

Transmitted by R. E. Landon's letter of July 1, 1958.

LITHOLOGIC DESCRIPTION OF
GENERAL PETROLEUM CORPORATION'S OIL SHALE COREHOLE 37-21
Drilled on Property of Opportunity Corporation
Rio Blanco County, Colorado

Location: 708.6 N & 1301.6 W of S $\frac{1}{4}$ or N 61° 26' W, 1482.0' fr S $\frac{1}{4}$ corner
Sec 21-1N-96W, Rio Blanco County, Colorado

Drilled : July, 1957

Elevation of Collar: 6984.8'

<u>From</u>	<u>To</u>	<u>Rec Ft</u>	
1.0	17.0	16.0	Siltstone, light buff to whitish, highly broken up, grades downward to sandy siltstone and silty sand, no values.
17.0	17.5	0	Missing
17.5	44.5	27.0	Sand, silty, light buff to buff, very fine to fine grained, massive, difficulty friable, occasional carbonaceous fragments, even fractures, fair sorting, locally micaceous, no apparent dip, poor to possibly fair permeability, no odor, stain or cut.
44.5	48.5	0	Missing. Probable Evacuation Creek-Parachute Creek contact.
48.5	95.0	46.5	Marlstone, light gray to gray, fine laminations in upper part becoming generally irregular layers to somewhat mottled in remainder of core, 10-15° apparent dip, nil to very poor values.
95.0	103.0	8.0	Marlstone, as above, however, mottled and irregular color bands more pronounced, contains two analcites (?) stringers less than 0.1 ft thick near bottom, unit appears silty and darker in color than above, poor values.
103.0	122.0	19.0	Marlstone, light gray to gray, irregular layers to occasional mottled, locally contains vugs filled with abundant pyrite, rare vertical fractures filled in part with gilsonite (?), 8-10° apparent dip, poor values.
122.0	126.0	4.0	Siltstone, light gray, massive, somewhat broken up, scattered minute fractures, locally vugs filled with calcite, rare carbonaceous fragments, no value.
126.0	128.0	0	Missing
128.0	165.0	37.0	Marlstone, gray to light brown, generally fine laminations throughout with occasional irregular layers and mottles, fair to good parting, scattered minute fractures filled with calcite, rare silt (analcite?) stringers less than 0.1 ft. 8-14° apparent dip, poor values.
165.0	167.0	2.0	Tuff bed (?), light gray, medium to coarse grained, massive, possible good marker bed.

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167.0	195.5	28.5	Marlstone, gray to light brown, laminated, occasional irregular layers, locally a zone about 2.0 ft thick that is brecciated and recemented, scattered high angle fractures, fair parting, common crystalline crustations on vertical fractured surfaces at 173.0 ft., poor values throughout.
195.5	196.5	1.0	Marlstone, brown, very fine laminations, good parting, 5° (plus or minus) apparent dip, poor to fair value.
196.5	254.5	58.0	Marlstone, gray to light brown, internal structures pronounced and include irregular layers, mottles, nodules, laminations, cross-laminations; occasional minute fractures, scattered patches composed of pyrite (?), unit somewhat silty in lower portion, very poor values.
254.5	256.5	0	Missing
256.5	257.0	0.5	Marlstone, brown with reddish cast, laminated, poor to fair values.
257.0	260.0	3.0	Marlstone, gray, laminations, occasional fractures filled with calcite, very poor value.
260.0	262.0	2.0	Marlstone, gray to brown, very distinct laminations, contains three analcite (?) stringers less than .05 ft, fair value.
262.0	290.0	28.0	Marlstone, light gray to gray, massive to laminated locally, scattered vertical fractures with some fractures filled with secondary minerals, nil to very poor values.
290.0	294.0	0	Missing
294.0	299.5	5.5	Marlstone, gray to light brown, laminations, contains several thin analcite stringers and two prominent ones, less than .2 ft thick, poor values.
299.5	301.5	2.0	Marlstone, light brown to brown, laminations, contains several analcite partings less than .05 ft thick, poor to fair values.
301.5	327.0	25.5	Marlstone, light gray to gray, fair laminations, occasional fractures with secondary mineralization, scattered thin analcite stringers, fair to good partings locally, nil to poor values.
327.0	328.5	1.5	Marlstone, gray to brown, fine laminations, somewhat altered in middle portion, poor to fair value.
328.5	335.5	7.0	Marlstone, gray to light brown, fine laminations, very poor value.

