

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

Core samples from Garrett Research and Development Company, Inc., Wyoming
 No. 1 Corehole drilled in NW1/4SE1/4SE1/4 (1,361 ft. N 53° W of SE
 corner) of sec 7, T 16 N, R 99 W, Sweetwater County, Wyoming

Elevation: 7,607 feet (unspecified reference)

Described interval: 150.0 to 822.7 feet

From	To	Description
150.0	170.0	Siltstone and mudstone: Light to medium greenish gray and olive gray, slightly calcareous in parts. Faintly bedded with thick gradational color zoning. Some fine black carbonaceous streaks and specks. Occasional yellowish-tan to brownish-gray weathered zones and patches. Tight very light gray to light brownish-gray siltstone and very fine sandstone at 157.8-159.0. (0.7 foot missing) (Grab sample of olive-gray mudstone gave no oil in test tube)
170.0	178.0	Mudstone and siltstone (weathered): Yellowish buff to bright orange tan, sandy in parts. Faintly streaked; some faint laminae in lower part. Few unweathered brownish-gray to olive-gray zones, patches, and vertical "stringers?". (0.7 foot missing)
178.0	182.2	Mudstone: Medium to light olive gray becoming interbedded with light neutral to slightly brownish gray, sandy in upper part. Very faintly bedded to banded and laminated. Wavy vertical weathered "stringer" as above from top to 180.3. (0.2 foot missing)
182.2	186.4	Mudstone: Light slightly brownish gray and rare gray green, slightly calcareous. Very faint streaked bedding to faint slightly irregular laminae. Buff to light brownish-gray sandy limestone at 185.8-186.0 and 186.3-186.4.
186.4	192.0	Mudstone and siltstone: White to gray buff and light to medium olive gray, slightly calcareous, sandy in lower part. Faintly mottled to distinctly variegated and zoned; some very faint streaked bedding in lower part. Upper part appears to consist of very indistinctly defined diagenetic breccia fragments.
192.0	194.4	Siltstone grading to mudstone and claystone: Light to medium and rare dark slightly brownish gray and rare olive gray. Faint streaked bedding and some irregular faint to distinct banding. Some carbonaceous plant trash in lower part.
194.4	214.0	Mudstone, siltstone, and very fine sandstone: White to some medium gray and light to medium olive gray in very thick gradational zones (white mostly in finer textured

By L. G. Trudell, completed July 20, 1971

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Laramie Energy Research Center, Laramie, Wyoming

September 14, 1971

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Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		rock and olive gray in coarser rock), slightly calcareous. Faint streaked bedding and rare laminae; some very thick massive zones in white sections.
214.0	218.0	Mudstone, siltstone, and sandstone: Light to medium olive gray and rare white. Faintly variegated to massive. Some broken core. (1.5 foot missing)
218.0	229.5	Mudstone, siltstone, and sandstone: Light to medium olive gray and some gray buff to gray. Faintly variegated and mottled. (1.9 foot missing)
229.5	258.0	Sandstone and some siltstone: Light to some medium slightly olive and brownish gray. Faint streaked bedding; occasional slight crossbedding. Occasional carbonaceous streaks below 235.0. (0.8 foot missing)
258.0	274.0	Siltstone and mudstone: Light to medium slightly olive gray, some very thick gray-buff to white zones in upper part and few 1- to 2-inch zones in lower part. Light to medium olive-gray slightly friable sandstone and sandy mudstone at 263.3-264.0.
274.0	279.0	Siltstone, mudstone, and claystone: Light to medium gray (some very slight brownish tint). Faint streaked bedding.
279.0	283.0	Mudstone and siltstone: Light to medium gray green, some light gray.
283.0	284.5	Like 274.0-279.0
284.5	286.5	Sandstone: Buff to medium olive gray. Slightly friable in lower part.
286.5	290.0	Sandstone and sandy mudstone: Light to some medium gray (common slight green to olive tint).
290.0	295.0	Siltstone and sandy mudstone: Light to medium slightly greenish and olive gray.
295.0	296.0	Siltstone: Gray buff. Massive to faintly streaked. A thin brownish-black coaly shale stringer at 295.6 and a 1-1/2-inch band at base.
296.0	298.1	Sandstone and siltstone: Light slightly brownish gray to gray buff. Some carbonaceous streaks and specks near top.
298.1	299.1	Sandstone: Light to medium slightly brownish and olive gray, fine to medium grained, massive.
299.1	304.5	Sandstone and sandy siltstone: Light slightly brownish gray. Faint streaked bedding.
304.5	312.0	Sandstone and sandy mudstone: Light to medium slightly brownish and olive to neutral gray. Faint streaked bedding. Few zones with abundant fine buff specks.

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From	To	Description
312.0	345.5	Siltstone and sandstone: Light to medium slightly olive and brownish gray and some buff. Faint streaked bedding. Rare carbonaceous streaks. Occasional zones with scattered dark gray pyritic blebs (commonly make rusty spots on outside of core).
345.5	348.0	Sandstone: Light slightly olive gray to buff white, fine to medium grained. Faint streaked bedding.
348.0	362.0	Sandstone and sandy siltstone: Light slightly olive and brownish gray. Faint very regular streaked bedding. Some pyritic blebs in upper part. Rare carbonaceous streaks in lower part.
362.0	380.0	Sandy siltstone and sandstone: Light slightly olive gray to gray buff. Faint streaked bedding; rare slight crossbedding. Rare carbonaceous streaks and specks.
380.0	384.0	Sandstone: Light gray green, fine grained. Faint streaked bedding. Rare carbonaceous streaks and specks. Some gray-buff siltstone in lower part.
384.0	385.6	Sandstone and sandy siltstone: Gray buff, fine grained. Faintly streaked to massive with some very faint very fine laminae.
385.6	386.0	Missing.
386.0	388.0	Siltstone: Gray buff to light slightly brownish gray, sandy in upper part. Faintly streaked and laminated.
388.0	390.0	Siltstone: Gray buff to light gray becoming laminated with light brownish gray in lower part, commonly sandy. Faintly streaked to laminated. Rare very fine carbonaceous streaks.
390.0	418.7	Siltstone and some mudstone: Gray buff to light and rare medium gray and brownish gray, sandy in parts. Faint to some moderately distinct laminae and bands; some very thick faintly streaked to massive zones. A 1-inch band of very dark brownish-gray carbonaceous shale at 402.2 and a fine layer at 404.1.
418.7	419.7	Oil shale: Light to medium brownish gray, slightly calcareous. Faintly laminated. A 1-inch piece of friable gray-buff sandstone at 419.2 appears to be out of place.
419.7	420.7	Oil shale: Olive gray, medium to dark brownish gray in lower inch; very slightly calcareous. Faintly laminated to very faint streaked bedding. Some thin shaly parting. A very fine brown ostracodal layer at 420.1 and a fine tan dolomite layer at 420.2.

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From	To	Description
420.7	421.7	Oil shale: Light to medium brownish gray, calcareous. Very faint laminae and streaked bedding.
421.7	422.7	Claystone: Light slightly brownish gray, slightly silty, slightly calcareous. Very faint streaked bedding. Very rare ostracods.
422.7	424.5	Oil shale: Light to medium and rare dark brownish gray, moderately to slightly calcareous. Faint laminae and streaked bedding. Some very fine carbonaceous specks. A very small tan earthy nodule at 423.7 feet.
424.5	426.7	Mudstone: Light to some medium brownish gray, slightly calcareous. Faintly streaked and laminae; some distinct gray-buff laminae and streaks.
426.7	428.1	Oil shale: Medium to light brownish gray, slightly calcareous. Faintly laminated and streaked. Rare very fine tan to buff, earthy and silty layers and streaks (some ostracods in layer near top). Some very small clams on parting surfaces at base.
428.1	428.5	Mudstone: Medium to light brownish gray, slightly calcareous. Faint streaked bedding. A thin irregular gray-buff silty layer at 428.2; some fine silty to sandy streaks near base. A 1/2-inch round massive brown nodule near base.
428.5	428.9	Sandstone: Medium gray in upper part to very light gray buff in lower part, calcareous. Variegated to massive; some brownish-gray mudstone streaks and stringers. Rare fine vitreous black organic specks.
428.9	431.1	Siltstone and mudstone: Light and some medium gray to white, very slightly calcareous in upper part. Faint streaked bedding with some moderately distinct very fine regular to slightly crossbedded laminae.
431.1	432.3	Mudstone and claystone: Light slightly olive gray to white. Very faintly bedded to massive.
432.3	432.5	Mudstone: Brownish gray to gray buff, dolomitic. Faintly streaked to thinly laminated. Some very fine carbonaceous flecks.
432.5	434.8	Claystone: Light slightly brownish to slightly olive gray. Massive to very faintly streaked. Irregular thick to thin parting; irregular coarse to slight hackly fracture; slightly unctuous.
434.8	437.0	Oil shale: Medium to light brownish gray, moderately to slightly calcareous. Faint streaked bedding and

