

LITHOLOGIC DESCRIPTIONS

GETTY OIL CO. #34
SW $\frac{1}{4}$, SE $\frac{1}{4}$, SEC 16, T5S, R97W, GARFIELD COUNTY, COLORADO

CORE DESCRIPTION

- 880.85- 893.05 Oil shale with interbedded siltstone and some fine-grained sandstone - buff to light and medium brownish gray; HCl - yes; chalky to earthy luster; laminated with common loop structures and distorted bedding; thin, light gray irregular tuff, minor pitting at 880.95; fractured at 882.0 and 886.0, minor breakage; fractured at 888.0, 888.2, 888.9 and 889.6; minor breakage, calcareous fracture coating; fractured at 890.3 with some solution of fracture zone and common dead oil; fractured (?) 891.25 - 891.55, jumbled; twisting of core with moderate breakage 891.8 - bottom; fractured 892.7 to bottom, moderate breakage, calcareous coating.
- 893.05- 896.2 Oil shale - medium to dark brownish gray; HCl - no; satiny luster; streaked bedding with some faint laminations, common distorted bedding; irregular, analcitized, tuff stringers at top and 894.1; fractured 895.0 - 895.65 and at 896.0, minor breakage on fracture plane, calcareous fracture coating.
- 896.2 - 898.3 Oil shale - medium to dark brownish gray; HCl - no; satiny luster; streaked bedding with common highly distorted bedding; interbedded, calcareous tuffs(?) from top to 896.85, moderate pitting and high distortion of bedding; 897.7 to bottom heavily jumbled, some boxworks, violent reaction to HCl, probable nahcolite zone. 897.0 - 897.7 missing.

898.3 - 902.8

Oil shale with some siltstone - light to medium brownish gray with some buff; HCl - minor to yes; chalky to earthy luster; laminated to faintly laminated with some loop structures, common streaked bedding; fractured at top, 899.4 and 900.0 to bottom, breakage on fracture plane only, calcareous fracture coating; dark gray tuff stringers with some pitting at 898.85, 901.2, 901.6 and 901.75; some solution 901.75 to bottom.

902.8 - 918.4

Oil shale - medium to dark brownish gray with some light brownish gray; HCl - no to minor; satiny with rare earthy luster; laminated to faintly laminated with common distorted bedding; fractured 905.1 - 905.8, 906.9 - 908.3, 910.15 - 912.0, 915.2 - 916.9 and 917.25 - bottom, moderate breakage on all fractures, calcareous coating; irregular light gray tuff streaks and stringers at 903.35, 903.5, 904.85 and 906.4. 912.4 - 912.6 missing.

918.4 - 925.15

Oil shale - medium to dark brownish gray; HCl - minor; satiny luster; laminated to faintly laminated with common streaked, some distorted bedding; pitting of medium brown analcitized tuffs at 919.4, 919.5, 919.65, 923.8, 924.2 - 924.3 and at 925.15, some dead oil in all tuffs.

925.15- 936.6

Oil shale - medium to dark brownish gray; HCl - minor; satiny, with some vitreous luster; laminated with some faint laminations; fractured at 932.5, moderate breakage, calcareous coating; fractured at 934.65, minor breakage; irregular light gray tuffs at 931.3, 934.0 and 935.1; some light gray tuff streaks and stringers 932.4 - 934.0; blebby, medium brown tuff at bottom. 933.0 - Footage Correction. Compressive Strength Sample 929.3 - 929.8.

936.6 - 939.9

Oil shale - medium to dark brownish gray; HCl - minor; satiny luster; faintly laminated with some laminations.

939.9 - 955.95

Oil shale - medium with some dark brownish gray; HCl - yes; satiny luster; faintly laminated to laminated with rare loop structures, common streaked bedding;

some light gray tuff streaks, stringers and blebs 943.0 - 945.0; light gray tuff stringers 946.3 and 947.05; irregular, medium brown, analcitized tuffs 947.4 and 948.9; partially dolomitized(?) tuffs at 951.7, 952.75 and 954.7, lower bedding moderately distorted, some dead oil, moderate solution.

955.95- 962.05

Oil shale - medium to dark brownish gray; HCl - minor to yes; satiny to vitreous luster; laminated to faintly laminated with common streaked bedding; minor pitting of tuff streaks and stringers throughout interval; gilsonite streaks 961.1 and 961.6.

