

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

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2 drilled in 1974 in NW1/4SE1/4SE1/4 (945 ft. N of S line and 1,132 ft. W of E line) of sec 28, T 19 N, R 106 W, Sweetwater County, Wyoming

Surface elevation: 7,409 feet

Cored interval: 65.0 to 472.7 feet

From	To	Description
65.0	67.0	Sandstone: Yellowish tan (2.5Y6/4), fine grained, very silty. Massive to faint regular streaked bedding. Irregular thick parting; slightly irregular to irregular fracture; slightly permeable. Sample of yellowish-tan sandstone from 65.4 feet: X-ray--dolomite, quartz, Na and K feldspars, analcime, illite.
67.0	70.3	Siltstone: Yellowish tan (2.5 to 5Y6/4, rare 7/4), slightly calcareous. Massive with some very faint slightly irregular streaked bedding. Irregular to fairly regular thick parting; slightly irregular to irregular fracture.
70.3	72.3	Siltstone and mudstone: Yellowish buff to light brownish yellow (5 to 2.5Y7/3-6/4, some 6/5 lower part), calcareous. Faintly laminated. Irregular to regular thick parting; slightly irregular to irregular fracture. Possible raindrop impressions on some parting surfaces. Sample of yellowish-buff mudstone from 70.4 feet: X-ray--quartz, calcite, feldspar, analcime, dolomite, illite.
72.3	74.6	Sandy siltstone: Light brownish yellow (2.5Y5/4-6/5), calcareous, massive. Irregular thick parting; fairly regular to irregular fracture.
74.6	76.6	Siltstone: Light brownish yellow to buff (2.5Y6/4 and 6/5-7/2 and 7/3, some 8/2), calcareous. Fairly distinct to faint streaked bedding. Irregular thick parting; irregular fracture. Some fine brownish-gray platy shale inclusions in upper part. Irregular contact with mudstone below.
76.6	77.4	Mudstone: Medium to light brownish gray (2.5Y5/2 and 5/1-6/2 and 6/1), calcareous. Faint distorted streaks and stringers. Irregular thick parting; irregular to slightly conchoidal fracture.
77.4	79.0	Siltstone: Light olive to olive buff (5Y6/2 and 6/3-7/2), slightly to moderately calcareous, slightly sandy in parts. Massive to very faintly streaked. Irregular thick parting; slightly irregular to irregular fracture. Sparse fine carbonaceous plant debris. Some very fine muscovite and rare biotite.
79.0	81.4	Siltstone and mudstone: Buff to light brownish yellow (2.5Y7/2-6/3 and 6/4, rare 8/2-8/1 and 5/4), calcareous. Faint to rare distinct laminae and bands to faint distorted streaked bedding. Regular to irregular thick to thin parting; fairly regular to irregular fracture.
81.4	83.5	Siltstone: Medium to light brownish gray and some buff, rare brown to orangish tan (2.5Y to 10YR 5/2-6/2, some 7/2 and 7/1-8/2, rare 5/3-6/4), very slightly calcareous. Faint streaked bedding; some faint to distinct bands and laminae in middle part. Irregular to

^{1/} By L. G. Trudell, completed April 28, 1975

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Laramie Energy Research Center, Laramie, Wyoming

May 19, 1975

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
		some regular thick to rare thin parting; irregular to rare regular fracture. Abundant very fine muscovite. Abundant fine black carbonaceous flecks. Abundant very fine dark mineral grains in some parts. Sample of brownish-gray siltstone from 82.7 feet: X-ray--quartz, analcime, feldspar, illite, dolomite, chlorite.
83.5	84.5	Siltstone and some mudstone: buff to light brownish gray and olive gray (2.5 to 5Y7/2-6/2), calcareous, sandy in middle part. Faintly streaked and laminated to massive. Irregular to regular thick parting; fairly regular to irregular fracture. Some high to low angle fracture with dull black coatings. A small dark brownish-gray mineral lens with rusty rims at 84.3.
84.5	85.5	Marlstone: Buff to light brownish-gray (2.5Y7/2-6/2, some 6/1 lower part), calcareous. Faint laminae to some very faint streaked bedding. Irregular to some regular thick to medium parting; slightly conchoidal to fairly regular fracture. Some low angle fractures with dark brown coatings in upper part. Very fine oolitic texture in some parts. Possible ostracods. Sample of buff marlstone from 85.2 feet: X-ray--quartz, dolomite, calcite, feldspar, analcime, illite.
85.5	87.5	Mudstone: Light to medium slightly brownish and olive gray, some tan to buff zones (2.5 to 5Y6/1-5/1, rare 5/2-4/2, some 6/2 and 6/3-7/2), calcareous. Faintly laminated; some tan to buff zones show sharp lateral gradation to grayer colors. Regular to irregular thick to rare thin parting; fairly regular to irregular fracture.
87.5	89.5	Mudstone and some oil shale: Mudstone as above with some medium to dark olive-gray oil shale. Some thin shaly parting. Rare ostracods.
89.5	92.0	Oil shale: Medium to dark and rare light olive gray (5Y5/2-3/2, rare 6/2), dolomitic. Faint very fine laminae and streaked bedding. Irregular to regular thick to rare thin parting; irregular to fairly regular fracture; some rubble. Rare light gray silty laminae in upper part. Sample of dark olive-gray oil shale from 91.6 feet: X-ray--dolomite, quartz, analcime, illite, feldspar, pyrite.
92.0	93.3	Marlstone and some oil shale: Buff to olive gray (5Y7/2-5/2), dolomitic. Faint and some moderately distinct very fine laminae to very faint streaked bedding. Regular to irregular thick to some thin parting; irregular to fairly regular fracture; some irregular broken core pieces. A high angle fracture with very fine drusy mineral patches and some black to brown stains through most of interval.
93.3	95.9	Marlstone and mudstone (lean oil shale?): Medium to light olive gray and rare buff (5Y5/2-6/2, some 4/2, rare 7/2), dolomitic. Faint laminae to very faint streaked bedding. Fairly regular to irregular thick to some thin parting; fairly regular to irregular fracture. Sample of olive-gray oil shale from 95.2 feet: X-ray--dolomite, quartz, analcime, feldspar, illite.