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Core samples from Garrett Research and Development Company, Inc.,
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From	To	Description
		very fine laminae. A thin tapered very light gray-buff silty layer at 435.0. (435.6-436.0 missing)
437.0	438.0	Oil shale: Medium and some light brownish gray, calcareous. Moderately distinct to faint very fine laminae. Rare very small brown earthy blebs and lenses. Rare ostracods in lower part.
438.0	438.8	Oil shale: Medium and rare dark brownish to olive gray, calcareous. Faint very fine laminae and streaked bedding. Abundant very fine ostracodal laminae in upper part.
438.8	440.1	Mudstone (oil shale?): Medium brownish gray, slightly calcareous. Very faint streaked bedding. Rare very fine gray-buff laminae and streaks. Rare very fine tan earthy blebs in upper part.
440.1	440.5	Oil shale (claystone): Dark grayish brown, non-calcareous. Massive to very faintly streaked. Irregular medium to thick parting; irregular coarse hackly fracture; slightly unctuous. Sample of dark grayish-brown oil shale from 440.2 feet: X-ray - K and Na feldspars, montmorillonite.
440.5	442.7	Mudstone: Like 438.8-440.1. A thin irregular dark grayish-brown oil-shale layer at 442.1. Some light gray to olive-gray mudstone and claystone bands in lower 3 inches.
442.7	453.2	Siltstone and mudstone: White and some slightly brownish to neutral gray. Faint to distinct very fine laminae and stringers; distorted in upper part becoming very contorted (some vertical) with common displacements below 447.0. (444.5-446.0 missing)
453.2	456.0	Siltstone and mudstone: As above with some thick distorted and displaced zones of light to medium brownish-gray claystone.
456.0	460.0	Sandstone: Gray buff to white, fine grained, massive. Rare fine brown inclusions.
460.0	462.0	Sandstone and siltstone: White to gray. Moderately distinct to faint laminae with common small displacements (inclined about 45 degrees in upper part). A very thin layer of abundant fine brown to dark brownish-gray oil-shale inclusions in upper part.
462.0	465.0	Siltstone, mudstone, and rare claystone: White to gray and some medium to rare dark brownish gray. Faint

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Core samples from Garrett Research and Development Company, Inc.,
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From	To	Description
		to fairly distinct very distorted and displaced to regular laminae and streaked bedding.
465.0	468.0	Siltstone and sandstone: White to light gray. Moderately distinct to faint very distorted and displaced to regular streaked bedding.
468.0	474.5	Sandstone: White to gray buff, fine grained. Massive to very faintly streaked. Rare fine brown inclusions.
Footages from 474.5 to 496.0 remeasured		
474.5	479.0	Siltstone: White to light and some medium slightly brownish gray. Faint to distinct, regular to some distorted and displaced laminae and streaked bedding. Light gray claystone and mudstone at 474.9-475.2.
479.0	480.4	Mudstone and claystone: Very light gray. Faint streaked bedding to massive. Slightly unctuous. Very abrupt change to gray-buff claystone at base.
480.4	481.7	Claystone: Gray buff. Very faintly streaked. Irregular thick to thin parting; irregular to coarse hackly fracture; unctuous. Thin light brownish-gray silty layers at top and bottom.
481.7	484.0	Mudstone: Light to medium brownish gray, slightly to moderately calcareous. Faint laminae and streaked bedding. A thin very light gray silty layer at 481.9. Abundant ostracods near base.
484.0	485.3	Oil shale: Medium to rare dark brownish gray, calcareous. Faint very fine laminae and streaked bedding. Abundant fine ostracodal layers and streaks.
485.3	492.0	Mudstone: Medium to light brownish gray, calcareous. Faint streaked bedding. Some scattered ostracods. Massive dark brownish-gray oil shale bands at 486.9-487.3 and 489.9-490.1. Sample of brownish-gray mudstone from 485.8 feet: X-ray - quartz, calcite, feldspar, pyrite, illite, dolomite.
492.0	493.0	Oil shale: Medium brownish gray, calcareous. Faint streaked bedding and some laminae. Rare ostracods.
493.0	493.9	Oil shale: Medium to some dark brownish gray, calcareous. Faint streaked bedding and very fine laminae. Medium to thin shaly parting in lower part. Rare ostracods.
493.9	498.6	Oil shale: Medium brownish gray, a thin dark layer at 495.6 and a 1-1/2-inch dark layer at 497.8; moderately

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From	To	Description
		to slightly calcareous. Faint streaked bedding and some very fine laminae. Rare ostracods. A thin gray silty layer at 494.8. Gray-buff to white silty claystone at 496.6-496.8. A thin prismatic calcite layer at base.
498.6	500.9	Mudstone and marlstone (oil shale in part): Light to medium brownish gray, calcareous. Faint streaked bedding and rare very fine laminae. Fairly abundant small planispiral snails (<i>Gyraulus?</i>). A thin dense gray to light brownish-gray layer at 900.1.
500.9	501.3	Limestone: Light to medium grayish brown. Massive to faintly streaked. Dense; conchoidal fracture. A fine light gray earthy and silty stringer at 501.2.
501.3	502.2	Oil shale: Light to some dark brownish to slightly olive gray, calcareous. Fairly distinct irregular laminae and streaks with abundant small irregular dense dark brownish-gray limestone nodules, blebs, and lenses. (Correlates with 313.1-313.9 in Washakie Basin Corehole No. 1)
502.2	502.8	Oil shale: Medium to some light brownish gray, calcareous. Faint streaked bedding to fairly distinct very fine laminae. Some <i>Gyraulus</i> . Very rare fish scales.
502.8	505.6	Mudstone: Medium to light brownish gray, calcareous. Faint laminae and streaked bedding. Rare ostracods and fish scales. A thin buff-white earthy layer at 504.4.
505.6	506.0	Missing.
506.0	510.6	Mudstone: Medium to some light brownish to slightly olive gray, rare dark brownish gray near base; calcareous. Faint laminae and streaked bedding. very rare fine buff earthy blebs. Rare ostracods. Very rare fish scales. A 1-1/2-inch gray-buff to light gray claystone layer at 507.9 and a very thin layer at 510.0.
510.6	510.9	Missing?
510.9	514.5	Oil shale: Dark brownish gray to black, some satiny luster, dolomitic. Faint streaked bedding and very fine laminae. Thick to thin shaly and some papery parting. Thin white to light gray silty tuff layers at 511.4 and 513.8; rare fine layers and streaks elsewhere. (Correlates with 322.8-326.8 in Washakie Basin Corehole No. 1)

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From	To	Description
514.5	517.0	Oil shale: Medium to some light brownish gray, calcareous. Faint streaked bedding and some very faint laminae. Rare Gyraulus in lower part.
517.0	524.3	Oil shale: Brownish gray (some very slight olive tint), moderately to slightly calcareous. Faint streaked bedding and very fine laminae. Light gray tight silty tuff with analcite grains at 518.0-518.2; light gray to white slightly friable silty and earthy tuff at 522.8-522.9; thin tuffs at 519.0, 519.3, and 522.0. Rare fine light brownish-gray earthy lenses in lower part.
524.3	526.8	Oil shale: Grayish brown, calcareous. Faint streaked bedding and very fine laminae. Abundant ostracods. A very thin white tuff layer at 525.9 and a 1-inch light gray biotitic band at 526.6. Sample of oil shale from 525.5 feet: X-ray - calcite, quartz, clinoptilolite, dolomite, feldspar, illite. Sample of light gray biotitic tuff from 526.6 feet: X-ray - calcite, feldspar, mordenite, mica.
526.8	528.1	Oil shale: Medium to rare dark brownish gray, calcareous. Faint very fine laminae. Common very fine tan to buff streaks in lower part. A fine light gray biotitic layer at 527.1.
528.1	530.1	Oil shale: Medium to some dark brownish gray and grayish brown, calcareous. Faint to some moderately distinct very fine laminae. Abundant very fine tan to buff earthy streaks and laminae in upper part. Rare ostracods.
530.1	530.3	Missing.
530.3	533.1	Oil shale: Very dark to some medium brownish gray, dolomitic to slightly calcareous. Faint to moderately distinct very fine laminae. Thick to thin shaly parting. A 3/4-inch light gray to white silty and earthy tuff at 530.7 and a 1/2-inch layer at 531.6. Sample of very dark oil shale from 531.1 feet: X-ray - quartz, montmorillonite, illite, calcite, pyrite, feldspar, dolomite.
533.1	535.2	Oil shale: Medium to rare light grayish brown and brown, some dark brownish gray in upper part, calcareous. Faint very fine laminae and streaked

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From	To	Description
		bedding. Some ostracods in lower part.
535.2	538.0	Sample of brown oil shale 534.8 feet: X-ray - quartz, magnesium calcite, pyrite. Oil shale: Medium and rare dark brownish gray, slightly calcareous to dolomitic. Faint streaked bedding and very fine laminae. Medium to thin shaly parting. Rare ostracods. Very rare small fairly dense brown nodules. A thin light gray biotitic tuff layer at 537.8. (536.6-537.0 missing?) Sample of thin light gray biotitic tuff from 537.8 feet: X-ray - calcite, analcite, feldspar, biotite, pyrite.
538.0	541.4	Oil shale: Medium to some light grayish brown and brownish gray, calcareous. Faint to moderately distinct very fine laminae. Abundant very fine buff earthy streaks and laminae. Medium to thin shaly parting. Sample of oil shale with very fine buff earthy streaks and laminae from 540.9 feet: X-ray - quartz, aragonite, calcite, analcite, dolomite.
541.4	541.5	Missing?
541.5	544.5	Marlstone (oil shale?): Medium to rare dark slightly olive gray interlaminated to zoned with grayish brown to tan, calcareous. Faint to moderately distinct very fine to some thin laminae. Regular thick to some thin parting. Rare to abundant very fine buff streaks. Sample of gray marlstone from 542.7 feet: X-ray - quartz, calcite, analcite, feldspar, dolomite, pyrite.
544.5	545.5	Oil shale: Brownish gray, calcareous. Faint <u>very</u> fine laminae and streaked bedding. Abundant very fine buff streaks.
545.5	545.8	Missing?
545.8	548.7	Oil shale: Medium to some dark brownish gray to brown, calcareous. Faint <u>very</u> fine laminae and streaked bedding in thick lighter and darker, grayer and browner zones. Shaly to papery parting in some dark zones. Abundant very fine buff to tan streaks.