962.05- 975.85

Oil shale - medium to dark brownish gray; HCl - yes; satiny to vitreous luster; laminated with common loop structures and distorted bedding; common light gray tuff streaks and stringers throughout interval; medium brown tuffs at 965.75 and 966.0, mild distortion of bedding; thin, light gray, irregular, partially analcitized tuff at 973.95, lower bedding moderately distorted; thin light brown tuff at 975.65, minor pitting.

975.85- 979.2

Oil shale - medium, with common light, brownish gray; HCl - minor; satiny to earthy luster; laminated with some loop structures and streaked bedding; common pyrite streaks and stringers throughout; possible bedding plane fractures throughout.

979.2 - 983.3

Oil shale - dark, with some medium, brownish gray; HCl - minor; vitreous with some satiny luster; laminated with rare loop structures, some distorted bedding; 979.6 - 979.9, shattered and recemented; medium brown, irregular tuff at 980.05, distortion of upper and lower bedding; drilling breakage 982.6.

983.3 - 994.2

Oil shale - medium, with some light and dark, brownish gray; HCl - minor; satiny with rare vitreous luster; laminated to faintly laminated with common streaked, some distorted, bedding, rare loop

structures; common pyrite streaks and stringers throughout; minor solution of light gray tuff stringers at 985.55 and 986.0; some light gray tuff streaks and stringers throughout.

994.2 - 995.8

Oil shale - dark brownish gray; HCl - no; vitreous luster; streaked bedding with some faint laminations.

995.8 - 998.75

Oil shale - medium, with some light, brownish gray; HCl - no; satiny luster; laminated with common streaked bedding; streaks of organic(?) material common throughout; thin, irregular light gray tuff at 998.1, mild bedding distortion; light brown, thin tuff at 998.5, lower bedding distorted.

998.75-1009.95

Oil shale - medium brownish gray with some light brownish gray; HCl - minor; satiny luster; faintly laminated with some laminations, common streaked bedding; shattered(?) and recemented zone at 1005.7; thin, medium brown tuff at 1006.05; thin, irregular light gray tuff at 1007.75; drilling breakage 1009.0 - 1009.95 along probable low angle (0°-10°) fractures; rare light gray tuff streaks and stringers throughout.

1009.95-1018.1

Oil shale - medium to dark brownish gray with some medium brown; HCl - no to minor; satiny to vitreous luster; laminated with common streaked bedding; fractured 1012.35 and 1012.8, minor breakage, dolomitic(?) fracture coating; richer zones top to 1011.1 and 1016.9 to bottom.

1018.1 -1024.7

Oil shale - light to medium brownish gray with some medium greenish gray; HCl - yes; satiny with rare earthy, luster; laminated to faintly laminated with common streaked bedding; light gray tuff stringer with some dead oil 1018.25; vertical fracture 1018.25 - 1018.95, breakage on fracture plane only; some interbedded, medium brown tuffs 1019.45; shattered(?) and recemented zone 1020.1 - 1020.7; fractured at 1021.0, breakage on fracture plane only; some pyrite streaks 1022.0 to bottom; minor pitting of core 1022.0 to bottom;

fractured 1024.2 to bottom, breakage on fracture plane only.

1024.7 -1032.6

Oil shale - light to medium brownish gray with some medium brown and rare dark brownish gray; HCl - yes; satiny luster; faintly laminated with some laminations, common streaked and distorted bedding; fractured from top to 1025.35, minor breakage; medium brown, analcitized tuff 1028.9, mild distortion upper bedding; fractured 1029.5, minor breakage; light brown tuff with some oil shale, 1030.95 - 1031.4, some minor fractures and solution in interval; some pitting of light gray tuffs and analcitized tuff streaks and stringers throughout interval.

1032.6 -1038.6

Oil shale - medium to dark brownish gray and black; HCl - yes; satiny to vitreous and resinous luster; laminated with common loop structures and distorted bedding; 1034.8 - 1035.05, interbedded, analcitized tuffs, moderate pitting, distortion of upper and lower bedding; 1036.8 - bottom has pyritic filling of irregular fracture traces or flowage lines.

1038.6 -1041.3

Oil shale with some siltstone - buff to light brownish gray with some medium brownish gray; HCl - minor; chalky to earthy luster; laminated with common distorted bedding; interval from 1039.4 - 1040.15 contains interbedded tuffs with common dead oil and rare gilsonite, moderate pitting and solution throughout, moderate bedding distortion; fractured 1040.25, minor breakage.