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From	To	Description
95.9	97.3	Marly mudstone: Light and some medium brownish gray to buff (2.5 6/2-7/2, some 2.5 to 5Y5/2), dolomitic to moderately calcareous. Faint streaked bedding and some very fine laminae; becoming nearly massive in lower part. Irregular thick to rare medium parting; slightly irregular fracture. Some fine rusty brown spheres and lenses near top. A small vitreous black plant (?) fragment at 96.6.
97.3	98.5	Missing.
98.5	101.4	Mudstone: Buff to rare medium olive gray (2.5 to 5Y7/2-6/2, rare 8/2 upper part, rare 5/2 lower part), mostly calcareous, becoming dolomitic in lower part. Faint streaked bedding. Irregular thick parting; irregular to slightly conchoidal fracture; some rubble. Rare fine brownish-black blebs near base.
101.4	104.7	Sandstone and siltstone: Orange buff and tan, rare gray buff to light gray (2.5Y to 10YR 7/3 and 7/4-6/3 and 6/4, rare 5/4 and 7/2 to N6), calcareous. Massive with faint to distinct thick to thin irregular vertical striping (striping appears to be a staining phenomenon rather than contorted bedding); faint horizontal streaks near base. Irregular thick parting; irregular to regular fracture. Irregular natural (?) vertical fracture from about 101.7 to 102.7.
104.7	107.2	Siltstone and mudstone: Light brownish and olive gray to buff (2.5 to 5Y6/2-8/2, some 6/1-7/1 upper part), moderately calcareous in upper part becoming slightly calcareous to dolomitic in lower part. Faintly streaked to massive with some faint laminae and bands. Irregular thick parting; slightly irregular and conchoidal fracture. Some fine carbonaceous specks and rare biotite in middle part.
107.2	108.0	Mudstone: Light to medium olive gray (5Y6/2-5/2), dolomitic. Faint streaked bedding. Irregular to regular thick parting; regular fracture.
108.0	108.5	Missing
108.5	111.0	Siltstone: Buff and gray buff to some light and rare medium olive gray and brownish gray (5 to 2.5Y 7/2-7/1, some 6/2, rare 5/2 upper part), very slightly calcareous. Very faint streaked bedding with some faint bands and laminae. Irregular thick parting; regular to some conchoidal fracture; broken core in lower 0.6 foot. Sparse carbonaceous specks. Very rare biotite.
111.0	113.0	Mudstone and claystone: Light to medium olive gray (5 to 7.5Y 6/2-4/2, some 7/2 upper part), noncalcareous to slightly dolomitic. Very faint streaked bedding and rare very fine laminae. Irregular to some regular thick to medium parting; slightly conchoidal to irregular fracture. Some natural (?) fractures. Some very fine pyrite cubes in lower part. Sample of olive-gray mudstone from 111.8 feet: X-ray--dolomite, quartz, analcime, illite, feldspar, montmorillonite.
113.0	114.0	Claystone (oil shale): Medium to rare light olive gray (5 to 7.5Y 4/2-5/2, rare 6/2), dolomitic. Faint streaked bedding. Irregular to some fairly regular thick parting; irregular and some coarse hackly fracture. Sparse very fine disseminated pyrite. Fine gray to white tuff streaks with hornblende (?) and biotite at 113.8-113.9.

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From	To	Description
		Sample of olive-gray oil shale from 113.6 feet: X-ray--quartz, dolomite, illite, analcime, montmorillonite, feldspar, pyrite.
114.0	116.0	Oil shale: Medium to dark olive gray (5Y 4/2-3/2 upper part, 3/2-2/2 lower part), moderately to slightly dolomitic. Faint very fine laminae. Regular thick to some thin parting; slightly irregular to hackly fracture.
		Sample of dark olive-gray oil shale from 115.8 feet: X-ray quartz, dolomite, analcime, illite, feldspar, montmorillonite, pyrite, Mg-siderite.
116.0	117.5	Oil shale: Medium to some dark and light olive gray (5Y 4/2-5/2, some 3/2 and 6/2, rare 2/2), dolomitic, silty. Moderately distinct to very faint laminae. Regular to some irregular thick to rare thin parting; slightly irregular fracture.
117.5	118.5	Missing
118.5	122.0	Mudstone and shale (lean oil shale?): Medium to rare light olive gray (5Y 4/2 and 4/1-5/2 and 5/1, rare 6/2 lower part), slightly to moderately calcareous. Faint to rare moderately distinct very fine laminae. Regular to irregular thick to thin parting; regular to some hackly fracture; some broken and mixed up core. Rare ostracod-covered parting surfaces. A 0.1-foot piece of very light gray biotitic tuff at 119.9-120.0 (no indication of continuity with core above; mixed up rubble and broken pieces of mudstone and shale below).
122.0	123.0	Mudstone: Medium to light brownish gray (2.5Y 5/2 and 5/1-6/2), slightly to very calcareous. Faint streaked bedding and rare very fine laminae. Regular to irregular thick to medium parting; regular to slightly conchoidal fracture. Rare very fine disseminated biotite.
		Sample of slightly brownish-gray mudstone from 122.1 feet: X-ray--quartz, dolomite, analcime, feldspar, illite, calcite, pyrite.
123.0	125.2	Mudstone: Medium to some light slightly olive and brownish gray (5 to 2.5Y 4/1 and 4/2-5/1 and 5/2, some 6/1-6/2), calcareous. Faint to some moderately distinct laminae. Regular thick to some thin parting; regular to some hackly fracture.
125.2	127.1	Shaly mudstone: Medium to some light olive gray and brownish gray (5 to 2.5Y 5/2 and 5/1-6/2), calcareous. Faintly laminated. Regular thin to rare thick parting; slightly hackly fracture. Some ostracods. A vitreous black woody plant fragment at 126.8.
127.1	128.5	Missing
128.5	130.7	Shaly mudstone: As above. Some rubble.

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From	To	Description
130.7	132.0	Oil shale: Medium to some dark and light olive gray and brownish gray (5 to 2.5Y 4/1-5/2, some 3/1 and 6/2), dolomitic to slightly calcareous, silty. Faintly laminated. Regular thick to some thin parting; fairly regular fracture. A very thin dark gray massive tuff layer at 130.8; a 1/2-inch piece of medium gray sparry tuff with very fine disseminated pyrite at 131.6.
132.0	132.6	Mudstone: Medium to some light olive gray and brownish gray (5 to 2.5Y 5/2-5/1, some 6/2-6/1), calcareous. Faint very fine laminae and streaked bedding. Regular thick to thin parting; fairly regular fracture. Rare ostracod-covered parting surfaces.
132.6	135.1	Oil shale: Medium to some light and rare dark olive gray and brownish gray (5 to 2.5Y 5/2 and 5/1-4/2 and 4/1, some 6/2-6/1, rare 3/1), calcareous. Very faint to rare distinct very fine laminae. Regular shaly to papery parting; slightly hackly fracture. Abundant very fine buff earthy laminae and streaks in some parts. Rare ostracod-covered parting surfaces. Sample of papery shale with very fine buff earthy laminae and streaks from 133.9 feet: X-ray--aragonite, quartz, calcite, illite, feldspar, analcime.
135.1	135.9	Siltstone: Brownish gray (2.5Y to 10YR 5/1-4/1), slightly calcareous. Faintly streaked. Irregular thick to medium parting; fairly regular to irregular fracture. Sample of brownish-gray siltstone from 135.8 feet: X-ray--analcime, quartz, feldspar, pyrite, illite.
135.9	136.0	Marlstone (oil shale): Dark to light brownish to olive gray (2.5 to 5Y 3/1-6/2), calcareous. Faintly laminated. Silty in upper part.
136.0	136.2	Marlstone: Buff (2.5Y to 10YR 7/2), slightly calcareous to dolomitic. Massive in upper part; laced with sparry to sandy-textured calcite-filled fractures in lower part. Irregular rounded core pieces.
136.2	137.5	Mudstone: Olive buff and light olive gray in upper part to light and medium brownish gray in lower part (5Y 8/2 and 8/1-6/2 to 2.5Y 6/2-5/2), calcareous, silty in upper part to marly in lower part. Very faint streaked bedding to faint very fine laminae. Irregular to regular thick to rare medium parting; conchoidal to slightly irregular fracture. Some fine irregular to vermiform gray to white stringers. Some ostracod-covered parting surfaces.
137.5	138.5	Missing
138.5	140.5	Mudstone, marstone, and shale (oil shale in part): Medium to some light olive gray and neutral gray (5Y 6/2-4/2, some 7.5Y 6/2-6/1 and rare N6-7), calcareous. Faint laminae and streaked bedding. Regular to irregular thick parting and slightly conchoidal fracture in most parts; some irregular to shaly rubble. Thin vermiform buff marly stringers in some mudstone pieces.