Note: Footage marks from 548 to 568 are not consistent with box labels or core markers.

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From	To	Description
548.7	549.7	Oil shale: Grayish brown, calcareous. Faint very fine laminae. Regular thick to some thin parting. Abundant very fine buff streaks.
549.7	551.3	Oil shale: Medium to very dark brownish to slightly olive gray, calcareous to dolomitic. Faint very fine laminae and streaked bedding. Medium to very thin shaly parting. Some very fine buff streaks. A 1-1/2-inch light to medium gray silty tuff at 550.6 (some biotite in lower part) and a 1/2-inch band at 551.0.
551.3	551.5	Marlstone: Tan, dolomitic. Very faintly bedded. Some oolites in upper half. Smooth contacts.
551.5	552.6	Oil shale: Medium and some dark slightly olive to brownish gray, slightly dolomitic to moderately calcareous. Faint very fine laminae and streaked bedding. Shaly parting. Abundant ostracods. Rare fine gray to gray-buff silty layers and streaks.
552.6	553.6	Oil shale: Medium and some dark brownish gray to reddish brown, dolomitic to slightly calcareous. Faint streaked bedding and <u>very</u> fine laminae. Thin to medium shaly parting. Some ostracods. Rare very fine gray silty to blebby layers. Sample of dark reddish-brown oil shale from 552.9 feet: X-ray - quartz, magnesium calcite, analcite, feldspar, dolomite, illite.
553.6	554.8	Oil shale: Medium and rare dark brownish gray, some neutral gray in upper part, dolomitic to slightly calcareous. Faint very fine laminae. Rare fine dense gray silty layers. Rare very fine buff streaks.
554.8	555.8	Oil shale: Medium to some dark brownish gray and grayish brown (commonly slightly reddish), dolomitic. Faint very fine laminae and streaked bedding. Some very fine buff streaks.
555.8	557.0	Oil shale: Medium to dark brownish gray, calcareous. Faint very fine laminae marked by very abundant very fine buff streaks. Shaly to some papery parting. A very thin pinch-and-swell light gray silty layer with some biotite at 556.9.
557.0	557.9	Oil shale: Dark to medium brownish gray. Rubble; length uncertain.
557.9	559.0	Oil shale: Medium brownish gray and olive gray, dolomitic. Very faint streaked bedding. A thin gray silty

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From	To	Description
		pyritic lamina at 558.3. One-inch buff marlstone layers at 558.4 and 558.9.
559.0	561.4	Mudstone: Medium to light olive gray, dolomitic. Faintly streaked to massive. Some irregular thin to 1-inch, medium to light brownish-gray dolomite layers with gradational boundaries. Sample of light olive-gray mudstone from 559.7 feet: X-ray - quartz, illite, dolomite, analcite, feldspar, pyrite.
561.4	562.0	Algal dolomite: Buff to grayish brown and some light to medium gray. Distinct to faint wavy laminae and streaks. Some fine irregular fractures filled with gray sparry calcite in upper 0.1 foot. Becoming oolitic in lower inch.
562.0	564.0	Oil shale: Medium and rare dark brownish gray (common slight olive tint), dolomitic to slightly calcareous. Faint streaked bedding and very fine laminae. Regular thick to thin parting. Some ostracods in upper part.
564.0	564.6	Oil shale: Medium to dark grayish brown, slightly to moderately calcareous. Faint very fine laminae. Regular thick to medium parting. A fine buff-white silty layer at 564.2.
564.6	567.9	Oil shale: Medium brownish to olive gray, some grayish brown in middle part; calcareous. Faint very fine laminae. Regular thick to very thin parting. Rare very fine gray calcite (?) laminae in lower part. Rare very fine buff earthy to chalky streaks and laminae. Sample of oil shale with some very fine buff earthy laminae and streaks from 567.0 feet: X-ray - calcite, quartz, aragonite, analcite, dolomite, pyrite, illite.
567.9	568.9 ^{1/}	Oil shale: Medium to dark brownish gray, slightly calcareous. Faint very fine laminae and streaked bedding. Regular shaly to some papery parting. Rare very fine prismatic calcite streaks.
568.9	569.9	Dolomite: Buff to tan and some brownish gray. Moderately distinct to faint, slightly wavy to regular laminae and streaks; a 2-inch irregular nodular massive layer in middle. Some thin to fine

^{1/} See note explaining sample depths at end of description

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From	To	Description
		sparry calcite streaks in upper part. A 1/2-inch very light gray to white slightly silty band at top. A 0.1-foot medium to dark brownish-gray oil-shale band at 569.6 with a thin zone of abundant flat buff oolites in middle.
569.9	573.0	Oil shale: Medium and rare dark brownish gray to reddish brown, moderately to slightly calcareous. Faint very fine laminae. Regular thick to rare thin parting. A very irregular thick vertical gray mudstone stringer with flat buff oolites in upper 0.4 foot; some very thin to fine discontinuous vermiform stringers (without oolites) in other parts. Abundant nearly obliterated ostracods in upper part. Rare very fine buff earthy streaks. Sample of gray mudstone stringer from 570.1 feet: X-ray - quartz, calcite, analcite, feldspar, dolomite, illite, montmorillonite, pyrite.
573.0	574.0	Oil shale: Medium to dark brownish gray, slightly calcareous to dolomitic. Faint very fine laminae. Regular thick parting. A very thin gray silty biotitic stringer at 573.1. A very irregular thin gray mudstone stringer at 573.3. Rare very fine buff streaks. Sample of dark brownish-gray oil shale from 573.6 feet: X-ray - quartz, calcite, dolomite, analcite, pyrite, illite.
574.0	575.7	Oil shale: Medium and some dark brownish gray in upper part grading to medium and rare dark grayish brown in lower part, slightly calcareous to dolomitic. Regular thick to medium parting. Rare very fine buff to tan laminae and streaks. Very rare ostracods. Sample of grayish-brown oil shale from 575.4 feet; X-ray - quartz, calcite, dolomite, analcite, pyrite, biotite.
575.6	575.9	Tuff: White with some gray mottling in upper part. Silty with some very fine analcite (?) grains in upper part becoming earthy and very fine blebby textured in lower part. Smooth contact at top; bottom contact missing. Sample of white tuff from 575.8 feet: X-ray - clinoptilolite, quartz, mordenite? or chlorite?, montmorillonite, analcite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research And Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
575.9	576.1	Oil shale: Medium to dark grayish brown. Faint very fine laminae. Few fine gray blebby quartz (?) streaks near top.
576.1	576.5	Missing?
576.5	578.2	Oil shale: Medium brownish gray in upper part becoming very dark in lower part, dolomitic. Faint very fine laminae to very faint streaked bedding. Regular medium to very thin shaly parting. Fine white silty tuff layers at 577.3 and 578.1. Some very fine light brownish-gray silty laminae and streaks in lower 0.3 foot. Very sharp regular contact with dolomite below. Sample of very dark oil shale from 577.7 feet: X-ray - quartz, calcite, analcite, illite, pyrite, dolomite, feldspar.
578.2	578.7	Dolomite and tuff: Faintly banded tan oolitic dolomite with some very fine round cavities frequently filled with colorless transparent calcite. Gray to gray-buff slightly crumbly silty tuff at 578.3-578.5. Sample of gray crumbly tuff from 578.3 feet: X-ray - quartz, feldspar, analcite, montmorillonite, biotite. Sample of tan dolomite with fine calcite-filled cavities from 578.6 feet: X-ray - dolomite, calcite; trace quartz, feldspar.
578.7	581.0	Oil shale: Brownish gray, calcareous. Faint very fine laminae and streaked bedding. Regular thick to medium parting. Abundant nearly obliterated ostracods? A fine gray sparry calcite layer at 578.9. Rare very fine light to medium gray silty layers.
581.0	582.5	Oil shale: Grayish brown, calcareous. Faint very fine laminae and streaked bedding. Abundant ostracods? A very fine calcite-filled vertical fracture from 581.9 to 582.3. A 1-inch dense massive gray calcareous band at 582.3 with fine vermiform stringers extending to 582.5. Sample of dense gray calcareous band from 582.3 feet: X-ray - calcite, analcite, quartz, feldspar, illite.
582.5	583.5	Oil shale: Medium to rare dark grayish brown, calcareous. Faint very fine laminae. Abundant ostracods? A fine gray silty to blebby stringer at 582.6.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
583.5	584.0	Oil shale: Medium to some dark grayish to slightly reddish brown, slightly calcareous. Faint very fine laminae. Abundant ostracods. A fine dark gray pyritic lamina at 583.8. Common thin gray calcareous stringers in lower 0.2 foot (like 582.3). Sample of dark to medium grayish-brown oil shale from 583.6 feet: X-ray - quartz, calcite, dolomite, analcite, pyrite, feldspar.
584.0	584.5	Oil shale: Medium to very dark brownish gray and some black, some satiny luster, slightly calcareous. Faint very fine laminae to very faint streaked bedding. Regular very thin to thick parting. Abundant ostracods. Sample of dark brownish-gray oil shale from 584.3 feet: X-ray - calcite, quartz, illite, pyrite, dolomite, feldspar.
584.5	585.6	Oil shale: Brownish gray, moderately to slightly calcareous. Faint streaked bedding and very fine laminae. Regular thick to medium parting. Rare ostracods. A 1/4-inch gray silty slightly calcareous lamina at 584.7.
585.6	586.6	Oil shale: Medium to some dark brownish gray and grayish brown becoming very dark to black in lower 2 inches, slightly to moderately calcareous. Faint to some moderately distinct very fine laminae. Regular thick to thin parting. Some ostracods. Two very fine gray silty layers in middle.
586.6	589.2	Oil shale: Medium brownish gray and grayish brown becoming slightly reddish brown in lower half foot, moderately to slightly calcareous. Faint and rare moderately distinct very fine laminae; fairly common very fine distinct buff to tan earthy streaks in upper half. Regular thick parting. A thin buff slightly silty marlstone layer at 586.7. Rare fine dense silty gray streaks and laminae in middle part. Mashed fish (?) fragments on parting surfaces at 589.1. Sample of oil shale with very fine buff streaks from 587.5 feet: X-ray - quartz, calcite, dolomite, analcite, feldspar, pyrite.
589.2	589.7	Oil shale: Very dark brownish gray to black. Very faint streaked bedding. Core ends at top do not fit