1041.3 -1050.6

Oil shale - medium to dark brownish gray; HCl - no; satiny to vitreous luster; laminated with common streaked, some distorted, bedding; intersection of two fractures 1042.55, minor breakage, calcareous fracture coating; light gray, irregular tuff 1044.0 - 1044.2, minor pitting, moderate distortion of upper and lower bedding; analcitized tuff stringers with dead oil 1044.8, 1046.45, 1046.5, 1046.6, 1046.65, 1047.0, 1047.1, 1047.15, 1047.45, 1047.7, 1047.9, and 1048.15; fractured 1045.85 and 1047.3, breakage on fracture plane only, dolomitic(?) coating; soft,

light gray tuff stringer at 1049.85, lower bedding distorted; light brown, soft tuff 1050.35 - 1050.6, mild distortion of upper and lower bedding, moderate solution and pitting.

1050.6 -1053.65

Oil shale - buff to light and medium brownish gray; HCl - yes; chalky to earthy luster; laminated with common streaked, rare distorted, bedding; pitting and solution of soft, irregular tuff stringer at 1052.2.

1053.65-1055.8

Oil shale - dark, with some medium, brownish gray; HCl - minor; vitreous luster; laminated to faintly laminated with common streaked and distorted bedding; medium brown, analcitized, tuff stringer at 1055.4; tuffs at 1055.6 and 1055.8, mild distortion of bedding.

1055.8 -1073.6

Oil shale - medium brownish gray with some dark brownish gray; HCl - minor to yes; satiny luster; faintly laminated to laminated with common streaked bedding; medium brown, analcitized tuff bleeding oil, 1056.9 - 1057.1; tuff stringers 1057.45 and 1058.05; medium brown tuff with some interbedding 1060.25; light brown tuff 1065.5 - 1065.7; medium brown tuff with some pitting 1067.15 - 1067.25; fractured at 1071.0, minor breakage; minor pitting of medium brown tuff 1071.95 - 1072.05; tuff stringers, locally distorting bedding 1072.3, 1072.35, 1073.1, and 1073.35; wilsonite streak at 1073.45. 1062.6 - 1071.0 - core heavily scratched and abraded.

1073.6 -1078.9

Oil shale - dark brownish gray with common medium brownish gray; HCl - minor; vitreous, with some satiny luster; laminated with common streaked, some distorted bedding; medium brown, irregular tuffs, with some pitting, common distortion of upper and lower bedding 1073.85 - 1074.0, 1074.05, 1074.35, 1074.5 and 1074.8, all tuffs exhibit some vertical flowage.

1078.9 -1081.7

Oil shale - medium brownish gray; HCl - minor; satiny luster; faintly laminated with some laminations, common streaked bedding; light gray tuff, moderate pitting

at top; some pitting of tuff stringers
1080.0 - 1081.0; irregular tuff stringers,
inclined from horizontal 60° and 80° at
1081.25 and 1081.5.

1081.7 -1092.5

Oil shale - medium to dark brownish gray;
HCl - minor to yes; satiny with some
vitreous luster; laminated with some
faint laminations, common streaked bedding;
moderate solution of crystal growth in tuff
stringer at 1085.9; some light gray to
medium brown tuff streaks 1090.35 - 1090.65;
moderate to heavy pitting and solution of
tuff with dolomite(?) at 1091.9; interbedded
medium brown tuffs and oil shale, with some
pitting 1092.0 - 1092.4.

1092.5 -1099.2

Oil shale - medium to dark brownish gray;
HCl - yes; satiny luster; faintly laminated
with common streaked bedding; moderate
solution and pitting of medium brown to
light gray tuffs with common dead oil
1092.9 - 1093.2, 1093.3 - 1093.7, 1093.8,
1093.95, 1094.85 - 1095.75, 1095.9, and
1096.2, upper and lower bedding distorted
in tuff zones; light gray irregular tuff
stringer at 1098.3.

1099.2 -1108.7

Oil shale - dark brownish gray with common
medium brownish gray; HCl - yes; satiny
luster; laminated with common streaked,
rare distorted, bedding; drilling breakage
1102.0 - 1102.6; fractured 1107.25,
breakage on fracture plane only, calcareous
coating.