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<u>From</u>	<u>To</u>	<u>Rec Ft</u>	
335.5	336.5	1.0	Marlstone, brown, fine laminations, contains analcite less than .2 ft near top, fair value.
336.5	350.5	14.0	Marlstone, gray to brown, very gradational in coloring throughout, 0.1 ft analcite near base, poor to moderately fair value.
350.5	361.0	10.5	Marlstone, as above, somewhat lower values but continues quite gradational in changing values.
361.0	367.5	6.5	Marlstone, gray to light brown, laminations, contains several analcite partings, poor values.
367.5	368.0	0.5	Marlstone, brown, laminations, fair value.
368.0	394.0	26.0	Marlstone, gray to brown, laminated to somewhat massive, color changes generally gradational, appears to have fairly high specific gravity in darker colors, therefore values are probably low, occasional thin analcite partings.
394.0	421.5	27.5	Marlstone as above, however, core is fractured somewhat with secondary mineralization and tar on fractured surfaces, values appear to be lower, occasional thin analcite stringers.
421.5	423.0	1.5	Tuff bed, white, massive, fine to medium grained.
423.0	423.5	0	Missing
423.5	457.5	34.0	Marlstone, light gray to light tan, laminated to somewhat massive, locally highly fractured, contains several analcite stringers greater than 0.1 at 426.0', 440.5' and 445.0', very poor to fair partings, values are extremely low to nil.
457.5	464.0	6.5	Siltstone, white to light gray, irregular bedding to somewhat massive, surface of core pitted, scattered patches of pyrite, other secondary mineralization in some respects unit appears as a tuff bed, however, might be only highly altered marlstone exposed to work of solutions, possibly a marker bed if it is a tuff, no values.
464.0	479.0	15.0	Marlstone, light gray to light tan, as last marlstone above, contains several solution cavities filled with secondary minerals, nil to very poor values.
479.0	480.0	1.0	Marlstone, brown, fine laminations, poor to fair values.

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<u>From</u>	<u>To</u>	<u>Rec Ft</u>	
480.0	508.0	28.0	Marlstone, light gray to very light tan, laminations, contains several analcite stringers with more prominent ones less than 0.2 ft thick at 487.0', 491.5', and 496.5 several of these analcite partings are lenticular, locally contains solution cavities filled with secondary mineralization and with extremely well developed crystals at 500.7 ft, fair partings throughout, nil to generally very poor values.
508.0	521.5	13.5	Marlstone, gray to light brown, laminations more distinctive due to slight increase in values locally, overall values poor.
521.5	522.0	0.5	Analcite bed (?), dark gray, very fine grained to silty, massive, slightly oil saturated.
522.0	529.5	7.5	Marlstone, light gray to gray, laminations, nil to very poor values.
529.5	530.0	0.5	Analcite bed, light brown, somewhat altered, very coarse grained, massive.
530.0	531.0	0	Missing
531.0	542.0	11.0	Marlstone, light gray to tan, laminations, highly fractured, nil to very poor values.
542.0	543.0	0	Missing
543.0	543.5	0.5	Marlstone, brown, laminations, fair values.
543.5	544.5	1.0	Marlstone, light gray, very poor values.
544.5	545.5	1.0	Marlstone, gray to brown, laminae quite variable in color changes, very poor to moderately fair values.
545.5	556.5	11.0	Marlstone, gray to light brown, poor to fair partings, rare very thin less than .05 ft analcite stringers, nil to very poor values.
556.5	558.0	1.5	Marlstone, brown to dark brown, laminations, locally brittle and papery, fair to possibly good values.
558.0	565.0	7.0	Marlstone, gray to light brown, laminations, very poor values.
565.0	566.5	1.5	Marlstone, brown to dark brown, laminations, good parting, fair to possibly good values.
566.5	567.5	0	Missing

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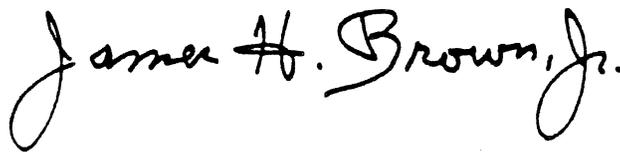
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<u>From</u>	<u>To</u>	<u>Rec Ft</u>	
567.5	572.0	4.5	Marlstone, light gray to gray, laminations, poor to fair partings, poor values.
572.0	573.0	1.0	Marlstone, brown to dark brown, fine laminations, brittle, papery, fair to good values.
573.0	576.0	3.0	Marlstone, gray to dark gray, laminated to somewhat irregular bedding, poor values.
576.0	587.0	11.0	Marlstone, gray, similar to last above, generally lower values varying from nil to poor.
587.0	589.0	2.0	Marlstone, gray to dark gray, irregular bedding becoming more pronounced locally, very poor to poor values.
589.0	590.0	1.0	Marlstone, light brown to dark brown, laminations, rare horizontal fractures filled with gilsonite (?) fair to very good parting, fair values.
590.0	-	-	TD

Described by:

James H. Brown, Jr.

1/9/58
JHBJr/dms