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From	To	Description
140.5	142.0	Mudstone and silty shale: Medium to dark slightly olive gray (5 to 10Y 5/1-3/1), calcareous. Faint to some moderately distinct laminae. Regular thick to thin parting; fairly regular fracture; mostly rubble in lower part. Abundant very fine muscovite and biotite on some parting surfaces. Sample of medium to dark gray laminated mudstone from 140.9 feet: X-ray--calcite, quartz, dolomite, illite, analcime, feldspar, pyrite.
142.0	145.8	Shale (mostly oil shale?): Medium olive gray and brownish gray (5 to 2.5Y 4/1 and 4/2-5/1 and 5/2, rare 10YR 4/1-5/1), calcareous. Faint very fine laminae and streaked bedding. Regular to some irregular shaly to papery parting; hackly fracture; commonly splinters and falls apart on splitting. Rare very fine buff earthy streaks and laminae (like 133.9 feet). Some ostracods. Sample of olive-gray shale from 144.9 feet: X-ray--calcite, quartz, feldspar, dolomite, analcime, illite.
145.8	146.1	Dolomite and siltstone: Tan and buff dolomite and gray-buff to light gray calcareous siltstone. Irregularly streaked and mottled. Irregular rounded core pieces.
146.1	147.1	Missing?
147.1	147.4	Mudstone and siltstone: Light slightly olive and neutral gray, calcareous. Faintly streaked to massive. Irregular core pieces.
147.4	147.9	Rubble: Like 140.5-148.9.
147.9	148.9	Silty shale and mudstone: Medium gray to olive gray (7.5 to 5Y 4/1-5/1 and 5/2), calcareous. Faint very fine laminae and streaked bedding. Irregular to regular thin to thick parting; irregular and hackly to slightly conchoidal fracture. Rare parting surfaces with abundant very fine muscovite and biotite. Some very fine buff earthy streaks.
148.9	150.0	Oil shale: Medium to rare dark olive gray (5Y 4/2-5/2, rare 3/2), calcareous. Faintly laminated. Shaly to papery parting; hackly fracture; rubble near top and bottom. Abundant <u>very</u> fine mica.
150.0	150.5	Missing?
150.5	151.0	Oil shale: As above. Firm to shaly core.
151.0	151.15	Siltstone: Gray (2.5Y 5/1), slightly calcareous. Regular massive band. Sample of gray siltstone from 151.1 feet: X-ray--Na feldspar, analcime, pyrite, calcite, quartz.
151.15	152.4	Shale (oil shale): Olive gray (5Y 5/2-5/1, some 4/2), calcareous. Faint very fine laminae. Regular to irregular shaly to papery parting; hackly fracture; mostly irregular rounded core wafers. Few very fine white earthy tuff laminae near top.
152.4	153.6	Sandstone: Yellowish tan to yellow buff (2.5Y 4/6-7/3), silty to medium grained. Irregular massive rounded core pieces and rubble; slightly friable in lighter parts. Rare very small black carbonaceous blebs and fine streaks in upper part.

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From	To	Description
		Sample of yellowish-tan sandstone from 152.9 feet: X-ray--quartz, analcime, K and Na feldspars, hornblende.
153.6	158.5	Missing?
158.5	161.7	Sandstone: Yellow buff to orange brown (2.5Y to 10YR 7/3-5/5). Faintly variegated to massive. Irregular parting; slightly irregular fracture; some rounded and worn core pieces. Porous and permeable. Some muscovite and biotite.
161.7	167.7	Missing?
167.7	169.5	Siltstone and mudstone: Yellow buff to gray buff (2.5Y 8/3-7/1), slightly calcareous in parts. Massive with some yellow-orange mottling. Slightly irregular to irregular thick to medium parting; slightly irregular to conchoidal fracture; some rounded and worn core.
169.5	171.2	Sandstone: Yellowish tan to light brownish gray (2.5Y 6/4-6/2), fine to medium grained. Massive with some irregular staining. Irregular parting and fracture; some rounded core pieces. Porous and permeable to tight. Tight gray calcareous sandstone stringer at 170.3-170.6.
171.2	177.7	Missing?
177.7	187.9	Sandstone: Olive brown to buff (2.5Y 5/4-7/2), fine to medium grained. Faintly variegated to massive. Irregular parting; slightly irregular fracture; some worn core in upper part. Porous and permeable. Fairly abundant biotite. Sample of sandstone from 183.6 feet: X-ray--Na and K feldspars, quartz, dolomite, analcime, illite, hornblende.
187.9	191.5	Missing
191.5	202.4	Sandstone: As above and below. Faint regular bedding in some parts.
202.4	206.3	Missing
206.3	213.2	Sandstone: Buff to orange tan and rare brownish orange (2.5Y to 10YR 7/2-6/4, rare 6/6 upper part), medium to fine grained. Massive, some faint regular bedding. Regular to irregular thick parting; fairly regular fracture; some rounded and worn core pieces. Porous and permeable. Fairly abundant biotite (and hornblende?).
213.2	217.3	Missing
217.3	220.3	Siltstone: Cement gray (7.5Y 7/1), slightly to moderately calcareous, massive. Irregular thick parting; slightly irregular and conchoidal fracture; some broken core. Sample of siltstone from 219.4 feet: X-ray--quartz, K and Na feldspars, dolomite, illite, Mg-siderite.
220.3	222.3	Missing
222.3	223.8	Siltstone and mudstone: Buff (2.5Y 7/2-7/3), calcareous. Very faint streaked bedding. Rubble and rounded core pieces. Some sandstone as below.

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From	To	Description
223.8	226.3	Sandstone: Yellow buff and some yellow tan (2.5Y 7/2-7/3, some 6/3), slightly calcareous, fine grained, silty. Very faint regular to distorted streaked bedding. Irregular thick parting; fairly regular to irregular fracture; some rounded core and rubble. Mostly porous and permeable. Rare mica. Very rare carbonaceous flecks.
226.3	232.8	Missing
232.8	234.0	Sandstone and some mudstone: Yellowish tan to brownish orange and some light olive gray (2.5Y 6/3 to 10YR 5/8, some 5Y 6/3-6/2), fine grained. Faintly variegated to massive. Irregular thick parting; slightly irregular fracture; some rubble in upper part. Porous and permeable. Some fine vitreous black carbonaceous streaks near bottom. Some biotite and hornblende.
234.0	234.5	Sandstone: Gray (7.5Y 5/1), fine to medium grained. Faintly streaked with carbonaceous material. Slightly irregular parting and fracture. Moderately permeable. Some biotite and muscovite. Conformable contacts. Sample of gray sandstone from 234.2 feet: X-ray--analcime, quartz, Na and K feldspars, illite, hornblende, mixed layer clay, dolomite, Mg-siderite.
234.5	243.0	Sandstone: Yellow buff and tan to some brownish yellow and rare orange (2.5Y 7/3 and 6/3-6/5, some 10YR 7/3-5/8), fine grained. Faint regular bedding. Fairly regular thick to medium parting; slightly irregular fracture; some worn core. Porous and permeable. Fine carbonaceous streaks in some zones. Some biotite and hornblende. Some gray layers as above at 237.8-238.1.
243.0	251.2	Siltstone: Cement gray (7.5 to 5Y 7/1-6/1), sandy in upper part to muddy in lower part, becoming calcareous in lower part, massive. Irregular thick parting; slightly irregular fracture; rare rubble. (245.0-246.8 missing)
251.2	253.4	Sandstone: White to light gray (N8-6; very slight brown to olive tint), very fine grained. Massive with some faint streaks and layers. Mostly rounded and worn core pieces. Some olive-buff mudstone pieces in lower part.
253.4	255.4	Mudstone and some siltstone: Gray buff to olive gray (5Y 7/1 and 7/2-5/2, rare 4/2), calcareous. Faint to some fairly distinct laminae. Irregular to regular thick parting; fairly regular to some irregular fracture. Sample of light to medium olive-gray mudstone from 254.5 feet: X-ray--quartz, calcite, analcime, feldspar, illite, dolomite.
255.4	260.5	Siltstone: White to gray buff (5Y 8/1-7/1), calcareous, sandy massive. Mostly rubble and rounded core pieces. (256.0-257.8 missing?)