1108.7 -1121.1

Oil shale - medium brownish gray; HCl -
yes; satiny luster; streaked bedding with
some laminations; light gray, calcareous
tuff 1109.75 - 1109.9; moderate to heavy
solution and pitting, load casted into
lower bedding, upper bedding moderately
distorted; shattered(?) zone associated
with flowage(?) and some tuffs, 1111.5 -
1111.8; common calcareous veinlets and
pyrite throughout.

1121.1 -1139.5

Oil shale - medium brownish gray with
some dark brownish gray; HCl - yes; satiny
luster; faintly laminated to laminated
with common streaked bedding; rare light
brownish gray bands top and bottom; rare
light to medium gray tuff streaks and

stringers throughout; fractured 1126.7, breakage on fracture plane only, calcareous fracture coating.

1139.5 -1146.35

Oil shale - medium to dark brownish gray and black; HCl - no; satiny to vitreous, with some resinous luster; laminated with some loop structures, common distorted bedding; irregular medium brown tuff 1140.2, mild distortion of upper and lower bedding; medium brown tuff stringers, some pitting 1144.3 and 1144.6; dark gray, thin tuff at 1144.2; irregular light brown tuffs 1145.0, mild bedding distortion; 1144.3 - 1145.0 "algal" (?) zone; rich zone at top from 1139.5 - 1140.6. 1145.15 - 1145.65 Compressive Strength Sample.

1146.35-1156.5

Oil shale and siltstone - buff to light and medium brownish gray; HCl - minor; chalky to earthy luster; laminated with some distorted bedding; fractured 1146.8, moderate breakage; 1148.85 - 1149.4, moderate breakage of tight fractures; off-white dolomite (?) band in light brown tuff; fractured 1149.5 and 1149.65, minor breakage, pyritic fracture coating; fracture intersection 1151.6, minor breakage, white fracture coating; fractured 1152.7, 1152.9 and 1153.0 - 1153.25, moderate breakage, white fracture coating; fractured 1154.2, 1154.6, 1154.9 and 1155.9; breakage at fracture plane only, minor solution pitting throughout interval. "A" GROOVE.

1156.5 -1160.2

Oil shale - medium, with some dark, brownish gray; HCl - no; satiny luster; laminated with rare loop structures, common distorted bedding; bedding inclined 10° from horizontal throughout interval; boxworks with pyrite 1157.15 - 1157.3, bedding mildly distorted above and below zone. TOP MAHOGANY ZONE.

1160.2 -1166.4

Oil shale - light, medium and dark brownish gray to black; HCl - no to minor; satiny to resinous luster; laminated (color banding) with common distorted bedding; light to medium brown to medium gray, analcitized tuffs, blebs, streaks and stringers throughout interval; tuff with some pitting 1161.15 - 1161.4; streaks, stringers, blebs and tuff bands 1161.7 -

1164.45; light brown tuff with dead oil 1164.45 - 1164.65; 1164.65 - 1165.7, irregular streaks, stringers and blebs, some flowage, with interbedded rich oil shale; 1165.7 - 1166.4, light to medium brown tuff.

1166.4 -1172.5

Oil shale - medium to dark brownish gray; HCl - no; satiny with some vitreous luster; laminated with some loop structures, and some distorted bedding; some light gray tuff streaks, stringers and blebs, top to 1168.3, mild bedding distortion; 1168.4 - 1168.8 heavy solution of crystal filled fractures(?) (0° - 10° and 70°), rare boxworks present in solution zones; fractured 1169.1 and 1169.65, minor breakage, white non-calcareous fracture coating (SO_4)(?); some solution in all fractures, probable water passage; fractured 1170.55, minor breakage, dark brown fracture coating (Mg, Fe?); 1170.75 - 1171.25, light gray, irregular tuff stringers, mild bedding distortion. PARTING SURFACE 1170.1. 1167.1 - 1167.6 and 1170.2 - 1170.75 Compressive Strength Samples.

1172.5 -1178.6

Oil shale - medium brownish gray; HCl - yes; satiny luster; laminated with some faint laminations, rare distorted bedding, some light colored, thin bands, 1176.45 to bottom; large gilsonite streak 1177.15; common pyrite streaks and stringers 1178.25 to bottom.