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		together; 1-inch zone of buff mudstone at end of core piece at 589.5; broken shaly to papery core at base. Sample of black oil shale from 589.3 feet: X-ray - dolomite, quartz, feldspar, analcite, pyrite, illite.
589.7	590.4 ^{1/}	Oil shale: Very dark brownish gray to black; some satiny luster. Very faintly bedded. Irregular thick to thin parting; conchoidal to coarse hackly fracture.
590.4	590.9	Oil shale: As above. Rare fine to very thin brownish-gray dense to silty biotitic streaks. Core ends at base do not fit together. Sample of black oil shale with dark brownish-gray biotitic streaks from 590.5 feet: X-ray - quartz, biotite, feldspar, dolomite, pyrite, analcite.
590.9	592.1	Mudstone: Buff to gray buff and rare light brownish gray, slightly calcareous. Faintly laminated and streaked; 0.2-foot massive band in middle. Some gray siltstone streaks in lower part. Becoming irregularly interfingered with buff and tan to grayish-brown oil shale in lower 0.2 foot.
592.1	594.5	Oil shale: Dark and some medium brownish gray to black, rare slight satiny luster. Faint slightly irregular streaked bedding. Irregular thick parting; irregular to some coarse hackly fracture. Some fine to thin, brownish-gray to tan, dense to silty streaks in upper part. Some very fine scattered biotite flakes on parting surfaces in lower part. Fairly abundant <u>very fine</u> light gray silty pyritic (?) lenses and streaks at 594.2-594.3. Grades to light brownish-gray silty mudstone in lower 1/2-inch. Sample of very dark oil shale with some very fine gray silty lenses and streaks from 594.3 feet: X-ray - quartz, illite, feldspar, dolomite, analcite, pyrite, ferroan.
TOP OF BUFF MARKER		
594.5	600.0	Mudstone and siltstone: Light gray (common very slight brown tint), micaceous, dolomitic or very slightly calcareous. Very faint fairly regular very thick to thin banding.
600.0	608.5 ^{1/}	Footage adjustment.
608.5	635.0	Mudstone and siltstone: As above.

^{1/} See note on sample depths at end of description.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
635.0	644.5	Mudstone and marlstone: Light gray to gray buff and rare light brownish gray. Massive to <u>very</u> faintly laminated. Rare fine pyrite streaks and stringers.
644.5	647.0	Mudstone and some siltstone: Gray-buff and light to some medium gray, slightly calcareous. Faint to some moderately distinct laminae and some thick very faintly streaked to massive zones; some small displacements in upper part
647.0	648.1	Mudstone: Light gray to gray buff. Faintly streaked and laminated. Becoming interbedded with thin layers of coarse dark gray analcite (?) in lower part. Sample of dark gray analcite (?) layer from 547.7 feet: X-ray - dolomite, quartz, analcite, feldspar, illite, pyrite.
648.1	648.6	Tuff and dolomite: Fairly coarse blebby-textured porous gray tuff with fine to small, platy to irregular buff earthy dolomite inclusions increasing toward base. Faintly streaked porous earthy buff dolomite in lower 1-1/2 inches; abundant oolites in lower 1/2 inch. Sample of buff dolomite from 648.5 feet: X-ray - dolomite.
BOTTOM OF BUFF MARKER		
648.6	649.6	Oil shale: Dark to medium gray and brownish gray, calcareous. Faint very fine laminae and streaked bedding. Regular thick to medium parting. Very abundant ostracods. Thin to fine buff dolomite streaks in upper 1/2 inch. A fine gray silty ostracodal limestone lamina at 649.4. Sample of dark gray oil shale from 648.8 feet: X-ray - quartz, dolomite, feldspar, pyrite, illite.
649.6	650.6	Oil shale: Medium to dark brownish gray, slightly to moderately calcareous. Very faint streaked bedding and very fine laminae. Regular thick parting. Very rare very fine pyrite streaks. Sample of dark brownish-gray oil shale from 649.9 feet: X-ray - calcite, quartz, dolomite, analcite, feldspar, pyrite, illite.
650.6	651.9	Oil shale: Dark brownish gray to tan and rare buff, calcareous. Very faintly laminated dark oil shale