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From	To	Description
260.5	263.6	Mudstone: Light to medium olive gray (7.5Y 6/1-5/1 and 5/2), calcareous. Massive with some very faint streaks and layers. Irregular to regular thick parting; regular to irregular and conchoidal fracture. Rare fine dark gray pyritic blebs. Rare thin white to light gray sandy layers in lower part.
263.6	265.4	Mudstone and siltstone: Medium to light olive gray (5Y 5/2 and 5/1-6/2 and 6/1, some 7/1, rare 4/1), calcareous. Very faint streaked bedding to faint and some moderately distinct very fine laminae. Regular to irregular thick parting; irregular to regular fracture. Abundant very fine mica. Some fine carbonaceous debris in coarser parts.
265.4	269.2	Mudstone and siltstone: As above. Intricately contorted and displaced bedding (possibly overturned). (265.9-267.8 missing.)
269.2	279.9	Mudstone and rare siltstone: Medium to light olive gray (5 to 7.5Y 5/2 and 5/1-6/2 and 6/1, rare 7/1), calcareous. Faint streaked bedding; abundant very fine distinct black oil-shale shreds in most parts; contorted bedding at 272.3-275.3. Irregular to regular thick parting; fairly regular fracture. A 0.1-foot irregular dense light brownish-gray dolomite layer near base. (276.8-277.8 missing)
279.9	280.2	Oil shale and dolomite: Black oil shale (5 to 2.5Y 2/1) and brownish-gray dolomite (2.5Y 4/2-5/2). Very faintly streaked oil shale with irregular dolomite stringers and lenses. Regular thick parting; regular to slightly conchoidal fracture.
280.2	281.5	Oil shale: Black (2.5Y 2/1-2/2), slightly dolomitic. Very faint streaked bedding. Irregular to regular thin to thick parting; hackly to irregular fracture; rubble in upper half. Sample of black oil shale from 281.2 feet: X-ray--quartz, dolomite, feldspar, analcime, illite, pyrite.
281.5	284.0	Oil shale: Black to dark and some medium brownish gray (2.5Y 2/1 and 2/2-3/1 and 3/2, some 4/1-4/2), dolomitic. Faint streaked bedding and very fine laminae. Irregular shaly to papery parting; hackly fracture; badly broken and mixed up from handling and splitting. Rare very small gray silty lenses near top.
284.0	284.2	Dolomite and some oil shale: Buff and some light brownish-gray dolomite (2.5Y 7/2, some 6/2-6/1) and dark brownish-gray to black oil shale (2.5Y 3/1-2/1), slightly calcareous. Faint inclined laminae with some small displacements.
284.2	285.1	Oil shale: Medium to dark brownish gray (2.5Y 5/1 and 5/2-3/1 and 3/2), calcareous. Moderately distinct to very faint displaced laminae and streaked bedding. Irregular shaly parting; hackly fracture; broken and mixed up from handling and splitting.