1178.6 -1179.2

Tuff - medium to dark gray; HCl - no; thin (0.05 ft.) light brownish gray oil shale band with distorted and displaced bedding 1178.7; moderate solution of tuff throughout. MAHOGANY MARKER.

1179.2 -1182.6

Oil shale - medium, with some light brownish gray; HCl - minor to yes; satiny luster; laminated with some loop structures, common streaked bedding; common pyrite streaks and stringers throughout interval; irregular, light gray, calcareous tuff stringer 1182.5.

1182.6 -1190.1

Oil shale - dark brownish gray with some medium, rare light, brownish gray; HCl - minor to yes; satiny to resinous luster;

laminated with some loop structures, rare distorted bedding; some light colored bands 1186.0 - 1187.0; "algal" zones(?) 1182.8 - 1183.65, 1187.15 - 1187.3, 1187.4 - 1187.6 and 1187.75 - 1188.2; medium brown, blebby tuffs 1188.25 - 1188.45; minor pitting of tuff stringer 1189.15.

1190.1 -1198.45

Oil shale - dark brownish gray to black with some medium brownish gray; HCl - minor; vitreous to waxy luster with rare satiny luster; laminated with common large loop structures and common distorted bedding; some shaly parting 1190.9 - 1191.0 with minor solution along bedding; 1192.15 - 1193.45, twelve buff bands; possible tight fracture (60°) at 1197.0; irregular, light gray, tuff stringer 1197.45. MAHOGANY BED.

1198.45-1201.15

Oil shale - medium, with some dark, brownish gray; HCl - yes; satiny luster; laminated to faintly laminated with some streaked bedding; fractured 1200.7, minor breakage, calcareous fracture coating.

1201.15-1202.45

Oil shale - dark brownish gray to black; HCl - no; vitreous luster; laminated with some loop structures, common streaked and distorted bedding.

1202.45-1206.4

Oil shale - medium, to dark, brownish gray; HCl - yes; satiny luster; laminated with common streaked, rare distorted bedding; light gray tuff stringers 1203.45, 1204.0 and 1204.6.

1206.4 -1209.6

Oil shale - medium, to dark brownish gray and black; HCl - no; satiny to waxy luster; laminated with some streaked, rare distorted bedding; common light-colored bands throughout interval; heavy abrasion by drilling 1207.45 to bottom.

1209.6 -1212.0

Oil shale - medium brownish gray; HCl - yes; satiny luster; laminated with common displaced bedding; pyrite and analcite(?) common throughout interval along bedding planes and in very tight fractures.

1212.0 -1222.3

Oil shale - medium to dark brownish gray with rare light brownish gray; HCl - minor to yes; satiny to vitreous luster; laminated with rare loop structures, some streaked and distorted bedding; light gray tuff blebs interbedded 1213.2 - 1213.45; 1217.95 - 1218.15, heavily jumbled, some boxworks remaining, probable saline crystal zone; medium brown tuffs with dead oil 1218.25, 1218.45, bedding mildly distorted above and below zone; 1218.55, shale dark blue and flaking, weathered appearance, possible water zone; dark gray, blebby tuff stringer 1220.55. 1217.55 - 1217.95 missing.

1222.3 -1227.3

Oil shale - medium to dark brownish gray; HCl - minor; satiny luster; streaked bedding with some faint laminations, bedding inclined 30° from horizontal above and below missing interval; large solution vugs 1224.2 - 1224.7, jumbled 1224.5 - 1224.7; solution vug with some boxworks 1225.6; fractured 1225.9, minor breakage; heavy solution with some remaining boxworks, 1226.7 - 1227.0. 1224.7 - 1225.5 missing.

1227.3 -1228.7

Oil shale - dark brownish gray with some medium brownish gray; HCl - yes; satiny luster; laminated with some distorted bedding; bedding plane fracture 1227.6; minor solution 1227.8.

1228.7 -1240.55

Oil shale - dark brownish gray with some medium brownish gray; HCl - minor; satiny luster; streaked bedding to faint laminations with some laminations; fractured with some solution, moderate breakage 1234.85 and 1235.1; fractured with moderate breakage and solution 1235.8; fractured with moderate breakage 1236.75; bedding plane fractures 1237.0 - 1238.7 (6-8 per foot), calcareous fracture coatings; medium brown tuff with common gilsonite 1238.65 - 1238.8; fractured 1239.2 - 1239.5, minor breakage, pyritic coating.