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		with thin to 1-inch very distinctly laminated light zones. Regular thick parting. Thin gray silty to sandy-textured tuff layers at 650.9 and 651.1. A thin dense brownish-black lamina at 651.2. Sample of thin dense brownish-black lamina from 651.2 feet: X-ray - quartz; trace calcite, dolomite, pyrite.
651.9	653.1	Oil shale: Dark brownish gray to black, rare medium to light brown in lower part, some very slight satiny luster; dolomitic. Very faint very fine laminae and streaked bedding; some distinct pinched and displaced brown laminae in lower part. Regular thick to some thin parting. A very fine gray silty lamina at 652.8 and a very fine light brownish-gray sandy-textured lamina at 652.9. Sample of black oil shale from 652.4 feet: X-ray - quartz, calcite, dolomite, analcite, pyrite, illite.
653.1	654.3	Oil shale: Dark brownish gray to slightly reddish tan, slightly to moderately calcareous. Distinctly laminated. A fine gray silty to sandy lamina at 654.0. Sample of distinctly laminated oil shale from 654.2 feet: X-ray - quartz, calcite, analcite, pyrite.
654.3	655.4	Oil shale: Dark to medium brownish gray, rare tan in upper part; moderately to slightly calcareous. Faint and rare distinct very fine laminae. Regular thick to medium parting. Very fine resinous black fossil streak at 654.5.
655.4	656.4	Oil shale: Dark and rare medium brownish gray to black, rare satiny luster; dolomitic. Very faint streaked bedding and rare fairly distinct laminae. Regular thick to medium parting. Fine grayish-brown silty streaks at 656.3.
656.4	657.2	Oil shale: Dark to some medium brownish gray, dolomitic. Very faint streaked bedding. Regular to irregular, thick to medium parting. A 1-inch zone of abundant irregular brownish-gray to gray silty streaks and stringers at 656.5. Sample of silty streaks and stringers with some oil shale from 656.5 feet: X-ray - dolomite, quartz, analcite, biotite, feldspar, pyrite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
657.2	657.7	Oil shale: Medium to some light and dark brownish and olive gray, dolomitic. Faint streaked bedding in upper part; a thin vermiform light olive-gray mudstone stringer in dark oil shale at 657.5-657.6; fairly distinct distorted streaks of dark oil shale and olive-gray marlstone in lower part.
657.7	660.0	Oil shale: Medium to dark brownish to slightly olive gray and rare brown to tan, dolomitic. Faint to fairly distinct, fine to thin distorted streaks and stringers. Rare fine vermiform light brownish-gray marlstone stringers. Some fine to thin, grayish-brown to tan and buff, marly to silty streaks and lenses mostly in lower part.
660.0	662.0	Oil shale: Very dark brownish-gray, some black mostly in upper part; dolomitic. Very faint streaked bedding and some very fine laminae. Regular to irregular thick parting. A thin dark gray silty stringer at 660.5. A 1/2-inch irregular brown dolomite layer at 661.1.
662.0	663.0	Oil shale: Dark to some medium brownish gray, dolomitic. Very faint streaked bedding. Fairly regular thick to some thin parting.
663.0	663.8	Oil shale: Dark brownish gray, some black in upper part; dolomitic. Very faint streaked bedding. Regular to irregular, thick to rare thin parting. Sample of dark brownish-gray oil shale from 663.6 feet: X-ray - quartz, dolomite, feldspar, illite, analcite, pyrite.
663.8	664.2	Oil shale: Medium to light and rare dark brownish gray, dolomitic. Faint streaked bedding. A 1-inch band of gray-buff mudstone in middle with common fine to thin vermiform stringers extending through irregularly bleached oil shale below.
664.2	669.4	Midstone: Gray buff to buff white, slightly calcareous in parts. Very faintly streaked and finely mottled to massive. Some very irregular very fine medium to dark gray silty streaks and blebs. (Footage adjustment; section is 5.9 feet thick)
669.4	670.5	Oil shale: Brownish gray, slightly to moderately calcareous. Moderately distinct very fine laminae. Regular thick parting. Abundant ostracods. Some very fine buff earthy and slightly silty streaks and laminae. Fine vermiform buff mudstone stringer in lower 1/2 inch.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		Sample of oil shale from 670.1 feet: X-ray - dolomite, quartz, calcite, feldspar, pyrite, analcite, illite.
670.5-	670.8	Mudstone: Buff to light gray, very dolomitic. Massive with rare faint irregular streaks. Slightly irregular upper contact; very regular lower contact.
670.8	671.8	Oil shale: Dark to light brownish gray, slightly calcareous. Faint to distinct, very fine to fine laminae; a 1/2-inch black oil-shale band at 671.7. Very regular thick parting.
671.8	672.8	Oil shale: Light to medium and rare dark brownish gray, calcareous. Fairly distinct very fine laminae. One or more thin to fine gray-buff vermiform mudstone stringers from 672.2 to 672.7.
672.8	674.8	Oil shale: Medium to some light and dark brownish gray, calcareous. Faint to distinct laminae. Regular thick parting. Rare short fine buff vermiform stringers. Some thin zones of very fine buff streaks. Slightly wavy gray silty to very fine sandy-textured analcite tuff band at 674.5-674.7; few fine short vermiform stringers in oil shale below.
		Sample of gray sandy tuff from 674.6 feet: X-ray - analcite, quartz, feldspar, pyrite.
674.8	676.8	Oil shale: Medium to some dark and rare light brownish gray and grayish brown, calcareous. Faint to some distinct laminae. Regular thick parting. Common very fine buff earthy streaks and rare fine blebs in upper part. A fine gray-buff silty to blebby tuff lamina at 676.1. A 0.1-foot light to medium gray silty tuff at 676.6.
676.8	677.8	Oil shale: Medium to dark brownish gray, slightly calcareous to dolomitic. Faint very fine laminae and streaked bedding. Regular thick to medium parting. A thin gray silty tuff lamina at 676.9. A fine dense dark gray lamina at 677.2. Thin to fine vermiform gray-buff to gray mudstone stringers from 677.3 to 677.7.
677.8	682.0	Oil shale: Very dark and some medium brownish gray, dolomitic. Faint very fine laminae to very faint streaked bedding. Regular thick to rare thin parting. Rare thin to fine, gray to brownish-gray tuffs in

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		upper half. Thin to fine vermiform gray-buff to buff marlstone stringers at 678.6-678.9 and 681.2-681.5. A thin grayish-brown to brown dense dolomite stringer at 681.6.
682.0	683.0	Oil shale: Dark brownish gray with some distinct thin to 1-inch, buff to tan marlstone bands. A thin gray silty tuff stringer at 682.2.
683.0	685.8	Oil shale: Dark to medium brownish gray, dolomitic to slightly calcareous. Dark very faintly laminated oil shale in upper part to dark and medium with faint and rare moderately distinct laminae in lower part. Regular thick and some thin parting. A 1-inch moderately coarse-grained gray analcite band at 685.0 with very irregular stringers extending 2 inches into shale below.
685.8	687.8	Oil shale: Medium to some dark and light brownish gray and grayish brown, slightly to moderately calcareous. Distinctly laminated; becoming dark and very faintly laminated in lower 0.3 foot. Regular thick parting. A thin blebby gray tuff layer at 686.1; rare fine layers elsewhere. Sample of distinctly laminated dark to light brownish-gray oil shale from 686.7 feet: X-ray - calcite, quartz, analcite, dolomite, pyrite.
687.8	688.8	Oil shale: Dark brownish gray to rare black, dolomitic. Very faint very fine smooth laminae in upper half to very faint very distorted streaked bedding in lower half. Very regular thick to thin parting in upper part to irregular thick parting in lower part. Distorted zone is laced with <u>very</u> fine mineral-filled fractures. Sample of dark fractured oil shale from 688.5 feet: X-ray - quartz, analcite, calcite, dolomite, feldspar, pyrite.
688.8	690.1	Oil shale: Very dark brownish gray to black, nearly all has satiny to resinous luster, dolomitic. Very faint smooth streaked bedding. Irregular thick parting; slightly conchoidal to irregular fracture. A thin brown dolomite band at 689.4. Sample of black satiny oil shale from 689.1 feet: X-ray - quartz, calcite, dolomite, analcite, feldspar, pyrite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
690.1	690.3	Marlstone and mudstone: Buff and tan to medium gray, dolomitic. Irregular wavy banding. Fine gray silty tuff streaks at top.
690.3	691.2	Oil shale: Light to dark brownish gray and some buff, dolomitic. Moderately distinct to faint very fine laminae. A very fine dark gray vermiform stringer in upper 2 inches. A fine gray silty tuff lamina at 690.7. Abundant very fine buff earthy streaks and lenses in lower part. Sample of light brownish-gray to buff oil shale from 690.8 feet: X-ray - dolomite, quartz, feldspar, analcite, pyrite.
691.2	692.0	Oil shale: Medium brownish gray to black, some satiny to resinous luster; dolomitic. Very faint streaked bedding with some faint irregular gradational banding. Irregular thick parting; slightly irregular and conchoidal fracture.
692.0	692.9	Oil shale: Medium to dark brownish gray, dolomitic. Faint very fine laminae and streaked bedding in thick gradational and rare sharp lighter and darker zones. Irregular to regular thick parting. A fine pinched dark gray silty layer at 692.3. A 3/4-inch tan marlstone layer at 692.4.
692.9	693.0	Tuff: Light to medium gray, fine to fairly coarse grained.
693.0	693.2	Marlstone: Buff to light and rare medium brownish gray, dolomitic. Moderately distinct regular to slightly wavy laminae and bands.
693.2	693.7	Dolomite: Buff and some medium to dark gray, very oolitic. Wavy platy algal streaks and stringers in upper inch; massive with very irregular gray patches and stringers in other parts.
693.7	693.8	Tuff: Gray, silty to blebby.
693.8	693.9	Oil shale: Dark to medium brownish gray. Common fine vermiform tuff stringers as above. Buff ostracodal marlstone in lower 1/2 inch.
693.9	694.6	Oil shale: Medium to some light brownish gray, calcareous, silty. Faintly laminated to very faintly streaked.
694.6	696.9	Oil shale: Medium to dark brownish gray, some neutral gray in upper part; calcareous. Moderately distinct to faint laminae. Regular thick parting. Rare fine gray silty tuff laminae in upper part.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		A very small round tan earthy nodule at 694.9. Some ostracods. Very fine buff silty to earthy lenses and streaks becoming abundant in lower part.
		Sample of dark to medium brownish-gray oil shale with very fine buff lenses and streaks from 696.8 feet: X-ray - calcite, quartz, dolomite, analcite, pyrite.
696.9	697.9	Oil shale: Medium to very dark brownish gray and some brown, moderately to slightly calcareous. Faint and some moderately distinct laminae. Regular thick parting. Abundant very fine medium to dark grayish brown dense mineral streaks. A very thin gray silty tuff lamina at 697.0. A very fine striated brittle vitreous black organic crust on parting surfaces at 697.6.
697.9	699.9	Oil shale: Medium and dark grayish brown becoming very dark in lower part, slightly calcareous. Faintly laminated in upper part to very faintly streaked in lower part. Regular thick to medium parting. Some very fine dark gray to brownish-gray, silty to blebby laminae mostly in lower part. Sample of dark brownish-gray oil shale from 699.6 feet: X-ray - quartz, calcite, analcite, dolomite, pyrite, feldspar.
699.9	700.9	Oil shale: Very dark to some medium brownish gray, slightly to moderately calcareous. Faint streaked bedding and very fine laminae. Regular thick parting. Rare ostracods.
700.9	701.6	Oil shale: Medium and some dark brownish to slightly olive gray, calcareous. Faintly laminated. Regular thick to medium parting. Rare ostracods. A 1/4-inch gray blebby tuff lamina at 701.4.
701.6	702.0	Oil shale: Medium and some dark grayish brown to tan and buff, slightly calcareous. Faint to very distinct laminae. Regular thick parting. A very fine tight high angle fracture with buff slightly silty filling from top to 701.8. Sample of distinctly laminated buff to dark brownish-gray oil shale from 701.9 feet: X-ray - dolomite, quartz, calcite, analcite, feldspar, pyrite.
702.0	704.8	Oil shale: Medium to dark brownish gray, slightly to moderately calcareous. Faint to fairly distinct