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From	To	Description
285.1	333.0	Siltstone and mudstone: Buff to brownish gray and olive gray (2.5 to 5Y 8/2 and 8/1-4/1), calcareous. Faint to distinct streaks and stringers; commonly contorted and disrupted. Irregular thick parting; irregular to some regular fracture. Occasional dark oil-shale streaks and stringers. (287.1-287.8 and 296.8-297.8 missing.)
333.0	338.0	Siltstone: Gray buff to light and some medium slightly brownish gray (2.5Y 7/1-6/1, some 5/1-5/2, rare 8/1 and 4/1), calcareous, sandy in lower part. Very faintly variegated to faint and some moderately distinct contorted stringers and streaks. Irregular thick parting; irregular to fairly regular fracture. Sample of light slightly brownish-gray siltstone from 334.6 feet: X-ray--quartz, analcime, feldspar, calcite, siderite, illite.
338.0	343.0	Very fine sandstone and siltstone: Gray buff to light slightly brownish-gray (2.5Y 7/1-6/1), calcareous, massive. Irregular thick parting; slightly irregular fracture.
343.0	345.9	Siltstone: Light slightly brownish-gray (2.5Y 6/1, becoming almost neutral in lower part), calcareous, sandy in upper part, massive. Irregular thick parting; irregular fracture.
345.9	346.4	Oil shale: Light to medium olive gray and brownish gray (5 to 2.5Y 6/1 and 6/2-5/2, rare 4/2), moderately to slightly calcareous. Faint very fine laminae; rare fine displacements. Irregular thick to thin parting; irregular fracture; some rounded and broken core pieces. Siltstone as above at 346.0-346.1.
346.4	347.8	Missing
347.8	349.2	Oil shale: Black and some dark olive gray to rare medium olive (5Y 2/1, some 3/1-3/2, rare 4/3), dolomitic. Very faint streaked bedding and some very fine laminae. Irregular thick to very thin parting; irregular to hackly fracture; some rounded core pieces; splinters badly on splitting. Sample of black oil shale from 348.7 feet: X-ray--quartz, illite, analcime, feldspar, dolomite, pyrite, Mg-siderite.
349.2	349.5	Marlstone: Gray buff to medium gray (5Y 7/1-5/1), slightly calcareous, silty in darker part. Faint regular laminae. Firm; slightly conchoidal fracture.
349.5	352.2	Oil shale: Black to gray (5Y 2/1-5/1), calcareous, mostly silty in upper part. Faint to some fairly distinct laminae. Irregular to regular thin to medium parting; hackly fracture; mostly irregular splintered core and rubble.
352.2	356.4	Oil shale: Dark olive gray and brownish gray to black (5 to 2.5Y 3/1-2/1), calcareous. Distinctly laminated with <u>very</u> fine buff earthy laminae and streaks. Regular shaly to papery parting; hackly fracture. Few small pieces of light gray friable muddy sandstone near top. Sample of papery shale with buff earthy laminae and streaks from 354.9 feet: X-ray--aragonite, quartz, feldspar, calcite, dolomite, illite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
356.4	359.5	Oil shale: Black to some medium brownish gray (5 to 2.5Y 2/1-3/1, some 4/1-4/2), dolomitic to calcareous. Faintly laminated with some very fine distinct buff earthy laminae and streaks. Regular to some irregular shaly to papery parting; hackly fracture; some rubble in lower part. (357.5-357.8 missing)
359.5	367.3	Oil shale: Black to some dark brownish and olive gray (2.5 to 5Y 2/1, some 3/1), dolomitic. Faintly laminated; some faint slightly disrupted bedding in lower part. Regular to irregular shaly and some papery parting; hackly fracture; splinters badly on splitting. Sample of black oil shale from 360.9 feet: X-ray--quartz, analcime, feldspar, calcite, illite, pyrite.
367.3	368.3	Oil shale: Black (2.5Y 2/1 to N2), dolomitic. Very faint very fine streaks and laminae. Irregular to regular thick to some medium and thin parting; slightly conchoidal and rare hackly fracture.
368.3	374.4	Oil shale: Dark brownish gray and olive gray to black (2.5 to 5Y 3/1-2/1), dolomitic. Faint streaked bedding. Irregular thin to rare thick shaly parting; hackly fracture; splinters badly on splitting. A 1-inch dark grayish-brown tight sandy-textured nodule at 373.3.
374.4	377.8	Oil shale: Dark to some medium brownish gray (2.5Y 3/2-2/2, some 4/2), calcareous. Faint laminae with abundant very fine distinct buff earthy laminae and streaks. Regular shaly to papery parting; slightly hackly fracture. A 1-inch slightly irregular yellowish-buff to dirty gray very fine sandy-textured analcime tuff band at 377.5. Sample of brownish-gray and buff papery shale from 376.0 feet: X-ray--aragonite, quartz, analcime, dolomite. Sample of analcime tuff from 377.5 feet: X-ray--analcime, quartz, feldspar.
377.8	379.3	Oil shale: Black to rare medium brownish gray (2.5Y 2/1, some 3/1, rare 4/1), dolomitic. Faint streaked bedding and very fine laminae. Irregular to regular thin to rare thick parting; hackly fracture; some rubble. Rare very fine silty biotitic streaks and laminae.
379.3	379.9	Siltstone: Brownish gray (2.5Y 4/1 and 4/2-5/1 and 5/2), dolomitic, muddy. Massive with some very fine carbonaceous streaks. Irregular thick parting; slightly irregular fracture. Some muscovite. Sharp slightly irregular upper and lower contacts. Sample of brownish-gray siltstone from 379.6 feet: X-ray--quartz, analcime, feldspar, dolomite, calcite, pyrite.
379.9	380.15	Oil shale: Black to dark brownish gray (2.5Y 10YR 2/1-3/1), dolomitic. Faint streaked bedding and very fine laminae. Slightly irregular thin to thick parting; slightly irregular fracture. A fine tan crystalline quartz lamina at 380.1 and a very thin slightly irregular olive-gray biotitic tuff layer 1/8-inch lower.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
380.15	380.8	Oil shale: Black to brown and some tan to buff (10YR and 2.5Y 2/1-5/3, some 6/3-7/2 lower part), calcareous. Faint to distinct very fine laminae; becoming wavy near base. Regular thin to medium parting; slightly irregular fracture; some rubble (probably broken during splitting). Rare very fine dense gray mineral laminae. Sample of distinctly laminated black to brown oil shale from 380.3 feet: X-ray--aragonite, quartz, calcite, dolomite, analcime, feldspar.
380.8	380.95	Tuff (?): Light gray (N6, some 7), silty to sandy. Faintly variegated. Irregular fracture; porous and permeable. Wavy upper contact; broken and worn lower surface. Sample of light gray silty to sandy porous tuff (?) from 380.9 feet: X-ray--quartz, analcime, calcite, pyrite.
380.95	382.9	Oil shale: Dark and some medium brownish gray (2.5Y and 10YR 3/2 and 3/1-2/1, some 4/1 in lower part), calcareous. Faint to some moderately distinct very fine laminae. Regular to some irregular thin to medium parting; hackly fracture; some rubble in lower part. Occasional fine to thin light gray silty laminae in upper half.
382.9	383.9	Oil shale: Black to dark and rare medium brownish gray (10YR and 2.5Y 2/1-3/1 and 3/2, rare 4/2), calcareous to dolomitic. Faint streaked bedding and very fine laminae. Regular thin to medium parting; hackly fracture; very splintery. A very thin light gray blebby chert layer at 383.2.
383.9	386.2	Shale: Slightly brownish and olive gray to gray buff (2.5 to 5Y 5/1-7/1), dolomitic to slightly calcareous slightly silty. Faint to some moderately distinct laminae. Regular thin to medium parting; irregular to regular fracture. Sample of gray-buff silty shale from 385.7 feet: X-ray--dolomite, quartz, feldspar, analcime, calcite, pyrite.
386.2	387.8	Missing
387.8	389.0	Marlstone and lean oil shale: Light to rare dark olive gray and some gray buff to buff (5 Y 6/2-5/2, some 7/1-7/2, rare 4/2-3/1), dolomitic. Moderately distinct to faint laminae. Regular to irregular thick parting; conchoidal fracture; irregular worn and broken core pieces; length uncertain.
389.0	390.6	Oil shale: Medium to some dark brownish gray (2.5Y 4/2-5/2 and 5/1, some 3/2-2/1), dolomitic. Faintly streaked to laminated. Irregular to regular thick to thin parting; irregular to hackly fracture; mostly irregular core pieces and rubble. Some porous sandy-textured calcareous streaks and slightly friable core pieces in upper part.
390.6	393.2	Oil shale: Dark brownish gray to brownish black (2.5Y to 10YR 3/2-2/1), dolomitic. Faint streaked bedding and very fine laminae. Irregular to regular thin to medium parting; irregular hackly fracture; splintery.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
		Sample of dark brownish-gray oil shale from 391.5 feet: X-ray--dolomite, quartz, calcite, analcime, feldspar, pyrite.
393.2	394.4	Oil shale: Dark to medium brownish gray and olive gray (2.5 to 5Y 2/1-4/1 and 4/2), dolomitic. Faint very fine laminae and streaked bedding. Irregular thin to thick parting; hackly fracture; splintery.
394.4	395.6	Oil shale: Dark and rare medium almost neutral gray (2.5 to 5Y 2/1-3/1, rare 4/1), dolomitic. Faint very fine laminae and streaked bedding. Regular to irregular thick to some thin parting; irregular to some hackly fracture.
395.6	396.6	Oil shale: As above with some yellowish buff to tan (5Y 7/2 and 7/3-6/3) slightly silty dolomitic marlstone laminae and bands and very fine streaks in lower part. A thin gray silty tuff lens at 396.4. Mostly irregular thin to medium shaly parting.
396.6	397.8	Missing
397.8	399.5	Oil shale: Black to medium and rare light grayish brown (2.5Y to 10YR 2/1-4/2, rare 10YR 5/2-6/2 lower part), calcareous. Faint to some fairly distinct laminae. Irregular to regular medium to thin parting; fairly regular to hackly fracture; some rubble and worn core. Some pieces of buff earthy marlstone in rubble at top. Ostracod-covered parting surfaces in upper part.
399.5	400.8	Oil shale: Medium to dark brownish gray (2.5Y 5/1 and 5/2-3/1, rare 2/1), calcareous. Faint to moderately distinct laminae. Irregular to regular thin to thick parting; fairly regular fracture; mostly rounded core pieces and some rubble.
400.8	402.0	Oil shale and marlstone: Dark brownish gray to buff (2.5Y 2/1-7/2), calcareous. Faint to moderately distinct laminae in thick dark and light zones. Regular thin to thick parting; hackly to regular fracture; some worn core pieces.
		Sample of buff marlstone with very fine dark oil-shale laminae from 401.9 feet: X-ray--dolomite, quartz, analcime, feldspar, pyrite.
402.0	403.6	Oil shale: Brownish gray to black (2.5Y 4/1 and 3/2-2/1), calcareous. Faintly laminated; abundant very fine brown to buff streaks and lenses. Regular thick to thin parting; slightly irregular and some hackly fracture. Few very fine light gray analcime laminae at 402.8; fine brownish-gray lamina at 403.3.
		Sample of dark brownish-gray to black oil shale with very fine brown lenses and streaks from 403.2 feet: X-ray--calcite, quartz, illite, analcime, feldspar, pyrite, dolomite.
403.6	407.3	Missing

