calcareous. Faintly streaked and mottled to irregularly laminated. Irregular parting and fracture. Some small oolitic patches and streaks; thin oolitic limestones at 832.6 and 832.8.
833.2	834.0	Mudstone: Buff (7.5 to 5Y 7/2 and 7/1-8/2 and 8/1), slightly calcareous. Very faintly streaked to massive. Irregular thick parting; irregular to conchoidal fracture. Some silty and rare oolitic streaks and patches. Sample of very light buff massive mudstone from 833.7 feet: X-ray - dolomite, quartz, calcite, feldspar, analcite, montmorillonite.
		Bottom of core.

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