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
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From	To	Description
		laminae. Regular thick to medium parting. Thin gray silty to blebby tuff laminae at 702.1 and 702.8; a very fine lamina at 704.6. Some very fine buff streaks near base. Sharp very slightly curved contact with mudstone below.
704.8	706.2	Midstone: Gray buff and buff to buff white, slightly calcareous to dolomitic. Massive to very faintly streaked. A 2-inch very wavy brownish-gray to tan and buff algal limestone one inch below top; a thin wavy brecciated algal zone at 705.4. Sample of massive gray-buff mudstone from 705.1 feet: X-ray - quartz, dolomite, calcite, feldspar, pyrite.
706.2	706.4	Siltstone (tuff?): Light to medium gray. Massive; laced with very fine dark fractures. Sample of gray fractured siltstone from 706.3 feet: X-ray - analcite, K feldspar, pyrite.
706.4	706.5	Oil shale: As below with very irregular to hackly, medium to dark gray silty stringers and streaks.
706.5	707.5	Oil shale: Light to medium and rare dark slightly olive to brownish gray, calcareous. Moderately distinct to faint laminae. Regular thick parting. Rare very fine buff-white earthy vermiform stringers in upper half.
707.5	708.5	Oil shale: Dark to medium and some light brownish gray, calcareous. Faint to distinct very fine laminae. Regular thick parting. Abundant very fine buff-white earthy and silty streaks in upper 0.3 and lower 0.2 foot. A thin buff algal breccia stringer draped over a 1-1/2-inch massive buff nodule at 707.8. A 1/2-inch gray coarse sandy-textured porous tuff band at 708.1. Sample of coarse-grained gray tuff from 708.1 feet: X-ray - analcite, Na and K feldspars, dolomite, quartz, biotite, pyrite.
708.5	709.0	Mudstone: Buff, dolomitic. Massive to very faintly layered. Abundant very fine dark lacy fractures near top. Thin zone of oolites and very small platy mudstone fragments overlying and filling angular crevices in faintly layered marly zone in lower 2 inches. Sharp contact with some very short stubby penetrations into oil shale below.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
709.0	710.1	Oil shale: Medium to dark slightly greenish gray, calcareous. Faint very fine laminae; slightly distorted in upper part. Regular to some irregular thick parting. Abundant very fine buff earthy and silty streaks and lenses. A very irregular buff marly mudstone crevice filling at 709.2-709.4 with a fine gray silty to very fine sandy-textured stringer extending to 709.6; thin gray silty layers at 709.8 and 710.0. Sample of dark to medium gray shale with some very fine buff silty streaks and lenses from 709.9 feet: X-ray - quartz, calcite, dolomite, analcite, pyrite.
710.1	711.2	Oil shale: Medium to some light and dark grayish brown to almost neutral gray, calcareous. Faint to fairly distinct very fine laminae. Regular thick to medium parting. Some very fine buff streaks in upper part. A fine dark gray blebby to very fine sandy-textured lamina at 710.5.
711.2	712.2	Oil shale: Medium to dark and some light brownish gray, calcareous. Moderately distinct to faint very fine laminae. Regular thick to medium parting. A 1-inch light gray silty tuff band at 711.3 and a 1/4-inch medium gray fine sandy-textured lamina at 711.5. Some very fine buff streaks in lower part.
712.2	712.8	Marlstone and Mudstone: Buff to gray buff and some light to medium slightly brownish gray, dolomitic. Very faint distorted streaked bedding. A very thin gray silty to blebby slightly porous calcareous layer at top and a very thin wavy dark oil-shale stringer 1 inch below top. Fine very irregular wavy broken algal stringer at 712.4. Thin oolitic conglomerate overlying very irregular large dense limestone nodules and stringers at base; unconformable to interpenetrating contact between limestone and bleached oil shale.
712.8	713.8	Oil shale: Medium to very dark and rare light brownish gray, slightly to moderately calcareous. Faint to moderately distinct, very fine to thin laminae; slightly wavy in upper part. A thin vermiform light brownish-gray to buff-white marlstone stringer from top to 713.2.
713.8	716.1	Oil shale: Medium to dark brownish gray, slightly calcareous. Fairly distinct laminae; faintly

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
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From	To	Description
		streaked medium to light brownish-gray, slightly silty oil shale at 714.9-715.2. Regular thick to medium parting. Very fine resinous black streaks at 714.6. Some fine gray to gray-buff silty laminae in lower part.
716.1	717.2	Oil shale: Medium to dark brownish gray, moderately calcareous, to dolomitic. Moderately distinct to very faint very fine laminae. Regular thick to thin parting. Rare fine gray silty laminae; a 1- to 1-1/2-inch gray silty stringer at top. (Sample length 1.5 feet; 716 and 717 footage marks are 1.4 feet apart.)
717.2	717.7	Mudstone: Gray buff, dolomitic to calcareous. Massive to faintly streaked and laminated. A 1/2-inch conglomeratic zone at top.
		Sample of mudstone from 717.4 feet: X-ray - dolomite, quartz, calcite, feldspar, pyrite.
717.7	720.6	Oil shale: Medium to dark brownish gray and grayish brown, slightly calcareous. Fairly distinct to faint laminae. Regular thick to thin parting. Rare fine gray to buff silty laminae; a 1/2-inch gray silty band at 719.0.
		Sample of brownish-gray oil shale from 720.0 feet: X-ray - calcite, quartz, dolomite, analcite, illite, pyrite, feldspar.
720.6	721.6	Oil shale: Dark to medium brownish gray, dolomitic. Faint very fine laminae. Regular medium to thin parting. A fine gray silty lamina at 721.0. Rare ostracods in lower part.
721.6	722.5	Oil shale: Dark brownish gray to some black, dolomitic. Faint streaked bedding and very fine laminae. Regular thick and some thin parting. Rare ostracods. A very fine layer of moderately coarse analcite crystals at 722.7. Gray to gray-buff, silty to very fine sandy-textured tuffs at 722.2 (1/4 inch) and 722.3 (1 inch) with a 1/2-inch zone of light brownish-gray to black oil shale between and a 1/2-inch zone of light to medium brownish-gray oil shale below. Contact with marlstone below is missing.
722.5	726.2	Marlstone and mudstone: Very light buff to gray buff, dolomitic to slightly calcareous. Massive to very faintly streaked; very fine light gray irregular