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
407.3	409.1	Oil shale: Brownish gray to some black and rare buff (2.5Y 4/2-3/2 and 3/1, some 2/1, rare 5/2-7/2), calcareous. Faint to some distinct laminae. Regular to irregular thick to rare thin parting; regular to slightly irregular and conchoidal fracture; some rubble and rounded core pieces. Fish scales at 407.9. Sample of dark brownish-gray to rare buff oil shale from 407.8 feet: X-ray--calcite; some quartz, dolomite.
409.1	410.8	Oil shale: Black to some medium and light brownish gray (2.5Y 2/1-3/1, some 4/1-6/1 upper part, some 3/2-4/2 lower part), calcareous to dolomitic. Faint and rare distinct laminae; some very fine brown lenses and streaks in lower part. Regular thick to rare thin parting; slightly irregular fracture. Very rare fish scales. A very thin granular light gray biotitic analcime lamina at 409.6; fine brownish-gray silty biotitic tuff lamina at 410.0; fine brownish-gray biotitic analcime lamina at 410.3. Sample of light gray granular biotitic lamina from 409.6 feet: X-ray--quartz, analcime, feldspar, biotite, calcite, hornblende, dolomite, pyrite.
410.8	412.9	Oil shale: As above and below. Chunky to shaly rubble; grab sampled.
412.9	414.4	Oil shale: Black and some grayish brown to buff (2.5Y 2/1-3/2, some 4/2 and 4/3-7/2), dolomitic to calcareous. Faint and some distinct laminae. Irregular to regular thin to thick parting; irregular fracture; some rounded core pieces and rubble.
414.4	415.6	Oil shale: Brownish gray to black (2.5Y 4/2-2/1, rare 5/2-5/1), dolomitic to calcareous. Faint to rare moderately distinct laminae. Irregular to regular thick to rare thin parting; irregular to slightly conchoidal fracture; some rounded core pieces and rare rubble. Small piece with part of a fossil fish in rubble.
415.6	416.6	Oil shale: Medium to dark and some light brownish gray (2.5Y 5/2-3/1, some 6/2 lower part), calcareous. Faint to fairly distinct laminae. Irregular thick parting; slightly irregular and conchoidal fracture. A very thin gray silty tuff lamina at 415.8; a fine pinched out very fine sandy-textured tuff at 416.1. Sample of dark to light brownish-gray oil shale from 416.3 feet: X-ray--calcite; some quartz, dolomite, pyrite.
416.6	417.4	Oil shale: Black to dark brownish gray (2.5Y 2/1-3/1, becoming slightly olive near base), dolomitic. Faint laminae and some very faint streaked bedding. Irregular to regular medium to thick parting; slightly irregular and hackly fracture. A massive light to medium gray silty biotitic tuff band at 416.8-417.0; a 5/8-inch buff to gray silty to very fine sandy-textured biotitic tuff band at 417.2.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
417.4	418.4	Oil shale: Olive gray (5 to 7.5Y 4/2-5/2, some 4/1-5/1), dolomitic. Faintly laminated. Slightly irregular thick to medium parting; slightly conchoidal to irregular fracture. A thin tan dolomite band at base (fine dark brown oil shale lamina in middle of band). Sample of olive-gray oil shale from 418.0 feet: X-ray--dolomite, quartz, calcite, feldspar, illite, pyrite.
418.4	420.0	Oil shale: Grayish brown to black (2.5Y 5/2-2/1), dolomitic to very calcareous. Faintly laminated; abundant very fine distinct buff laminae, streaks, and lenses in some parts. Regular to some irregular thick to very thin parting; regular to irregular and sharp to coarse hackly fracture. Small buff crystalline limestone lenses at contact with leaner oil shale below. Sample of shale with very fine distinct buff laminae and streaks from 419.4 feet: X-ray--calcite, dolomite, quartz, feldspar. Sample of medium to dark brownish-gray laminated oil shale from 419.7 feet: X-ray--calcite, dolomite, quartz, feldspar.
		BOTTOM OF LANEY MEMBER TOP OF WILKINS PEAK MEMBER
420.0	420.8	Oil shale: Light olive gray and some olive buff to medium olive (5Y 6/2-5/2 and 5/3, some 7/2, rare 4/2 streaks), very to slightly calcareous. Faint to distinct discontinuous laminae and streaks. Irregular thick parting; regular to irregular and conchoidal fracture. Some fine buff-white limestone streaks and laminae. Sample of light to medium olive-gray oil shale from 420.4 feet: X-ray--dolomite, calcite, quartz, feldspar.
420.8	421.6	Mudstone: Light gray (5 to 7.5Y 7/1-6/1), slightly to very calcareous. Faintly streaked; some olive-green shale laminae in upper part. Irregular thick parting; irregular fracture; some shaly rubble at top. Sample of light gray calcareous mudstone from 421.4 feet: X-ray--quartz, dolomite, calcite, feldspar.
421.6	421.8	Oil shale and marlstone: Olive gray to greenish buff (5 to 7.5Y 5/2-8/2), calcareous. Distinct to faint slightly irregular laminae. Slightly irregular parting; irregular hackly fracture. Abundant buff crystalline limestone laminae and streaks.
421.8	422.3	Tuff: Buff and tan to brownish gray (2.5Y 7/2 and 7/3-5/2 and 5/1), silty to sandy biotitic. Massive; faintly laced with very fine tight rusty brown fractures. Irregular thick parting; regular to irregular fracture. Cut by a thin tight irregular high angle fracture zone. Sample of buff and tan tuff from 422.1 feet X-ray--analcime, quartz, feldspar, pyrite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
422.3	423.5	Oil shale: Black to olive green (5 to 7.5Y 2/1-5/2 and 5/3, rare 6/2) dolomitic to slightly calcareous. Faint to fairly distinct streaks and discontinuous laminae. Irregular to fairly regular thick to medium parting; irregular and some slight to coarse hackly fracture; rubble at 422.5-422.8. Abundant fine disseminated crystals in some zones. Few thin limestone streaks in upper part. Sample of dark oil shale with abundant fine crystals from 423.1 feet: X-ray--dolomite, quartz, calcite, feldspar, illite, pyrite.
423.5	423.6	Tuff: Pale yellowish brown (10YR 6/5-7/4), silty. Few very fine oil-shale stringers near top; a very faint very fine shaly stringer in middle. Thin to fine vermiform stringers extending 1/2-to 3/4-inch into dark oil shale below.
423.6	425.0	Oil shale: Medium to light and some dark olive green (7.5 to 5Y 4/2 and 4/3-6/2 and 6/3, some 3/2, mostly 2/1 in upper inch), slightly calcareous to dolomitic. Faint to some distinct streaks and some discontinuous laminae. Irregular thick to medium parting; irregular and some coarse hackly fracture. Few fine buff-white limestone streaks near base. Sample of olive-green oil shale from 423.9 feet: X-ray--calcite, quartz, dolomite, feldspar, montmorillonite.
425.0	425.4	Mudstone and oil shale: Olive buff to olive gray (5Y 7/2-5/2, rare 4/2). Faint streaked bedding. Mostly rubble. Some fine buff-white limestone streaks and lenses.
425.4	426.0	Tuff: Buff (5 to 2.5Y 8/2), silty, very calcareous in upper part. Faint streaked bedding; few marly laminae in middle part. Abundant very fine hornblende and biotite. Rubble in lower 0.1 foot. Sample of tuff from 425.7 feet: X-ray--K and Na feldspars, calcite, analcime, biotite, hornblende.
426.0	427.2	Mudstone limestone and siltstone: Light to medium gray (5 to 7.5Y 7/1-5/1) and buff to tan (2.5Y 7/3 and 7/2-6/3), calcareous. Faint to distinct slightly irregular laminae; rare slight cross-laminae in lower part. Regular to irregular thick parting; slightly irregular fracture. Few shaly partings with very abundant very fine biotite in upper part. Sample of light gray silty limestone and calcareous mudstone from 426.7 feet: X-ray--calcite, quartz, dolomite, feldspar.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
427.2	428.6	Mudstone, limestone, and oil shale: Medium and rare dark olive gray to light gray (5Y 5/2 and 5/1-7/1, rare 4/2-3/2), commonly silty, mostly very calcareous. Fairly distinct to faint slightly irregular and some displaced laminae. Irregular to fairly regular thick parting; irregular fracture. Massive olive-gray oil shale with abundant fine disseminated crystals at 427.9-428.0.
428.6	428.8	Missing? NOTE: Box 40 (426.4-434.2) was spilled and mixed up. Reassembled sequence below 428.8 is probably not exactly correct.
428.8	430.0	Oil shale: Olive gray (7.5Y 5/2-4/2), slightly calcareous to dolomitic. Faint streaked bedding. Irregular thick to medium parting; irregular fracture. Abundant light gray silty limestone streaks, laminae, and bands.
430.0	431.9	Marlstone and oil shale: Medium to light and rare dark slightly olive gray (5Y 5/1-6/1, some 4/1-3/1), slightly calcareous. Moderately distinct to faint laminae and rare bands. Slightly irregular thick parting; irregular fracture. Abundant irregular light to medium gray limestone laminae and streaks.
431.9	432.3	Tuff: White to buff and rare tan to light brownish gray (2.5Y 9/2-8/2, some 7/2, rare 6/4-6/1), calcareous. Moderately distinct to faint laminae and bands. Regular thick parting; slightly irregular fracture. White efflorescent powder on outside of core. Abundant biotite in some zones. Sample of white to buff tuff from 432.2 feet: X-ray--K and Na feldspars, biotite, pyrite, calcite.
432.3	434.2	Marlstone and oil shale: Like 430.0-431.9. Very abundant limestone layers and streaks.
434.2	434.4	Limestone: Light slightly olive and brownish gray (5 to 2.5Y 6/1-7/1), fine crystalline to silty textured. Very faintly layered. Some pyrite near top. Becoming tuffaceous in lower part.
434.4	434.7	Tuff: Buff and some tan (2.5Y 7/1-7/2, some 6/4), slightly calcareous. Massive with fine tan mottling and lacy filaments. White efflorescent powder on outside of core. Tuff is 2-3/4-inches thick.
434.7	435.4	Oil shale: Olive green (10Y 5/2-4/2), dolomitic. Very faint streaked bedding; slightly wavy near top. Irregular thick parting; irregular fracture. Abundant fine crystalline calcite patches and some fine to thin streaks. Some fine short vermiform tuff stringers and streaks near top.
435.4	436.8	Oil shale: Medium to light olive green (10 to 7.5Y 5/2-7/2, some 4/2), dolomitic to calcareous. Faint streaked bedding. Irregular to fairly regular thick to medium parting; irregular fracture. Some fine to thin light gray to white calcite streaks and laminae. Sample of olive-green oil shale from 436.2 feet: X-ray--dolomite, quartz, calcite, feldspar, illite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
