CORE DESCRIPTIONS

COLORADO OIL SHALE

Corehole: LR2-74 (600' - 940.5')

600' - 600.5'	Very fine-grained sandstone; light brown, indistinct laminations, calcareous, organic debris.
600.5' - 600.7'	Medium-grade oil shale.
600.5' - 602.1'	Coarse siltstone; light brown, indistinct laminations, calcareous, organic debris.
602.1' - 602.9'	Low-grade oil shale,
602.9' - 605.0'	Lost core; arbitrarily assigned to this interval.
605.0' - 608.5'	Low to medium-grade oil shale; light medium brown, finely laminated, calcareous, moderately fractured.
608.5' - 611.2'	Coarse siltstone, as above.
611.2' - 612'	Low-grade marlstone,as above; solution cavities.
612' - 625.0'	Interbedded low-grade marlstone and medium-grade oil shale; light to medium brown, finely laminated, calcareous, local tuffaceous horizons, moderately fractured.
625.0' - 627.0'	High-grade oil shale; dark brown to black, finely laminated, calcareous, poor porosity and permeability, cut by steep fractures (approximately 80^{o}).
627' - 633'	Low-grade marlstone, as above.
633' - 637.7'	Coarse siltstone; medium brown, indistinct to contorted laminations, slightly to non-calcareous, good porosity and permeability, organic debris, crossed by 80^{o} fracture, marlstone at 634.3 - 634.5' and 635.4 - 636.0'.
637.7' - 639'	Low-grade marlstone, as above.
639' - 639.6'	Coarse siltstone, as above.

639.6' - 642.4'	Low-grade marlstone, as above; some pyrite lenses.
642.4' - 645'	Coarse siltstone, as above.
645' - 649.7'	Low-grade marlstone, as above; local silty and tuffaceous horizons.
649.7' - 651.3'	Coarse siltstone, as above; marly horizon 650.2' - 650.5'.
651.3' - 652.9'	Low-grade marlstone, as above; silty horizon at 652.3 - 652.4'.
652.9' - 656.8'	Coarse siltstone; medium brown, as above, moderately fractured, pyrite nodules.
656.8' - 665.6'	Interbedded low and medium-grade marlstone; moderately fractured by low angle fractures, heavily fractured 660.0' - 660.9', some local horizons of higher grade.
665.6' - 705.8'	Siltstone; light tan, indistinct laminations, slightly to non-calcareous, good porosity and permeability, moderately fractured, some organic debris and disseminated pyrite, clay rip-up clasts, color changes to medium brown at 674', contorted laminations prominent below 681', and grain size begins to coarsen to a very fine-grained sandstone.
705.8' - 728.7'	Low-grade marlstone; medium brown, finely laminated, calcareous, poor porosity and permeability, local tuffaceous lenses and horizons partially impregnated with hydrocarbon, moderately fractured, heavily fractured beginning at 709.8', solution cavities, both large and small, and undissolved evaporite(?) crystals begin about 712.9', medium-grade horizons at 716.1 - 719.8', beginning around 721' the marlstone becomes barren, the silt content increases, rip-up clasts and contorted bedding become prominent; 725.0 - 725.4', a medium-grade horizon.
728.7' - 730.6'	Dominantly a coarse, calcareous siltstone, with rip-up clasts of marlstone.

730.6' - 736.2'	Medium to high-grade oil shale; medium dark brown, finely laminated, calcareous, poor porosity and permeability, moderately to heavily fractured, cut by high angle fractures, some sealed by bicarbonate(?) and hydrocarbon, local solution cavities, and thin tuff beds partially impregnated with hydrocarbon material.
736.2' - 736.4'	Fine-grained sandstone; light brown, calcareous, tuffaceous(?).
736.4' - 749.8'	Low-grade marlstone.
749.8' - 761'	Low to medium-grade oil shale; poor porosity and permeability, finely laminated, calcareous, pyrite on some of the near vertical fractures.
761' - 771'	Same as above; 1/8" tuff at 761.6' and 1/8" tuff at 768.3', slightly reworked 1" tuff at 770.2, 1" tuff at 770.6'.
771' - 781'	Same as above; ¼" tuff at 771.3' and at 772.3' and at 780.5'.
781' - 791'	Same as above; 1/8" tuff at 786.8'. At 790' a 2" tuff slightly reworked.
791' - 801'	Same as above;at 792.8' ½" tuff with solution cavities and gilsonite. At 800.3' ¼" tuff.
801' - 811'	Medium to high-grade oil shale; poor porosity and permeability, finely laminated, some sediment structures, very calcareous. ½" tuff at 804.2'. At 805.9' and 806.9' are two thin tuffs. Bicarbonate in some of the vertical fractures, thin tuff at 810.4'.
811' - 821'	Medium-grade oil shale; poor porosity and permeability, calcareous, finely laminated, tuffs at 811.7', 812', 812.3', 812'7', 813.9', up to ¼".
821' - 831'	Same as above; with gilsonite in the vertical fractures, at 826 - 828',thin tuffs at 828.1' and 828.6', near vertical joints apparent.