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		to lacy streaks becoming abundant in lower part. Rare fine pyrite blebs in upper part. Interfingering mudstone and bleached oil shale in lower inch. Sample of very light buff massive marlstone from 722.9 feet: X-ray - dolomite, quartz, calcite, feldspar.
726.2	726.8	Oil shale: Medium to dark and rare light slightly brownish gray, calcareous. Faint to fairly distinct laminae. Regular thick to medium parting. Some ostracods. Fine vermiform buff marlstone stringers in upper 0.2 foot.
726.8	727.8	Oil shale: Medium to light and some dark slightly brownish gray, calcareous. Distinctly laminated. Regular thick to medium parting. Irregular 1/2-inch gray blebby analcite layer at 726.9 with vermiform stringers extending 1 inch into shale below.
727.8	728.8	Oil shale: As above becoming dark and faintly laminated in lower part. Rare fine blebby analcite layers. Some very fine buff streaks near base.
728.8	729.1	Pisolitic limestone: Grayish brown and dense in upper inch; buff and earthy in lower part. Sharp regular contacts at top and bottom. Sample of pisolitic limestone from 728.9 feet: X-ray - dolomite; trace quartz, feldspar.
729.1	729.3	Marlstone: Buff to light slightly brownish gray, dolomitic, slightly silty. Faintly laminated. A very fine oolitic streak near top. Abrupt change to dark gray shale at base. Sample of marlstone from 729.1 feet: X-ray - dolomite, quartz, analcite, feldspar.
729.3	730.3	Oil shale: Very dark to medium slightly greenish to brownish gray, calcareous. Moderately distinct to faint laminae. Some thin to fine, gray to buff, blebby to silty layers.
730.3	732.0	Oil shale: Medium to dark brownish gray, calcareous. Faintly laminated. Regular thick to thin parting. Rare ostracods. A 0.1-foot gray silty tuff band at 730.4. Some fine distinct buff marlstone laminae in lower inch.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		Sample of gray tuff from 730.4 feet: X-ray - analcite, quartz, feldspar, pyrite.
732.0	733.0	Oil shale: Very dark to medium brownish gray, slightly calcareous to dolomitic. Faintly laminated to very faintly streaked. Regular thick to medium parting. Few thin to fine, gray to brownish gray, silty to blebby layers. A very thin buff oolitic marlstone layer at 732.5 and a fine dense tan dolomite lamina at 732.6.
733.0	734.0	Oil shale: Very dark brownish gray, dolomitic to slightly calcareous. Faint very fine laminae and streaked bedding. Regular thick to medium parting. A 1/2-inch massive brown dolomite band at 733.2. Few fine brownish-gray silty to very fine sandy-textured laminae in lower 0.2 foot. A very fine buff-white earthy and silty lamina at base. Rare ostracods? Sample of very dark oil shale from 733.4 feet: X-ray - quartz, calcite, feldspar, dolomite, analcite, pyrite, illite.
734.0	736.0	Oil shale: Medium to some light and dark brownish gray, calcareous. Fairly distinct to faint laminae. Regular thick to medium parting. Rare fine sandy to blebby analcite layers. Rare short fine dull black vermiform stringers. Sample of fairly distinctly laminated medium to light brownish-gray oil shale from 734.7 feet: X-ray - quartz, calcite, analcite, illite, pyrite.
736.0	739.3	Oil shale: Medium to very dark grayish brown and brownish gray, dolomitic. Faint to some moderately distinct laminae. Regular thick to thin parting. A fine grayish-brown silty to sandy tuff layer at 737.8 and a 1/2-inch layer at base. A 1/2-inch dense brown to black laminated band at 738.1 with milky quartz (?) streaks in upper part and coarse black analcite (?) blebs in lower part. Sample of medium to dark grayish-brown oil shale from 736.5 feet: X-ray - quartz, calcite, analcite. Sample of thin brown to black layer with milky streaks and black blebs from 738.1 feet: X-ray - quartz, analcite, feldspar, pyrite, calcite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
739.3	740.3	Oil shale: Dark and rare medium brownish gray to black, dolomitic. Faintly laminated in upper part to very faintly streaked in lower part. Regular to irregular thick parting. Rare fine dark brownish-gray slightly silty layers and streaks.
740.3	740.9	Oil shale: Very dark to medium slightly brownish to olive gray, dolomitic. Very faintly streaked to faintly banded. Irregular to regular, thick to some thin parting. Irregular 1/2- to 1-inch dark gray silty stringer at 740.6; some very fine streaks at 740.8. Sample of medium to dark slightly olive gray oil shale with very fine dark gray silty streaks from 740.8 feet: X-ray - quartz, dolomite, analcite, feldspar, pyrite, illite.
740.9	741.5	Oil shale: Very dark to medium brownish gray, dolomitic. Faintly streaked to laminated with some distinct buff marlstone laminae near top and bottom. Some fine dark to medium gray blebby to silty layers in upper part. A 0.1-foot band of tan slightly silty dolomite at 741.1; a 3/4-inch buff dolomite band with irregular dense brownish-gray streaks in lower part at 741.4.
741.5	741.9	Siltstone: Medium to light gray, slightly calcareous, hard and tight. Faintly mottled. Abundant very fine dark lacy fractures and some pyrite patches in upper inch. Sharp very slightly irregular contact at top; very irregularly inter-fingered with dark to medium oil shale in lower 0.1 foot. Sample of siltstone from 741.7 feet: X-ray - analcite, quartz, calcite, feldspar, pyrite.
741.9	742.6	Oil shale: Light to medium and some dark brownish gray, dolomitic to slightly calcareous. Distinctly laminated. Regular thick to medium parting. Some fine dark gray blebby layers.
742.6	743.6	Oil shale: Medium to very dark brownish gray, dolomitic. to moderately calcareous. Faint to some fairly distinct laminae. Regular thick to some thin parting. Some fine gray blebby to very fine sandy-textured layers. Rare fine to small dense dark

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.
Wyoming No. 1 Corehole (Con.)

From	To	Description
		grayish-brown nodules.
743.6	744.6	Sample of dark to medium brownish-gray oil shale from 743.1 feet: X-ray - quartz, calcite, analcite, dolomite, pyrite. Oil shale: Medium to some dark and rare light slightly brownish gray, slightly calcareous. Faint very fine laminae. Regular medium to thin parting. Fairly abundant scattered ostracods. Several fine to very thin dark gray blebby to very fine sandy-textured layers in upper 0.1 foot; silty layers and oil-shale laminae displaced 1/4 inch by a very irregular invisible high angle fracture.
744.6	745.0	Sample of dark to medium gray shale from 744.4 feet: X-ray - quartz, calcite, analcite, illite, pyrite. Oil shale: Medium to dark brownish gray, slightly calcareous to dolomitic. Moderately distinct to faint very fine laminae and streaked bedding. Regular thick to medium parting. Abundant ostracods. A fine gray sandy lamina at 744.7 and a 1/4-inch gray to brownish-gray, silty to sandy lamina 1/2 inch above base.
745.0	745.4	Oil shale: Very dark brownish gray to black, dolomitic. Very faint streaked bedding. Irregular to regular, thick to medium parting. Sharp regular contact with marlstone below.
745.4	745.6	Marlstone: Buff, dolomitic, very fine blebby to silty textured. Massive with a 1/2-inch light gray mudstone band in middle.
745.6	746.7	Mudstone: Light gray and gray buff, slightly calcareous. Faintly streaked and irregular layered to massive.
746.7	747.7	Marlstone: Very light buff to gray buff and some light to medium gray, dolomitic to calcareous. Fairly distinct to faint distorted streaked bedding; some finely to coarsely fractured zones with various marlstone and mudstone fillings. Large dense gray nodular masses at 747.3.
747.7	748.0	Sample of buff marlstone from 747.0 feet: X-ray - dolomite; some quartz, feldspar. Oil shale: Buff and tan to very dark brownish gray, dolomitic. Distinctly laminated. Regular medium to thin parting.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
748.0	748.7	Oil shale: Medium to dark slightly brownish gray, very dark brownish gray to black in lower 0.2 foot; moderately calcareous to dolomitic. Regular medium to thin parting. Some ostracods in lower part. Sharp regular contact with limestone below.
748.7	749.5	Limestone: Very light buff becoming finely to thinly interbedded with gray mudstone in lower part, oolitic. Massive; some <u>very</u> fine black crinkly laminae near top.
749.5	751.5	Siltstone: Light gray, firm. Very faintly streaked to massive. Sample of light gray siltstone from 750.5 feet: X-ray - quartz, dolomite, feldspar, biotite, pyrite, ferroan.
751.5	757.0	Mudstone: Light to medium gray (commonly slightly brown in lighter parts), Faint and rare distinct very thick bands to fine laminae. Fairly regular very thick parting; common very slight irregular hackly fracture. Small to fine buff marlstone pebbles overlying a 1-inch coarse sandy zone at 752.5.
757.0	757.5	Mudstone: Dark to medium and rare light gray. As above.
757.5	760.4	Mudstone: Light to medium gray. Faint irregular streaked bedding; some indistinct banding in upper part. Common very fine irregular dark fractures in some parts. A 0.1-foot band of light brownish-gray silty marlstone at 759.5 with thin medium to dark slightly brownish gray shale bands above and below.
760.4	761.3	Siltstone and fine sandstone: Light gray, micaceous. Faint distorted to regular streaked bedding.
761.3	762.1	Mudstone: Light to medium slightly olive to brownish gray, dolomitic. Faint distorted bedding with injected sandstone stringers in upper 0.4 foot; faint regular bands and laminae in lower part. Dark slightly brownish gray oil shale in lower 0.1 foot.
762.1	762.6	Dolomitic marlstone and oolitic limestone: Light brownish gray to buff. Distinctly to faintly banded. A thin very dark oil-shale layer at 762.2.
762.6	763.6	Mudstone: Medium to light gray becoming slightly brownish gray in lower part. Massive to very faintly streaked. Very fine dark lacy fractures in upper part. Indistinctly grades to laminated marlstone at base.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
763.6	764.7	Marlstone grading to oil shale: Gray buff to medium and some dark slightly brownish gray, slightly silty in upper part, calcareous. Faint to fairly distinct laminae; some fine displacements. Slightly irregular thick parting. Rare very fine pyrite blebs and streaks. Rare fine bone fragments (ribs and vertabrae). Sample of gray-buff to slightly brownish gray silty marlstone from 764.0 feet: X-ray - calcite, quartz, analcite, dolomite, illite.
764.7	765.0	Mudstone: Light to medium slightly brownish gray, calcareous. Faint very distorted and displaced laminae and thin bands truncated by a large irregular light gray siltstone mass. A thin gray fine blebby-textured calcareous layer at top and a thin dark brownish-gray sandy layer at bottom. Sample of thin gray layer from 764.7 feet: X-ray - dolomite, calcite, analcite, quartz.
765.0	765.8	Marlstone: Tan and buff to light and some medium grayish brown, dolomitic to calcareous. Finely laminated in upper part to thinly banded in lower part. Thin medium to rare dark grayish-brown oil-shale zones at 765.2 and bottom. Some fine oolitic streaks. A 1/2-inch gray porous silty to coarse blebby crystalline band above upper oil-shale zone. A 1/2-inch dark slightly brownish gray sandy-textured band at 765.7. Rare bone fragments. Sample of gray silty to blebby porous band from 765.2 feet: X-ray - analcite, feldspar, quartz, illite, calcite. Sample of tan to grayish-brown marlstone from 765.4 feet: X-ray - dolomite, quartz. Sample of gray sandy band from 765.7 feet: X-ray - analcite, quartz, feldspar, calcite, biotite, pyrite.
765.8	766.6	Mudstone: Medium to light slightly brownish to neutral gray, calcareous. Faintly mottled. Thin dark blebby zone at top.
766.6	767.6	Mudstone and silty marlstone grading to oil shale: Light gray and gray buff to medium and rare dark brownish gray, calcareous. Faint to moderately