436.8	438.2	Limestone and oil shale: Light gray silty limestone (10Y 7/1-8/1) and light to medium olive-green oil shale (10Y 7/2-5/2). Faintly bedded oil shale interbedded with very abundant limestone laminae and streaks; common disrupted and displaced bedding. Sample of silty limestone (or very calcareous siltstone) finely interlaminated with oil shale from 437.5 feet: X-ray--calcite, dolomite, quartz, feldspar, pyrite.
438.2	439.9	Oil shale: Light to medium olive green (10Y 7/2-5/2), calcareous. Faint laminae and some streaked bedding. Irregular to fairly regular thick parting; irregular to slightly conchoidal fracture. Rare fine limestone streaks. A fine tan tuff lamina at 439.3; a fine light gray to white biotitic tuff lamina at 439.6.
439.9	442.0	Oil shale: Olive gray (7.5Y 5/2-4/2), slightly calcareous to dolomitic. Faint streaked bedding and rare laminae. Irregular to rare regular thick to medium parting; irregular fracture. A 1/2-inch light gray silty to earthy tuff band at 440.1; very fine syneresis cracks with pyritic filling at bottom. Rare fine to thin light gray silty limestone streaks and irregular layers in lower part. Some very fine disseminated pyrite cubes in lower part.
442.0	444.0	Oil shale and siltstone: Oil shale as above and below with abundant laminae, bands, and streaks of light gray very calcareous siltstone. Abundant biotite in siltstone in upper part. Bedding becoming very disrupted in lower part. Sample of siltstone from 443.3 feet: X-ray--calcite, dolomite, quartz, feldspar.
444.0	445.2	Oil shale: Olive green (7.5 to 10Y 5/2-4/2), slightly calcareous. Very faint laminae and some streaked bedding. Irregular to fairly regular thick to rare thin parting; irregular coarse hackly fracture. Fairly abundant very fine disseminated pyrite cubes.
445.2	446.5	Oil shale: Medium and some dark olive green (10Y 4/2-5/2, some 3/2, rare 2/1), dolomitic. Faint to some moderately distinct laminae. Fairly regular to irregular thick to rare thin parting; irregular coarse hackly fracture. Some very fine disseminated pyrite. A fine tan tuff lamina with very fine black blebs at top. Fairly abundant fine prismatic calcite streaks at 446.0-446.4. Sample of dark oil shale from 445.7 feet: X-ray-- calcite, dolomite, quartz, feldspar, illite, Mg-siderite. Sample of prismatic calcite streak from 446.2 feet: X-ray-- calcite.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
446.5	448.2	Oil shale: Medium to light olive gray (5 to 10Y 4/2-6/2 and 6/1), dolomitic to slightly calcareous. Faint laminae and some very faint streaked bedding. Irregular thick to medium parting; irregular and some conchoidal fracture; some rubble at top and at 447.6. Few buff algal marlstone stringers and lenses near top including one thin buff-white earthy tuff lense with abundant very fine black flecks. Sparse very fine pyrite cubes and streaks in lower part.
448.2	449.4	Marlstone and mudstone: Olive buff to some medium olive gray (5 to 7.5Y 7/2 and 7/1-6/2 and 6/1, some 5/2-5/1), calcareous. Faint and some fairly distinct laminae and bands. Irregular to regular thick parting; irregular and some conchoidal fracture. Abundant very fine biotite in mudstone. A 2-inch light gray biotitic siltstone band at 449.0; white efflorescent powder on outside of core. Sample of buff biotitic mudstone from 448.4 feet: X-ray-- calcite, quartz, feldspar, dolomite, analcime, Mg-siderite.
449.4	449.6	Tuff: Buff in upper part to white in lower part (2.5Y 8/2 to N10), silty to chalky. Very faintly streaked and mottled in upper half; massive in lower half. (Tuff is 2-3/4 inches thick.) Sample of chalky white tuff from 449.55 feet: X-ray-- K feldspar.
449.6	450.1	Oil shale: Olive gray (5Y 5/2-4/2), slightly calcareous. Faint streaked bedding. Irregular parting and fracture; rubble at top. Abundant fine disseminated pyrite. Sharp regular contact with mudstone below.
450.1	452.0	Mudstone and siltstone: Light slightly olive gray to very light gray buff (7.5 to 5Y 6/1-8/1), calcareous. Faint irregular disrupted streaks and stringers in upper part; bedding in lower part becoming marked by very fine distinct irregular to regular dark shaly (oil shale?) seams. Irregular thick parting; irregular to fairly regular fracture. Becoming sandy in lower part. Sample of very light gray-buff siltstone from 451.3 feet: X-ray-- dolomite, calcite, quartz, feldspar.
452.0	452.7	Limestone and marlstone: Gray-buff limestone (5Y 7/1-7/2) and light to medium olive-gray marlstone (5Y 6/2-5/2 and 5/1). Silty to sandy-textured limestone thinly interbedded with fine irregular marlstone laminae. Slightly irregular thick to rare thin parting; irregular fracture. Sample of gray-buff limestone with fine marlstone laminae from 452.4 feet: X-ray-- calcite, dolomite, quartz, feldspar.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
452.7	454.0	Oil shale: Light to medium olive gray to olive green (5 to 10Y 6/2-5/2, rare 4/2), calcareous. Faint distorted to regular streaked bedding and some displaced and disrupted laminae. Irregular to some fairly regular thick to medium parting; very irregular hackly fracture in upper part to irregular fracture in lower part. Abundant calcite streaks, blebs, and patches in upper part. Few thin to fine dense buff limestone lenses in lower part.
454.0	455.0	Oil shale: Light to dark olive gray and olive green (7.5 to 10Y 6/2-3/2 and 3/1, rare 2/1 lower part), moderately to slightly calcareous. Faint to some distinct commonly displaced and disrupted laminae and streaks. Slightly irregular to irregular thick parting; irregular and some slight to coarse hackly fracture. Some very fine disseminated pyrite. Rare very small buff-white tuff (?) lenses in middle. A thin shredded and displaced medium to dark gray biotitic (?) tuff stringer at 454.7.
455.0	457.0	Oil shale: Medium to dark olive gray and some black (7.5Y 4/2-3/2, some 2/1, some 5/2 lower part), dolomitic. Faint laminae and streaked bedding; occasionally slightly disrupted or displaced. Irregular thick parting; irregular and some slight to rare coarse hackly fracture. Some fine lacy calcite streaks and stringers in middle part. Rare small gray silty tuff nodules and lenses in upper part; rare fine streaks in lower part. Sample of dark olive-gray oil shale from 455.6 feet: X-ray--calcite, dolomite, quartz, feldspar, Mg-siderite, illite.
457.0	458.2	Oil shale: Medium and rare dark olive gray (7.5Y 4/2-5/2, rare 3/2), dolomitic to calcareous. Faint very fine laminae. Irregular thick to medium parting; irregular and some coarse hackly fracture. Rare fine pyrite streaks and blebs in upper part. Rare very fine buff marlstone streaks and laminae in lower part. A very fine light gray biotitic tuff streak at 457.0.
458.2	458.8	Marlstone, oil shale, and tuff: Buff to dark olive-gray marlstone and oil shale (7.5 to 5Y 8/2-3/2), dolomitic to calcareous. Distinctly interlaminated marlstone and oil shale. Slightly irregular thick to medium parting; fairly regular fracture; some rubble at bottom. A 1-inch gray-buff silty and earthy tuff band with some biotite at top; laced with very fine dark tight fractures. A fine pinched out white biotitic tuff lamina at 458.6.
458.8	459.7	Oil shale: Olive gray (7.5Y 5/1 and 5/2-4/1 and 4/2), dolomitic to calcareous. Very faintly streaked and laminated; some distinct gray-buff limestone laminae in lower part. Irregular thick to medium parting; irregular fracture.
459.7	460.2	Limestone and mudstone: Buff (2.5 to 5Y 8/1-7/2), very calcareous, fine sandy to silty textured. Faint to moderately distinct laminae and bands; few very fine distinct dark shaly partings. Irregular thick parting; regular fracture. Grades into tuff below.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
460.2	460.7	Tuff: Tan to buff (2.5Y to 10YR 6/4-8/2), slightly calcareous. Irregularly layered and streaked. Irregular thick parting; regular fracture. Abundant fine dark gray to brownish-gray grains (analcime?) in lower part. Some white powder on outside of core. Sample of tan to buff tuff with analcime (?) grains from 460.5 feet: X-ray-- analcime, quartz, calcite, pyrite, feldspar, dolomite.
460.7	461.0	Siltstone: Light gray (2.5 to 5Y 7/1-6/1), very calcareous. Irregularly banded and laminated with fine medium to dark gray shaly laminae.
461.0	461.7	Claystone and mudstone: Light to medium gray (5 to 2.5Y 6/1-4/1), calcareous. Faint to some distinct laminae and bands. Fairly regular to irregular thick parting; irregular fracture. Sample of laminated gray claystone and mudstone from 469.6 feet: X-ray-- calcite, dolomite, quartz, feldspar, illite, pyrite.
461.7	463.5	Siltstone: Light gray (2.5 to 5Y 7/1-6/1), very calcareous. Distinctly layered with fine irregular medium to dark gray shaly partings. Irregular to fairly regular thick parting; fairly regular fracture. Sample of light gray siltstone from 462.1 feet: X-ray-- calcite, dolomite, quartz.
463.5	464.6	Mudstone: Light to medium gray (5Y 6/1-5/1, rare 4/1 lower part), calcareous, silty in upper part to shaly in the lower part. Faint laminae; slightly irregular in upper part. Irregular to regular thick parting; fairly regular fracture.
464.6	465.5	Oil shale: Medium to rare dark olive gray (5Y 5/2-4/2, rare 3/2), dolomitic to slightly calcareous. Faintly laminated; rare distinct buff laminae. Mostly rubble and irregular rounded core pieces. Some small to 1-inch gray silty tuff lenses. Rare pieces of light gray mudstone as above.
465.5	465.6	Tuff: Tan to light brownish gray (2.5Y 6/4-6/2), silty. Massive; very fine gray shaly laminae near top. Few fine short stringers extending into shale below.
465.6	466.6	Marlstone (oil shale?): Olive gray (7.5Y 5/1), calcareous. Very faintly streaked to massive; becoming interlaminated with gray-buff limestone in lower part. Irregular thick parting to rare regular thin parting; irregular and some coarse hackly fracture; some rounded core and rubble.
466.6	468.0	Mudstone and limestone: olive gray to buff (5Y 5/2-7/2), very calcareous. Faint to moderately distinct slightly irregular laminae and some streaked bedding. Irregular thick to thin parting; irregular to fairly regular fracture; rare rubble. Faintly laminated orange-buff to rare tan (10YR 8/3-7/3, rare 6/3) silty tuff at 467.5-467.9.

