

The Superior Oil Company
Piceance Creek Core Hole #5
Sec. 10-1N-97W
Rio Blanco County, COLORADO

SAMPLE DESCRIPTION

<u>Depth</u>	<u>Description</u>
<u>Core No. 1 200 to 219 Cut: 19 Rec. 19 Boxes: 7</u>	
200-219	Siltstone, lt. br, hd, fine lamin of lt. & dkr br., some contortion, non-slt calc, little or no organic matter
<u>Core No. 2 219 to 248 Cut: 29 Rec: 29 Boxes: 10</u>	
219-220	Tuff, buff, hd, calc, little or no lamin
220-224	Siltstone, med br, hd, non-calc, H2S odor, fine lamin
224-230	Tuff, buff, hd, calc, massive, lenses of organ. matter, coal at 226, blk, xll. ls. at 227
230-248	Marlstone, med, br., hd, non calc 230-241, slt. calc. 241-248, finely lamin, few sm sand. lenses 239, no kerogen odor
<u>Core No. 3 248 to 277½ Cut: 29½ Rec: 29½ Boxes: 10</u>	
248-271	Siltstone, lt. br, hd, slt. calc, becoming more marly 264-271, organ. residue along vert. fract. 254½-256, no kerogen
271-273	Marlstone, dk. br, hd, non-calc, no kerogen, finely lamin.
273-277½	Marlstone, lt. br-buff, hd, calc, becoming more silty toward bottom, irregular lamin
<u>Core No. 4 277½ to 305' Cut: 28 Rec: 28 Boxes: 9</u>	
277½-305½	Marlstone, brn to dk brn, hd, slt. calc, unevenly laminated, with thick silt stringers at 283-286, little or no contortion, becoming higher in organic material toward the bottom, weak kerogen smell

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<u>Depth</u>	<u>Description</u>
<u>Core No. 5 305½ to 332</u>	<u>Cut: 26½ Rec: 26½ Boxes: 9</u>
305½-332	Marlstone, lt brn to brn, non calc 305½-309, calc 309-332, hd, 309-324, higher silt and s.s. lenses 309-316, 324-332, dk brn calc slightly higher kerogen odor
<u>Core No. 6 332 to 361½</u>	<u>Cut: 29½ Rec: 29½ Boxes: 10</u>
332-361½	Marlstone, lt-dk br, hard, calc 332-349, non calc & no kerogen 349-357, silt, kerogen and silt. calc 357-361½, fine sand lenses 342, 352, vert fract 344-346
<u>Core No. 7 361½ to 391½</u>	<u>Cut: 30 Rec: 29½ Boxes: 10</u>
361½-391½	Marlstone, lt brn to buff, silt calc, very hd, finely laminated, badly broken at 370-371, 374-376, 387-391, high silt content 369-370, marlstone is highly silty through core, fracture filling at 365 with very dk resin non calc mineral, at 384-385 dolomite is in small fractures, H2S smell in sand & silt lenses esp. at 378, organic content low, weak kerogen odor
<u>Core No. 8 391½ to 408</u>	<u>Cut: 16½ Rec: 16½ Boxes: 6</u>
391½-408	Siltstone, buff to lt. brn, silt. calc, very hd, bd. poorly defined, badly broken 395-398, 402-408 little organic material, H2S smell throughout core - weak kerogen odor at 393 otherwise none
<u>Core No. 9 408 to 423</u>	<u>Cut: 15 Rec: 14 Boxes: 4</u>
408-422	Siltstone lt. br, silt, calc, highly fract. 414-417, 418-421, poorly lamin, weak-mod H2S odor 408-413, marcasite seams and fract linings 414-422
422-423	Missing

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<u>Depth</u>	<u>Description</u>
<u>Core No. 10 423 to 453 Cut: 30 Rec: 30 Boxes: 10</u>	
423-425	Siltstone, lt. br. hd, non calc, poor lamin, little organ, few sm vugs
425-453	Marlstone, lt-dk br, hd, non calc, fine lamin, 429 is v. dk brn, stg. kerogen, rest of core has silt. odor, thin silt & f. sand lenses at 430, 431, 441, thick silt and vugs 446-451, vugs well leached, 2ndary nahco. 425½, 437
<u>Core No. 11 453 to 483 Cut: 30 Rec: 30 Boxes: 10</u>	
453-483	Marlstone, lt-med. br, hd, calc 453-459, 464-473, 481-483, f. lamin, richer in kerogen 459-464, 479-481, gry calc siltstone lenses at 457, br. med. ss. at 481, vert. fract 454-456, nahcolite seams & fillings at 454, 470, 471, 477, 480, 480½
<u>Core No. 12 483 to 513 Cut: 30 Rec: 30 Boxes: 10</u>	
483-513	Marlstone (483-485½, 488-494, 503-506, 510-513) lt. br. hd, silt calc, much silt, weak kerogen, (485½-488, 494-503, 506-510) dk br. hd, non calc, finely lamin, much organ. moderate kerogen, a vert. fract. 485½-488, 491-492, 494-500, irregular fract 502-506, 510-513
<u>Core No. 13 513 to 531 Cut: 18 Rec: 18 Boxes: 6</u>	
513-531	Marlstone, lt. brn to brn, hd, silt calc, marlst laminated, lenses of silt thicker bd, badly broken 528-531, organic content still low, kerogen odor weak
<u>Core No. 14 531 to 561 Cut: 30 Rec: 30 Boxes: 10</u>	
531-561	Marlstone, brn to dk brn, hd, non calc, poorly laminated, high silt content; siltstone and ss layers present throughout the core, badly broken 534-535, 548-550, high angle fracture 546-47, higher organic material, kerogen odor weak