831' - 835.5'	Same as above; vertical joints have bicarbonate in it.
835.5' - 838.2'	Medium to high-grade oil shale; moderately calcareous, poor porosity and permeability, finely laminated.
838.2' - 841'	Medium-grade oil shale; 838.2 - 840' heavily fractured, gilsonite in some of the fractures.
841' - 841.4'	Same as above.
841.4' - 845.5'	Medium to low-grade oil shale; moderately fractured.
845.5' - 847.3'	Medium to high-grade oil shale; slightly calcareous, poor porosity and permeability, finely laminated.
847.3' - 851'	Medium-grade oil shale; fractured from 847.6' - 847.9', tuffs at 850.1' and 850.8'.
851' - 854'	Same as above.
854' - 858'	Medium to high-grade oil shale; finely laminated. poor porosity and permeability, calcareous, last foot very fractured.
858' - 860.9'	Low to medium-grade oil shale; poor porosity and permeability, finely laminated, slightly calcareous, coarse grained ¼" tuff at 860', somewhat reworked.
860.9' - 862.4'	High to very high-grade oil shale; finely laminated, poor porosity and permeability, calcareous.
862.4' - 863'	Medium to high-grade oil shale.
863' - 864.7'	See above.
864.7' - 873'	Medium to low-grade oil shale; poor porosity and permeability, finely laminated, calcareous, vertical bicarbonate covered joint at 865.5', thin tuff beds at 870.8', 871.0', 872.5', and 872.9'.

873' - 883'	Medium-grade oil shale; tuffs at 873.5' (½"), 873.7' (1") with some gilsonite impregnated, 875.5' (½") 875.8' and 880.6' (1") some pyrite in fractures.
883' - 884.4'	Same as above.
884.4' - 886.1'	Barren marlstone; calcareous, moderate porosity and permeability, finely laminated.
886.1' - 887'	Lost core assigned here, probably due to drillers rounding off footage.
887' - 891'	Medium to high-grade oil shale; calcareous, poor to moderate porosity and permeability, mostly fine laminations except from 889.4 - 889.9'.
891' - 900'	See above; tuffs at 894.7', (1") 894.9' (½"), 896.2' (1"), silty tuffaceous zone at 898 - 898.7', almost vertical fracture at approximately 899.3', 899.3 - 900' very fractured.
900' - 910'	Low to medium-grade oil shale; tuffs at 901.2 (¼"), 904.3' (1"), 904.6 - 904.9' and 905.2 - 905.5' and 905.5' - 905.8', some of small fractures have pyrite.
910' - 920'	Medium-grade oil shale; 3 tuffs at 910.1' (¼"), 1" tuff at 916.5', tuff zone (3") at 918.5'.
920' - 930'	Same as above; upper 3" very fractured, a vertical fracture below this, near vertical fractures with bicarbonate at approximately 920.7', ½" tuff at 924.5' and 925.0', 3" tuff zone at 928.5' in interbedded marlstone, lowermost foot has a vertical fracture.
930' - 934.9'	Same as above; with some richer thin interbeds, tuff at 931.7' (½"), very fractured at 933.2 - 934.0' with bicarbonate on the fractures, contorted tuff at 934.2', some contorted bedding in this zone.
934.9' - 940.5'	Medium to high-grade oil shale; calcareous, poor porosity and permeability, finely laminated, solution cavities at 941.7', very fractured at 941.8'.

The funny looking thin core here is what was drilled by the bottom rod after it had separated from the core barrel,and started drilling its own hole. It probably represents the core in the region of about 930'.