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAYS

Core samples from U.S. Bureau of Mines White Mountain Corehole No. 2

From	To	Description
468.0	469.2	Mudstone and limestone: Olive gray and medium to some light gray (7.5Y 4/2 and 4/1-5/2 and 5/1, some 6/1), very calcareous. Faint to moderately distinct slightly irregular laminae and streaks. Raindrop impressions (?) at 468.6.
469.2	470.4	Oil shale: Black to dark olive and brownish gray (5 to 2.5Y 2/1-3/1 and 3/2), dolomitic. Faint laminae and streaked bedding. Irregular to regular thick to thin parting; irregular and some slight to coarse hackly fracture; some rounded core and rare rubble. Some light brownish-gray crystalline calcite streaks and laminae in upper part; thin to fine vermiform stringer at 469.4-469.6. Some very fine disseminated pyrite. Buff nodular silty and earthy tuff laced with very fine tight fractures at 470.0-470.2. Sample of black to dark brownish-gray oil shale from 469.8 feet: X-ray-- dolomite, quartz, calcite, feldspar, illite, pyrite.
470.4	471.4	Oil shale: Medium to rare light olive green (7.5 to 10Y 4/2-5/2, rare 6/2), dolomitic to slightly calcareous. Faint laminae and streaked bedding. Irregular thick parting; irregular and some coarse hackly fracture; Some fine (<2mm) pseudomorphs of calcite after shortite.
471.4	472.0	Marlstone (lean oil shale?): Medium to light olive gray (10Y 5/2 and 5/1-6/2 and 6/1), calcareous. Faint streaks and discontinuous laminae. Irregular thick to medium parting; irregular fracture. Abundant calcite pseudomorphs (<3mm). Abundant fine silty limestone streaks and short vermiform stringers.
	472.0	Bottom of recovered core
	472.7	Bottom of hole

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Laramie Energy Research Center, Laramie, Wyoming.

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