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<u>Depth</u>	<u>Description</u>
<u>Core No. 15 561 to 591 Cut: 30 Rec: 30 Boxes: 10</u>	
561-564½	Marlstone, brn-drk brn, hd, non calc, high silt content, siltstone & ss lenses present
564½-591	Marlstone, very high siltstones content, slightly calc, some organic material, some distorted bedding near bottom of core 1 foot adjustment
<u>Core No. 16 592 to 632 Cut: 40 Rec: 40 Boxes: 14</u>	
592-632	Siltstone, lt-dk brn, hd, slightly calc, med. organic content, some s.s. lenses, well fractured 628-632, slight kerogen odor
<u>Core No. 17 632 to 647 Cut: 15 Rec: 15 Boxes: 5</u>	
632-647	Siltstone, lt-dk brn, non-calc, med. organic mat. present, well fract. strong kerogen odor, 644-647 badly fractured
<u>Core No. 18 647 to 663 Cut: 16 Rec: 16 Boxes: 6</u>	
647-663	Marlstone, brn to dk brn, hd, non-calc, weakly laminated, small am't. of silt, organic material high, intraformational breccia 650½, high kerogen content, kerogen throughout the core med. to strong, badly broken 661-663.
<u>Core No. 19 663 to 681 Cut: 18 Rec: 18 Boxes: 6</u>	
663-673	Marlstone, lt. br., hd, non-calc, f. lamin, weak kerogen, well fract. 670-673, few thin silt lens.
673-681	Siltstone, lt. gry, hd, poorly lamin. almost massive, non-calc, thin marlstone layers, lt. br. at 675-678, 680-681
<u>Core No. 20 681 to 733 Cut: 52 Rec: 52 Boxes: 18</u>	
681-702	Marlstone, brn to dk brn, hd, non calc, finely laminated, badly broken 691-692, organic material still low, kerogen weak, 687-689 vert. fractures

<u>Depth</u>	<u>Description</u>
702-707	Siltstone, lt. gry, hd, non calc, thinly bded, very low organic material, med. kerogen odor
707-724	Marlstone, lt. buff to dk. brn, hard, non calc, unevenly laminated esp. 711. Large NaH vugs at 712' (5"), 721-722.3 good organic in dk. units, weak to med. kerogen odor
724-729	Siltstone, lt. gry, hd, slt. calc, med. laminated, some marlstone interbd, little organic matter, low to no kerogen odor
729-733	Marlstone, brn, hd, non calc, poorly laminated, organic material high esp. at 732-733, kerogen odor still weak
<u>Core No. 21 733 to 784 Cut: 51 Rec: 51 Boxes: 17</u>	
733-784	Marlstone, brn to dk brn, silt layers are gry, very hd, non calc, laminated-silt layers are finely bded, broken 741-744, 779-782, organic content high, 741-744 fine ss with very high kerogen content, overall med. kerogen odor
<u>Core No. 22 784 to 844 Cut: 60 Rec: 60 Boxes: 20</u>	
784-844	Marlstone, lt. buff to brn, (brn-having higher organic material) poorly laminated except for 836-839, which is a good marlstone, silt content is high throughout the core, badly broken at 809-12, 817-19, 844, kerogen content still very low, no vugs or other mineralization
<u>Core No. 23 844 to 893 Cut: 49 Rec: 49 Boxes: 17</u>	
844-893	Marlstone, brn to dk brn, very hd, non calc, laminated with discontinuous fine silt lenses 844-850, organic content high, badly broken 886-893, vert. fract 850, 865, kerogen odor is very high, no vugs
<u>Core No. 24 893 to 953 Cut: 60 Rec: 60 Boxes: 20</u>	
893-949	Marlstone, dk gry-dk brn, hd, non calc, fine lamin-poorly lamin, thin siltstone lenses at 941-946, kerogen odor moderate at top and decreasing to nothing 914, rest is very poor marlstone with increasing silt content, lower part is becoming dk br-almost blk and more shaley