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
		distinct slightly wavy laminae; some fine to small displacements. Irregular thick parting. Some fine dense to blebby gray layers. Looks slightly bleached in lower part. Sample of medium to light brownish-gray oil shale from 766.6 feet: X-ray - quartz, calcite, analcite, dolomite, feldspar.
767.6	768.6	Oil shale: Medium to dark brownish gray and grayish brown, rare tan; calcareous. Faint to fairly distinct laminae; very fine light laminae are commonly discontinuous to lenticular. Regular to irregular thick parting. Fine dark massive to blebby crevice filling in upper 0.1 foot. Rare very fine dense to silty gray layers. A 1-inch gray silty to sandy band at base; abundant biotite in lower part. Sample of gray biotitic band from 768.6 feet: X-ray - analcite, quartz, feldspar, biotite, pyrite.
768.6	769.0	Oil shale: Medium to dark grayish brown (slightly reddish) becoming interlaminated with gray in lower part, calcareous. Fairly distinct very fine regular laminae. Regular thick parting. A very fine gray silty layer at 768.7. Sample of dark to medium grayish-brown oil shale from 768.7 feet: X-ray - quartz, calcite, analcite, pyrite.
769.0	769.7	Oil shale: Medium and rare dark slightly brownish to almost neutral gray, calcareous. Faint to moderately distinct very fine laminae. Regular thick to medium parting. Rare ostracods. A 1/4-inch dense gray layer with some very fine pyrite at 769.1. A very fine blebby gray layer near base. Sample of slightly brownish gray oil shale from 769.2 feet: X-ray - calcite, quartz, analcite, feldspar, illite, dolomite.
769.7	770.9	Oil shale: Medium to some very dark brownish gray and some almost neutral gray, calcareous. Moderately distinct to very faint laminae; rare fine displacements in upper part. Regular thick to medium parting. A very fine lenticular light brownish-gray silty biotitic layer at 770.2. Conformable wavy contact with dolomite below.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
770.9	771.5	Dolomite: Tan, some buff near top, oolitic, slightly calcareous in upper part. Small to 1-inch nodules at top; very faintly bedded with few very fine black oil-shale layers below 771.1. Smooth contact at base.
771.5	771.6	Oil shale: Black to dark grayish brown, slightly calcareous. Very faintly laminated. A very thin lenticular dense gray limestone layer 1/4 inch below top.
771.6	772.4	Oil shale: Medium and some dark grayish brown in upper three inches, medium brownish gray in lower part; calcareous. Very faint streaked bedding and some very fine laminae. Regular to irregular thick parting; slightly conchoidal fracture. Some very fine irregular discontinuous dark gray fracture fillings.
772.4	773.4	Oil shale: Medium to some light slightly brownish to almost neutral gray, slightly silty, calcareous. Moderately distinct to faint very fine laminae. Regular thick to medium parting. A very thin gray biotitic tuff layer near base.
773.4	775.0	Oil shale: Medium almost neutral gray in upper part to medium and dark brownish gray in lower part, calcareous. Faint very fine laminae. Regular thick to medium parting. Rare paper-thin light brownish-gray to buff, silty to earthy laminae and streaks. A very fine blebby gray layer at 774.5.
775.0	776.0	Oil shale: Medium and some dark brownish gray to olive gray, slightly to moderately calcareous. Faintly laminated. Regular thick to medium parting. Few fine gray silty laminae in lower 2 inches.
776.0	777.6	Oil shale: Medium to some dark olive gray, calcareous. Faint very fine laminae and streaked bedding. Shaly to papery parting. A fine white earthy layer with silky crystalline streaks at 776.1. Light olive-gray marlstone at 777.3-777.4.
777.6	777.9	Algal dolomite: Buff to brownish gray and some medium to dark gray, slightly calcareous. Nodular and some coarsely fragmental. Wavy upper surface; fairly regular lower surface.
777.9	778.3	Oil shale: Buff to medium and rare dark brownish gray, dolomitic. Distinct to faint very fine slightly crinkly laminae. Slightly irregular thick parting.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
778.3	779.3	Oil shale: Light to medium and rare dark slightly brownish gray, slightly calcareous. Faint very fine laminae. Regular thick to thin parting; slightly unctuous. Rare unidentified fossil fragments.
779.3	780.4	Oil shale: Medium to dark brownish gray, calcareous. Faint very fine laminae. Regular thick to very thin parting. Abundant very fine buff earthy streaks and laminae. Rare very fine prismatic crystalline laminae. A fine gray silty lamina at 780.3. Sample of dark oil shale with rare very fine buff streaks and laminae from 779.8 feet: X-ray - quartz, aragonite, calcite, feldspar, dolomite, pyrite.
780.4	780.8	Mudstone: Medium slightly brownish gray, very slightly calcareous. Very faintly bedded. Slightly irregular thin to thick parting. Sample of gray mudstone from 780.7 feet: X-ray - analcite, illite, quartz, montmorillonite, feldspar, pyrite.
780.8	781.9	Oil shale: Medium and some dark brownish gray, calcareous. Faint to moderately distinct very fine laminae. Regular very thin to thick parting. Very abundant very fine buff earthy streaks and laminae in upper part. Rare ostracods in lower part. Sample of oil shale with abundant very fine buff streaks and laminae from 780.9 feet: X-ray - aragonite, quartz, calcite, pyrite, dolomite, montmorillonite.
781.9	782.1	Limestone: Buff in upper 1/2 inch, gray in other parts, very sandy. Some pyrite near base. Fairly regular upper contact; irregular wavy lower contact.
782.1	785.8	Mudstone: Medium to light slightly brownish to neutral gray. Faint streaked bedding; some faint bands and laminae in upper part. Gray-buff dolomitic zone at 782.3-782.5.
785.8	786.0	Missing.
786.0	790.3	Mudstone: Medium to light gray with some very slight brown to green tint. Faint streaked bedding and rare laminae; some distorted zones. Some sandy micaceous zones as below.
790.3	802.0	Sandstone: Gray buff, fine grained, very micaceous. Massive to faintly streaked. Rare mudstone as above. (795.0-796.0 missing)

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

From	To	Description
802.0	802.3	Intraformational conglomerate: Fine to small platy fragments of gray to buff mudstone and marlstone. Some rounded grains near top.
802.3	804.5	Siltstone and marlstone: Faintly streaked gray-buff siltstone in upper part grading to massive very light buff silty calcareous marlstone in lower part. Some indistinct tight irregular fractures. Sample of massive buff silty marlstone from 804.0 feet: X-ray - dolomite, calcite, quartz, analcite.
804.5	806.3	Marlstone: Buff and some light brownish gray, silty, calcareous. Distorted streaks and stringers in upper half foot; faintly banded and laminated with irregular to regular thick to thin parting in lower part. Rare thin oil-shale layers.
806.3	806.4	Oil shale: Brownish gray, calcareous. Faint very fine laminae. Regular thin parting. Some buff silty marlstone laminae.
TOP CATHEDRAL BLUFFS TONGUE OF WASATCH FORMATION		
806.4	810.0	Mudstone: Olive gray to gray green, rare slight maroon mottling in upper part, massive.
810.0	816.0	Mudstone: Olive gray. Becoming clayey and crumbly in lower part.
816.0	819.0	Mudstone: Medium to light slightly greenish gray, slightly calcareous in parts, massive.
819.0	822.4	Siltstone, fine sandstone, and some mudstone: Light gray to medium gray green, micaceous. Massive to faintly variegated and mottled.
822.4	822.7	Sandstone: Light gray, fine to medium grained, very calcareous, micaceous, massive.

Bottom of core.

NOTE: Core in boxes 44 through 47 had two sets of footage marks. Red marks agreed with labels on boxes and core run blocks but were not consistent with core lengths. Blue marks were consistent with core lengths but ended in box 47 with 8.5-foot discrepancy with red marks on remainder of core. Depths indicated in the description and assay tables were measured from the blue marks. Blue and red mark footages

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Laramie Energy Research Center, Laramie, Wyoming

September 14, 1971

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from Garrett Research and Development Company, Inc.,
Wyoming No. 1 Corehole (Con.)

<u>From</u>	<u>To</u>	<u>Description</u>
for the four boxes of core were as shown below.		
Box No.	Blue Marks	Red Marks
44	567.5-577.1	567.5-581.0
45	577.1-586.8	581.0-593.5
46	586.8-597.6	593.5-606.0
47	597.6-600.0 (last mark)	606.0-616.3

The 0.7-foot piece of rich oil shale at 589.7-590.4 was removed from the top of the core barrel with core No. 56 (626-636 feet). The core end matched the upper end of core No. 53 so the piece was moved to that location and footages below were adjusted accordingly.

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Laramie Energy Research Center, Laramie, Wyoming

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