1240.55-1246.9

Oil shale - light to medium brownish gray with some dark brownish gray; HCl - no to minor; earthy to satiny luster; laminated with rare loop structures, some streaked

bedding; minor fractures and drilling breakage at fracture points top to 1240.25; light brown tuff 1243.35; bedding plane fractures with solution along bedding 1244.4 - 1245.0; light to medium brown tuff, 1245.0 - 1245.2; near vertical fracture 1245.35 - 1245.75, minor breakage, some dead oil on fracture surfaces; some bedding plane fractures in interval 1245.35 - 1245.75; fractured 1246.5, minor breakage; thin, light brown tuff with minor solution, 1246.65.

1246.9 -1252.3

Oil shale - medium to dark brownish gray and black; HCl - no; satiny to vitreous luster; laminated with some streaked bedding; "algal" (?) zones separated by leaner zone 1248.15 - 1250.95; medium brown, irregular tuff stringer at top; irregular, medium gray blebby tuff 1248.5, mild bedding distortion; some pyrite stringers in leaner zone, gilsonite stringer 1250.5.

1252.3 -1262.45

Oil shale - medium to dark brownish gray; HCl - no; satiny to vitreous luster; laminated with common streaked and distorted bedding; fractured 1253.5, minor breakage; soluble light gray tuffs and interbedded tuffs 1254.7 - 1255.3, moderate bedding distortion; soft light gray tuff, jumbled, 1256.4 - 1256.6; common, thin, interbedded tuffs 1256.8 - 1257.0; 1257.05 - 1258.5, light gray to grayish white tuffs and interbedded tuffs, high bedding distortion; fractured 1257.75; fractured 1260.15 - 1260.85, 1261.6 and 1262.05, minor breakage. 1259.35 - 1259.85 Compressive Strength Sample.

1262.45-1268.3

Oil shale - medium with some light brownish gray; HCl - minor; satiny luster; laminated with some distorted bedding; fractured 1263.4, minor breakage; 1263.85 - 1265.75, broken and jumbled along fractures, shattering throughout, some moderate solution; near vertical fracture 1266.4 - 1266.65, breakage on fracture plane, calcareous coating; tight fractures, 1266.75; common pyrite streaks and stringers 1265.75 - bottom.

1268.3 -1269.85

Oil shale - light to medium brownish gray with some buff; HCl - yes; earthy luster; laminated with rare loop structures, some distorted bedding; fractured 1269.0, breakage on fracture plane only, pyrite coating; light brown tuffs 1269.6 - 1269.75. BOTTOM MAHOGANY ZONE.

1269.85-1284.8

Siltstone with rare lean oil shale - buff to light brownish gray with some light to medium gray; HCl - minor to yes; laminated to massive with common distorted bedding; tight fracture traces to 1270.2; minor pitting of light gray tuff stringer 1270.5; fractured 1271.55, minor breakage; light gray tuff, 1271.8 - 1272.8; fractured 1272.8, minor breakage; 1272.85 - 1273.5, fractured or tightly fractured, common pyrite, some solution along fracture planes; fractured 1275.0, pyrite coating; 1275.25 - 1278.85, jumbled and broken along common fractures, heavy solution of crystal growths; 1278.85 - 1279.45, moderate solution of crystal growths; fractured 1280.0, 1280.7, 1281.65, 1282.6 and 1283.0, breakage on fracture plane, common pyrite coating; heavy solution along vertical, intersecting fractures 1283.25 - bottom. very soft, incompetent rock. 1276.4 - 1277.75 missing. 1281.0 - 1281.45 Compressive Strength Sample. "B" GROOVE.

1284.8 -1287.8

Oil shale - medium to dark brownish gray and black; HCl - no; satiny to vitreous luster; laminated with common streaked and distorted bedding; bedding inclined 10°-20° from horizontal throughout interval; slickensides(?) 1285.45; some solution of crystal growths 1284.9 and at bottom. TOP R-6.