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<u>Depth</u>	<u>Description</u>
949-953	Shale dk br-blk, easily broken, non calc, siltstone lense 953 Top of Garden Gulch - 949
<u>Core No. 25 953 to 1013 Cut: 60 Rec: 60 Boxes: 20</u>	
953-966	Shale, blk, hd, fissile, non calc siltstone lenses 953-954, 956-957 becoming marly
966-970	Marlstone, dk br, hd, non calc, poorly lamin, with gravel size pockets of light siltstone, becoming shaley in bottom foot
970-974	Same shale material as 953-966
974-993	Same marlstone as 966-970
993-998	Shale, same, highly fract
998-1002	Marlstone
1002-1005	Shale
1005-1008	Marlstone, v. shaley
1008-1013	Shale, 1009-1013 highly fract, 1007-1009½ has thin gypsum (?) non calc stringers along bding planes
<u>Core No. 26 1013 to 1073 Cut: 60 Rec: 60 Boxes: 20</u>	
1013-1023	Shale, dk gry, poorly laminated, non calc, gypsum stringers in top 2', fissile, weak kerogen odor
1023-1053	Marlstone, lt gry-med. brn, hd, non calc, poorly laminated, small silt lenses present through, becomes more sh. and dk toward the bottom. Strong kerogen odor.
1053-1054½	Shale
1054½-1½"	Siltstone
1054½-1061	Marlstone, high kerogen
1061-1070	Shale, high kerogen odor

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<u>Depth</u>	<u>Description</u>
1070-1071	Marlstone - high kerogen
1071-1073	Shale, high kerogen
<hr/> <u>Core No. 27 1073 to 1128 Cut: 50 Rec: 50 Boxes: 17</u>	
1073-1079	Marlstone, dk gry-dk br, hd, non calc, poorly lamin, moderate kerogen odor
1079-1081	Shale, blk, hd, fissile, non calc, med. kerogen
1081-1084	Marlstone, above med. kerogen
1084-1086	Shale, above slt. kerogen
1086-1089	Marlstone, slt. kerogen
1089-1092	Shale, no kerogen
1092-1094	Marlstone, dk br, no kerogen
1094-1101	Shale, no kerogen
1101-1104	Marlstone, no kerogen
1104-1115	Shale, no kerogen, almost marly in places, some buff silt lenses 1107-1111
1115-1118	Marlstone, slt kerogen
1118-1123	Shale, moderate kerogen odor
<hr/> <u>Core No. 28 1123 to 1144 Cut: 21 Rec: 21 Boxes: 7</u>	
1123-1130	Marlstone, dk br-blk, hd, non calc, poorly lamin, with thin buff siltstone units, good kerogen odor
1130-1144	Shale, dk br-blk, hd, non calc, highly fract 1130-1140, v. silty with buff siltstones lenses (1/2-2") in 1140-1144, v. slt. kerogen

<u>Depth</u>	<u>Description</u>
<u>Core No. 29 1144 to 1204 Cut: 60 Rec: 60 Boxes: 20</u>	
1144-1204	Shale, dk brn to dk gry, calc 1183-1190, med. indurated, highly broken and fractured 1144-1176 (easily broken zone) (rest fairly well indurated) 1176-1204 is a marly shale, numerous siltstone layers throughout the core, kerogen odor weak
<u>Core No. 30 1204 to 1251 Cut: 47 Rec: 47 Boxes: 16</u>	
1204-1251	Shale, dk gry to blk, silt. calc, med. indurated, fissile, poker chip breakage, badly fractured 1217-1220, 1248-1251, silt layers throughout core - 103" in thickness, kerogen odor very weak
<u>Core No. 31 1251 to 1293 Cut: 42 Rec: 42 Boxes: 14</u>	
1251-1293	Shale, dk gry to blk, silt. calc, med to poorly indurated, fissile, badly broken 1260-61, 1290-93, very small silt or marlstone layers through core, kerogen odor weak except 1256-57
<u>Core No. 32 1293 to 1346 Cut: 53 Rec: 53 Boxes:</u>	
1293-1308	Shale, dk gry to blk, non indurated, non calc, fissile, some siltstone lenses throughout esp. 1297, 1298, 1303, 1307, med. kerogen odor
1308-1312	Sandstone, lt gry, well cemented (indurated) non calc, well sorted, dolitic or ostracodal (hard to tell even under microscope, some finely dissem. bk organic material, 1309½ interbd with shale
1312-1320	Shale, dk gry, non calc, broken at 1312-1313
1320-1328	Sandstone, dk gry, well cemented, subangular, well sorted fine gr. quartz s.s., H2S odor, interbd sh. at 1324, 1325, becomes fair down the core
1328-1346	Siltstone, dk gry, non calc, well indurated except for the bottom 3', very spongy & shaly, kerogen odor is weak, badly broken 1341-1346.

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Core No. 33 1346 to 1372 Cut: 26 Rec: 22 Boxes:

1346-1348 3/4	Sandstone, lt. gry-lt. br., hd, calc, with thin gry marlstone lenses ($\frac{1}{2}$ "-4")
1348 $\frac{1}{2}$ -1362 $\frac{1}{2}$	Marlstone, dk br., hd, finely lamin. slt calc, down to 1353, thin shaley and silty lenses ss lens at 1361, good kerogen odor top 3'
1362 $\frac{1}{2}$ -1367 $\frac{1}{2}$	Sandstone, fine gr., lt. gry, hd, slt. calc, much contortion with marlstone in upper 2 ft., poorly bedded, almost massive in bottom
1367 $\frac{1}{2}$ -1372	Missing

1346 - Top of the Douglas Creek Fm.