1287.8 -1302.15

Oil shale - light, medium and dark brownish gray; HCl - minor to yes; earthy to satiny luster; laminated with rare loop structures, some distorted bedding; fractured 1288.5, 1289.0, 1293.15, 1295.7, 1296.15, 1296.75 and 1299.1 - 1299.3; breakage along fracture plane only; interbedded tuffs in flowage 1290.0 - 1290.1; solution with some boxworks 1290.7 - 1291.0; light brown tuff 1291.85 - 1292.0; interbedded light brown tuffs 1292.4 and 1292.8; light brown to light gray tuff 1294.0 - 1294.2;

dark gray tuff, moderate solution
1296.85 - 1297.1, upper and lower bedding
distorted; jumbled and broken with
moderate solution 1297.15 - 1298.45;
solution of crystal growth 1298.8; some
light brown tuff stringers, minor pitting
1298.8 - 1299.7; light brown tuff stringer
with pyrite 1301.4. 1297.15 - 1297.8
missing.

1302.15-1315.0

Oil shale - light, medium and dark brownish
gray with some medium greenish gray; HCl -
no; satiny with some earthy luster;
laminated with rare distorted bedding;
medium to dark gray tuff 1304.1 - 1304.35,
mild distortion of upper and lower bedding;
fractured 1304.9 and 1308.8 (gilsonite
stringer), breakage along fracture plane
only; soft, light brown tuff stringer
1306.75; medium gray tuff 1311.45 - 1311.8,
upper bedding distorted; some pyrite
streaks and stringers throughout interval.

1315.0 -1319.1

Oil shale - medium to dark brownish gray;
HCl - minor; satiny to vitreous luster;
laminated with common streaked and distorted
bedding, some loop structures; crystal
growth (analcite?) 1316.1, bedding distorted
around growth; thin light brown tuff with
crystal growth distorting upper and lower
bedding 1316.5; light gray tuff at bottom,
distorting lower bedding.

1319.1 -1320.9

Oil shale (lean) - light brownish gray,
with some medium to dark brownish gray;
HCl - minor; earthy luster; laminated with
common pyrite streaks and stringers through-
out; minor pitting of thin tuff zones
1319.3, 1319.55 and 1320.15.

1320.9 -1332.3

Oil shale - dark brownish gray to black;
HCl - no; satiny to resinous luster;
streaked and distorted bedding; "algal"
zones"; separated by leaner zones of
medium brownish gray, laminated shale;
richer zones top to 1321.3, 1321.6 -
1321.8, 1322.5 - 1322.85, 1323.3 - 1324.3,
1327.95 - 1328.2, 1328.7 - 1328.8 and
1329.8 - bottom; crystal growth, upper
and lower bedding distortion 1324.3;
fractured 1324.65, breakage on fracture
plane only; interbedded light to medium
gray tuffs 1324.85 - 1325.1, minor solution.

1332.3 -1335.25

Oil shale - light to medium brownish gray; HCl - no; earthy to satiny luster; laminated with some distorted bedding; drilling breakage top and bottom; common pyrite streaks and stringers to 1333.6.

1335.25-1340.8

Oil shale - dark brownish gray with some medium, rare light, brownish gray; HCl - no; satiny to waxy luster; streaked bedding to laminated with common distorted bedding; leaner zones 1337.85 - 1338.9 and 1339.7 - 1340.2; irregular crystal growths, associated with tuff(?) stringers, 1337.3, 1338.85 and 1339.15; gilsonite stringer 1339.45.

1340.8 -1347.05

Siltstone and lean oil shale - buff to light brownish gray with some medium brownish gray (top and bottom); HCl - no; chalky to earthy luster; laminated with rare distorted bedding; common pyrite streaks, stringers and blebs throughout; fractured 1341.0, breakage on fracture plane only.

1347.05-1354.4

Oil shale - medium to dark brownish gray with buff to light brownish gray in leaner zone 1349.55 - 1350.3; HCl - no; earthy to waxy luster; streaked and distorted bedding to laminated; medium brown, blebby tuff 1352.4, upper and lower bedding distorted; irregular, medium brown tuff with dead oil 1352.15 - 1352.65, upper bedding distorted, minor load casting, lower bedding; light gray tuff streaks 1353.8 - 1354.1. 1354.1 - 1354.55 Compressive Strength Sample.

1354.4 -1360.25

Siltstone with rare, lean oil shale - buff to light brownish gray and light to medium greenish gray; HCl - minor to yes; chalky to earthy luster; laminated to massive; irregular buff-colored tuff stringer 1354.55; buff-colored tuff 1354.75 - 1355.0, fractured, moderate breakage; fractured 1358.0 - 1358.7, minor to moderate breakage; shaly parting 1356.65 - bottom with some drilling breakage; minor solution 1358.7 - bottom; hard, white crystal growths throughout. 1359.3 - 1360.25 missing. CORRELATE WITH G/N LOG "KICK".

1360.25-1364.8

Oil shale - dark brownish gray; HCl - no; vitreous to waxy luster; streaked and distorted bedding; 1360.25 - 1360.65, shaly parting with secondary deposition along parting planes, probable water passage, minor solution vugs in interval; 1360.65 - 1362.2 heavy solution of box-works with some associated pyrite, probable nahcolite zone; 1362.2 - 1364.25, bedding inclined 10°-45° from horizontal; 1364.25 - bottom, horizontal bedding.

1364.8 -1369.85

Oil shale - light to medium brownish gray; HCl - no to minor; earthy to satiny luster; laminated with rare distorted bedding; minor breakage at top; fractured 1366.5, 1367.2, 1367.9 and 1369.0, breakage on fracture plane only; blebby, medium brown tuff stringer 1368.6, mild distortion of lower bedding; common light gray tuff streaks, stringers and blebs 1369.2 to bottom.

1369.85-1374.15

Oil shale - medium brownish gray with some light brownish gray; HCl - no to minor; earthy luster; laminated with some streaked bedding; some shaly parting throughout; fractured 1370.6, 1370.75, 1371.7, 1372.6 and 1372.9, breakage on fracture plane only; partially retorted 1372.15 - 1372.45, light gray tuff 1372.15 - 1372.25; minor solution along bedding plane 1371.35 and 1373.4; common pyrite streaks 1371.6 to bottom.

1374.15-1384.65

Siltstone and lean oil shale - buff to light and medium brownish gray; HCl - minor; earthy with some satiny luster; laminated with rare streaked bedding; shaly parting throughout; fractured 1374.55, 1374.9, 1375.85, 1376.0, 1376.75, 1377.75, 1378.0, 1379.85 - 1380.3, 1382.05, 1382.4, 1382.6, 1383.2, 1383.7 and 1384.4, minor breakage on fracture planes; some tight fracture traces throughout; partially retorted 1381.85 - 1382.3.

1384.65-1392.3

Siltstone with some fine-grained sandstone, rare marlstone - buff to light brown and light gray; HCl - yes; chalky to earthy luster; laminated with some distorted bedding; en-echelon fractures, 1186.2 - 1186.7, minor breakage; fractured 1187.3

and 1188.4, breakage on fracture plane only; solution of crystal growths 1190.0, 1190.3, 1191.75 and 1192.1, bedding distorted above and below crystal zones.

1392.8 -1394.15

Oil shale - dark brownish gray; HCl - no; satiny luster; streaked and distorted bedding; small crystal growths throughout.

1394.15-1406.8

Oil shale - light to medium brownish gray with some medium brown; HCl - no; earthy to satiny luster; laminated with some faint laminations, some streaked, rare distorted bedding, color banding from 1398.4; fractured 1397.65, 1402.9 and 1405.3; breakage on fracture plane only; minor solution of crystal growths 1401.1; large gilsonite stringer 1406.5; pyrite blebs 1406.2 - 1406.5.

1406.8 -1410.3

Oil shale - medium brownish gray to medium brown; HCl - no; satiny luster; laminated with common streaked, some distorted bedding; fractured 1407.2, 1407.5 and 1409.1, breakage on fracture plane only; interbedded light brown tuff streaks, distorting bedding 1408.75 - 1409.0.

1410.3 -1415.0

Oil shale - medium, with some dark, brownish gray; HCl - minor; satiny luster; streaked bedding with some laminations; broken and jumbled throughout interval, minor to heavy solution with some boxworks; fractured 1412.2, breakage on fracture plane only, pyrite coating; fractures throughout jumbled zones. 1413.0 - 1413.2 missing.

1415.0 -1418.8

Oil shale - medium brownish gray to medium brown; HCl - no; satiny luster; laminated with common streaked bedding; light brown, thin tuff 1415.45; fractured 1417.25, 1418.0 and 1418.35, breakage on fracture plane only. BOTTOM R-6.

1418.0 -1422.2

Siltstone and marlstone - medium brownish gray to medium gray; HCl - minor; earthy luster; laminated; common pyrite streaks throughout; fracture intersection 1419.95, breakage on fracture plane only. 1420.25 - 1422.1 missing.

TOTAL DEPTH